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SOCIAL WELFARE ASPECTS OF DEVELOPMENT IN A TRANSITION ECONOMY: APPLICATION TO VIETNAM

A thesis submitted in partial fulfilment of the
requirements for the award of the degree

DOCTOR OF PHILOSOPHY

from

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by

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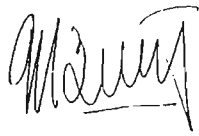
To Binh Thanh and Thanh Chau

AUTHOR'S CERTIFICATION

I, Dzung The Nguyen, certify that this thesis has not been submitted as a part of the requirements of another degree and that it is the product of my own independent research.

I certify that any help received in preparing this thesis and all sources used have been acknowledged in the thesis.

Signed

A handwritten signature in black ink, appearing to read 'Dzung The Nguyen', with a stylized, cursive script.

11 July 2001

Abstract

Social welfare aspects of development in the transition from a centrally planned system to a market driven economy are of increasing theoretical and practical interest. However, this subject area is characterised by a number of important knowledge gaps concerning both essential concepts of social welfare and methodologies of its exploration, which are magnified by the fundamental changes introduced in the transition process. Specific features due to geography and history add to the complexity.

This thesis represents an attempt at reducing the gaps by developing an innovative conceptual framework and methodological tools for studying social welfare in a developing transition economy and applying them for the empirical analysis of the impact of Vietnam's transition on its welfare. The main contribution of this thesis is two-fold. In terms of methodological development, it introduces an innovative framework for analysis of social welfare during the transition and develops an intertemporal CGE model with rational expectations and an econometric model for the quantitative analysis of social welfare conditions and the social welfare system, respectively. In terms of empirical work, the thesis has applied qualitative and quantitative methodologies to analyse recent changes in Vietnam's social welfare conditions and social welfare systems.

The analysis has unveiled important insights into recent evolution of Vietnam's social welfare and its dynamics, which lead to a number of important conclusions. Firstly, it has been established quantitatively that Vietnam's transition has produced dramatic changes in social welfare in Vietnam. The chosen transition strategy is appropriate for the country's conditions. However, the transition and welfare policies are not always optimal. Within the chosen transition strategy, the country can obtain greater improvement in living standards by accelerating economic reforms, particularly in the areas of market liberalisation and ownership reform.

There is an urgent need to deepen the reform of the social welfare system, which is still lagging behind reform efforts in other areas and produces limited effects on household welfare. To address the social welfare problems facing Vietnam, such as continuing wide-spread poverty, growing inequality and insecurity, and limited effectiveness of the existing social welfare system, the reform measures should aim at improving targeting of public transfer schemes at the most needy such as the poor, the ethnic minorities, and vulnerable groups and introducing new more selective instruments such as unemployment benefits. Moreover, the analysis confirms the appropriateness of the newly developed methodology for analysis of social welfare under the transition.

Chapter 2 clarifies concepts of social welfare in a transition economy. Having made a clear distinction between social welfare conditions (SWC) and the social welfare system (SWS) – two interlinked aspects of social welfare, the thesis provides a comprehensive review of literature on existing research methodology, studies done on the subject, and identified a number of knowledge gaps to be addressed.

In chapter 3, the thesis introduces an innovative analytical framework, which views the transition as the expansion of people's choices of their occupation,

consumption, and investment and considers social welfare in terms of opulence, equality, and security. These allow studying the two aspects of social welfare in an integrated and interactive manner.

Based on the analytical framework, this chapter also develops theoretical basis for quantitative analysis of social welfare during the transition through modelling social welfare conditions and the social welfare system in a developing transition economy. The former model distinguishes itself by the combination of neoclassical intertemporal profit and utility optimisation of respective agents with various structuralist features of the developing transition economy, the introduction of HDI-like utility function and rational expectations, and the focus on welfare aspects. The novelty of the former is that it takes into account both public and private transfers as integrated and interacting elements of the social welfare system in a developing transition economy. A theoretical exploration of social welfare aspects of the transition on the models has unveiled that while in general the long-run impact of the transition on social welfare conditions is positive, it may result in short-term production contraction and worsening living standards, depending on the initial conditions and adopted transition policies. Concerning the social welfare system, public transfers may be of impure altruism and crowd out the private transfers. In general, public transfers and the SWS in general have a limited role and cannot replace a rapid and equitable growth in maintaining living standards during the transition.

Next, the study reports a qualitative analysis of changes in social welfare during Vietnam's transition. Chapter 4 focuses on the impact of the transition on social welfare conditions. The chapter reviews the transition process in Vietnam in comparison with other transition countries. It concludes that in contrast with almost other transition countries, Vietnam's transition has produced not only remarkable production gains and increasing macroeconomic stability, but also a rapid improvement of living standards. However, as predicted by the theoretical analysis, this is accompanied by growing, although still slightly, inequality and insecurity.

Chapter 5 offers a qualitative analysis of the response of Vietnam's social welfare system to the increasing need for social protection and assistance during the transition. The analysis points that Vietnam's social protection system is primarily designed for public employees and focuses on urban areas. The system is characterised by limited number of instruments, restricted coverage, benefits, and efficiency. However, there are innovative efforts to address the need of the most destitute, including working and non-working poor. Other pillars of Vietnam's social welfare system, such as labour and employment policies, education and health care, are also considered. In general, the effectiveness of the system is still limited due to its slow response to the new economic environment, weak targeting, and lack of resources.

Chapter 6 is devoted to a quantitative analysis of social welfare in the transition. The thesis demonstrates how an intertemporal model of SWC with rational expectations and an econometric model of SWS can be built on the basis of the methodological development and applied for practical quantitative analysis of social welfare in a developing country such as Vietnam. The former represents the first intertemporal CGE model of Vietnam's transition economy. Six policy experiments with different transition and welfare scenarios provide additional insights into welfare dynamics of Vietnam's transition. In particular, they confirm that different transition policies tend to produce different effects on SWC and long-term impacts can be quite different from short-term ones. Next, the modelling has established quantitatively that

while the transition strategy chosen is relevant and has resulted in a remarkable improvement in SWC, they are not optimal. Fostering the reform process, particularly through accelerating market liberalisation and ownership reform, certainly leads to more impressive achievements. However, the transition policies are interlinked and need to be carried out coherently. Further, as improvement of SWC in the transition economy is positively linked with the development of the non-state sector, the latter is most critical for further enhancement of living standards and poverty reduction. Moreover, SWC is better off from more targeted social policies such as the establishment of unemployment benefits while “populist” policies such as lump-sum public transfers do not produce the effect.

The analysis of the econometric model of the social welfare system also has unveiled a number of important issues facing Vietnam's existing SWS. In support of the qualitative analysis in chapter 5, the quantitative analysis has established that the existing public transfer schemes produce statistically quite insignificant impacts on the welfare of Vietnamese households in general and recipient household in particular. Only poverty reduction assistance – a relatively recently emerging scheme – represents an exception by making statistically significant impacts on household welfare. Next, contrary to social security, social assistance and poverty reduction assistance are impure altruistic and, thus, require recipients' service in return. It has also confirmed that the social protection system is weakly targeted at the most needy, in particular the poor, those affected by disasters, and the vulnerable. Next, private transfers play an essential role in Vietnam's SWS but they are crowded out by public transfers, although slightly. More important, as private transfers deteriorate as a result of covariate risks and irregularities, such as natural disasters, there is a need to strengthen the formal SWS, particularly public transfer schemes. However, Vietnam SWS reform appears still lagging behind reform measures in other areas and this creates an additional constraint to the on-going reform process. The above also represents direction for future reform of Vietnam's SWS and social policies, in general.

The thesis is concluded by chapter 7, which summarises major findings and conclusions of the thesis. Moreover, it discusses existing limitations of the study and suggests future research in this subject.

The thesis utilises existing time series of macroeconomic data and cross-section data accumulated by both national and international agencies as well as the data collected under the two consecutive Government/World Bank/UNDP/SIDA Living Standards Measurement Surveys in 1992-93 and 1997-98. The data sets are complemented by other data collected from the Vietnamese Government's regular household surveys, census and sectoral surveys conducted by line ministries such as labour, education, health, agriculture and rural development, as well as data collected by international organizations such as the World Bank, IMF, UNDP, UNICEF, FAO ILO and EU and the NGO community in Vietnam.

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List of Abbreviations

Bill.	Billions
BSS	Basic social services
CEE(s)	Central and Eastern Europe or Central and Eastern European countries
CEMMA	Committee for Ethnic Minorities and Mountainous Areas (of Vietnam)
CGE	Computable general equilibrium
CIS(s)	Commonwealth of Independent States
CMEA	Council for Mutual Economic Assistance and Cooperation (also COMECON)
CPV	Communist Party of Vietnam
DCED	Development in communes faced with extreme difficulties
<i>Doi moi</i>	Vietnam's reform process (English translation: renovation)
EBRD	European Bank for Reconstruction and Development
ESCAP	United Nations Centre for Economic and Social Development in Asia and the Pacific
EU	European Union
FDI	Foreign direct investment
FSU	Former Soviet Union
GDP	Gross domestic product
GEMPACK	General Equilibrium Modelling Package
GNP	Gross National Product
GSO	General Statistical Office (of Vietnam)
GSP	Gross social product
HDI	Human development index
HEPR	Hunger eradication and poverty reduction
HH	Household
HPI	Human poverty index
HRD	Human resources development
ILO	International Labour Organisation
IMF	International Monetary Fund
IMR	Infant mortality rate
ISSA	International Social Security Association
LHS	Left hand side
MARD	Ministry of Agriculture and Rural Development (of Vietnam)
Mill.	Millions
MO Culture	Ministry of Culture and Communication (of Vietnam)
MOET	Ministry of Education and Training (of Vietnam)
MOH	Ministry of Health (of Vietnam)
MOI	Ministry of Interior (of Vietnam)
MOLISA	Ministry of Labour, Invalids and Social Affairs (of Vietnam)
MPI	Ministry of Planning and Investment (of Vietnam; successor of SPC)
NA	Data not available
NCPFP	National Committee for Population and Family Planning (of Vietnam)
NGO(s)	Non-government organisation(s)
NIC(s)	Newly industrialised country (countries)
NMP	National material product
NP(s)	National programme(s) (of Vietnam)
NTP(s)	National target programme(s) (of Vietnam)
OLS	Ordinary Least-Square estimation procedure
PDCED	Programme for socio-economic development in communes faced with extreme difficulties
PPC(s)	Provincial People's Committee(s) (in Vietnam)
RHS	Right hand side
SA	South Asian countries
SAM(s)	Social accounting matrixes
SBV	State Bank of Vietnam
SEA	Southeast Asian countries

SESAME(s)	System of economic and social accounting matrixes with extensions
SIDA	Sweden International Development Agency
SOE(s)	State-owned enterprises
SPC	State Planning Committee (of Vietnam)
SRV	Socialist Republic of Vietnam
SWC	Social welfare condition
SWF	Social welfare function
SWS	Social welfare system
TB	Tubercules
UNCED	United Nations Centre for Environment Development
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
VLSS	Vietnam's living standards survey
VLSS(s)	Vietnam's living standards survey(s)
VLSS1	Vietnam's living standards survey in 1993-94
VLSS2	Vietnam's living standards survey in 1997-98
VND or D	Vietnam's currency (US\$1=VND15,000 as of June 2001)

CHAPTER 1 INTRODUCTION

Section 1.1 Problems to be addressed

By its scope and long-term impact, the on-going economic transformation from the centrally planned system into a market-oriented economy is one of the most prominent socio-economic phenomena at the national and international levels. Starting in late 1980s and early 1990s, the transition has been already changing the principal rules of the game and the way people and institutions operate. In fact, the historic transformation has already produced unprecedented impacts on life of 30% of humankind in 31 countries in Europe and Asia (IMF 2000:128)¹. It is increasingly recognised that the transition will be a long and difficult process (Lavigne 1995; World Bank 1996a: 1-4).

Issues facing the transition are of practical importance not only for the transition countries but also for others as a result of their rapid integration into the regional and world economy. On the other hand, studies on transition experiences are also of theoretical significance as the transition serves as a 'living test' for the economic models, which underpin reform strategies and policies. As the latter's outcomes often turn out to be more difficult than anticipated, the transition poses challenges to the economics discipline (Horne 1995: 379; IMF; *ibid*).

Recently, social welfare aspects of the transition have been of increasing interest to both practitioners and academicians. Firstly, there are growing concerns from millions people living in transition economies and from national and international development agencies about negative social impacts of the transition, such as rising unemployment and poverty, and deteriorating social services. Secondly, it is

¹ The transition has embraced all former "socialist" economies (except North Korea and Cuba).

increasingly agreed that social welfare represents the ultimate goal and an important driving force behind the transformation (SRV 1998b). Whenever social development and social welfare, in particular, are not addressed, the transition is often accompanied by increasing social unrest, instability and unsustainability. However, some East Asian transition economies, namely China and Vietnam, have been more successful than others, especially those in Southeast Europe and Central Asia.

However, research on the experience of transition economies in social welfare is still lacking, particularly in terms of the experience of the East Asian transition economies. To some extent, this is due to a number of methodological limitations.

Firstly, there is a confusion about how the subject is to be discussed. In a broad context, there is a strong lack of agreement among both scientists and practitioners as to what social welfare means (Sen 1982; Van de Walle 1996). The term ‘social welfare’ is often used interchangeably to have two quite distinctive meanings, namely the condition of well-being of a community or society and the national system to provide social services and benefits (Simpson and Weiner 1989; Whitaker and Federico 1997).

Secondly, while both of the aspects are relevant to transition, the prevalent tendency has been to give primary focus to the macro-economic issues of the transition and changes in social welfare conditions at the household level but not to more critical aspects such as the dramatic alteration in people’s capability or their freedom of choices. Only a few studies explore changes in social welfare institutions during the transition.

Finally, given complexity and dynamism of the transition process, there is an urgent need for applicable tools for quantitative welfare analysis and design of transition policies. Fortunately, in recent years several methodologies have been developed for

this purpose but these have been applied primarily to developed market economies (Devarajan 1993; Johanson 1993; World Bank 1995; Keuning 1996; United Nations in Vietnam 1998a). The dynamism, the premature status of market mechanisms and institutions in transition economies, and the lack of reliable data represent major constraints still to be overcome.

The above-mentioned deficiencies are especially reinforced in the case of developing transition economies. These economies distinguish themselves by the underdeveloped status of their economy with various degrees of dualism and segmentation (e.g. between the state-led and market-led sectors) that contradict basic assumptions of neoclassical theories. Vietnam represents an interesting case. The country has embarked upon transition since the mid-1980s. Despite its initial macroeconomic and social achievements, there are growing concerns among national and international agencies still about widespread poverty, growing inequality, and increasing insecurity. The challenges have been reinforced by the economic slowdowns associated with the sluggish progress of Vietnam's economic and the social reforms and negative impacts of the Asian financial crisis in late 1990s. However, the contribution by economists and social scientists in and outside the country to social welfare aspects of the transition in Vietnam is still limited.

In sum, to study social welfare aspects of the economic transition is undoubtedly of practical and theoretical importance. However, this subject area is characterised by a number of important knowledge gaps concerning essential concepts of social welfare and methodologies of its exploration, which are magnified by the fundamental changes introduced by the economic transition as well as specific features of a developing economy. This thesis represents an attempt to reduce the gaps by developing an

analytical framework for studying social welfare in a developing transition economy and its application for an empirical analysis of Vietnam's transition.

Section 1.2 Objectives and scope of the thesis

This study analyses the changes in social welfare in a developing transition economy, particularly Vietnam, and explores their cause-effect linkages with the country's transition and *vice versa*. For this purpose, it develops a conceptual framework and corresponding methodological tools necessary for comprehensive qualitative and quantitative analyses of multi-faceted impacts of the transition on social welfare and, then, applies it to Vietnam's conditions. In particular, it will:

1. Establish a conceptual framework for a comprehensive analysis of social welfare conditions and the social welfare system in a developing transition economy
2. Develop analytical models for establishing quantitative cause-effect linkages between the transition and social welfare and *vice versa*, and for designing appropriate policy responses to achieve welfare objectives of the transition.
3. Apply the methodological tools for a quantitative and qualitative analysis of recent changes in social welfare during Vietnam's economic transition and generate theoretically-based policy recommendations for the improvement of the country's social welfare.

Specifically, the study poses and seeks answer to the following principal study questions: (i) what constitute key changes in social welfare conditions and the social welfare system during the transition, particularly in Vietnam; (ii) what are mechanisms of the changes; and (iii) what are the most appropriate policy responses to the social welfare challenges facing the transition economy.

Major hypotheses to be explored and validated include:

1. The transition is unpreventably associated with dramatic shifts in both social welfare conditions and the social welfare system, which contribute to the transition-induced fundamental changes in people's choices, particularly those related to their occupation. Improvement in social welfare in the transition is possible and depends on the development of the non-state sector. Thus, in the long run, to ensure the achievement of social welfare objectives of the transition, it is critical to deepen the economic transition and accelerate the reform of the social welfare system.
2. There is a cause-effect relationship among the initial conditions, the progress of the transition and adopted policies, and social welfare. The complex relationship can be studied quantitatively as a whole, using methods of general equilibrium modelling and econometrics and taking into account the mixed structure of the transition economy.
3. When specified, the models can be used for identifying, designing, and calibrating policy options of the transition and the social welfare system in order to reduce negative impacts of the transition while improving social welfare.

Section 1.3 Study methodology

The study attempts to develop a methodology for analysing social welfare during the economic transformation, particularly that in a developing transition country. The improvement is based on related theoretical and empirical works done in Vietnam and outside. The study starts with an in-depth exploration of existing concepts of both economists and social scientists on social welfare. Then, it sets up a new conceptual framework to analyse social welfare in a transition economy based on recently developed approaches such as social choices, capability, and human development. On

this basis, applied equilibrium modelling and econometric methods are employed to develop models for social welfare conditions and the social welfare system.

The lack of reliable data, particularly those concerning the social welfare system, and/or access to them have been recognised as a serious constraint to studies on social welfare in a transition country. The use of applied equilibrium modelling methodology reduces the demand for data. On the other hand, the study uses existing time series macroeconomic data and cross-section data collected by both national and international agencies. In particular, the study will use the data collected under the two consecutive Government/World Bank/UNDP/SIDA living standards measurement surveys in 1992-93 and 1997-98. To analyse the data, the thesis will combine standard statistical and econometric tools (e.g. cross-tabulation and multivariable regression) to interpret the data and identify possible linkages between economic and welfare indicators. To validate data for the applied computable equilibrium modelling, the thesis will use the System of Economic and Social Accounting Matrices and Extensions (SESAME) adopted by the United Nations to bring together data from various sources.

In addition to these analytical tools, comparative analysis of transition experiences across transition economies will be undertaken. In this respect, the comparison of transition experiences of Vietnam and China is of particular interest. The two transition economies share a number of commonalities. However, China started its transition much earlier and therefore can be considered as a living laboratory for Vietnam.

Section 1.4 Plan of the thesis

The thesis consists of seven chapters as follows:

Chapter 1 - Introduction defines the objectives, scope, and research methodology of the thesis as well as outlining the actuality of the study and the methodology to be used. It also contains the plan and outlines of the thesis.

Chapter 2 – Review of Literature on Social Welfare and Economic Transition provides a critical overview of recent literature concerning social welfare and transition. The focus is given to distilling concepts of social welfare, specifying essential changes in social welfare conditions and the social welfare system under the transition and their underlying causes, and methodologies for their analysis. This chapter also identifies gaps in knowledge to be covered by the study.

Chapter 3 - Formulation of the Analytical Framework and theoretical exploration of Social Welfare Impact of the Transition plays the central role in the study. Firstly, the chapter starts by sets up the conceptual framework for an interactive analysis of social welfare conditions and the social welfare system in a developing transition economy. This allows the development and exploration of properties of a comprehensive model of social welfare conditions in a transition economy. Contrary to existing works in this subject area, the model considers both static and dynamic changes in social welfare conditions and takes into account fundamental changes in people's choices of their occupation, consumption and investment, respectively. A theoretical exploration of social welfare conditions during the transition will be undertaken with the use of the model. Finally, this chapter also presents the theoretical basis of a comprehensive model for the social welfare system, which takes into account both public and private transfers and their interactions. Similar to the case of the model for

social welfare conditions, a theoretical study of properties of the model also provides a number of insights into changes in the social welfare system.

Chapter 4 –Social Welfare Conditions during Vietnam’s Economic Transition applies the analytical framework for a qualitative analysis of recent changes in social welfare conditions in Vietnam. It starts by providing an overview of Vietnam’s ongoing transition into a market-oriented economy in the broader context of the country’s general socio-economic development. Then, the chapter establishes patterns of the transition and corresponding changes in the country’s social welfare conditions. The focus is given to analysing the impact of the transition on the welfare of different social groups and geographical regions. Initial conditions, major developments, key patterns, achievements and shortfalls, and the lessons drawn will be compared with the experiences of China and other transition countries to establish the commonality and specificity of Vietnam’s experiences.

Chapter 5 – Social Welfare System during Vietnam’s Economic Transition specifies principal changes in the broad social welfare system in Vietnam as a whole and by major component. However, the chapter focuses on the social protection system – the least studied component, which includes three elements, namely social insurance, social assistance, and poverty reduction assistance. Some other components such as labour and employment policies, education, and health care are also discussed.

Chapter 6 is devoted to ‘*Modelling Social Welfare Impacts of the Transition and Policy Simulation*’. This chapter represents the quantitative analysis of changes in social welfare during Vietnam’s transition and also represents an essential contribution of the thesis. Firstly, this chapter specifies the model for social welfare conditions and its parameters, using Vietnamese data. Having been implemented and calibrated, the model

is used to conduct the simulation of various transition and welfare policies to assess their potential impacts on social welfare conditions and generate appropriate recommendations. Secondly, then, this chapter specifies the econometric model for Vietnam's social welfare system, taking into account both public and private transfers and their impacts on household welfare. Data from two household living standards surveys in 1992-93 and 1997-98 are used to estimate the model's parameters. An analysis of the results of the estimation and simulation helps to provide valuable insights into the system and generate recommendations for a future reform of the social welfare system.

Chapter 7 – Summary and Conclusions summarises major contributions and conclusions of the thesis. Having pointed out limitations of the study, this chapter also suggests various follow-ups, including further theoretical and empirical studies to be conducted to ensure a human-oriented and sustainable transformation and growth in Vietnam.

Section 1.7 Chapter summary

This chapter shows that the thesis's research subject - social welfare during the economic transition from central planning to the market economy - is of both practical and theoretical interest. This thesis aims to redress existing gaps in this subject area by developing a conceptual framework and methodological tools necessary for interactive qualitative and quantitative analyses of social welfare conditions and the social welfare system in a developing transition economy. Then, the methodological developments are applied for analysis and generation of policy recommendations concerning social welfare during Vietnam's economic transition.

CHAPTER 2 REVIEW OF LITERATURE ON SOCIAL WELFARE AND ECONOMIC TRANSITION

Section 2.1 Introduction

The purpose of this chapter is two-fold. Firstly, in section 2.2 it clarifies the concepts, boundaries and approaches to social welfare and economic transition used the literature. Then, in sections 2.3 and 2.4, it reviews major studies on social welfare conditions and the social welfare system during the transition, respectively, and discusses both their methodologies and findings in order to identify knowledge gaps to be addressed in the subsequent chapters.

Section 2.2 Theoretical concepts, boundaries, and methodologies

2.2.1 Social welfare: definitions and boundaries

The term ‘social welfare’ is characterised by both its multidimensionality (Van de Walle 1996) and the inconsistency with which it is discussed (Timmuss 1955). Despite its wide use in economics and other social science literature and contrary to other economic concepts, the term ‘social welfare’ has not received a clearly defined and concise meaning as yet (Simpson and Weiner 1989). It is observed that the term is used interchangeably in the literature to refer to two quite distinctive subjects, namely social welfare conditions and the social welfare system. Thus, the clarification of the term’s meaning and its boundaries is vital for any study in this area.

A. Social welfare conditions

On one hand, ‘social welfare’ economists and social policy scientists mean ‘*a condition (or state) of well-being of a community or society*’ (Simpson and Weiner 1989; Whitaker and Federico 1997:28). Therefore, in this study the term ‘*social welfare condition(s)*’ (or SWC in short) is used to refer to this interpretation of social welfare to avoid possible confusion. SWC is viewed best as the object of valuing or the means to judge about societal well-being (Sen 1982; Sen, Muellbauer et al. 1987). In this

meaning, SWC has been increasingly recognised not only as the ultimate goal of socio-economic development (Van de Walle 1998a) but also its driving force (Streeten 1994; SRV 1995b). As a major subject of welfare economics, SWC serves as the criterion (e.g. in forms of so-called “*social welfare function*”) for social judgment of alternative economic allocations or distributions, i.e. ‘*deciding which of several alternative economic states of affairs (e.g. resources allocations and income distribution) is “best”, and [assessing] how well market (or other economic) systems perform*’ (Greenwald 1994:1027-8). Specifically for this purpose, Pigou introduced the concept of economic welfare as ‘*that part of social welfare that can be brought directly or indirectly into relation with the measuring-rod of money*’ (Pigou 1920), e.g. in terms of monetary gains and losses.

B. Social welfare system

On the other hand, the term ‘*social welfare*’ is often used among social scientists, social policy practitioners and the general public to refer to the provision of social services, i.e. ‘*those means developed and institutionalised by society to promote the ends, which are wholly or primarily social*’ (Townsen 1976:28). More specifically, Baker (1991:221) defines social welfare as ‘*a nation’s system of programs, benefits, and services that help people meet those social, economic, educational, and health needs that are fundamental to the maintenance of society*’. To stress the institutional nature of this interpretation of social welfare, this thesis proposes to use the term “*social welfare system(s)*” (or SWS in short) to refer to it².

The literature on SWS indicates the wide diversity in scope and composition of SWS across countries due to their differences in perceived needs and ability to meet them. Moreover, there does not yet exist unified terminology related to SWS

² So the term ‘*social welfare*’ refers to both the meanings.

(Encyclopedia Britannica 2000). However, it is observed that a traditional SWS focuses primarily on the public and direct interventions. In general it encompasses two major elements, namely social security, which includes social insurance and the social assistance, and other general social services (such as health care, education, housing services, and social works). *Social security* represents measures set up by legislation to protect citizens from various economic risks and vulnerabilities of life. According to criteria of the International Labour Organisation (ILO), a social security system must include medical care and income maintenance in case of an involuntary significant loss of livelihood. Social security legislatively imposes specific individual rights to or specific obligations on the institutions, primarily public ones, which administer it³. *Social insurance* aims at smoothing income of working people and is financed by contributions of workers, their employers and/or sometimes state payments. As defined by ILO Convention 102, it includes pensions, survivor, injury, disability, health-care insurance, and unemployment compensation, benefits of which depend on a claimant's previous employment history. On the other hand, *social assistance* is set to respond to people's income, aiming to maintain the accepted level of well-being of people, independent from their employment history and contribution. Social assistance often includes various distinctive elements, such as social assistance programmes, entitlement programmes, and universal benefits. Contrary to other social services, *social works* (or welfare services) represent services to assist the disadvantaged, distressed or vulnerable persons or groups, who cannot take care themselves. However, concrete structure of the

³ However, some countries use the term social security much more narrowly, e.g. in the UK and the US the term covers only statutory cash benefits and the federal social insurance system (OASDI), respectively.

SWS and design of its components, particularly social assistance, vary extremely widely among countries ⁴.

The recent literature often goes beyond the traditional SWS to recognise the important role of economic development, macro policies, and private arrangements (Sen 1995a; Holzmann and Jorgensen 2000). In this respect, social protection and safety net are other increasingly used terms. The term '*social protection*' includes both social security and voluntary measures not enforced under legislation. The term '*safety net*' refers to the residual protection against deprivations when the individuals cannot help themselves and other measures have failed (Pinker 1979; Spicker 1988:3; Simpson and Weiner 1989). These attempts are particularly relevant to developing countries, where the application of the traditional approach to social welfare for decades has shown severe pitfalls (Sen 1981; Sen 1985; Drèze and Sen 1989; Burgess and Stern 1991; Sen 1991; Guhan 1994).

However, the two distinctive concepts of social welfare are closely related. Both of them are based on the notion of human well-being (or welfare), which is defined as '*the state of being or doing well in life, happy, healthy or prosperous condition, or satisfactory condition (of a person or community)*' in moral and physical terms (Simpson and Weiner 1989). The social welfare condition reflects the result of efforts of society to bring its vision of social well-being into fruition (Whitaker and Federico

⁴ *Social assistance programmes* (e.g. food stamps in the US and family assistance in other developed countries) distinguish themselves by the use of means testing. They represent government-funded 'public transfers provided to people in need if their assessed income falls below a given income threshold and if they meet other eligibility condition for regular or occasional income support. Contrary, *universal benefits* (e.g. education in Australia) are those supports available to all citizens or residents as rights of membership independent of employment record or income. *Entitlement programmes* (e.g. medicare in the US or health services in Sweden) are government-funded but provide benefits that are guaranteed to all people who meet eligibility requirements without the need of means testing. See Briggs, A. (1961), Spicker, P. (1988), and Whitaker, W. H. and R. C. Federico (1997).

1997). On the other hand, the social welfare system represents efforts, which contribute to social well-being through provision of social services.

In summary, social welfare is a multidimensional concept, encompassing two distinctive but connected subjects, namely social welfare conditions and social welfare provision. While there is the need to study both them, their distinction involves often quite different methodologies.

2.2.2 Social welfare conditions: methodologies

A. Measurement and judgment about social welfare conditions

How society values or judges SWC depends on what it considers fundamental to human well-being. In this regards, in the literature there exist three related paradigms, which are based on utility, opulence, and capability⁵.

The utilitarian paradigm intuitively measures and judges SWC in terms of people's mental conditions, such as pleasure and happiness (Bentham 1789) or desire fulfilment and satisfaction (Pigou 1920:Chapter 2; Ramsey 1926)⁶. This view originated from Bentham (1789); Edgeworth (1881); Marshall (1890); and Pigou (1920), and has become dominant in welfare economics due to its convenience for mathematical manipulation (Sen, Muellbauer et al. 1987:5). Although there are attempts to directly valuate utility in terms of an individual's physiological and sociological needs⁷, it is

⁵ Some authors also advocate the idea of shared prudential values of human well-being against the happiness, desire, and capability views (Griffin, J. P. 1991; 1996). and Qizilbash, M. (1997). However, implications of this proposal are limited due to lack of transparency for the general public.

⁶ Classical utilitarianism defines utility '*as an individual's well-being, or more explicitly, his happiness, taking happiness to subsume both sensual pleasure and pain and spiritual delights and suffering*' (Yew-Kwang 1983:2).

⁷ E.g. Maslow (1943:395) defines five basic human needs (namely, physiological, safety, love, esteem and self-actualisation) and places their satisfaction into a 'hierarchy' on the psychological basis. Feinberg (1980:32) proposed a more extensive list, defining 'welfare interests' based on people's basic needs ranging from physical health and the minimum income to a tolerable social and physical environment. Bradshaw (1972) expands the somehow *normative* needs to cover also *comparative* needs. Robson (1976) even argues that the list should be expanded to cover every aspect of a person's life - physical, emotional, material, and spiritual.

commonly agreed that a utilitarian interpretation of SWC is unsuitable for practical valuation due to the subjectivism and direct immeasurability of utility. However, many economists believe that SWC can be valued *via* individual choices, particularly market-based choices, which are the only directly observable aspect of human preferences (Sen 1982: 2; Yew-Kwang 1983; Van de Walle 1996: 2-3). Even so, the underlying assumption about the binary relation between choice and well-being is not unquestionable (Sen 1982).

The opulence paradigm of SWC equates people's well-being with their command over essential goods and, thus, often interprets the real income as the monetary equivalent of utility (Drèze and Sen 1991:6). This interpretation of SWC is the most widely used in applied studies. It originated from Adam Smith, who considered well-being of a nation in terms of what makes it '*better or worse supplied with all the necessities and conveniences*' and links its living standards with '*the different progress of opulence in different ages and nations*' (Smith 1776:1&375). Pigou (1920:759) proposed concentration on possession of vital commodities, interpreting SWC as minimal living standards in terms of minimal commodity possession⁸. Some authors e.g. Landcaster (1966) focus only on the most vital goods such as food or expand this view to include also some 'primary social goods' '*that every rational man is presumed to want [such as] rights, liberties and opportunities ... and the social bases of respect*' (Rawls 1971: 60-5) or freedom (Sen 1982;1999). However, 'commodity fetishism' remains prevalent (Van de Walle 1996: 2-3). Sen (1982:366) pointed out that opulence cannot be the only measurement of SWC since it reflects the mean but not well-being itself and the link between them can be quite uncertain.

⁸ Pigou (ibid.) suggests that '*the minimum includes some defined quantity and quality of house accommodation, of medical care, of education, of food, of leisure, of the apparatus of sanitary convenience and safety where work is carried on and so on*'.

The capability paradigm has been recently proposed by Sen as an alternative to the two above and increasingly accepted. In contrast to the others, this paradigm places emphasis on the functioning aspect of human well-being. Sen (1982;1985,1995), Sen, Muellbauer et al. (1987) and Nussbaum, Sen et al. (1993) argue that SWC is best valued in terms of people's capability and choices⁹. This paradigm gives rise to the concept of sustainable human development, which basically defines SWC as the sustainable enhancement of people's choices for a decent, knowledgeable, and long and healthy life (UNDP 1990; Anand and Sen 1994; UNDP 1995)¹⁰. Further, as the choices are influenced not only by their own characteristics but also by characteristics of the socio-economic environment where people operate, changes in the environment affect SWC. Thus, the capability paradigm provides a close and natural linkage between SWC and the process of multifaceted socio-economic transformation, which cannot be directly captured by the other paradigms. The complex relationship between capability, functioning and choices as well as the relations between the three paradigms in measuring and judging about SWC is summarised in Figure 1.

As noted by Van de Walle (1998b), these distinctive paradigms are complementary. The application of a particular paradigm depends on the purpose of a

⁹ Sen (ibid.) argues that SWC is best valued in terms of peoples' capability to achieve the functioning they value. Functionings represent those the person manages to do or to be. As doing or being well makes the person contented or fulfilled, functionings are central to people's well-being achievement. Capability is an ability to function and encompasses the notion of freedom to choose and undertake the chosen life. Thus, capability is a better measurement of SWC than functionings. As capability can be presented as the space of alternative binary combinations of choices and functionings, choices provide the simultaneous and two-way linkage among capability, functioning, and well-being. In other words, capability and, thus, SWC are best valued in terms of choices.

¹⁰ This concept was developed and articulated by UNDP in the 1990s and increasingly accepted at the international, national and sub-national levels. With this respect, UNDP proposes to measure and judge SWC in terms of the Human Development Index (HDI), Human Poverty Index (HPI) and Gender Development Index (GDI), which highlight various aspects of human development in terms of deprivations in income (PPP), education (literacy, years of schooling or school enrolment), and health (life expectancy at birth). However, there are also some critics regarding to the composition of the human development indexes and its statistical sources. The need for further improvement of the human development methodology has been also recognized (UNDP, ibid.).

presumptions of neoclassical microeconomics¹¹ and usually presents a social welfare problem in terms of finding the optimal allocation of goods among consumers and the optimal allocation of resources among producers to maximise the value of the social welfare function subject to constraints on demand and supply of goods, and resources¹². Bergson and Samuelson propose making judgement about the SWC on the basis of the construction and evaluation of an explicit social welfare function (SWF): $W=W(u_1, u_2, \dots, u_n)$ where u_i ; $i=1, n$ is individual welfare¹³. The SWF can be a Bentham-Harsanyi additive utilitarian SWF, a Bernoulli-Nash multiplicative SWF or Rawls's maximin SWF (Acocella 1998: 23-68). The major constraint in the application of this approach is that the real form and values of SWF are often un-observable. Thus, partial judgement about SWC often takes place based on some measurable metric of utility (Pigou 1920; McKenzie 1983) and the Pareto principle or its extensions such as Kaldor-Hick's and Scitovsky's compensation principles¹⁴.

Since the 1930s, the theoretical basis of this approach has faced numerous critics due to its neglect of interpersonal comparison and distributions (Sen 1999:352)¹⁵, inattention to interpersonal interactions¹⁶, inconsistency of the basic assumptions with

¹¹ Namely the existence of a well functioning market economy, people's maximization of individual welfare, the dependence of societal welfare on individual welfare, and Pareto optimality

¹² e.g Walras, Pareto, and Cassel provide elegant constructions formulated under the theory of general equilibrium.

¹³ Bergson-Samuelson social welfare function allows us to map convex or strictly convex social welfare indifference curves and treat social welfare conditions as welfare of an individual, if it has four properties, namely satisfaction of welfarist postulate, comparability of individual welfare, strong Pareto principle, and convexity or strict convexity of social preference.

¹⁴ Pareto principle states that a SWC improvement takes place if at least one individual is better off without any individual being made worse off, which is a rare event in any real economic change. Kaldor-Hick suggest that a potential SWC improvement is made if the gainers could, at least, fully compensate the losers. However, this criterion offers only a potential Pareto improvement and may lead to a paradoxical result, which is addressed by the Kaldor criterion

¹⁵ Arrow - the most prominent author of this approach - considers 'interpersonal comparison of utilities has no meaning' (Arrow, K. J. 1951). There are attempts to address this limitation by using different social welfare functions, e.g. the maximisation of the minimal level of welfare (Rawls, J. 1971) and taking into account inequality (Atkinson 1970; Deaton 1997:136-9).

¹⁶ These critics are particular popular among social scientists, who claim that '*social welfare [shall be] pertaining, relating or due to the interaction resulted from an individual's association with others or*

respect to empirical observations about people's actual behaviour in developing economies (Yew-Kwang 1983 and Jha 1994:19-20). As noted by Sen (ibid.) the underlying cause of these methodological shortcomings is '*an informational limitation of considerable ethical and political importance*'¹⁷.

b. Social choice approach

To some extent, the social choice approach takes its roots from Arrow (1950;1951). This approach overcomes the partial nature of the Pareto SWC judgement by supplementing it with other widely accepted ethical axioms and procedures (e.g. voting). The approach involves the concepts of social welfare functionals and social choice functions¹⁸. Through the '*impossibility theorem*', Arrow demonstrates that even some critical but mild underpinings of the traditional approach, such as Pareto efficiency, cannot be met simultaneously with basic ethical principles such as non-dictatorship, independence and unrestricted domain. As observed by Pattanaik and Suzumura (2000), the further development of the social choice approach takes place within two basic frameworks. Nozick (1974) lays out the game-form framework within the entitlement theory, which links SWC with the exercise and respect of fundamental rights, such as right to life, livelihood and freedom of choice, rather than satisfaction of preferences. On the other hand, Sen resolves Arrow's impossibility theorem by taking into account interpersonal comparison using non-utility information within the preference-based approach (Sen 1970; Sen 1992). He argues that social choices are based on individual preferences, which shall involve concerns for others (Sen

connection with the functions and structures necessary to membership of a group or society as a natural or ordinary condition of human life' (Simpson and Weiner 1989). There are attempts to redress this limitation through emerging concepts such as externalities, community effect, social capital, norms and non-economic incentives.

¹⁷ E.g. this approach may imply that those who have lower capability to generate utility from income, say an invalid, would be given smaller share of the total income.

¹⁸ Social welfare functionals and social choice functions are rules that assign a social preference and a chosen element, respectively, to every possible profile of individual preference.

1970;1992)¹⁹. Further, collective choice is influenced by the nature and structure of society, thus, the dependence between social choice and individual preferences can vary widely (Sen 1995b). As noted by Sen (1986:1122-4) social choice links with Harsanyi's impersonal choice framework (Harsanyi 1955)²⁰.

Another important theoretical development is Sen's introduction of the conceptions of functioning and capability into SWC analysis (Sen 1981). He demonstrates how the concept of capability and social choice approach can help to analyse real causes of critical SWC problems in developing countries such as poverty and famines. He concludes that it is failures in entitlements – the result of the existing ownership and social organisation - that cause famine and poverty but not production or supply malfunctions²¹. This important notion allows Sen to build a bridge between SWC and economic and social transformations. In this respect, Sen (1982;1999) argues that the transformations and development, in general, are best viewed as the process of expanding the capability of people through the enhancement of their freedom of choices²². Sen believes that this is the precondition for shared and sustainable economic growth. Pattanaik and Suzumura (1996) and Pattanaik and Xu (2000) propose an extended framework for social choice analysis of SWC with the use of agent's preference.

¹⁹ Sen notes that 'the society in which a person lives, the class to which he belongs, the relation he has with the social and economic structure of the community, are relevant to a person's choice not merely because they affect the nature of his personal interests but also because they influence his value system including his notion of "due" concern for other members of society' (Sen, A. 1970).

²⁰ According to Harsanyi (ibid.) social choice requires that SWC would be aggregated from individuals' preferences either as if each person had an equal chance of being in the position of the others, or as a linear weighted sum of individual utilities with the assumption about cardinal non-comparability of individual utility functions and Pareto indifference.

²¹ Sen's argument can be summarized as follows: people's ownership (or 'endowment'), and exchange possibilities (or 'exchange entitlement') determines their entitlement, i.e. the set of alternative commodity bundles that people command using all rights and opportunities they have. In its turn, the entitlement defines the person's capability or incapability in respect to the functionings, which determine the person's welfare and the social welfare condition of the whole society (Sen, 1997, 497).

²² Sen stresses that the achievement of functionings allows people to exercise positive liberty and the importance of possibility/ability to function even if the functionings are actually performed.

This approach also contains an important methodological improvement. Sen (1982:5-8) observes that with the use of additional non-utility information, relevant social choices and SWC analyses can be done with limited and partial comparability and exactness, while remaining adequate for making social decisions. This resolves many claims about the informational basis for studying preferences and welfare, which often appear *'to overstate the difficulties of introspection and communication, and to underestimate the problems of studying preferences revealed by observed behaviour'*.

His following general observation on the failures of traditional economics is also relevant to the methodological shortfalls, from which many current studies on SWC in developing and transition countries suffer:

'A major failing of traditional development economics has been its tendency to concentrate on supply of goods rather than on ownership and entitlement. The focus on growth is only one reflection of this. Extreme concentration on the ration of food supply to population is another example of the same defective vision. Recently the focus has shifted somewhat from growth of total incomes to the distribution of incomes...But I would argue that "income" itself provides an inadequate basis for analysing a person's entitlements...Even if there are no schools in the village and no hospital nearby, the income of the villager can still be increased... But this rise in income may not be able to deal at all adequately with his entitlement to education or medical treatment, since the rise in income as such guarantees no such thing' (Sen 1982).

In summary, there exist two distinguishing approaches to studying SWC, each of which has its own pros and cons. While these approaches are linked to the alternative

paradigms on SWC, they are complementary. However, the social choice approach provides a closer linkage between SWC and the socio-economic transformations as well as induced structural changes. Further, as correctly noted by Greenwald (1994:1028), there is the tendency of SWC studies to focus on policy applications, on the analysis of social decision processes, and on the exploration of the implications of property rights and asymmetric information on markets. Van de Walle (1996) notes that in practice the selection of an approach is frequently influenced by the availability of economic instruments and the multiplicity of objectives, which often limit actual policy choice. Secondly, while economists generally assume that utility is the objective of policy and individual behaviour, policy makers often focus more on non-utility views of social welfare. Thirdly, the differences among the views or approaches about what constitutes SWC and how to assess policy options do not eliminate the importance of how SWC is measured within a particular view or approach. The choice of living standard indicators, the poverty line and poverty index can influence policy assessment.

2.2.3. Social welfare system: principles and typologies

A. The concept and principles

Although modern social welfare provision based on compulsory insurance appeared more than a century ago²³, it became an intrinsic part of the modern world only after the World War II (Esping-Andersen 1996:1) as a response to increasing social- and policy-related risk and vulnerability²⁴ due to industrialisation, urbanisation and globalisation, the increasing role of the modern state in socio-economic management, and accelerated social stratification and marginalisation (World Bank 2000;

²³ The modern social welfare system appeared first in Germany in 1883 when health insurance and old-age pension were introduced to protect German workers from industrial accidents and old age, well before being established in Britain in 1908-11 and in USA in the mid-1930s (King, A. 1983).

²⁴ Risk is understood as the uncertainty or unpredictability of the income stream that results in welfare losses (World Bank. 2000b) while vulnerability refers to people's lack of capability to maintain their livelihood in a sustainable manner (UNCED 1993)

Encyclopedia Britannica 2000). As stressed by several authors, e.g. Spicker (1988), Whitaker and Federico (1997:29) and Trattner (1994), the purpose of SWS is to benefit the community and society as a whole²⁵. Nowadays, the SWS has become the largest public sector in most developed countries²⁶. Compared with developed countries, social welfare provision in developing countries is much less, but it is still often ranked among the largest public sectors in the economy²⁷ (Encyclopedia Britannica 2000).

Spicker (1988) and Whitaker and Federico (1997) give a detailed overview of the characteristics of a modern SWS. It is worth noting that a SWS is organised and operates according to three principles, namely collective responsibility, universality and selectivity. Collective responsibility is the central principle, which requires risk sharing and redistribution among members of society. The principle of universality means in theory social welfare services shall be available to all the needy, who need them (Timmuss 1968:129). Le Grand (1984) argues that universalised welfare services are less stigmatising and less politically vulnerable than a selective service. The major problem facing universality is its low efficiency and higher cost because resources are

²⁵ In particular, Trattner (1994) states that today social welfare provision acts 'not only to support and enhance the well-being of needy individuals and groups, but also to improve community conditions and help prevent and solve social problems affecting all citizens'. An ILO expert report in 1984 also states that the 'fundamental purpose [of social security] is to give individuals and families the confidence that their level of living and quality of life will not, insofar as is possible, be greatly eroded by any social or economic eventuality. This involves not just meeting needs as they arise but also preventing risks from arising in the first place and helping individuals and families to make the best possible adjustment when faced with disabilities and disadvantaged with have not been or could not be prevented. ... It is the guarantee of security that matters most of all, rather than the particular mechanisms such as contributory or tax financing, the insurance or service model of delivery, or the ownership of facilities (public/private, profit/non-profit) by which that guarantee is given.... The means should not be confused with the ends'.

²⁶ In the early 1980s social security alone absorbed between one-fifth and one-third of GDP in most European countries and about one eighth of GDP in Canada, Australia, the US and Japan Encyclopedia Britannica (2000). Encyclopedia Britannica, Britannica.com. 2000..

²⁷ More than 140 countries have some type of social security schemes, among them work-related injuries, old-age and survivors' pension established in almost countries, followed by sickness benefits and family allowances. Less common are other schemes such as unemployment benefits, which are set up in about 40 countries (ibid.)

also often applied to people in no special need (Pen 1974:377)²⁸. Selectivity means that social welfare services shall be given to the most needy, while excluding the others (Spicker 1988). This principle is supported by many authors, e.g. Pinker (1979); Spicker (1988:3) and Simpson and Weiner (1989). However, there are four arguments against selectivity, namely involving expensive and sometime inefficient means testing, possibly working against equality and creating 'poverty traps', and being stigmatising (Townsen 1976:126)²⁹.

From the literature (e.g. Spicker (1988); Drèze and Sen (1991); Trattner (1994); Whitaker and Federico (1997)) one can distinguish three functions of SWS, namely remedial, preventive, and supportive, and three kinds of services, namely income maintenance, in-kind services, and personal social services³⁰.

Although nowadays the state plays an important role in the provision of social welfare³¹, there is still an extensive debate on this subject. It is argued that the provision of welfare is a part of the basic reason why government should exist at all as there is a lack of incentive for self-interested contributions (Olson 1971, Chapter 1), and for the

²⁸ Le Grand (1982) observes that even if the distribution is progressive, most of the spending goes to people who are not in the bottom 20 per cent of income groups. Bearing this in mind, he considers that the 'strategy of equality' through increasing public expenditure and universalised services, has failed.

²⁹ Analysing the impact of employment programmes in the US, Gueron (1990) notes the tendency to move from means-tested entitlement into reciprocal obligation (e.g. under food-for-work programmes). Supporting the arguments, Mitchell, Harding et al. (1994) develop an analytical framework to analyse the targeting of social welfare programmes through an inter-country comparative analysis. Furthermore, Mitchell, Harding et al. (1994) and Whiteford (1997) discuss the formalization of efficiency and effectiveness concepts applied to social welfare programs.

³⁰ *Remedial function* aims to eradicate people's deprivation in basic needs due to relatively short-term malfunctions of economy, family, or the individuals. In contrast, the *preventive function* addresses regular and often persistent causes of deprivation while the *supportive function* attempts to maintain and improve functioning of individuals in the society. For the purpose, SWS's services can be income maintenance, in-kind services, and personal social services. Income maintenance services provide financial resources so that their beneficiaries can purchase necessary goods and services in market. In contrast, in-kind services provide needed goods or services rather than the funds. Personal social services are non-financial welfare services that enhance people's personal development and functioning, e.g. public social utilities and care services (Whitaker and Federico, *ibid.* 28-9).

³¹ Thus, in 1930 Sir Alfred Zimmern gave the term 'welfare state' to mean a 'country seeking to ensure the welfare of all citizens by mean of government-operated social services.' (The Concise Oxford Dictionary)

private sector's involvement through normal market mechanisms. Cawson (1982: Chapter 7) argues that the state can involve itself in social welfare provision under three modalities, namely (i) direct provision; (ii) facilitating the private provision; and (iii) mixed model known as 'welfare pluralism'. As noted by Spicker (1988), the authors do not necessarily disagree with the idea of public SWS but rather seek other ways to better achieve its objectives.

B. Typology of the social welfare system

However, Esping-Andersen (1990), Stephens (1996:33) and other authors show that the SWS a nation can choose largely depends on the level and mode of its socio-economic development. In this respect, there are three major typologies, namely the SWS in developed, developing, and centrally planned economies, which are summarised in Table 1.

Firstly, there is a common consensus among researchers that the most mature SWS is observed in developed market economies. The system often represents a combination of social insurance, social assistance, and labour market interventions, and typically provides all or most of the following services: old-age pension, unemployment benefits, family income support, facilities for the infirm and disabled; education and health services (Atkinson 1989). There exist wide variations in terms of mechanisms³², eligibility, entitlements, administration, coverage, and level of benefits but, in general, both coverage and the degree of support are high (Burgess and Stern 1991).

³² The methods of provision are very diversified, ranging from legal liability, provident schemes, social insurance, benefits to all residents, social assistance and negative income taxes to cash benefit programmes (such as pension schemes, disability and sickness benefits, unemployment benefits, family, maternity and parental allowances, benefits for survivors and single parents below pension age) and in-kind benefits (e.g. national health schemes)

Table 1. Comparison of typologies and models of the social welfare system

	Main characteristics	Institutional model (Scandinavian)	Corporatist model (Continental European)	Liberal model (Anglo-Saxon)	Centrally-planned model	East-Asian & NICs model	Developing countries
1	2	3	4	5	6	7	8
Social policy	Coverage	Very high coverage & income replacement rates	High coverage & income replacement rates	High coverage & income replacement rates	High coverage and replacement rates	Limited coverage & benefits	Both coverage & size of benefits are very limited
	Social Insurance	Income security for working pop.	Social insurance for breadwinner males	Market-driven social insurance covers only old age & unemployment	Extended employment-related social insurance	Corporate occupational insurance limited to core workers.	Social insurance covers only urban formal sector (e.g. less than 10% of labour force in India).
	Social services	Generous and comprehensive universal social services with public provision	Generous social transfers but undeveloped social care services	Means-tested minimum public residual social assistance. The important role of private provision	Untargeted extended in-kind services with little cash transfers combined with other social policies e.g. on-life employment & price subsidies. The dominating role of the state and production units.	Segregated residual social assistance offers little protection for the weaker members. Mainly based on extensive family welfare	Limited ad-hoc social assistance for bottom groups. Heavily relying on family welfare.
Economic regime	Outcome	High security & equality combined with very low poverty rate	Middle level of security and equality	High & raising inequality & poverty	High equality & security but low living standards.	Little govt intervention and relatively low social welfare expenditure.	High and raising inequality and insecurity
	Development & labour policies	The public-employment-led strategy	High wage/low employment strategy through intentional labour supply reduction	Liberal low-wage/high-employment strategy combined with active labour and human resource policy	Central planning & heavy-industry-oriented development strategy	Growth-mediated strategy with high labour participation, savings & investment on human resources.	Neoclassical structural adjustment and stabilisation lead to cuts back in social expenditures

Sources: 3-6: Esping-Andersen (1990) and Stephens (1996: 33), 7: Goodman and Peng (1996); 8: Sankaran, Subrahmanya et al. (1994) and Huber (1996).

Esping-Andersen (1990) and Stephens (1996:33) distilled three models, namely (i) the liberal model of Anglo-Saxon countries, Japan, and Switzerland, where social transfers are limited and generally means-tested; (ii) the corporatist or work-merit model of continental Europe, which comprises sizeable but mostly earning-related schemes, and (iii) the social-democratic or institutional model of the Scandinavian countries and the Netherlands, where social welfare is treated as a universal right and involves large social transfers.

ESCAP (1996) and World Bank (2000:2) observe that SWS in developed economies is distinguished itself by the dependence on social insurance, which is often complemented by income maintenance and welfare employment. The system has not been exclusively concerned with the protection of the poor, although SWS in some countries has been traditionally focussed on poverty eradication.

Secondly, compared with developed countries, SWS in developing countries is characterised by its underdevelopment, although formal SWS appears more developed in highly urbanised, mid-income Latin American and Caribbean countries and South Africa. As noted by Goodman and Peng (1996), East Asian and NIC countries use a quite distinctive model, which is essentially growth-mediated. In these countries, the development of a modern network of public support for vulnerable groups was neglected in favour of family welfare and private pensions and insurance (ESCAP 1996). The recent Asian crisis unveils shortcoming of this strategy, which has resulted in huge welfare losses (World Bank. 2000c: 59.). In general, the formal SWS in developing countries is characterised by extensive reliance on family welfare, chronic under-financing, and limited coverage and benefits. Firstly, the availability of services is limited and varies widely even across most essential contingencies such as work injury benefits; benefits for old age, disability and survivors; sickness and maternity benefits;

and family allowance³³. Secondly, most of the services cover only a small proportion of the population working in the formal sector in urban areas, leaving the absolute majority, e.g. rural dwellers and urban informal sector workers, excluded. Thirdly, the system is characterised by wide-spread malfunctions in terms of lack of compliance by employers failures in making contribution, size and timeliness of benefits, operation efficiency and sustainability (ISSA 1993; Guhan 1994)³⁴.

Since the 1980s there has been an extensive debate on the future of SWS in developing countries (Jenkins 1993, Sankaran, Subrahmanya et al. 1994; Huber 1996)³⁵. Getubig (1992) and ESCAP (1996:9) consider that the models in developed countries are of limited relevance for developing countries due to the low level of their economic development and widespread absolute poverty. Recently, there emerges a general concurrence that further development of SWS in developing countries will require an innovative approach. MacPherson (1987) was among first to advocate that developing countries should give more attention to social assistance, which shall be locally based, financed from progressive taxation, and encompassing rights of the needy to benefits. Laying down the strategy for social protection for the World Bank, Holzmann and Jorgensen (2000) articulate a more comprehensive approach, defining social protection, 'as public interventions to assist individuals, households and communities better manage risk and provide support to the critically poor'. They propose a balanced

³³ Listed in order of decreasing prevalence.

³⁴ As summarised by the International Social Security Association, 'within developing region, social security schemes continue to suffer from inadequate coverage as well as inadequate benefit level because of escalating inflation and, in many cases, inadequate resources. In addition, widespread political upheaval, droughts and adverse economic conditions have continued to pose significant challenges for social security in developing regions. Furthermore, these countries are beginning to focus on the needs of ageing populations, as well as increasing demands because of economic restructuring' (ISSA, *ibid.*).

³⁵ For example, Jenkins (*ibid.*) articulates a social-insurance-oriented model of the SWS in developing countries. However, he admits that this model is irrelevant for the most vulnerable groups of population, such as workers in the rural and informal sectors, the unemployed and the non-working poor. But he argues that their needs can be met best through other social protection mechanisms such as health care, sanitation, clean water supply and housing.

combination of alternative social risk management strategies (including public, market-based and informal ones), policies (e.g. preventive, mitigating and coping), and appropriate instruments in terms of supply and demand. The framework also involves sound macroeconomic policy, good governance, and access to basic education and health and, thus, goes well beyond traditional social protection (World Bank 2000b:3-11). On the other hand, Sen, Dreze, Guhan, and other authors draw more attention to capability-related aspects such as land reform, asset creation, and employment. They argue that by improving people's endowments and entitlement, the measures enhance their capability against risks and vulnerability and, thus, people can improve their well-being themselves (Sen 1991; Guhan 1994). This idea serves as the basis for the sustainable livelihood approach developed and promoted by UNDP and the International Institute for Sustainable Development, which focuses attention on the capability of individuals and households to utilise their assets, natural/biological, social and physical, to make a living and improve their quality of life without jeopardizing the livelihood choices of other, either now or in the future (Singh and Gilman 2000)³⁶.

Thirdly, SWS in the centrally-planned countries was unique. As pointed out by Adam (1991); Horne (1995:389); Aiguo (1996) and Milanovic (1994) the system was extensive, encompassing a full employment guarantee; state run pensions, disability and child allowance schemes; free public health care and education; and heavily subsidised basic goods and services. Poverty-related schemes were almost absent, except for assistance to special groups such as the disabled and alcoholics. In general, the system

³⁶ There exist commonalities between the approaches. de Haan notes that '...various international development agencies have slightly different understandings of what social protection is. But two issues are common. First, it emphasises risk and vulnerability. This recognises the dynamic nature of poverty and ... focuses our attention on the need to be prepared for crises. This should help us toward a proactive social policy agenda that ... emphasises the need to assist individuals, households, and communities to manage risk and increase security. Second, a social protection framework emphasizes the need to provide support to the poorest' (quoted in World Bank, *ibid.*).

was extensive in scope³⁷ but almost untargeted and funded by the government budget. Direct taxes were small and played almost no role in income distribution. In terms of implementation, the provision was largely anchored to workplaces with active involvement of enterprises and the countries lacked capacities to identify and target support to the needy. Kornai (1997) argues that the socialist model was premature compared with the level of economic development and, thus, ran into crisis in the mid 1980s due to lack of affordability.

Hussain (1994) and Xinping (1994) indicate that there were remarkable contrasts between SWS in the European socialist countries and SWS in East Asian ones, such as China and Vietnam. While the former was close to the corporatist model of continental Europe, the latter appeared more similar to that of developing countries. As pointed out by Hussain, in China and Vietnam there were sharp contrasts between urban and rural areas in terms of organisation and benefits. Secondly, the urban system was segmented according to the ownership status of the employment unit. In general both coverage and benefits were more limited than those in the European former socialist countries.

So, there are three distinctive typologies of social welfare provision, which correspond to different level of development and modes of socio-economic organisation. This applies that the transition produces dramatic alteration of the SWS.

Next, as noted by Esping-Andersen (1999), all the models appear to face a number of similar serious problems. Firstly, they have been 'frozen' for a long time and, thus, have become incapable of responding adequately to new conditions such as population ageing, growing costs of medical services, increasing risks of market and

³⁷ In the former European socialist countries, cash public transfers accounted for about a fifth of gross income, that was comparable with developed market economies. However, the transfers were generally unrelated to income (ibid.)

welfare state failures; and negative effects of globalisation. Secondly, there are apparent trade-offs between employment growth and generous egalitarian social protection³⁸. Critics suggest a 'social investment' strategy, which redirects social policy from its current focus on passive income maintenance towards active labour market programmes that 'put people back to work, help households harmonise work and family obligations, and train the population in the kinds of skills that post-industrial society demands as an alternative' (Esping-Andersen 1996).

In summary, social welfare is an extremely complex concept, characterised by its multi-dimensionality. It encompasses two distinctive but connected concepts, namely social welfare conditions (SWC) and social welfare systems (SWS). The former reflects the result of efforts of society to bring its vision of social well-being into fruition (Whitaker and Federico 1997), while the latter represents some of the ways of contributing to SWC often through redistribution in favour of lower-income groups. Thus, a study both the aspects of social welfare is necessary to fully evaluate impacts of an economic and social development process. This is particularly relevant to the on-going transition from a centrally planned to a market economy.

³⁸ In North America, deregulation and freed markets have resulted in positive employment performance on the cost of rising inequality and poverty. In continental Europe, there are conflicts between chronically high unemployment (especially youth and long-term) and the maintenance of equality and poverty due to heavy social contributions and taxes, high and rigid wages, and extensive job rights, which make the hiring of additional workers prohibitively costly and the labour market too inflexible. Scandinavian countries could not afford full employment and generous welfare provision and are forced to cut back their social expenditures. In East Asian and NICs countries, the recent financial crisis evaporates many social achievements by decades and unveils the vulnerability of the strategy to ensure social security on the basis of rapid growth and private welfare initiatives alone. The social welfare crisis is particularly persistent in transition economies in the East-Central Europe and developing countries in the Latin America, where most of population, particularly low-income groups, are not protected from adverse impacts of on-going dramatic socio-economic adjustment.

2.2.4 The economic transition

A. The concept

Whilst the terms ‘economy-in-transition’ or ‘transition economy’ can be applied to any country undergoing a major structural change or transformation³⁹, in the present context they are commonly used to refer to a unique category of countries that are characterized by the ‘the transitional state of their economies from a centrally administrated system to one based on market principles’ (IMF 1994). Similarly, the term ‘transition’ refers specifically to the transformation from a centrally planned economy to a market one (Horne 1995:380).

The immediate common objective of the economic transition is ‘*to raise economic efficiency and promote growth*’ (IMF 2000:131). This objective is similar to that of other economic reforms elsewhere, including the earlier reforms carried out by almost all centrally planned economies. However, the transition distinguishes itself with the depth and intensity of changes, involving the elimination of central planning and the domination of the state ownership as the principal mode of economic organisation and the introduction of the diametrically opposite market-based mode (IMF, *ibid.*). Thus, in contrast with economic reforms elsewhere, the transition represents fundamental changes of the rules of the game in the economy and reshaping behaviour of people and organizations. There is common agreement on the components of the transition, which include macroeconomic stabilisation, market liberalisation, ownership reform and amending the role of the state, reform of the social welfare system, and building market-support institutions (Fisher and Gelb 1991; Lavigne 1995; World Bank 1996a; Harvie 1998).

³⁹ For example, Anna Krueger considers the transition from an underdevelopment economy to a regular, market-oriented one, taking the cases of Korea and India in 1950-1980 (Krueger, A. O. 1998).

In sum, the transition represents the process of Schumpeter's creative destruction, through '*constant revolutionising of both production and social conditions*', leading to the reorganisation of the economic structure and the social system, and development of a new civil society (World Bank 1996a: 1-4). However, this study will focus primarily on the economic aspects of the transition.

B. Factors influencing the transition

a. Initial conditions:

There is a common agreement in the literature that the transition countries enter the transition with a substantial variety of departure points and the initial conditions have considerable effects on the transition strategies and outcomes across countries. The World Bank (1996:3) points out that the transition economies are quite diversified in terms of their socio-economic development⁴⁰, their histories, cultures, resource endowments, and political structures. (IMF 2000) emphasises that the institutional and legal infrastructure⁴¹ necessary for the operation of a market-oriented economy was absent in all countries.

However, it is also agreed that the countries have several common initial conditions. Firstly, they shared the unique Soviet-type economic organization with (i) public ownership of the means of production as the dominant mode of exercising property rights and (ii) central planning based on non-competitive and administrative principles as the primary mechanism for resource allocation (Griffin 1989: 24-35; Bardhan and Roemer 1992; Kornai 1992; Horne 1995: 381; Lavigne 1995; Sacks and

⁴⁰ However, the majority of the transition economies were low- and low-middle-income countries in terms of per capita GNP in 1994 (World Bank, *ibid.*)

⁴¹ Including property rights, legislation regulating entry and exit, financial markets, commercial banking system, open labor market and a market-oriented system of taxation (IMF, *ibid.*). Moreover, the absence of an appropriate SWS to protect people from market's failures can be added to the list.

Wing 1995)⁴². The mode of economic organisation commonly led to a distorted macro economy⁴³ and state micro-management of enterprises and cooperatives.

Secondly, concerning SWC, Lavigne (1995:63) notes the countries were characterised with an egalitarian society “without the ‘poor’ and social classes”⁴⁴, the satisfaction of basic needs at a low level, comprehensive and universal social security covering ‘from cradle to grave’, and relatively high human capital with respect to health and education standards. Aiguo (1996) quite reasonably argues that, however, the SWC achievements were largely ‘support-led’ i.e. by giving priority resource allocation instead of a widely-participated and shared rapid economic growth.

Finally, what is often missed in the literature is that almost all the transition countries came to the transition with crisis situations characterized by growing chronic shortages and distortions such as high ‘over-full employment’, hidden and repressed inflation, and low morale of workers (Lavigne 1995: 60-62). The massive stagnation started in the mid-1970s but failed to be addressed by various reform attempts within the central planning system (Ericson 1991).

b. Alternative transition strategies and policies

There is a general consensus among authors (Fisher and Gelb 1991; Lavigne 1995; World Bank 1996a; Harvie 1998) on three major areas of economic transformation during the transition. They include economic measures aimed at

⁴² Some authors such as Lin (1998:219-24) and Lavigne (ibid.) argue that the adoption of the heavy-industry-oriented development strategy is also an important common feature of the economies.

⁴³ Ericson (1991:11-28) argues that the organization mode was a coherent whole with its own equilibrium mechanisms and responses to disruption.

⁴⁴ However, one can argue that in fact the poverty did not exist only in the intra- relative sense in view of the general low level of consumption and living standards. Moreover, a small fraction of the society (called the ‘*nomenclature*’) normally was much better off since their political or managerial positions gave them better access to supplies and services and the opportunities to participate in the parallel economy (Lavigne, M. 1995).

macroeconomic stabilization⁴⁵ and market institutionalisation⁴⁶, restructural measures aimed at developing the institutional basis for a market economy⁴⁷, and social measures⁴⁸.

There are extensive debates on the choice of transition strategies and sequencing transition measures (Fisher and Gelb 1991; Lavigne 1995:116-21; Intrilligator 1996a; Intrilligator 1996b; Harvie 1997:4; Lin 1998; Makarov 1998). In general, the debate on transition strategies is focussed on the choice between 'shock therapy' and 'gradualism' although the definition of each strategy is not quite clear⁴⁹. The shock therapy strategy is based on the monetarist or neo-classical vision with the triad of stabilisation, liberalisation, and privatisation (Fisher and Gelb 1991; Harvie 1997:4)⁵⁰. On the other hand, the gradual strategy appears close to the structuralist vision, emphasising the institutions, competition, and governance aspects of the transformation (Intrilligator 1996a; Intrilligator 1996b; Makarov 1998:248). Fisher and Gelb (1991) correctly point

⁴⁵ Major measures include balancing the government budget through increases in taxes and cuts in government expenditures and restrictive monetary policies such as restoring a positive interest rate and direct regulation of bank lending), price liberalisation (e.g. reduction of subsidies and deregulation of price fixing).

⁴⁶ Major measures include (i) liberalisation of domestic trade, (ii) liberalisation of foreign trade (e.g. reducing and eliminating the state monopoly, lifting of export and import licenses, introducing tariffs as active instruments of trade policy; current account convertibility of the domestic currency and devaluation of the domestic currency, (iii) labour reform (e.g. weak indexing of the nominal wage and allowing greater labour mobility) and (iv) finance and banking and tax reforms which aim to set up a environment for the operation of a market economy. These measures often form 'heterodox' stabilization packages, with various combinations of standard monetary and fiscal restrictions and several 'anchors' including both nominal variables such as the exchange rate and money wages and real variables such as money supply and/or interest rate.

⁴⁷ This comprises ownership reform and economic restructuring, which often involves large-scale privatisation and private sector development, legal reform, and institution building. The latter two redefine and institutionalise the new role of the state.

⁴⁸ Major measures include the development of a new market-oriented SWS, which replaces the former all-embracing socialist SWS and reduces social costs of the transformation in the short term, and long-term reforms to address possible market failures through the provision of social services and develop a civil society.

⁴⁹ The shock-therapy strategy represents attempts to accomplish the transition with radical changes within a relatively short period. In contrast, the gradual strategy epitomizes a sequential process of phased and incremental reforms, which often do not have blueprints at the beginning (Fisher, S. and A. Gelb 1991 and Harvie, C., Ed. 1997).

⁵⁰ Lavigne (ibid.,118-21) notes that 'shock therapy' strategy is often associated with the political willingness to radically break away from the past.

out that transition should be seen as the sequential and complementary reforms⁵¹, which are dependent on the country's initial conditions and the reform strategy defined by the interplay between politics and economics. Notwithstanding the speed of policy reforms, a market-oriented economy cannot operate without an appropriate institutional infrastructure, which was absent and requires time to be developed.

Based on above, World Bank (1996:12-16) proposed to measure the progress of transition in terms of four broad dimensions, namely the degree of economic liberalisation, structural transformation, and social adjustment⁵². As noted by the IMF (2000:179-84), two aggregate indicators of the transition have been developed and widely-used, namely the transition index and the liberalisation index developed by the European Bank for Reconstruction and Development (EBRD) and De Melo et. al, respectively⁵³. Further, economic and social outcomes from the transition are often

⁵¹ They suggest that macroeconomic stabilisation, price reform, trade reform, ownership reform, small-scale privatisation and private sector development, legal reform and safety net reform be carried out first in a rather short period, say, of two or three years, followed by other measures such as labour market development, reforms of finance, banking and tax, large scale-privatisation and restructuring, and reforms of social services. These measures are to be accompanied with extensive institutional reform and less-extensive efforts for building of the civil society from the very beginning of the transition.

⁵² Concretely, the degree of economic liberalisation is measured in terms of liberalisation of prices, domestic and foreign trade, currency convertibility, and openness to new business entry. Structural transformation is measured by changes in ownership in terms of shares of state and non-state sectors, particularly the growth of the private economy (e.g. the share of the non-state sector output in GDP, the privatisation of assets, especially those belonging to the state such as large- and medium-sized firms, agricultural land and housing). Institutional transformation is measured by the development of the institutional framework necessary for a market economy, particularly laws and the legal framework (especially the introduction of property rights, reform of judicial institutions and enforcement mechanisms); the banking sector; changes in role of the government (SOE reform, reform in tax administration, public administration, and fiscal decentralization, social policy). Social adjustment as measured by the introduction of measures to address market failures and poverty (such as unemployment benefits and other safety nets) and increase labour mobility within tight budgetary constraints.

⁵³ The EBRD transition index is the unweighed average of eight indicators, which measure the extent of enterprise privatisation and restructuring (3 indicators), market liberalisation and competition (three) and financial sector reform (two). The indicators rank from 1 to 4+ with the boundary values representing conditions in the representative centrally planning and advanced market economies, respectively. The EBRD index is published in the annual EBRD Transition Report for all transition countries, except East Asian countries and Mongolia. The liberalisation index represents the weighed average of three indicators, domestic market liberalisation (weight 0.3), foreign trade liberalisation (0.3) and enterprise privatization and banking reform (0.4). The indicators rank from 0 to 1 with the boundary values interpreted similarly to those of the EBRD index. The transition index is available for all transition countries, except Bosnia-Herzegovina, Cambodia and Laos, from 1989 to 1997. There exists a high correlation between the two indicators due to the similarity of their concepts (IMF, *ibid.*)

considered in terms of GDP growth, per capita income, average inflation, labour productivity and major social indicators such as poverty, life expectancy and infant mortality (World Bank 1996:20). Harvie (1998:8) concludes that while output-based indicators are widely used when discussing the transition outcomes, the emphasis should be placed on the long-run tendency.

In summary, transition appears more complex than initially anticipated. It represents a long and multi-dimensional process of economic transformation with fundamental changes in both economic and social sectors. It appears that both monetary/neoclassical and structuralist theories are partly relevant. Moreover, the transition process is influenced by both the initial conditions and the transition strategies and concrete policies adopted. However, as noted by Lavigne (1995) and the World Bank (1996) separating contributions of individual influencing factors is extremely difficult. These represent a methodological challenge for any studies in this subject area.

Section 2.3 Review of literature on social welfare conditions during the transition

2.3.1 Literature on outcomes of the transition

There is a rich literature with comparative studies on transition experiences, which provides a broad overview and assessment of the progress of transition in different countries, e.g. Horne (1995), Murrell (1996); Fisher, Sahay et al. (1996); World Bank (1996), Harvie and Tran (1997,1998), UNDP Regional Bureau for Europe and the CIS (1999:Chapters 1-3) and (IMF 2000)⁵⁴. There are three major findings. Firstly, the performance is quite diversified across countries (especially in terms of

⁵⁴ World Bank (1996) and IMF (2000) give the most comprehensive comparative view on the transition experience. However, they focus mostly on countries in the Central and Eastern Europe and the CIS, giving the East Asian transition economies, especially Vietnam, meagre attention.

output and inflation)⁵⁵. Secondly, the patterns of the transition do influence its performance⁵⁶. Thirdly, social adjustment commonly lags behind economic reforms.

The IMF (2000: Chapter III) provides the most up-to-date comprehensive overview of the transition progress and its outcomes across countries. While the progress of the transition is uneven among the countries, there are some general patterns. Firstly, the transition appears more difficult and its results are more limited than anticipated. Secondly, in terms of macroeconomics, almost all transition countries are still affected by the production contraction, increases in unemployment, surge of inflation in the initial stage and persistent problems of fiscal consolidation and macro stability. Thirdly, the structural reform and institutional changes are far from complete⁵⁷. However, almost all characteristics of the economies have been dramatically altered in favour of the market economy. Based on a number of commissioned studies, the report considers that the transition performance is due to four factors, namely the initial economic structure, the accompanied political development, reform strategies, and macroeconomic policies. The report concludes that the two-pronged transition strategy, which combines macroeconomic stabilisation and comprehensive structural reform, has been more successful in limiting the magnitude of

⁵⁵ In general, the transition countries are divided into three groups according to the transition performance, namely the more advanced reformers in Central and Eastern Europe, the less advanced reformers in CEE, CIS, and the East Asian reformers. In general, the first group have undertaken more fundamental structural and institutional reforms and achieved more favourable output results, than the second group, especially CIS countries. The third group shows quite distinctive transition patterns and experiences a rapid economic growth and remarkable improvement of living standards.

⁵⁶ World Bank (ibid.) and Harvie (ibid.) show that the transition performance depends on (i) the speed, intensity, and consistency of the implementation of economic reform policy, especially the macroeconomic stabilisation program and liberalisation; (ii) the extent of liberal entry and competition in domestic markets, including the imposition of hard budget constraints on state or formerly state enterprises and appropriate fiscal incentives for local governments; (iii) degree of openness of the domestic economy to foreign competition, particularly foreign trade and FDI; (iv) strong savings and investment are essential for long-term sustainability and growth.

⁵⁷ IMF(ibid.) stresses that although the importance of the institutional reform was recognized at the beginning of the transition, it was given too little attention due to difficulties in its implementation and lack of experienced personnel.

the production contraction and achieving subsequent growth⁵⁸. The report suggests focussing future transition policy efforts on five most critical areas, namely macroeconomic stability, structural reform, enterprise reform, market-based financial sector development, transforming the role of the state and institutional reform.

There is a continuing debate in the literature on causes of the strong growth and remarkable macro stability of the East Asian transition economies, particularly China and Vietnam. Harvie and Tran (1997,1998) and the IMF (2000: Chapter III) argue that the transition countries were able to maintain social stability, drastically tighten their fiscal and monetary policies, and, even more important, choose an appropriate sequential and pragmatic reform strategy⁵⁹, which takes notice of their specific initial conditions, such as the existence of large and labour-surplus agriculture⁶⁰. However, as in other countries, the fastest growth takes place in the sectors where the reform is most comprehensive. Contrary to the observations made by Lin (1998:215) and some other authors about the absence of large privatisation under the gradual strategy, the transfers of land from agricultural cooperatives and state farms to peasantry on an equitable long-term basis represents an important and large step (although partial) towards ownership

⁵⁸ Macroeconomic stability is a prerequisite for effective enterprise and financial sector reforms, which, in their turn, represent necessary condition for maintaining the stability by imposing necessary discipline and competition pressures on the sectors. Delays in key structural reforms, such as price and trade liberalisation and elimination of the state's subsidies, typically lead to higher inflation and a less robust recovery. Rapid reform of small-scale enterprises combined with a more gradual approach to large enterprises and the introduction of supporting commercial legislation and effective competition have been proved the most successful. In contrast, the role of the exchange regime has not been crucial (IMF, *ibid.*).

⁵⁹ IMF(*ibid.*) notes that transition reforms in east Asian countries are largely partial. The reform of large state-owned enterprises and financial sector is left to the later stage while the development of new market-based small and medium-scale enterprises is encouraged. There are also flexible timing and sequencing reform measures to fit into actual implementation capacity.

⁶⁰ However, important differences in agricultural technologies have been neglected by all the authors. The east Asian transition economies, particularly China and Vietnam, distinguish themselves by the significance of the wet rice economy with low-cost intensive technology, considerable substitution of capital by labour, small but equitably-distributed land holding, which allow quick incremental increases in production. Such increase appear more difficult in the other transition economies, which are more influenced by the Eurocentric model of agriculture. See Bray (1989).

reform⁶¹ in these countries. Compared with agriculture, the ownership reform in other sectors was much slower.

There is a rich literature on Vietnam's transition and its assessment. A number of documents of the leading Party and the Government outline goals, strategy, and measures of the transition in Vietnam (CPV 1979; CPV 1986; SRV 1990; SRV 1993; SRV 1995b; SRV 1996), aspects of which are highlighted by studies done by various Vietnamese research institutions and scholars (Võ Nhân 1990; Vu Tuan Anh 1994; Vo Dai Luoc 1995; Vien Chien Luoc Phat trien 1997a; Vien Chien Luoc Phat trien 1997b). A major limitation facing these sources of information is that they are often descriptive and miss well-documented supporting facts.

In this context, studies done on Vietnam's transition by foreign agencies and researchers are often good complementary sources of information. In particular, Fforde and De Vylder (1996) provide an in-depth overview of the transition in the broad context of the country's socio-economic development. The authors come to an important conclusion that in contrast with transition in other countries, Vietnam's transition is a complex bottom-up endogenous process, in which local initiatives and energy play an essential role.

A number of studies done by the World Bank since 1993 focus on economic aspects of Vietnam's reform programme and the country's macro-economic performance since 1986 (World Bank 1990; 1993b; 1995; 1997; 1998c). The World Bank (1993; 1997; 1998) and World Bank (2000d) provide the most comprehensive overview of Vietnam's reform programme and the country's macro-economic

⁶¹ Although land ownership remains to the State, peasants enjoy wide land user rights, including land use, rent, inheritance, sale and purchase, mortgage for a long period (e.g. from 25-50 years depending on type of land and the purpose of the land usage).

performance from 1986 to 2000. World Bank (2000 d) represents a joint report by the World Bank, Asian Development Bank and UNDP, which outlines policy options for the assessment and the implementation of Vietnam's strategy for socio-economic development towards 2010. These studies emphasise the urgent need to accelerate reforms, particularly in the most critical areas such as the reform of the state-owned enterprises, promotion of the market-led sector, strengthening the banking and financial sectors and, public administration reforms in order to maintain growth and further eradicate still wide-spread poverty. They also establish a framework and represent important sources of reliable data for studying the transition and its impact on Vietnam's SWC.

Harvie and Tran (1997:162-208) provide a comparative analysis of the transition processes in China and Vietnam. They stress that the countries share a number of similarities in their political systems and commonality in initial conditions, gradual transition strategies, general success, and problems. However, China has achieved greater economic stability and progress in improving productivity. While Vietnam is more advanced in terms of macro-economic reform, its development seems more vulnerable to external factors due to its greater dependency on its resources base, lower efficiency, and saving and investment rates. The disparities are largely caused by the more advanced state of China's economy, its earlier start to reform and the dynamism of its non-state sector

In terms of study methodology, comparative economics has been employed as the major methodological tool for studying the economic transition. A number of studies also use econometric techniques to explore the linkage between factors and performance of the transition, but mainly within the neoclassical framework. Aggregated indexes of economic liberalisation or the general progress of the transition

are often used to investigate the relationship between output growth (as well as FDI and inflation) and policy performance (World Bank 1996a; Fisher, Sahay et al. 1996b; Sacks 1996b; Selowsky and Martin 1997). Based on the case of CEE and CIS countries, Fisher, Sahay et al. (1996) claim that data do not strongly support the structuralist approach, and suggest that as countries successfully carry out the transition, the neoclassical relationship between growth and per capita income, population growth, secondary enrolment and investment becomes even more important. Similarly, Borensztain, Demekas et al. (1992) also claim that their empirical work on the relationship between the introduced macroeconomic reform measures and changes in institutional behaviour in the transition economies gives little support to the structural-institutional hypothesis. However, the conclusion appears premature as perhaps changes in institutional behaviour in Eastern Europe were still limited in the period 1991-93 (Horne 1995:383). This, however, implies that to study a transition economy at the macroeconomic level is not sufficient to capture essentials of the transition process, which are often reflected in terms of microeconomic and institutional changes first. With this respect, a study on East Asian transition economies would provide more evidence to help to redress the methodological problems.

There are also attempts to explore the theoretical underpinings of the transition by exploring its foundations, including the central planned economy, using modern economic concepts and techniques. For this purpose, Kornai (1992) gives an analysis of the Soviet-type economy with soft budget constraints, monetary overhang, repressed inflation, and centralized information flows. Bardhan and Roemer (1992) investigate the possibility of alternatives to central planning other than a market economy. Griffin (1989), Sacks and Wing (1995) and (Lin 1998) explore distortional effects of the adoption of the heavy-industry-oriented development strategy at the expense of the

other sectors. Blanchard (1991; 1997) explores the interactions between the transition process and the state-led and market-led sectors with respect to wages and labour. He establishes the critical importance of market sector development for the progress of the transition and equilibrium in the labour market. None of the studies, except the latter, gives a theoretical explanation for empirical differences in transition strategies, trajectories, and outcomes.

2.3.2 Literature on impact of the transition on social welfare conditions

There exists an intensive debate on the social impacts of transition. The World Bank (1993:13-14); Cornia (1996:1-2) observe that the neglect of welfare issues in the early stage of the transition has been replaced by increasing interest and reassessment of the social viability of the reform process.

Home (1995:380-9) argues that there are three SWC issues related to the transition, namely (i) interpreting and measuring the social cost of transition (mainly in terms of unemployment and poverty), (ii) defining optimal policy responses in terms of policy trade offs between efficiency, equity, and their timing and sequencing, (iii) formulating safety net measures to mitigate transition costs and maintain policy support to the transition.

Cornia (1996:4) and the World Bank (1996:71) and other studies point out that in addition to macroeconomic factors, there exist a number of micro-level factors affecting welfare of a poverty-prone household to be considered⁶².

Changes in social welfare conditions during the transition are mainly studied by economists in terms of altering living standards and equality , focusing on four major

⁶² Common factors to be considered include for example (i) large family size and single parenthood; (ii) unemployment; (iii) lacking education; (iv) being old, especially women; (v) lacking assets or access to productive resources such as land and credit; and (vi) living in remote and environmentally deteriorated areas.

indicators, namely (i) income, (ii) wealth (e.g. possession of a house or land), (iii) the extent of social security and (iv) access to public goods and social services. For the latter, both the process indicators, such as access to education, health services, nutrition and pension, and output indicators such as education attainment, life expectancy, and mortality (especially among children) are used. While focussing primarily on income aspects of SWC, the World Bank (1996:66-70) suggests considering transition impacts in terms of (i) widening gaps in income and wealth distribution, (ii) varying economic growth, and (iii) increasing labour mobility. Aiguo (1996) and Cornia (1996) attempt to judge the social impacts of the transition in terms of all income-based, capability-based, and population-based welfare indicators. The general tendency is to shift attention to exploring the impact of the transition on cross-cutting issues such as poverty, gender disparity, and human security instead of separate SWC indicators (UNDP Moldova 1999; UNDP Regional Bureau for Europe and the CIS 1999).

With this respect, Cornia (1994); UNICEF (1994; 1995), (IMF 2000) and other studies agree that, in general, in despite considerable inter-country diversity, SWC in the transition economies have deteriorated and current prospects are still mixed⁶³. The studies emphasize two very important conclusions. Firstly, transition affects different population groups and geographical regions in different ways. Secondly, the positive experiences of some advanced transition economies, e.g. Poland and the Czech Republic (Sachs 1996:111-12), and East Asian transition economies, e.g. China, and

⁶³ Cornia indicates that the transition leads to a sharp increase in the ultra poor (e.g. from 35 to 50%). On average, income decreased by 18-39% ⁶³. This conclusion is supported by a number of studies conducted by the World Bank, indicating that in most of the transition economies, particularly in the CEE and the CIS countries, income fell sharply due to falling output, rising unemployment, and increased income inequality, both across population groups and geographical regions World Bank (1996). Cornia (1996) suggests that in 1989-94, 75 million people in Eastern Europe slid into poverty (i.e. totalling 25-30% and 8% of population in CIS and CEEs, respectively). Moreover, the people have been trapped in deep poverty: in 1993 the poverty gaps was about 25-30% of the international comparative poverty line compared with an average of 35-40 % in middle-income developing countries. Poverty also tends to be more transient and strongly influenced by the geographical location.

Vietnam have proved that the key to maintain and improve SWC in a transition economy is to resume economic growth and ensure that the growth is sustained and widely shared⁶⁴. However, Ravallion and Chen (1994) warn that there is the need to explore not only the rate of poverty (e.g. the headcount index) but also higher-order poverty measures (e.g. the poverty gaps and the Foster-Greer-Thorbecke index) because the depth and severity of remaining poverty may be worsened somehow. To this end, Cornia (1996); Sachs (1996) and the World Bank (1996:73) note that the impact of the transition on SWC goes far beyond those measured by income and other utility-based information. Despite some gains in terms of vastly widening choices of goods and services⁶⁵, there is widespread unemployment⁶⁶ and poverty, deterioration of human capabilities and capital, and an unprecedented demographic crisis.

The impact of the transition on equality is often given special attention in recent debate on outcomes of transition. Bruno, Ravallion et al. (1995) report that there is no relationship between growth and inequality over time. This is in sharp contrast with the findings of Cornia (1996); World Bank (1996:69), Milanovic (1998) and Ferreira (1997), which indicate the clear tendency to increasing inequality in all countries as a result of transition⁶⁷. Milanovic (1998) analyses changes in income, income inequality,

⁶⁴ IMF(ibid) notes that rapid growth enables a remarkable broad-base improvement of living standards in China and Vietnam in despite the deterioration of their limited SWS.

⁶⁵ Including home production. World Bank (ibid.) notes that private land has been particularly important to wellbeing during transition, boosting household consumption and sometimes income by a dramatic increase in home food production in many countries.

⁶⁶ While wages have become more differentiated, they are still in poorly related to work efficiency and did not cover inflation, especially at the beginning of transition. The fall in output and changes in economic structure make adjustments in the labour force through employment and unemployment unavoidable. These either lead to massive decreases in employment in the state sector (e.g. in CEE) or turn the state sector's wages into a budget burden (e.g. in CIS). By the end of 1994, in CEE alone unemployment was affecting 10 million people, of which 40 % for more than one year (Cornia, G. A, 1996: 1-17). Cornia (1996); World Bank (1996) note that in CEE countries a stagnant pool of jobless people has been formed and the development of the private sector does not necessarily leads to its elimination. China is an exception where rapidly growing township and village enterprises (TVEs) have been able to generate over 100 million new jobs in rural areas since 1978.

⁶⁷ Cornia concludes that in CEE the Gini coefficient rises from 0.22 to 0.27 (i.e. a level similar to that in OECD countries), while in the CIS it reaches the level of the Latin American countries.

and poverty during the transition in CEE and CIS countries and represents the most comprehensive study of this problem. He establishes that the mechanisms of increasing inequality varies across countries. In the CEE and CIS countries it has resulted from an increase in wage dispersion and the relative share of the richest in the population, while in China and Vietnam the major reason is due to regional differences in growth, particularly between urban and rural areas.

There are a number of studies on Vietnam's SWC during the transition. SPC/GSO (1994,2000), ADUKI Pty Ltd April (1995), (UNDP/UNICEP/UNFPA 1995; World Bank 1995; UNDP/UNICEF 1996; United Nations in Vietnam 1998; World Bank (1998a; 1999a) are among the most substantive and influential studies. IMF (2000) provides the most recent overview of Vietnam's transition and changes in SWC in comparison with other transition economies although SWC aspects were not the primary theme of the analysis. The strong focus on poverty and equity during Vietnam's transition represents the common theme among the studies. The studies confirm that SWC have been dramatically improved since the start of the transition in terms of an internationally impressive reduction in the poverty rate⁶⁸ from 70% in the mid-1970s and late 1980s to 51% in 1993-94 and 36% in 1997-98. However, in addition to still wide-spread poverty, there are serious challenges to sustaining the achievement in SWC and redressing emerging problems of the transition such as growing unemployment and inequality (particularly, between urban and rural areas) and increasing insecurity.

In terms of study methodology, most of the existing studies follow the traditional approach mentioned in section 2.2.1.A. Attention is given to income

⁶⁸ Counted according an internationally comparable poverty lines, e.g. VND1.160 mill and VND1.790 mill in 1992-93 and 1997-98, respectively. The 1992-93 poverty line are calculated on the basis of the baskets of food and non-food goods and services consumed by the third quintile, adjusted according to the minimal daily energy consumption of 2,100 kcal per capita bundle. The 1997-98 are based on the 1992-93 good baskets but amended according to 1997-98 prices.

distribution, equity, poverty, and other social aspects of the transition (World Bank 1996a; Melo and Denizer 1997; World Bank 1998a; Milanovic 1998b). Trying to establish linkages between changes in the macroeconomic environment and social welfare, some studies also attempt to reflect changes in capability and human development choices, and use them to explain changes in the countries' SWC. In particular, UNDP/UNICEP/UNFPA (1995); UNDP/UNICEF (1996) and United Nations in Vietnam (1998; 1999) are based on capability and, more specifically, a human development approach. Among the studies, UNDP/UNICEP/UNFPA (1995) and United Nations in Vietnam (1998) are path-breaking. The former was among the first comprehensive studies on SWC and, particularly, poverty during the transition at the national level. Contrary to SPC/GSO and World Bank studies, it proposes a capability-based framework to address poverty during the transition as the lack of ability to participate in national life, especially in the economic and social spheres, as a result of isolation, limited access to resources, restricted people's participation in development efforts, excessive risks, and environmental unsustainability, which are quite exogenous to households. The latter study takes a step further by innovatively analysing the transition as the process of multi-faceted expansion of household choices for escaping poverty or to secure decent livelihood, which affect different population groups in different ways. So, poverty and insecurity are seen as the limitative of the choices. Together with the (World Bank 1999a), these establish a good foundation for studying the impact of the transition on household welfare and poverty during Vietnam's transition. The major methodological shortcoming of the existing studies on Vietnam's SWC is that they consider people as passive beneficiaries of the transition process but not the major source of its energy and initiatives. Secondly, the studies remain largely qualitative, not supported by quantitative analysis of cause-effect relations between the

transition and SWC. This is largely due to the lack of appropriate quantitative models, which link the proposed frameworks with empirical works.

There are also some efforts to use econometric methods to quantify the linkages between economic and welfare indicators and household characteristics at the national, sub-national and household levels, including in Vietnam (Dollar, Glewwe et al. 1998; Haughton, Haughton et al. 1999). To some extent, the innovative attempts are in line with the so-called ‘microeconomic approach to development policy’, which is advocated by Deaton and others (Deaton 1997).

However, in general the studies on social welfare during the transition are still descriptive and post-mortem due to a number of existing limitations. Firstly, the studies fail to provide a comprehensive framework for studying social welfare in the transition due to their neglect of dramatic changes in people’s capability as a result of the alternation of ownership, entitlements, and the socio-economic structure. Secondly, the studies are unable to quantify the multifaceted and multi-dimensional interactions between social welfare and transition policies, particularly in critical areas, such as the role of the state and the state-owned sector, the social agenda of the transformation, and the functioning of the SWS. These effectively handicap the design, assessment, and optimisation of future transition policies and their implementation.

2.3.3 Review of other related significant contributions

The shortcomings are largely due to the lack of a quantitative model for studying the dynamic linkages in the macroeconomic reform process, social welfare conditions, and the social welfare system under transition. Such a model can be based on

computable general equilibrium (CGE)⁶⁹, econometric, or static microsimulation⁷⁰ modelling. Compared with CGE methods, econometric models often appear simpler to develop but require a more extensive database and cannot provide straightforward insights into the socio-economic process. Static microsimulation modelling, e.g. STINMOD, helps in analysing the distributional and fiscal impacts of specific redistribution policies by simulating their impacts on individuals and households in a standardised database for a representative population. However, it requires both an extensive database and carefully designed software (Lambert, Percival et al. 1994).

In contrast, CGE modelling requires less information but, when feasible, can capture essentials of the state of an economy and give direct answers to a number of both long- and short-run policy concerns. The first successful CGE model was formulated and implemented by Johanson in 1960 for Norway (Johanson 1960). With the development of more generic and user-friendly software packages, this method has become a standard tool for policy analysis in developed countries. Devarajan and Robinson (1993), Harrison, Jones et al. (1993 p:100), Shoven and Whalley (1992); Gunning and Keyzer (1995); Ginsburg and Keyzer (forthcoming) provide a comprehensive overview of CGE methodology. It is agreed that the CGE methodology has been proved as useful 'either to question received wisdom or put empirical content into an otherwise quantitative argument'. Elbers and Smit (1997) describe a methodological framework for the construction of a CGE model for analysis of policies

⁶⁹ The computable (or applied) general equilibrium (CGE) modeling represents an analytical approach, which explores the economy as a complete system of inter-dependent components, reflected in mathematical terms.

⁷⁰ The static microsimulation modelling, e.g. STINMOD, simulate impacts of specific policy on individuals and households and, thus, is often used to analyse the distributional and fiscal impact of a specific redistribution policy. See Lambert, S., R. Percival, et al. (1994) for details.

in developing economies⁷¹. James and Olsen (1998) describe steps to construct the model. Dixon, Parmenter et al. (1992) provide detailed discussion and guidance for development and implementation of various classes of CGE models. CGE methodology often uses SAM⁷² as their informational and accounting framework. An extensive review of recent developments in dynamic CGE modelling is given in Malakellis (2000), which makes a clear distinction between recursive models (e.g. Johanson's model of Norwegian economy and ORANI-F and MONASH for Australian economy (Dixon, Parmenter et al. 1997)) and intertemporal models (e.g. model of impacts of US environment regulations (Jorgenson and Wilcoxen 1990) or Australia's tariff reform (Malakellis 2000))⁷³. It is observed that the latter is very popular for analysing tax policy issues. Another example is Go (1994), which provides a dynamic computable general equilibrium model of an open developing economy and uses the model for examining the impact of various intertemporal factors such as tariff reform and terms-of-trade shocks. Recently, there is a tendency to develop simple, small scale CGE models for practical policy analysis in developing countries. Devarajan, Go et al. (1997) and Devarajan and Go (1998) reduce the above model to a simpler CGE model to fit into available data and expertise in the countries. These works can serve as a solid foundation for the development and utilisation of CGE models to study the transition economy.

⁷¹ The authors observe that CGE models are usually built in two steps, namely (i) specifying model equations, function form and maximal number of parameters based on priori available knowledge and information; and (ii) calibrating the model to a benchmark data set, which are used as the base year condition (Elbers & Smit (ibid.)).

⁷² The social accounting matrixes (SAM) represents a sequence of accounts in monetary terms. Each account shows a certain economic process and its relations to the other economic processes in the matrix form in accordance with the United Nation's System of National Accounting (SNA). The system of economic and social accounting matrices and extensions (SESAME) extends SAM to incorporate social and environment aspects, which are often insufficiently expressed in the monetary terms. See Keuning, S. J. (1996).

⁷³ Recursive models are consistent with static and backward expectations and can be solved period by period, while intertemporal models correspond to rational foresight. Thus, the latter cannot be solved in one period at a time.

In this respect, ESCAP (1997) offers an overview of the application quantitative models for analysing impacts of macroeconomic policies during the transition in China, Vietnam in comparison with India. It is observed that the use of the models, particularly econometric and CGE, in developing and, especially, transition countries, is still at the initial stage. Major constraints include the lack of reliable data, the dynamic and complicated structure of the economies, and lack of human and material resources.

However, there are a number of examples of the use of the CGE methodology to study a transition economy (Breuss and Tesche 1993; Hare, Revesz et al. 1993; Martin 1993; Braber, Cohen et al. 1996; Xu 1996; ESCAP 1997). Among earlier works, Aghion (1993) develops a simple theoretical two-sector model of the transition economy based on Blanchard (1991) to explore optional speed and sequencing of reforms and provides some foundations for both macroeconomic and structural policy recommendations. Martin (1993) develops a price-responsive model of the post-reform Chinese economy and uses it to explore effects of a range of macroeconomic and trade policy instruments. The model reflects China's two-tier system for pricing in domestic markets for foreign exchange and incorporates the linkages between product and factor markets. The results are consistent with theoretical predictions but give more insights into the effects of the transition. Bennett-Dixon's CGE model of a transition economy in CEE and CIS also reflects some its structuralist features, e.g. its high concentration in industry and residual price control and rationing (Bennett and Dixon 1995). The authors focus on exploring impacts of macro policy under various policy scenarios and conclude that with price liberalisation, monetary expansion leaves output and employment unchanged. However the expansion leads to super-inflation without price liberalisation. Moreover, they argue that due to the complementarity between the oligopolistic and

state-led sector outputs, the government should expand the state-led sector to give a rise to Keynesian multiplier effects.

Braber, Cohen et al. (1996) give an interesting comparison between the applications of CGE and Social Accounting Matrices (SAM) methodologies for the analysis of the transition process, taking Poland and Hungary as examples. They conclude that while the models give insights into the opposite poles of the transition, to an extent, their results are faced with some uncertainty resulting from their ex-post calibration. Xu (1996) demonstrates the use of a CGE model to derive quantitative estimations of the reduction of sectoral labour demand caused by a shock therapy proposal in the case of China's transition. However, these models are based on utility-information and, thus, unable to reflect much the on-going structural changes in the transition countries. Contrary to the static models, Croska (1998) develops a dynamic model for CEE and CIS countries with the predetermined dynamics of the technical progress and the transition. On the other hand, Ferreira (1997) presents a theoretical two-period model of wealth distribution dynamics and occupational choice to investigate the distributional consequence of policies and developments associated with the transition. He concludes that the transition inevitably leads to increasing inequality both during the transition and the new steady state. However, the model does not take into account workers' accumulation of physical and human capital. The works suggest that the CGE framework can be used for policy improvement or seeking alternative policy options of economic reform.

The econometric modelling of a transition economy is described in ESCAP (1995). Wang Tong (1997) describes a comprehensive econometric model of the Chinese transition economy, which covers eight areas. The simulation for the period

from 1990 to 1995 indicates that the model is able to capture essentials of the Chinese transition economy. Thus, the model is used for checking the consistency between and feasibility of proposed macroeconomic policies vis-à-vis macroeconomic targets for 1996. Nguyen Van Quy (1997) describes the construction and the usage of a macro-econometric model of Vietnam's transition economy from 1986 to 1995. The model takes into account the dualism of the country's economy by making a distinction between agricultural and industrial sectors in determining output and employment, and exposing supply-constraints to increases in outputs and exports. However, there are many constraints facing the construction and usage of econometric models for transition economies, such as the availability of data, dynamic changes in the economic structure, and the coexistence of planned and market economies.

Given the lack of experience in the transition countries in collecting data on SWC, living standards measurement surveys, especially those conducted with the technical assistance of the World Bank, represent valuable sources of data for studying SWC. Deaton (1997) introduces in detail methodology to use the data collected from the Living Standards Measurement Surveys or similar household surveys to explore a number aspects of SWC such as income, poverty and equality, nutrition and children, savings, and distributional effects of price and tax reforms. He emphasises that often the micro-level data (sometimes without complicated analysis) can give straight-forward answers to a number of questions on macroeconomic policies through the lens of household welfare. Dollar, Glewwe et al. (1998) and Haughton, Haughton et al. (1999) give excellent examples of how statistical and econometric methods can be applied for study of various aspects of social welfare of Vietnam's transition economy, based on the data from the first Vietnam Living Standards Survey (VLSS) in 1992-93. The studies were carried out by Vietnamese and foreign researchers, who are able to provide

insights into key indicators of household welfare, such as income and its distribution, equality, poverty, reproductive health, child health care, health insurance, under-weighted newborns, son preference, schooling, household expenditures, private internal migration, rural credit and rice production. However, the studies have not addressed many other important issues, such as access to the social security system and linkages among the mentioned household welfare defining processes and the relationship between them and the overall macroeconomic reform.

In summary, there is limited use of quantitative methods to study SWC and the impact of the transition. This is due to a number of methodological constraints such as the novelty of the issues raised, the complexity and dynamism of on-going socio-economic structural adjustments, lack of experience and data, and existing methodological limitations. However, the work done in the areas indicate the feasibility of addressing the above methodological issues and there is an opportunity for the thesis to make a methodological contribution to studying impact of the transition on SWC.

2.3.4 Summary and conclusion

Economic transition is a multifaceted and very complex economic phenomenon, which has produced contrasting changes in social welfare in transition economies. The present knowledge about the changes and their cause-effect relationship is still far from complete, particularly in the case of Asian transition economies such as China and Vietnam. Firstly, this is because present studies on the transition tend to focus on macroeconomic aspects rather than structuralist and institutional ones, such as changes in ownership and incentive system, the dual characteristic of a transition economy due to the co-existence of both centrally-planned and market-oriented economies during the transition and uneven development of different sectors of the economy (e.g. urban and rural, industry and agriculture), and the rapid transformation of a transition economy

from a closed and underdeveloped system into an open and developed one. To some extent, the microeconomics of the transition have not been fully explored. Secondly, the studies conducted on social welfare changes during the transition are still dominated by the traditional approach without due attention to changes in ownership, entitlement exchange relations, the social welfare system and social policies in general. Thirdly, the lack of a comprehensive framework to link transition policies and its social welfare impacts, and appropriate methodology for their quantification is constraining effective monitoring and design of transition policies in order to maintain and improve welfare of people under the transition.

Section 2.4 Review of literature on the social welfare system during the transition

This subsection provides a review of literature on the impact of the transition on SWS, its composition, and methodology for its study from the viewpoint of economics, i.e. regarding its institutional, allocational, and redistributive aspects, which affect efficiency and equity of its operation.

2.4.1 Literature on the social welfare system in transition economies

Esping-Andersen (1990) and Kornai (1997) observe that in all transition economies the reform of SWS was delayed compared to economic reforms. By the early 1990s the transition had not produced any considerable changes in SWS, except the introduction of unemployment insurance in the advanced reforming countries.

According to Kornai, the main problems facing the formal SWS in transition economies include (i) non-affordability of the 'old' largely universal entitlements; (ii) lack of institutional capacity for effective implementation; (iii) imperfect and inaccurate knowledge about the real and affordable needs of the population for social assistance; and (iv) the potential of inappropriate political choices. Cornia (1996) observes that

European transition economies suffer from inadequate policy responses in the areas of the labour market, income transfers, and health care⁷⁴.

The World Bank (1996:77-86) observes that in all transition economies, there are dramatic changes in their SWS in terms of its coverage, target groups, efficiency, financial sustainability, and administration. The introduction of unemployment benefits and a new social insurance system, breaking the vicious cycle of the old pension system and increasing the selectivity of social assistance (including both direct transfers in cash or in kind and providing income opportunities) have been listed as the most influential measures. But the study does not analyse the impacts in detail. Horne (1995:389-90) indicates that Poland's SWS shows a good example in terms of integrating safety net measures to mitigate short-term costs of reforms with long-term reform of SWS, and combining the latter with tax reforms.

Milanovic (1992) empirically explores the distributional impact of social transfers in Russia and Eastern Europe. He shows that cash transfers, on the whole, were distributed almost uniformly per capita regardless of income distribution, but became more targeted as well as smaller in absolute amounts, compared with those in the socialist economies. Braithwaith, Grootaert et al. (1998) study the actual distribution of transfers through social assistance programmes in five European transition countries and their impacts on the poverty gaps in the later stage of the transition. The impacts are found to be closely correlated to the programme performance. Moreover, major factors influencing the likelihood of receiving social assistance include labour force status of

⁷⁴ Firstly, the support function of their social welfare systems has been considerably eroded during the transition. This concerns not only the level and coverage of benefits (e.g. unemployment benefits) but also the emphasis on passive employment measures instead of active ones. In contrast with the other European transition economies, in the Central Europe, the welfare crisis is attributed to the massive contraction in aggregate demand rather than the rapid dismantling of the old SWS. Secondly, there are inadequate mix and intergenerational bias towards pensions in expense of family allowance and social assistance. Finally, there are large welfare losses due to the lack of adequate tax policy and tax administration.

the household head, household composition, tenancy, and location. Milanovic (1998) observes that the social assistance in European transition economies differs considerably from the former socialist SWS as well as the SWS in other European countries in terms of five characteristics (i) testing both income and income capacity or 'dysfunctionality' for eligibility; (ii) the wide use of categorical (indicator) targeting; (iii) being considered as a temporary relief; (iv) often provided in-kind; (iv) the absence of the minimum income guarantee. Compared with developing countries, the transition economies face with a much larger current pensions liability (so that the shrinking state sector has to pay for pension rights accrued by almost 90% of the former labour force) and more unfavourable age structure of labour force. Esping-Andersen (1990) observes that in general in the transition economies SWS had more redistributive effects than the tax system although those were also very limited ⁷⁵ as the countries have no experience in identifying needs and delivery support.

Concerning other aspects of SWS, it appears that there is no close correlation between the speed of reform and changes in health indicators (World Bank 1996a). In many CIS countries, the long-run trend toward worsening mortality has accelerated since transition began, particularly for men. By contrast, infant mortality, maternal mortality, and life expectancy improved in the advanced reformers. The picture is mixed in the other reform groups. Thus, Cornia (1996) concludes that in CEE and CIS countries, the transition has been accompanied by widespread deterioration of human capability indicators (e.g. life-expectancy at birth and the total fertility rate) and demographic indicators. Moreover, there is no evidence of increased malnutrition. In

⁷⁵ The tax system was essentially direct and proportional to income. It consisted of two elements, namely (i) payroll taxes, that were paid by enterprises at the rate of about 40-50% of the net-wage bill and financed the pay-as-you-earn system of social security, and (ii) direct personal taxes that were only imposed on very high income households and, thus, did not play an important role, accounting for only 1% of total household income. See Esping-Andersen, G. (1990)..

contrast, the latter is particularly severe for the rural poor in China and Vietnam. Maintaining and building on preventive health care, especially in providing immunizations, has received little attention. Curative health services in the CEE and the CIS retain most of the inefficiencies inherited from central planning. Public health programs are poorly structured, and modern methods of quality control are absent. There is little consumer choice and little accountability although many of the transition economies have already switched from taxes into social insurance to pay for health care.

The future SWS in the transition economies has been the subject of intensive debate. Milanovic (1994) argues that the Central European countries would evolve toward the corporatist model of continental Europe as both tend to have large social transfers related to previous earnings, with relatively limited roles in income distribution. Krumm, Milanovic et al. (1994) provide a comprehensive exploration of policy options of the proposed SWS reform, based on an original typology of the relationship between growth and SWS. The authors argue that there are significant tradeoffs between compensating the increase in insecurity and poverty through public transfers and investment in production. The author considers that in the long run, short-term gains in security may not outweigh the lack of private and public capital accumulation. Further, a number of potential policy options⁷⁶, which are likely to be more consistent with macroeconomic imperatives and have less adverse-incentive effects, are explored. Milanovic (1995) emphasises the need for urgent pension reform and better targeting of social assistance as a condition for further progress of the transition as pensions comprise 70-80% of the total cash transfers and the current financial burdens cannot be sustainable without pension reform. Milanovic (1998)

⁷⁶ E.g. flatter pensions at quite low replacement rates, localised (income-tested) social assistance, or other temporary measures (e.g. employment schemes).

further discusses potential options for the social welfare reform and concludes that the choice between the existing income test screening system and the minimum income guarantee system is an empirical question. Exploring income transfers and social safety net in Russia, Barr (1992) recommends focus on social welfare reform measures such as poverty relief, cost containment, and the strengthening of administrative capacity. In contrast to Krumm, Milanovic et al. (1994), Barr suggests the need to establish the minimum 'real' level of the major benefits at not less than the subsistence, and ensure sources of financing for SWS programmes from their beginning and to strengthen their administrative capacity.

The World Bank (1998) considers policy options to strengthen the social safety net in Kazakhstan⁷⁷. It concludes that strong and sustained growth is the key to poverty reduction in Kazakhstan but not public transfer programs. Further, reform efforts should focus on making existing social programs more effective. Priority should be given to maintaining an adequate income floor for pensioners, increasing the coverage of unemployment benefits, and reducing the leakage of child allowances and other social assistance to the non-poor. Exploring the coal industry in Russia, Craig, Canning et al. (1994) discuss the problems raised by the incapability of the existing safety net to cover all retrenched workers. The authors also suggest that there is the need for improved targeting of the existing SWS programmes with workers' greater participation in restructuring programmes. Dershem and Gzirishvili (1998) provide a qualitative analysis of the informal social safety net and household vulnerability in terms of food, economic security and shelter during the transition in Georgia. The World Bank (2000)

⁷⁷ In 1996 more than a third of the population lived below a 'subsistence minimum' living standard.

contrasts the evolution of social protection in European and Eurasian transition countries and its policy alternatives⁷⁸.

UNDP Regional Bureau for Europe and the CIS (1999) attempts to explore changes in SWC and SWS in the European and CIS countries in terms of human development. The study focuses on the impact of the transition on people's security, particularly in terms of enterprise benefits, unemployment benefits, pensions, health care and education. The report gave a comparative analysis of changes in SWS in the region. Using this framework, UNDP Moldova (1999) reviews the impact of the transition on SWS in Moldova with particular attention to social protection, public health, food security, cultural environment, ecological security, and personal security at the national level.

Compared with the CEE and CIS countries, problems facing SWS in East Asian transition economies are quite distinctive. They aim to maintain and improve welfare of those who are left behind during the transition. World Bank (2000) considers that the retrenchment of public sector workers, the collapse of the old SWS, and strengthening formal social assistance in combination with informal arrangements in the context of demographic aging constitute major challenges to the social protection system in East Asian transition countries.

⁷⁸ In European transition economies, the transition has been more aggressive and effective, leading to resuming growth, increasing real wages and reducing unemployment. Social protection to safeguard layoff workers and the poor consumes a larger share of GDP. Mean-tested social assistance has been more widely used for poverty reduction. The pension system is being reformed with multi-pillar systems introduced. In contrast, stalled progress of transition in Eurasian transition economies leads to sharper decline in production, which has not been restored yet. The formal labour market collapsed and self-employment and secondary jobs – largely informal – become the main source of income but the private sector is smaller. Large wage and social benefit arrears and increasing unemployment represents major social and economic challenges. In general, pension spending remains high relative to output, but protection is insignificant in real terms. Social assistance is poorly administrated and targeted, focusing on housing and utility subsidies rather on mean-tested measures

Aiguo (1996) overviews changes in the Chinese SWS, including education, health care, and the social protection system under the transition. He concludes that compared with CEE and CIS countries, the Chinese pre-reform SWS had much more limited coverage with considerable differences between urban and rural areas. Radical changes in the economic environment and institutions have raised the urgency of restructuring the SWS. For example, the dismantling of cooperatives in rural areas fundamentally weakened the collective safety net and caused their total disappearance in some places. Hussain (1994) provides a more detailed analysis of the SWS during the transition. The system consists of two elements. Firstly, labour insurance comprises two separate sub-systems for urban and rural areas with different organization and benefits. Secondly, restrictive social assistance includes narrowly targeted schemes, namely (i) special assistance to poor areas, (ii) social relief to destitute households, (iii) natural disaster relief, and (iv) local social welfare initiatives of sub-provincial government. The three former schemes are funded by the central government. The last is funded and managed by the local government and widely varies depending on the local resources and initiatives without any common minimum standards. He concludes that the central social welfare concern facing China and Vietnam during the transition is to raise living standards of those lagging behind rather than protect social security of the general population from deprivation, like CEE and CIS countries. Selden and Laiyin (1997) offer a comparative reflection on the contours and achievements of China's pension system in the light of transition. They also assess various options for the social welfare reform (e.g. the formation of a three-pillar system, pooling of various funds at the provincial level and expansion of coverage) from the perspective of economic development and overcoming China's pervasive urban-rural divide.

Compared with China, the SWS in Vietnam is much less studied. The Institute of Labor Science and Social Affairs (1994) and the Central Institute of Economic Management (1998) attempt to establish a framework for the future reform of Vietnam's SWS. They conclude that the SWS shall be broad-based and comprise nine social programmes⁷⁹. However, they further discuss only two components, namely social insurance and health insurance. In particular, the Institute of Labor Science and Social Affairs (1994b) provides a brief overview of the establishment of the social protection system in Vietnam and discuss its potential development under the transition. ILO (1994); Prescott (1997) and (Preston 1999) provide more comprehensive analyses of the country's social security system and conclude that the formal system was designed to meet the needs of state sector workers and concentrated mainly in urban areas⁸⁰. Although there are some emerging forms of social assistance and poverty alleviation programmes, there is no social safety net for the entire population, particularly retrenched workers and vulnerable groups, no guarantee of a minimum provision. Van de Walle (1998b) analyses the role of some SWS programmes such as the national programmes for poverty reduction and employment generation in providing safety net for the poor people in rural areas. As noted by ILO (1994:3) and the World Bank (1998:179-200) local communities, tribes and other interest groups operate various networks for informal social protection. These community-based self-help

⁷⁹ They include (i) education and vocational training, (ii) health care, (iii) labour protection, (iv) employment promotion, (v) social insurance, (vi) preferential treatment of people of merits, (vii) social relief, (viii) hunger eradication and poverty reduction, and (ix) prevention and elimination of social evils and crimes.

⁸⁰ The study indicates that in 1994 the existing formal social security system in Vietnam covered only the public sector (i.e. less than 10 % of the total labour force) and leaves other sectors without any form of institutionalised social security coverage. The Labour Code and the Government Decision no. 43 on temporary social security schemes endorsed in late 1993 provide an entirely new framework and structure for social security in Vietnam, based on employers' and employees' contributions through an autonomous social security institution. A number of steps have been taken to expand the coverage, particularly to the newly emerged private sector, streamline its management, reduce the reliance on the state and increase its financial sustainability and efficiency, however, with limited success.

schemes are felt to be extremely important for the society at large and now form part of the backbone of social protection in Vietnam. SRV (1998) offers the first comprehensive analysis of the provision of basic social services in Vietnam during the transition, but it focuses heavily on allocative aspects but not on their distribution and efficiency.

In summary, SWS in the transition economies are at a cross-road. SWS reform has been delayed. However, the transition has produced dramatic changes in social welfare in all countries. As the transition has involved negative impacts on the welfare of a vast number of people in transition economies, SWS has become an increasingly important item in the reform agenda of governments in most transition economies, including China and Vietnam.

2.4.2 Review of other related methodological contributions

Moffitt and Plotnick (1992) give an overview of studies on incentive aspects of SWS in the US, focusing on social assistance programmes. The programmes are strongly targeted at the poor, especially female head families, and experienced a dramatic growth in the period 1965-85. There is strong evidence that the level of potential benefits and the benefit-reduction rates robustly influence participation in the programmes, labour supply and some aspects of family structure.

Studying impacts of public expenditures, Weisbrod (1970) and Haveman and Weisbrod (1984) provide a conceptual framework for policy analysis of SWS based on cost-benefit analysis of involved expenditures. To judge the effectiveness of a SWS, Weisbrod argues that it is important to distinguish its vertical and horizontal

efficiency⁸¹. Rostagno and Utili (1998) demonstrate the use of the framework for an empirical assessment of the Italian social protection system, relying on survey data on household income and wealth. The analysis unveils existing ill-designed targeting mechanisms and proposes a new means-testing formula. Van de Walle and Nead (1995) point out that the complementariness of behaviour approaches, which allow us to get a better measure of the impact of policy measures from the benefit incidence studies, which essentially represent comparisons between pre- and post interventions. The authors indicate that as SWS can be represented as income transfers between donors and recipients, behaviour approaches can provide far-reaching potential implications for designing and implementing social welfare policies and programmes.

On the other hand, there exists a rather extensive literature about the motives for private transfers. In general, there are two major hypotheses about their motives. According to the altruistic hypothesis, formalised first by Becker (1974), private transfers are motivated by the donor's concern about the welfare of the recipient and, thus, the consumption of donors and recipients are independent from the distribution of income among them (Barro 1974; Becker 1974). In contrast, according to the egotistic hypothesis, donors make transfers in exchange for the recipients' services. Tomes (1981) found empirical evidence in support of the altruistic hypothesis: the amount of bequest received is negatively related to the recipient's income. Bernheim, Shaleifer et al. (1985) found empirical support to their exchange model of bequest behaviour, based on a strategic bequest model. Cox (1987) explores comparative statistics of the model and finds that the statistics would be influenced by the motives for the transfers. Under the altruistic regime the amount of transfer reduces with a rise in the recipient's income.

⁸¹ Vertical efficiency is understood as the ability to target resources not only but at least primarily to the needy. In contrast, horizontal efficiency represents the ability to provide assistance to all of the targeted needy (Weisbrod, *ibic.*)

However, under the exchange regime, the reverse is likely to happen. He concludes that data on inter vivos transfers support the exchange-relative motive but not the altruistic one. Cox, Eser et al. (1998) find evidence supporting the exchange-cum-altruism model of private transfers. Cox, Jimenez et al. (1996) and Cox, Fetzer et al. (1998) and Le Minh Tam (1999) explore private transfers in two transition economies, namely Poland and Vietnam. They find that private transfers in the two countries are large and function like a mean-tested public transfer programme and are in favour of low-income households, young couples, large families and those affected by illness⁸².

Social scientists have singled out two alternative motives for public transfers, namely remedial and developmental (Spicker 1988; Trattner 1994; Sen 1995; Whitaker and Federico 1997). Quantitative studies on incentive aspects of public transfers place their focus on their influence on labour supply and saving (Danziger, Haveman et al. 1981; Moffitt and Plotnick 1992). Kanbur, Keen et al. (1995) provide a model to explore the implications of a poverty alleviation programme on labour supply using both welfarist and non-welfarist frameworks. Bestley proposes a simple model of a poverty reduction programme as a public transfer (Bestley 1997). However, patterns of public transfers have not been fully studied yet.

From the viewpoint of an economist, social insurance is the most studied element of the social protection system. Studies on social insurance and its impacts on individual welfare and aggregated saving are commonly explored with overlapping generation models, pioneered by Allains (1947); Samuelson (1958) and Diamond (1965). Williamson and Warren (1983) develop an individual's lifespan income-

⁸² The former study used data from household budget surveys in 1987 and 1992 and 1993-94, respectively. The study concludes that in Poland private transfers are large, responsive to liquidity constraints but are weakened after the transition. The second study is based on data collected from Vietnam household survey in 1993-94. It concludes that private transfers in Vietnam are responsive to household resources and characteristics and region indicators of living standards.

insurance model. Hubbard and Judd (1987) consider the impact of lifetime uncertainty and imperfect capital market. Galor and Zeira (1993) study the effect of the financial market and initial distribution of wealth. Notably, concerning public social assistance, Bestley (1997) sketches a model of a poverty alleviation programme, which takes into consideration both economic incentives and the institutional aspects of such a programme. However, as recognised by the author, the model fails to capture the dynamic and long-term aspects due to its static and short-term nature.

A number of studies point out the linkage between the public transfers and private ones. Considering distribution of income and intergenerational mobility of a utility maximising family under an altruistic framework, Becker and Tomes (1979:1175-78) conclude that public transfers may have neutral or sometimes negative distributional effects. Roberts (1987) finds that public contribution to a charity financed by a lump-sum tax will crowd out private giving dollar by dollar. Andreoni (1989) develops a model incorporating both public and private transfers. He concludes that the relative degree of the crowding-out effect depends only on the degree of donors' altruism and the public transfers will increase the total amount redistributed if and only if recipients are more altruistic than donors. Cox and Jimenez (1995) and Cox, Eser et al. (1998) also find that private transfers are often influenced by public transfers. Using data from the 1988 Philippines family income and expenditure survey, Cox and Jimenez (1995) concludes that the effect is non-linear and can be large, and, thus, may neutralise the effect of public transfers. The impact tends to be reinforced under the exchange regime. Using the US data to explore the effect of public transfers on the level and distribution of income taking into account private transfers, Cox and Jakubson (1995) find that private transfers neutralise impacts of public transfers under the altruistic regime. However, as suggested by other empirical studies using data from US

household surveys, the crow-out effect of public transfers on private transfers is often small. The authors suggest that measuring differential rates of crowding out of various public transfer programmes is a difficult but is a potentially valuable subject for further research and also find their close relations with public transfers.

There are other ad-hoc approaches to studying the social welfare system. On one hand, welfare programmes are explored as public spending and regression analysis of household data is used to measure the consumer's willingness to pay for their services or to quantify their impact on particular dimension of household's well-being (Van de Walle 1995:2). On other hand, micro simulation is increasingly used to explore potential impacts of changes in the programmes in terms of eligibility and level of expected benefits (Lambert, Percival et al. 1994; Polette and Robinson 1997). However, these approaches do not provide a clear picture about the interrelationship among influencing factors.

There are also a number of studies of the political and economic aspects of the SWS. Mofitt, Ribar and Wilhelm (1996) develop a model of determination of the level and distribution of benefits of social welfare provision through votes of the poor and non-poor groups. Gultas (1999) looks at the same issue but using a different mechanism: the level and distribution of benefits are defined by the level of the groups' lobbying contribution to the partly self-interested government.

2.4.3 Summary and conclusion

Representing both the ultimate goal of socio-economic development and its active driving force, social welfare is widely used both as a criterion for social judgement of socio-economic development and as a interventionist tool of a welfare state to maintain people's welfare. However, the practical use of this concept is often constrained not only by its complexity and the inconsistencies in the way it is discussed,

but also due to the lack of appropriate methodologies and tools. It is observed that the foundations of the well-established traditional approach such as its emphasis on individual welfare at the expense of community interactions and interests and the assumption about a well functioning market economy with perfect competition and information often do not withstand scrutiny, particularly in the case of a developing economy. Therefore, a qualitatively new approach is required. The capability-based approach and social choice theory represent a promising move in this direction, but still need to be further developed. These are particularly applicable for transition economies.

Section 2.5 Chapter summary and conclusions

There is a growing interest in the social welfare aspects of transition. Major debate is focused on the adopted transition strategies, analysis of their experience and methodology for this purpose. In this respect, the transition paths and progress in China and Vietnam are of keen interest.

However, there are a number of gaps in these areas. Firstly, in general the impact of transition on both social welfare conditions and the social welfare system were paid little attention in transition strategies and practice, especially during the early stages of the transition. Secondly, the existing studies suffer from the lack of a comprehensive framework to understand the structure of transition economies and assess the impact of the transition on both social welfare conditions and the social welfare system. Most studies draw attention to utility-based information, e.g. aggregated income per capita indicators. Some of them focus on analysing economic welfare at the household level and the linkages between household welfare and household characteristics, missing the important macro-economic factors induced by the transition. Thirdly, dynamics of changes in SWC and SWS, influencing factors, and cause-effect have not been fully studied both qualitatively and quantitatively. The above presents

serious constraints to understanding the complex impacts of the transition and design effective and sustainable policy responses.

This neglect has partly resulted from the novelty of the issues raised and the lack of appropriate methodological tools, which has forced most studies to employ general methodologies developed for established market economies. This effectively prevents the studies from giving more valuable insights.

This thesis will attempt to address the above-mentioned knowledge gaps. In particular, Chapter 3 introduces a comprehensive framework for analysis of social welfare during transition, based on changes in people's choices of occupation, consumption and investment, and presents theoretical basis of economic models for a quantitative study of SWC and SWS in a developing transition economy. The subsequent chapters show how the methodological developments can be applied for social welfare analysis and generation of policy recommendations in the case of Vietnam.

CHAPTER 3 FORMULATION OF ANALYTICAL FRAMEWORK AND THEORETICAL EXPLORATION OF SOCIAL WELFARE IMPACT OF THE TRANSITION

Section 3.1 Introduction

As mentioned in the previous chapters, there is an increasing literature on both social welfare conditions and the social welfare system during economic transition. However, a comprehensive framework for their interactive analysis is still absent. This is particularly true for the developing transition economies in Eastern Asia, such as China and Vietnam, where the level of economic development is very low. The two countries distinguish themselves from transition economies in Central and Eastern

Europe (CEE) and the former Soviet Union by a distinctive but still not fully studied transition path characterised by a steady improvement in social welfare.

This chapter attempts to fill the methodological gap. Section 3.2 develops an innovative conceptual framework for subsequent analysis, which brings together both aspects of social welfare. Section 3.3 elaborates the theoretical basis of models for analysis of impacts of the transition on SWC and the SWS in a developing transition economy. Section 3.4 discusses sources of data and its consolidation for the analysis. A summary of major findings and conclusions is given in Section 3.5.

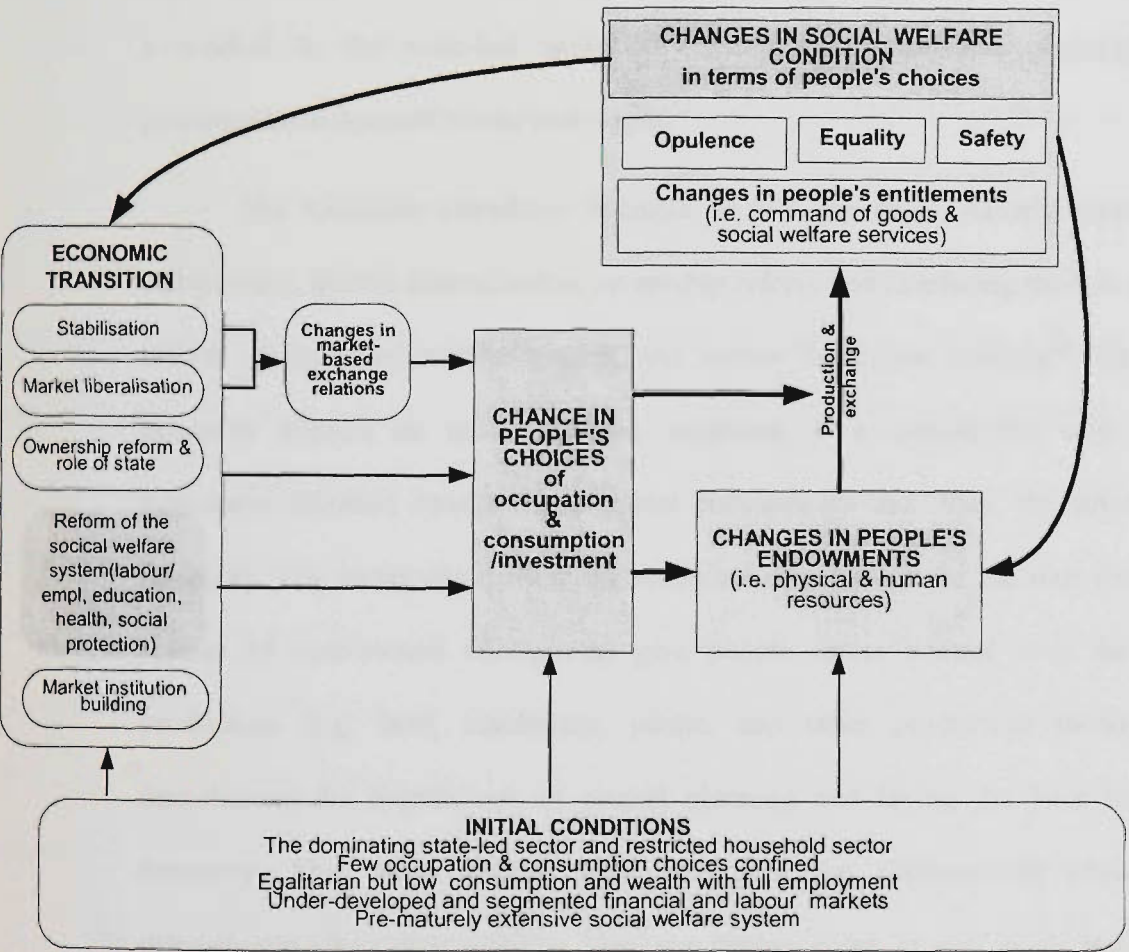
Section 3.2 Conceptual framework

According to the increasing literature on the transition, which former centrally planned economies have embarked upon since the late 1980s⁸³, the intricate interaction between transition and social welfare in the countries represents a major challenge to both economic theory and social policy. Firstly, in all transition countries, the transition has been more difficult and produced impacts that are more complicated than anticipated. Secondly, social welfare is often not given duly attention and, when it happens, policy responses are not always adequate. Thirdly, the interaction is complex and dynamic by its nature as the transition alters fundamental rules in an economy. It affects social welfare conditions (i.e. the measure of the social well-being) by altering not only the economic efficiency and growth, but also the social welfare system, i.e. public means to maintain well-being. In their turn, the changes in social welfare conditions and the social welfare system strongly influence both the transition's policies and progress. This complicated interrelationship necessitates a comprehensive

⁸³ However, China and some East-Asian countries such as Vietnam started their economic transition much earlier, in the late 1970s and the mid-1980s, respectively.

framework for the study as visualised in Figure 2. The concepts and terminologies used in the framework have been discussed in Chapter 2.

Figure 2. Framework for study of social welfare conditions and the social welfare system during transition



3.2.1 The economic transition

Although examination of the framework can commence from any element in the above framework, let us start first from the economic transition that distinguishes the

transition economies from others, which undertake economic reforms. The unique feature of the transition countries is the transformation from the centrally planned system as the principal mode of their economic organisation into one based on market principles. Prior to transition, the economies were dominated by the state's ownership over the means of production and its direct, totalitarian involvement in economic decision-making. As a result, in principle there was only one occupational choice - to be a worker in the state-led sector (including state-controlled cooperatives) with predetermined input of labour and wages.

The transition introduces changes in five key areas, namely macroeconomic stabilisation, market liberalisation, ownership reform and redefining the role of the state, reform of the social welfare system, and market institution building⁸⁴. The transition produces impacts on social welfare conditions in a complicated way. Firstly, it introduces dramatic changes in physical endowments and, thus, the structure of the economy. The ownership reform and amendment in the role of the state (including the reform of state-owned enterprises) give people direct control over the means of production (e.g. land, machinery, plants, and other production facilities), while demolishing the foundations of central planning and laying the base for a market economy. This faces people with two principle occupational choices, which dramatically affect their welfare. They can choose either to stay in the state-led sector with its limited but stable incentive base or engage in the more dynamic market-led sector, which offers higher but more risky incentives. Stronger incentives result in higher efficiency and foster development of the market-led sector compared with the state-led sector, which may have to shrink.

⁸⁴ Macroeconomic stabilisation and market liberalisation represent common elements of many reform efforts in developing countries. Thus, one may argue that the other components are distinguishing features of the transition.

However, as the general efficiency increases, economic growth is revitalised, leading to the increasing general opulence and living standards. Secondly, the transition also affects human resource endowment. The reform of the social welfare system transforms the prematurely extensive and equitable (but inefficient) ‘socialist’ provision of social services (including employment, education and health care, and the social protection system) into a slimmer but better targeted system. On one hand, this reduces financial burdens, offers greater labour mobility, and encourages increasing private sector provision. As a result, these enhance people’s control over their human resources and allow the system to respond better to demand of the needy for assistance. On the other hand, given the dramatic increase in the demand for assistance in the case of production contraction, the downsizing exercise negatively affects the maintenance of human capital and social welfare conditions in general. Thirdly, the macroeconomic stabilisation and market liberalisation introduce new market-based exchange relations, under which consumers and producers made their decisions on the basis of market prices. Fourthly, the above changes are reinforced by the new institutional infrastructure, such as banking and financial institutions, taxation, and legal systems, which are developed to support the new market-oriented economy and social welfare system.

The changes in endowment and exchange conditions amend people’s entitlements, i.e. their command over goods, and thus, their living standards. However, changes in living standards cannot capture the full impact of the transition on the social welfare. As confirmed by analysis of people’s subjective perception of the impact (Milanovic 1996), there are important welfare effects of the transition, which are non-utility in nature. The effects appear related to the dramatic enhancement of people’s choices and functionings in the emerging market economy.

3.2.2 Social welfare conditions

The improvement in social welfare conditions is the ultimate objective of the transition as human well-being has been increasingly recognised as the ultimate goal of economic development (Van de Walle 1999). The transition economy is not an exception. The goal emphasises traditional utility- and opulence-based conceptualisations of human well-being in terms of living standards and satisfaction. For example, this is strongly emphasised in Vietnam's socio-economic development strategy during the transition, which *"sees as its highest goal the well-being, freedom, and happiness of human beings"* (SRV 1995b). As stressed by Sen in his concept of capability, the scope of human well-being to be considered under transition has to be expanded to the area of 'freedom' of people's choices and functionings. Thus, transition strategies often view human well-being as an important driving force of economic development. In particular, Vietnam's socio-economic development strategy during the transition *"considers human beings as the most powerful engine of development, the creative energy, the source of material and spiritual wealth of a society"* (SRV, *ibid.*).

What constitutes human well-being defines how social welfare conditions are evaluated and judged. Thus, in order to fully reflect human well-being in the transition economies, the framework values social welfare conditions in terms of opportunity, equality and safety. The first component reflects the space of people's choices and functionings. Utility and opulence-based information, such as per capita equivalent income, share of food in the total household expenditures, and other traditional living standard indicators, gives information about people's consumption choices, which are especially limited for the poor and the hungry. School enrolment rates echo people's choice to take an enlightened life with necessary knowledge and skills. Child mortality or under-five malnutrition, whatever information exists, reflect people's choices to lead

a long and healthy life. In contrast to the HDI, the selected indicators are more accessible not only at the national but also sub-national levels (even at the household level). Moreover, they are more responsive to dynamic changes in the transition economies than the indicators used for composition of HDI, such as adult literacy and life expectancy at the birth.

The framework departs from the human development approach taken by UNDP by looking deeper at the basis of the welfare choices. In fact, the concept of opportunity here also encompasses some key non-utility information about people's capability for the potential choices and functionings. In particular, this includes information about occupation, physical and human capital, and entitlement exchange conditions, i.e. those determining their livelihood. Occupational choice is fundamental since it determines not only people's livelihood but also their role in the production sphere. With the transition, people can choose to be either a passive but secured employee in the state-led sector, or a more risk-taking employee or a pro-active entrepreneur in the market-led sector. In its turn, the space of occupational choices are affected by people's accumulated physical and human capital. Without a minimal capital, a person cannot enter business due to the underdeveloped capital market. For the same reason, the accumulation of physical capital and assets also plays an important role in securing people's economic safety (Sen 1991; Guhan 1994). Further, the above-mentioned education and health also represent the indicators of human capital, which defines people's income earning capability (Becker 1993) and their opportunity for a better job within the occupation they have chosen. Exchange conditions also play a dramatic role in defining people's choices (Sen 1985). By replacing centrally planned and heavily distorted prices with the market-based ones, the transition has amended relative prices and, thus, affected people's choices in terms of allocation of their resources. The change in relative prices is

reinforced by the development of the institutional infrastructure to support the market economy. However, the development of the institutional infrastructure requires time and huge resources and is not always given due attention (IMF 2000).

Secondly, equity is an important dimension of social welfare that takes into account the distributional aspects of economic development and makes social welfare conditions distinct from a sum of individual welfare. Equity is viewed as a combination of equality and fairness, which is understood as equality in opportunities. From the viewpoint of social welfare, a more equal distribution is always preferable to a less equal one (Sen 1973; Sen 1992; Deaton 1997). This implies that equity shall be interpreted as equality not only in terms of income or welfare expenditure as traditionally is done in social welfare studies (e.g. by measuring income equality through indicators such as the Gini coefficient, poverty gaps, and intensity of poverty), but also in terms of equality in other indicators of capability as mentioned above. Special attention will be paid to the social welfare status of low-income groups and underdeveloped regions.

The third component - safety - is a very important aspect of social welfare conditions under transition. The main idea is that under transition, welfare of individuals, households and communities is especially vulnerable to multiple risks created by dramatic and dynamic changes in individual and household endowments and the entitlement exchange conditions within which they operate but possess imperfect information. Risks like production contraction, change in relative prices, a rise in unemployment, inflation surge, cut in public transfers, and other numerous potential economic failures during the transition, often result in shocks that hit individuals, households and communities in an unpredictable or unpreventable manner. Informal

arrangements have been proven to play an important role in helping people to absorb idiosyncratic shocks, i.e. those distressing single individuals or households leaving the others unaffected. However, covariate risks, i.e. those concerning an entire community or region, often go beyond capacity of informal arrangements and affect capability of the individuals, households and communities to generate sustainable livelihoods, thus causing massive poverty. Thus, a social welfare system equipped with appropriate and consistently implemented instruments is necessary to help individuals, households and communities to manage better the risks and provide support to the most needy. Obviously, the assistance and support can also be provided through varying existing endowments or entitlement exchange conditions.

The framework tries to find out the optimal mix of the above-mentioned dimensions of the social welfare condition, which shall depend on the common goals and standards of life the society sets for itself. Even when a set of goals and standards of living is given, expressing them and their achievement in a quantitative form for easy comparison remains a challenge. This is due to the possibility of conflict of interests among population groups, regions and generations, and between efficiency targets and equality. Firstly, in order to address this problem, it is proposed to consider the above indicators both in aggregate and disaggregate forms. This means the necessity to disaggregate the indicators and consider their distribution not only at the household but also at the commune or regional levels by sector (state-led and market led-sector), income generation activities (agriculture, industry and services), by location (such as rural and urban), by employment (working and non-working, household non-wage workers, wage workers and self-employers) as well as by some human characteristics such as education, age, sex and ethnic group. Secondly, while focussing on problems

facing the poor and low income groups, attention is also given to welfare of other income groups.

So, instead of valuing social welfare condition solely on the basis of standards of living, this framework views the former in terms of changes in people's choices of occupation, consumption and investment. This offers a more systematic approach to social welfare with more transparent cause-effect linkages with the transition process than other studies (UNDP/UNICEP/UNFPA 1995; World Bank 1995; United Nations in Vietnam 1998; World Bank 1999a). The studies tend to emphasise separate aspects of SWC such as opulence (e.g. per capita income or expenditure, wealth, or its deficiency such as the lack of income consistent with a 2,100 calories per days per capita intake) or social indicators (e.g. adjusted income per capita, life expectancy, illiteracy rate, and education attainment or schooling alone). There this a commonality between this framework and the UNDP human development approach. The HDI methodology developed and tested by UNDP since the early 1990s can be the starting point to derive more relevant, compact indicators for monitoring and comparison of welfare fluctuations in the transition economies. However, this framework differs from the UNDP approach by emphasising occupational choices and safety, which are essential for social welfare in a transition economy. Compared with the approach of the World Bank, the framework positively distinguishes itself by the attempt to link economic and social aspects of development. Finally, the framework is much broader than the concept of social exclusion, which covers primarily employment and poverty aspects of social welfare.

This approach has a number of real advantages. Firstly, it allows recognition of different dimensions of social welfare, not simply as 'associated variables' but as an

integrated part of the transition process. Secondly, it captures the most essential aspects of both the goals and the means of the economic transition. Thirdly, it directly helps in developing models for qualitative analysis of underlying causes of changes in social welfare. Finally, it is broad and sensitive enough to help in clarifying and fostering a policy agenda for further steps in the transition.

So, in line with Sen's capacity view on human well-being (Section 2.3.1A.c) the framework proposes to view economic transition as the distinctive process of altering people's choices and functionings to pursue welfare interests, irrespective of its strategies, progress, and outcome.

3.2.3 Social welfare system

Within the framework, the social welfare system in the transition economy is viewed in terms of protecting people's entitlements rather than simply maintaining income⁸⁵. The important role of the social welfare system, which can help to maintain and improve social welfare conditions without waiting for general economic growth and opulence, cannot be undervalued due to the well-documented economic volatility and wide-spread poverty in transition economies. Here, the social welfare system is defined broadly as a combination of public interventions and private arrangements to assist individuals, households and communities to enhance their capability to better manage risks and vulnerability⁸⁶ and support the poorest⁸⁷ so that they can choose and perform the functionings they value. According to this approach, the social welfare system is not a cost to society but an investment in human capability formation by helping the poor

⁸⁵ see Dreze-Sen's similar general framework for social security in developing countries, based on the capability approach. The authors also pointed out the need for institutional and policy arrangements as well as the appropriateness of cash transfers as a social security measure (Drèze, J. and A. K. Sen (1991:1-40).

⁸⁶ Risk is defined as the probability of lost or substantive reduction in income (World Bank, *ibid*), while vulnerability is the lack of capability in maintaining the decent level of income (UNDP)

⁸⁷ see the World Bank's recent similar approach to social protection in developing countries in World Bank (2000a:84) and World Bank (2000b: 200).

keep access to basic social services so that they can build up necessary endowments and capabilities to avoid social exclusion and coping strategies that lead to irreversible negative effects during adverse shocks. The definition also takes into account financial constraints prevalent in a transition economy: without private initiatives, the targets are beyond capacity of the government and donor community, even when public measures such as social insurance and public transfers are given high priority.

Within the framework, the study will analyse the social welfare system in terms of its major instruments, which affect people's capability against risks and vulnerability, as follows:

1. Protective measures such as disaster relief, social transfers, social assistance, and public works, which aim to eliminate deprivations due to natural and economic disasters;
2. Preventive measures, e.g. insurance (including for old age, disability, survivorship, sickness) and assets creation (pension systems, asset transfers, protection of poverty rights, extending financial markets to the poor) which reduce risks and vulnerability to various deprivations; and
3. Promotional measures which aim to enhance endowments, entitlement exchange relations, and real income and consumption, such as land reform and asset creation, labour market policies (including labour standards, child labour reductions, pre-job training), disease prevention, and good macroeconomic policies.

The impact of the social welfare system is assessed in terms of enhancing static welfare (including reducing vulnerability, consumption smoothing and improved equity), contributing to growth (including income and consumption smoothing,

effectiveness and cost of informal provision and the cost of public provision) and reducing poverty. The effectiveness of the measures can be assessed in terms of

1. Coverage ratio (i.e. the percentage of the potential beneficiaries to the total population and the percentage of those who actual receive benefits to the number of potential beneficiaries);
2. Transfer efficiency which is the proportion of the net benefit received by beneficiaries to the total budget outlay, after leakages such as programme and administrative overheads;
3. Targeting efficiency (or vertical efficiency) is the proportion of the transfer that reaches the target groups to the total overlay, i.e. net the share going to outside the target group either explicitly as in universal schemes or because of leakages; and
4. Horizontal efficiency (Weisbrod 1970)

The indicators of coverage, targeting, and efficiency of the social protection system are of particular importance. They reflect the degree to which society and its members are protected from human, economic and environment malfunctions, which make people unable to care of themselves sufficiently such as old age, illness, disability, injury, maternity, death, unemployment, disasters, and income falling below a certain line.

However, special attention will be given to private arrangements, which are considered as an important part of the SWS in a developing transition economy in contrast to traditional approaches. This epitomises both the residual role of the social welfare system and the specific features of the social welfare system in developing countries. In particular, the study will draw attention to exploring the intricate

relationship between public and private transfers, which has not been fully studied yet (Cox and Jakubson 1995).

3.2.4 Transition and social welfare: Effects of initial conditions

Initial conditions are an important element in the framework and will be discussed in detail in Chapters 4 and 5. It is obvious that on one hand, the transition economies share many crucial commonalities due to their common mode of economic organisation in the past. Prior to transition, the economies were in a decade-long deep stagnation that worsened already low living standards. However, the countries were able to maintain an extensive social welfare system, leading to relatively high human endowment, equality, and safety. On the other hand, the countries are very diversified in terms of the level of economic development, physical and population sizes, endowments, and cultural and historical background.

In this aspect, East Asian transition economies represent interesting cases, which have not been fully studied. This is especially the case with Vietnam. In contrast to other transition economies, the gradual transition approach adopted by the East Asian countries has not been accompanied with essential political reform but has resulted in rapid economic growth and wide-spread improvements in living standards. However, it also means the long-term coexistence of the planned and market elements (say, in terms of the state-led and market-led sectors). The dualism has been also exaggerated by the dualist nature of their developing economies and social welfare systems with sharp contrasts between the rural and urban sectors. The double dualism has important influences not only on the patterns of the transition in the countries but also on the structure, funding, and ways their social welfare systems operate.

As the state-led and market-led sectors are driven by quite different microeconomic foundations, the dynamics of social welfare in transition economics need to be explored at both macro and micro levels. The study represents a methodological challenge due to its complexity. However, the study is important due to its relevance to a number of other developing transition economies as well as developing countries.

In sum, the above framework allows a comprehensive qualitative analysis of the impact of the transition on social welfare. The framework is also helpful for quantitative analyses, which are required to quantify the dynamics of social welfare and cause-effect relations in order to generate well-reasoned policy recommendations. The complexity of the relationships implies that mathematical modelling should be used for the purpose.

Section 3.3 Theoretical models and exploration of social welfare effects of the transition

3.3.1 Introduction

This section attempts to provide the theoretical basis for quantitative analysis of SWC in a developing transition economy by exploring its underpins through mathematical modelling. As analysed above, SWC in the transition economy represent a wide range of complex issues. This study focuses on two key issues, which are of critical importance for policy applications but still have not been duly studied yet. Firstly, it sets up an economic model for exploring the dynamics of social welfare conditions during the transition, based on the occupational choice framework. Secondly, it derives a model of the social welfare system, which reflects both public interventions and private initiatives for social welfare and allows considering the interactions between the two essential elements of the system.

3.3.2 Model of occupation and consumption choices and social welfare conditions during the transition

Like Ferreira (1997), it is assumed that occupational choices play the central role in determining dynamics of social welfare conditions in the transition economy where the centrally planned and market economies coexist. Unlike Ferreira's model, in addition to employees in the state-led sector and capitalists, welfare conditions of workers in the market-led sector are also considered.

Another distinguishing feature of this model is that it also considers the agents' accumulation of physical and human wealth, which allows the employees' upward movement in terms of their occupation and welfare. The use of the Keynes-Ramsey infinite horizon framework (Blanchard and Fisher 1990; Chaudhri and Wilson 2000) provides several additional insights, which are important for potential policy implications.

The model represents a methodological development, which addresses some of the limitations of traditional neoclassical models of transition economies (Martin 1993; Xu 1996; Krkoska 1999) to explore the complex relationship between the transition, economic growth and social welfare.

A. The model

a. Key assumptions

Firstly, presume that the transition economy produces and consumes a single composite tradable good that can be used for both private and public consumption and investment. Such a good can be the value-added product (or the gross domestic product (GDP) at the aggregated level), from which both material inputs and capital depreciation have been excluded.

Secondly, it is presumed that a lump-sum tax is taken from the value-added product to fund public consumption in forms of public transfers to households (e.g. social security payments and assistance) and accumulation of public capital (e.g. infrastructure, education and health care).

Thirdly, in terms of resources the transition economy is characterised with labour abundance compared with capital. However, the capital market is underdeveloped so that the minimal level of privately owned capital is required to be able to borrow, start or operate a business. Saving is allowed with a unified interest rate r .

b. Occupational choices and static changes in social welfare conditions

For simplicity, assume that the composite good (denoted as Y) is produced by two sectors, namely the state-led sector (denoted as s) and the market-led sector (m). The sectors are distinctive not only in terms of their technologies but also their rules of distribution of the value-added product, as described below.

1) The transition and emerging occupational choices

1.1) The market-led sector

The transition is epitomised by the re-emergence and development of the market-led sector, which comprises private enterprises and join-venture firms. In this stylised model, this sector also includes the household economy⁸⁸. The sector is driven by the maximisation of its profit $\pi_m = \max(Y_m - W_m)$ where W_m stands for workers' wages. The sector faces hard budget constraints. This is particularly related to capital. To capture this, following Ferreira (1997), assume that enterprises in the sector are

⁸⁸ This assumption is necessary to keep the model simple and can be solved by the GEMPACT demonstration version. Strictly speaking, the traditional household sector is subsistence and driven largely by household utility maximisation rather than market signals.

characterised by a stochastic production function y with the minimal scale of capital input⁸⁹

$$(1) \quad Y_m = 0 \quad \text{if } K < K^*$$

$$Y_m = A_m \theta_m L_m^{\varepsilon_{m2}} K_m^{\varepsilon_{m3}} \quad \text{if } K \geq K^*$$

where Y_m stands for the value-added product of the market-led sector; A_m represents the level of technological progress in the sector⁹⁰. K is capital input. L is labour input, measured in persons. $K^* > 0$ is the minimal own capital to enter business due to the underdeveloped capital market⁹¹. The minimal start-up capital may be the cost of a plot of land, or a business license, or an industrial plant. As usual, the production function is assumed to take the Cobb-Douglas form when $K \geq K^*$, however, without the restriction for the constant return to scale due to the imperfect market conditions prevalent in the transition economy⁹².

θ is a random variable reflecting the probability of success of a market-led enterprise in the transition economy.

$$(2) \quad \theta = 1 \quad \text{with probability } q$$

$$\theta = 0 \quad \text{with probability } (1 - q)$$

The departure from Ferreira (ibid.) is that the success probability q is assumed to be related to variable α , which reflects the progress of the transition. α can take the form of the transition index developed by the European Bank for Reconstruction and Development (EBRD) (IMF 2000) or the liberalisation index constructed by Melo, Denizer et al. (1996)⁹³. This is because the major fact of the transition is to create an

⁸⁹ The subscription for time is dropped for the purpose.

⁹⁰ The coefficient is proposed to link with human capital accumulation as discussed later in Section 3.3.2 and equation (26).

⁹¹ See Ferreira (ibid.) and Aghion, P. and P. Bolton (1997).

⁹² Dixon, P. B., B. R. Parmenter, et al. (1992) give the optimal allocation of the market economy in the case of the Cobb-Douglas production function with constant return to scale

⁹³ The former represents the average of 3 indicators of enterprise privatisation and restructuring, 3 indicators of market liberalisation and competition, and 2 indicators of the financial sector reform. The

enabling environment for development of the market-led economy. Let q take the following form

$$(3) \quad q = \alpha^{\epsilon_m}$$

It is expected that $0 < \alpha^{\epsilon_1}$, $0 < \alpha \leq 1$. Substituting (3) into (1)-(2) gives the following expression for the expectation of the value-added product in the market-led sector

$$(4) \quad E(Y_m | K \geq K^*) = A_m \alpha^{\epsilon_m} L_m^{\epsilon_m} K_m^{\epsilon_m}$$

1.2) The state-led sector

To some extent, the state-led sector represents a contrast to the market-led sector. The former comprises state-owned enterprises (SOEs) and the enterprises in which the state possesses the controlling share as well as pre-reform cooperatives. As long as the transition has progressed, dramatic changes are introduced into the sector. Under the privatisation programmes, a number of the sector's enterprises are restructured and shifted into the market-led sector. The remaining enterprises are increasingly driven by market mechanisms. With the abolition of central planning, the decrease in government subsidies, and the introduction of a performance-based reward system, the enterprises remaining in the sector are also expected to maximise profit $\pi_s = \max(Y_s - W_s)$.

However, the state-led sector's enterprises are still largely influenced by a number of the state's direct interventions. In particular, it is proposed that the state determines the wage rate w_s in the state-led sector. Moreover, it is well documented that

indicators rank from 1 (i.e. the centrally planning) to 4 + (i.e. advanced market economies). This index has been published in the EBRD Transition Report since 1989, but without the East Asian transition economies and Mongolia. The latter denotes the weighted average of three distinct indicators for domestic market liberalisation (weight 0.3), foreign trade liberalisation (0.3) and enterprise privatisation and banking reform (0.4). This index ranks from 0 to 1, where the boundary values are also correspond to conditions in the centrally planning and advanced market economies. This index is available for all transition economies for 1989-97. As noted by IMF (ibid.) the two indexes are highly correlated.

despite their commitment to the transition, governments in transition countries are often keen of minimising the cost of restructuring (Mendoza 1991; Krkoska 1999) or even attempting to maintain the sector's role⁹⁴ (SRV 1993). Therefore, the sector continues enjoying soft budget constraints (Kornai 1998), being able to tap into government resources. Thus, it is proposed that contrary to the market-led sector, enterprises in the sector are faced with a deterministic production function of the Cobb-Douglas form⁹⁵ similar to (4) but with $\varepsilon_{m1} = 0$.

2) Welfare implications of the occupational choices

As wages and other earning are the major source of people's livelihood, the choice of occupation determines their welfare. Various occupational choices are associated with different earning abilities⁹⁶, which depend not only on production functions of respective sectors but also on their objective functions as described below.

2.1) The market-led sector

Let us start by considering wages, labour and earnings in the market-led sector. Firstly, as the sector's production function is stochastic, incomes of both the representative capitalist and worker are subject to risk. Secondly, regarding to sector's distribution rule, it is proposed that its wage rate w_m is determined by the marginal product of their labour, i.e.⁹⁷

$$(5) \quad E(w_m) = (1 - \tau) \varepsilon_{m2} A_m \alpha^{\varepsilon_{m1}} L_m^{\varepsilon_{m2} - 1} K_m^{\varepsilon_{m3}}$$

where τ is the value-added tax.

⁹⁴ As announced, governments in the East Asian transition countries preserve a strategic role of the state-led sector. The Government of Vietnam even emphasises the leading role of the sector not only during the transition but also in the post-transition economy (Vietnam, *ibid.*)

⁹⁵ Ferreira proposes that the production function is of the Leontieff form (Ferreira, *ibid.*:9).

⁹⁶ As labour is measured in terms of persons, we assume that people have similar level of effort.

⁹⁷ For simplicity, taxes have not been included yet.

The sector's demand for labour and the total income of both workers and capitalists are defined by the sector's profit maximisation by choosing the optimal level of labour input and production output. So the after-tax income is

$$(6) \quad \max_{L, Y > 0} \pi_m = (1-\tau) p Y_m - w_m L_m$$

Substituting the production function (4) into (6) and its subsequent differentiation in respect of L gives the first order condition

$$(7) \quad \frac{d\pi}{dL} = (1-\tau) p A_m \varepsilon_{m2} \alpha^{\varepsilon_{m1}} L_m^{(\varepsilon_{m2}-1)} K_m^{\varepsilon_{m3}} - w_m = 0$$

The optimisation problem (6) has the solution if $\varepsilon_{m2} < 1$ that makes the second order condition negative. Then, the sector's optimal demand for labour is

$$(8) \quad L_m^* = \left(\frac{(1-\tau) p \varepsilon_{m2} A_m}{w_m} \right)^{\frac{1}{1-\varepsilon_{m2}}} \alpha^{\frac{\varepsilon_{m1}}{1-\varepsilon_{m2}}} K_m^{\frac{\varepsilon_{m3}}{1-\varepsilon_{m2}}}$$

and the workers' total income is $W = w_m L_m^*$.

To identify the optimal level of output, define labour input from the production (4) and substitute it to (6). The differentiation in respect of Y gives the following first order condition

$$(9) \quad \frac{d\pi}{dY} = (1-\tau) p - w_m \frac{1}{\varepsilon_{m2}} Y_m^{\frac{1-\varepsilon_{m2}}{\varepsilon_{m2}}} A_m^{\frac{-1}{\varepsilon_{m2}}} \alpha^{\frac{-\varepsilon_{m1}}{\varepsilon_{m2}}} K_m^{\frac{-\varepsilon_{m3}}{\varepsilon_{m2}}} = 0$$

When $\varepsilon_{m2} < 1$, there also exists the sector's optimal output level

$$(10) \quad Y_m^* = \left(\frac{(1-\tau) p \varepsilon_{m2}}{w_m} \right)^{\frac{\varepsilon_{m2}}{1-\varepsilon_{m2}}} A_m^{\frac{1}{1-\varepsilon_{m2}}} \alpha^{\frac{\varepsilon_{m1}}{1-\varepsilon_{m2}}} K_m^{\frac{\varepsilon_{m3}}{1-\varepsilon_{m2}}}$$

Substituting L_m^* and Y_m^* into (6) gives the capitalists' maximal earnings

$$(11) \quad \pi^* = \frac{1-\varepsilon_{m2}}{\varepsilon_{m2}} \alpha^{\frac{\varepsilon_{m1}}{1-\varepsilon_{m2}}} \left(\frac{(1-\tau) \varepsilon_{m2} p A_m}{w_m} \right)^{\frac{1}{1-\varepsilon_{m2}}} w_m K_m^{\frac{\varepsilon_{m3}}{1-\varepsilon_{m2}}} \quad \text{or}$$

$$(12) \quad E(W_{mc}|K \geq K^*) = \beta_m(.) K_m^{\frac{\varepsilon_{m3}}{1-\varepsilon_{m2}}}$$

where $\beta_m(.)$ denotes the RHS of (11) with the last term excluded. Thus, $\beta_m(.)$ represents the profit capitalists earn per a unit of their capital adjusted by exponent term $\frac{\varepsilon_{m3}}{1-\varepsilon_{m2}}$. Thus, when a capitalist's own capital exceeds K^* , he earns non-zero income, which equals the sum of the product of capital and the product produced

The above implies that the emergence and development of the market-led sector in the transition brings new occupational choices with distinctive earning abilities. Those with accumulated own physical wealth greater than K^* can choose to be capitalists with income w_{me} . Those with accumulated own physical wealth less than K^* have to be workers with market wage w_m which is a function of the amount of capital used in the sector. However, the expansion of occupational choices involves certain risks due the dependence of the sector's development on the progress of the transition measured by term $\alpha^{\varepsilon_{(.)}}$ in the production functions (4) and the failure of the emerging market economy to secure employment for every labourer.

2.2) The state-led sector

As the transition has progressed, the state's subsidies are abolished and market mechanisms are introduced into the state-led sector. This implies that the wage rate in the state-led sector is increasingly based on the marginal product of labour and (5) may be applied⁹⁸.

Another more interesting alternative is that the state sets the wage rate in the context of the transition (Blanchard 1997). Firstly, the wage setting may be influenced

⁹⁸ Ferreira (ibid.) suggests that the wage rate in the state-led sector is set equal to the average product of labour. In the case of a Cobb-Douglas production function, this proposal gives a result similar to (5) but without term $\varepsilon_{(.)2}$.

by state employees, who want to protect the benefits they enjoyed under the legacy of the central planning and are well organised. Secondly, the state is willing to minimise the unrest created by the sector's restructuring and maintain the support of workers in the sector to its transition policy. Finally, the state may also be willing to use the state-led sector's wage rate setting to regulate the speed of the sector's transformation in order to achieve socio-economic stability (e.g. to keep unemployment at an acceptable level).

Let propose that in the transition economy the state is willing to set the sector's wage rate, which maintains the equilibrium in the labour market. To derive the wage setting rule in this case, I follow Blanchard(ibid.) in assuming that workers in the sector can block restructuring if the value of being employed in the state sector V_s is greater than the sum of the values of being employed in the market-led sector V_m and being unemployed V_u as a result of the restructuring. Denote the interest rate as r , the value associating with blocking the restructuring and, thus, continuing working in the state sector is

$$(13) \quad rV_s = w_s + \frac{dV_s}{dt}$$

As in the transition economy the market-led sector is the only source of new jobs, the probability of getting new job is proportional to the growth of labour demand in the market-led sector ΔL_{dm} and is reversely proportional to the growth of labour supply, i.e. the sum of the total number of the unemployed U , the natural growth of the labour force ΔL and the number of the state employees laid off in the current period. Denote the percentage of workers to be laid off in a period as λ and the interest rate as r . Then the value associating with engaging in the transformation is

$$(14) \quad rV = (1-\lambda)w_m + \lambda bw_m + \lambda \frac{\Delta L_{dm}}{U + \Delta L + \lambda L_s} (V_m - V_u) + \frac{dV_u}{dt}$$

Thus, the wage rates in the state w_s can be defined in terms of the equilibrium between the layoffs from the restructuring of the state-led sector and the labour market conditions.

$$(15) \quad w_s = w_m (1-\lambda + \lambda b + \lambda c \frac{\Delta L_{dm}}{U + \Delta L + \lambda L_s})$$

In sum, manipulating the wage rate in the state-led sector appears to be an important economic tool of the state to regulate the progress of the transition and achieve equilibrium in the labour market, although wage rates in the non-state sectors can vary, being higher or lower or equal to those in the state-led sector. However, the choice of the wage setting rule(s) depends on not only the state's priority and policy but also on the availability of financial resources, which are particularly limited at the start of the transition when unemployment often surges. Furthermore, it can be seen that (6)-(11) are also applied to the state-led sector with minor modifications: in the equations coefficient α is to be excluded, sector indexes are to be amended from m to s , and the state earns the sector's profit instead of capitalists. However, despite of principal changes in the state-led sector, it still offers only one occupational choice: being a worker with determined wage rate w_s , irrespective of the workers' efforts and their accumulated savings.

2.3) The government

The government represents another economic agent in the transition economy. During the transition, the government plays a dual role. On one hand, as mentioned above, like in the former central planning economy, it acts as the state-capitalist, owning capital of the SOEs, and earns the product of its capital. On the other hand, the

government performs a social welfare role and address market failures by re-distributing income and providing social services. Given alternative wage setting rules in the state-led-sector, these can be summarised by the following social welfare problem of maximisation the total utility U

$$(16) \quad \max_{w_i, \tau_{a_i}} U = \sum_{i=1}^N \gamma_i u_i(w_i, \tau_{a_i}) \quad \text{subject to}$$

$$(17) \quad \tau (Y_m + Y_s + Y_{ss}) + W_{ms} = \sum_{i=1}^N a_i + G + TB$$

where τ_{a_i} represents the income tax net public transfers applied to a person (or group of persons) i ; $u_i(w_i, \tau_{a_i})$ is the individual/household utility as a function of income and income tax/public transfers; γ_i stands for the weight attached to the person (or group of persons) for social welfare aggregation⁹⁹; and N is the total population. In (17) W_{ms} represents the profit from the state-led sector and is defined according to equation (12) with a minor amendment (i.e. alternating sector index to s); a_i stands for the amount of income a person/household pays net the amount of public transfers she/it receives; G stands for the total public consumption and TB does the country general balance. Equation (17) represents the model's closure condition. Its LHS indicates the budget income, namely the revenue from the value-added tax and the profit from SOEs while the RHS shows budget expenditures in terms of income re-distribution (income tax net the public transfers for individual consumption) and funding consumption G . In contrast with Ferreira's conclusion (Ferreira 1997), equation (17) indicates that in the transition economy the state can carry out income redistribution through both the value-added tax applied to enterprises and a combination of income tax and public transfers

⁹⁹ It is commonly required in the literature based on equity concerns that the weight varies among different persons (or groups of persons). For example, a pro-poor policy gives higher weight to the poorer than the richer. See Sen, A., J. Muellbauer, et al. (1987) and Sen, A. (1992).

applied to individuals and households. In addition to these tools, which can be, at least in principle, selective and targeted, the state can also promote social welfare through public consumption, which is characterised by less selectivity in terms of beneficiaries as well as high externality and unexclusiveness in terms of its effects. It is obvious that compared with central planning, in order to achieve welfare objectives with more constrained budget resources and major shifts in occupational choices, the transition economy needs better targeting of the tools. However, the choice of a set of tools is primarily a matter of practice, largely depending on the implementation capacity, which is almost lacking due to the novelty of problems facing social welfare in the transition economy. Further, to stress the difference with the pre-transition economy, it is proposed that the SWC will be solved in the de-centralised manner by the other agents' maximisation behaviour.

In summary, this sub-section has shown that the changes, which the transition introduces into the production side of the economy, have principally expanded people's occupational choices. As the occupational choices are associated with different earning abilities, the people's welfare is also affected. However, the changes in welfare are static as well as occupational choices have been made. Moreover, the framework indicates the importance of the physical wealth accumulated by individuals/households as the factor determining their occupational choices. As wealth accumulation is shaped by consumption and saving, a study of the factors, which are still neglected, is also critical for analysing changes in social welfare conditions in the transition economy.

3) Static changes in the social welfare condition

It can be shown that the above-mentioned alternative occupational choices are characterised by different earning abilities. Thus, the people's occupational choice

determines their static welfare as well as the aggregated social welfare condition in the transition economy as the whole.

Firstly, let consider the comparative statistics of the expected earnings associated with the occupational choices in the market-led and state-led sectors. It can be proved that the expected earnings in the market-led sector are higher than that in the state-led sector, if the sectors were operating on the same scale, e.g. the minimal one. Indeed, let us assume that a centrally planned economy comprises only the state-led sector, including also agricultural cooperatives, and all workers are employed by the sector. The transition means the development of the market-led sector. For the purpose, the latter should be able to pay its workers higher wage rates than in the state-led sector. Otherwise, the workers remain in the state-led sector and the transition cannot proceed. A similar judgement is also applied to capitalists. However, the income of the latter shall be greater than the worker's wage. Otherwise she will not start business and continue as a worker. In summary, to get capitalists and workers engaged in the market-led sector, right from the start up level, the marginal products of labour and capital in the market-led sector has to be greater than those in the state-led sector (if no subsidy to the state sector involved). To formalise this, write

$$(18) \quad E(w_{me}|K_m=K^*) > E(w_m|K_m=K^*) > E(w_s|K_s=K^*)$$

Substituting K^* into equations (5), (12), and (15) and dividing by $K^{*\varepsilon_{m1}}$ gives the following comparative statistics related to earning abilities of various occupations in the transition economy, using a unit of capital¹⁰⁰.

$$(19) \quad \beta_m(.) K^{*\frac{1}{1-\varepsilon_{m2}}} > (1-\tau) \varepsilon_{m2} A_m \alpha^{\varepsilon_{m1}} L_m^{\varepsilon_{m2}-1} > (1-\tau) \varepsilon_{s2} A_s L_s^{\varepsilon_{s2}-1} \quad \text{or}$$

¹⁰⁰ The notion about the minimal level and per unit capital term is important because by history the state-led sector tends to possess much more capital than other sectors and, thus, its wage rate in some economic activities can be higher. However, the total employment in the sector remains limited.

$$[(1-\tau) \varepsilon_{m2} A_m \alpha^{\varepsilon_{m1}} L_m^{\varepsilon_{m2}-1}] > (1-\lambda + \lambda b + \lambda c \frac{\Delta L_{dm}}{U + \Delta L + \lambda L_s})$$

(19) indicates that from the welfare perspective, the progress and the SWC impact of the economic transition depends on the productivity of labour in the emerging sector. Indeed, (19) represents the necessary condition for the emergence and development of the market-led sector, thus, it is also the welfare condition for the progress of the transition. As it appears difficult for the emerging sector to meet the condition in all economic branches of the economy at the same time, (19) also implies that the transition would progress with various speeds in different branches of the economy and the sequential approach to the transition would be superior to “shock therapy”.

Secondly, as different occupational choices are characterised by different earning abilities, people’s occupational choices determine their static welfare, i.e. the long-run distribution of income and wealth in the transition economy. The choice is determined by the initial private physical wealth and agent’s attitude to risk. At the end there are five classes of economic agents. The first two classes include workers in the state-led and market-led sectors. Given other factors are equal, these classes are the poorer with their occupational choice constrained by their physical wealth $k < k^*$. Among them, those who are risk adverse choose to work in the state-led sector for a deterministic but lower wage w_s . Contrary, risk-takers choose to work in the market-led sector for a stochastic but greater wage w_s .

Capitalists are the richest. The exploration of firm’s investment decisions in Chapter 6 indicates that each value optimising firm is characterised by its optimal level of investment k^{**} . Accordingly, capitalists can be divided into two groups. Those with wealth $k^* \leq k \leq k^{**}$ invest all of their physical wealth into the production function. Those

with wealth $k > k^{**}$ invest only up to k^{**} and save $(w_{me} - k^{**})$. Notwithstanding the interest earning from holding physical wealth outside the production function, that makes them better off by reducing their vulnerability to risks¹⁰¹.

Thirdly, consequently at the aggregate level, the social welfare condition in the transition economy is determined by the development of the emerging sector, namely the market-led sector. Accordingly, the variation of the general level of opulence can be presented by the change in the average aggregate income. As the latter is the sum of the average income from each occupation in the economy, weighted by its population share $p_{(i)}$ in the total employment, the change in the average aggregate income can be presented as follows.

$$(20) \quad \Delta w = \sum_i S_i (\Delta p_i + \Delta w_i)$$

where $\Delta w_{(i)}$ is the percentage change in the average aggregate income and in the average income of each occupation, $\Delta p_{(i)}$ is the percentage change in the share of the people engaged in the occupation in the total labour force. $S_{(i)}$ is the share of the income from the occupation in the total income, i is the occupation index, i.e. , i.e. $i = mc, m, s$ and u . The equation shows that the transition can affect the general level of opulence by two distinctive mechanisms. First, it enables people's movement from the lower-paid state-led sector to the higher-paid market-led sector, i.e. through introducing new occupational choices (This results in positive Δp_{ms} , Δp_{ms} and negative Δp_s , Δp_u). Second, it increases the wage rate by raising the efficiency of sectors in the economy through their restructuring and creating favourable conditions for their effective operation (i.e. $\Delta w_{(i)}$).

¹⁰¹ See also Ferreira(ibid.)

On the other hand, inequality – another aspect of the social welfare condition – is measured by the Gini coefficient, which can be decomposed by occupation as follows (Milanovic 1998a:7)

$$(21) \quad GINI = \sum_i S_i p_i GINI_i + \frac{1}{w} \sum_{i \neq j} (w_i - w_j) p_i p_j + \xi$$

where $GINI_{(i)}$ is Gini coefficients of income distribution defined for the economy as the whole and respective occupations; ξ is the overlapping term reflecting the existence of outliers within occupations, i.e. those members of a high income group who have income lower than that of some members of a lower income group and *vice versa*. This term is assumed to be constant during the transition; i and j are occupation indexes, i.e. $i=mc,m,s,u$; $j=mc,m,s,u$. The first RHS term represents the impact of the within-occupation inequality on the general income inequality. The second RHS term represents the inequality due to the cross-occupation differences in the average incomes. It can be seen that both the terms give a rise in inequality under the transition. First, it is because the income inequality in the market-led and household sectors is greater than that in the state-led sector, which is characterised by a more egalitarian distribution. So the growth of the sectors compared with the state-led sector leads to an increase in the first RHS term. Second, the gaps in income between the market-led, household and state-led sectors are expected to expand as the former develop. This means the second RHS term also increases.

However, for a short period, intra-sector changes in the Gini coefficient and ξ can be neglected, from (21) we can define income inequality on the basis of inter-sector differences in wage rates in a much simpler way.

$$(22) \quad GINI = \frac{1}{w} \sum_{i \neq j} (w_i - w_j) p_i p_j$$

In sum, the expansion of occupational choices is associated with changes in social welfare conditions under the transition. It appears that in the long-run the transition results not only in an increase in the level of general opulence but also a rise in inequality. The changes are closely linked with the emergence and development of the market-led sector. However, since the findings are based on the initial distribution of physical wealth, they reflect largely static changes in welfare, which are induced by the initial conditions of the transition. The dynamic aspect of changes in social welfare conditions under the transition is determined by household consumption choices and its wealth accumulation.

c. Consumption choices and welfare dynamics during the transition

The abolition of central planning in an egalitarian but low consumption economy and the introduction of market principles also expands people's consumption and investment choices. Moreover, new occupational choices create stronger incentives for accumulation of wealth, both physical and human. This sub-section develops the framework for exploring welfare dynamics in the transition in this perspective. It will show how choices among consumption, accumulation of physical wealth, and investment in human capital are determined and how they affect the dynamics of social welfare condition.

1) The preferences

From the demand side, let us consider the welfare dynamics of the representative worker, who may engage in any of the above-mentioned production sectors, and the representative capitalist. For simplicity, assume that each household in the economy comprises an adult and a child, who share the parent's attitude to risks. Obviously, the household's occupation does not change unless the accumulated

physical wealth reaches K^* . The life span of such a family can be considered as infinite.

Next, it is assumed that the representative household is concerned not only about consumption but also human development in terms of its capability for the functionings and beings it values (Sen 1982; Sen, Muellbauer et al. 1987; Sen 1992) such as leading a long, healthy, and knowledgeable life (UNDP 1990; UNDP 1995; UNDP 2000). In other words, the household also receives utility from obtaining and maintaining some set of human development indicators such as years of education, literacy, and life expectancy or avoiding human deprivations such as poverty and hunger, illness and malnutrition. For simplicity, I assume that the household utility function takes the following form¹⁰².

$$(23) \quad u_i = \gamma_i \ln c_i + (1 - \gamma_i) h$$

where c denotes the household consumption and h stands for an indicator of human development such as the household's average years of schooling. γ_i , $i=1, N$ is the weight assigned to consumption. The human development indicator can be easily extended to include other aspects of human well-being. It is easy to see that the utility function is a well-behaving function with $u'_c \geq 0$ and $u''_c \leq 0$.

The inclusion of the indicator of human development is an innovative attempt to reflect the increasing agreement in the literature that households are concerned about not only their consumption but also other aspects of their well-being, particularly those related to capability to lead a healthy and knowledgeable life (Sen 1985; Sen,

¹⁰² It is also possible to include disutility from labour in the household utility function. This will allow to consider the household's allocation of labour. Using the same methodology as described later, one will find out that the household will allocate its labour resources up to the point when the ratio between the disutility and generated income equals saving Tobin q . This result is comparable to that of Sen (1982) about the possibility of disguised unemployment. However, this issue appears not of a special relevance to the transition economy with abundant labour force and widespread unemployment and poverty.

Muellbauer et al. 1987). The utility function implies that households make their decisions about human development related expenditures such as education and preventive medicines, based not only on perspectives of future earnings as suggested by the human capital theory but also on their immediate utility effects. The form of the utility function is based on formulas of the well-known human development index (HDI) and other aggregated social welfare indicators such as human poverty index (HPI), which have been developed and published by the United Nations Development Programme (UNDP) and increasingly widely accepted since the early 1990s ¹⁰³. Indeed, the above utility function can be easily derived from the formula for HDI-like indexes (UNDP 1990; UNDP 1995) by taking off its constant term.

$$(24) \quad HDI = \mu_1 \frac{\ln x_{\max} - \ln x}{\ln x_{\max} - \ln x_{\min}} + \sum_{i=2}^n \mu_i \frac{z_{i,\max} - z_i}{z_{i,\max} - z_{i,\min}} = \gamma_1 \ln x + \sum_2^n \gamma_i z_i + C$$

where x denotes the indicator of opulence such as income or expenditure; z_i , $i=1, n$ stands for other human development indicators such as education (e.g. adult literacy and years of schooling) and health (e.g. life expectancy at birth). μ_i and γ_i are the weights assigned to indicator i . $\sum_1^n \mu_i = \sum_1^n \gamma_i = 1$

2) The worker

The primary source of workers' livelihood is their human capital, which represents their wage earning capability (Becker 1993). Since the concept of human development also encompasses the concept of human capital, the human development indicator reflects a worker's wage earning ability. Thus, the representative worker's income is the sum of her wage represented by the wage earning function $W_i(\bar{w}_i, h_i)$ of

¹⁰³ The development of the HDI also receives contribution and support from a number of leading academicians, particularly Sen A.

the average wage rate per her occupation and human development indicator h and the interest from her accumulated physical capital k_i (e.g. saving) ¹⁰⁴.

$$(25) \quad y_i = W_i(\bar{w}_i, h_i) + rk_i$$

where i denotes the sector in which the representative worker is engaged, $i=m,s$; l_i is her labour input measured by hours; and k_i is the physical capital the worker holds in period t ; $k < k^*$. \bar{w}_i is the sector's average wage for the period (since the household labour input is measured in terms of persons as before); and h_i is the indicator(s) of the human capital accumulated by the person; r represents the prevalent saving interest rate in period t . The worker is a price taker so that both \bar{w}_i and r are independent from her input of labour and her saving.

It is proposed that there is a linkage between human capital accumulation and the growth of production due to this factor. Let us think of h_i as the average level of human capital of workers employed in the occupation. Then the derivative from the wage earning function with respect to h_i , i.e. $W'_h(\bar{w}_i, h_i)$, represents the growth of the wage rate in sector i due to human capital accumulation (e.g. better educated and skilled labour force). On the other hand, the volume of the value-added product produced by sector i is proportional to coefficient A in the sector's production function (5). The coefficient is often thought to represent the effect of factors other than physical inputs. So, $W'_h(\bar{w}_i, h_i)$ shall be equal to the rate of change of A over time.

$$(26) \quad dA_i/dt = W'_h(\bar{w}_i, h_i)$$

This equation endogenises the coefficient A , which now is allowed to vary as a function of human capital accumulation.

¹⁰⁴ For convenience, when discussing household welfare, variables are expressed in the per-worker terms and denoted by small letters. As before the time notion is also dropped.

The first RHS term in (25) determines the worker's human wealth, i.e. income from her labour and human capital; and the second RHS term defines her income from holding the physical capital, i.e. physical wealth.

Secondly, with regards to human capital accumulation, following Becker (1993), I define the creation of human capital $\dot{h}_{i,t}$ in period t as a function of private expenditures $c_{h,i,t}$ for education and health, and the existing level of human capital. The idea is the higher level of human capital the greater amount is required for its maintenance and further growth¹⁰⁵. Denote the rate of depreciation of the household's human wealth as d_h , then the accumulation of human capital in period t is defined by the following equation

$$(27) \quad \dot{h}_{i,t} = \dot{h}_i(c_{h,i,t}, h) - d_h h_{t-1}$$

Thirdly, concerning the household's physical wealth accumulation, its growth \dot{k}_i in period t is determined by the household's disposable income net of consumption expenditures c_i , e.g. foods and entertainment, and human-capital-related expenditures c_h , e.g. expenses on education and preventive health care. Thus,

$$(28) \quad \dot{k}_i = (1 - \tau_o)[w_i + (r - d)k_i] - c_i - c_h$$

where τ_o denotes the income tax τ net public transfers T and is expressed in terms of percentages of the household pre-transfer income y_i ¹⁰⁶, i.e. $\tau_o = \tau - T$. d represents the

¹⁰⁵ Of course, public consumption G is also proposed to play an important role in human capital accumulation, particularly public expenditures on social services, such as education and health, and on supportive public physical infrastructure, such as infrastructure and communication. However, this issue is not addressed in this study. On one hand, there exists a close correlation between private and public expenditures for human capital. On the other hand, in the transition economies most household level data lack reliable information about the public expenditures.

¹⁰⁶ This short cut is also used by Chaudhri and Wilson (2000). Furthermore, the household welfare is also influenced by across-household private transfers. Cox (1987, 1995) indicates the importance of private transfers and the existence of the functional relationship between public and private transfers and a person's pre-transfer income. We will discuss this issue in section 333.

rate of physical capital depreciation. The population growth and borrowing are assumed to be equal to zero.

Finally, I assume the representative worker's household maximises its total intertemporal utility in the Keynes-Ramsay infinite horizon framework by choosing its consumption, expenditures for human capital development, and, thus, also saving.

$$(29) \quad \max_{c, c_h > 0} \int_0^{\infty} e^{-\rho t} [\gamma_1 \ln c + (1 - \gamma_1)h] dt \quad \text{subject to (27)-(28)}$$

To solve this optimisation problem, set up the current value Hamiltonian and transversality conditions, using costate variables q_k and q_h ¹⁰⁷

$$(30) \quad H = e^{-\rho t} [\gamma_1 \ln c + (1 - \gamma_1)h] + q_k e^{-\rho t} \{ (1 - \tau_a)[w + (r - d)k] - c - c_h \} + q_h e^{-\rho t} \dot{h}$$

$$(31) \quad \lim_{t \rightarrow \infty} q_k k_t e^{-\rho t} = 0$$

$$(32) \quad \lim_{t \rightarrow \infty} q_h h_t e^{-\rho t} = 0$$

The necessary and sufficient conditions for the maximum are

$$(33) \quad H'_c = \gamma_1 e^{-\rho t} / c - q_k e^{-\rho t} = 0 \quad \Rightarrow c = \gamma_1 / q_k$$

$$(34) \quad H'_{c_h} = -q_k e^{-\rho t} + q_h e^{-\rho t} \dot{h}'_{c_h} = 0 \quad \Rightarrow q_k = q_h \dot{h}'_{c_h}$$

$$(35) \quad \begin{aligned} d(q_k e^{-\rho t}) / dt &= q'_k e^{-\rho t} - \rho q_k e^{-\rho t} = -H'_k = -q_k (1 - \tau_a)(r - d) e^{-\rho t} \\ \Rightarrow q'_k &= q_k [\rho - (1 - \tau_a)(r - d)] \\ \therefore q_k &= \exp \left\{ \int_0^{\infty} [(1 - \tau_a)(r - d) - \rho] ds \right\} \end{aligned}$$

$$(36) \quad d(q_h e^{-\rho t}) / dt = q'_h e^{-\rho t} - \rho q_h e^{-\rho t} = -H'_h = -(1 - \gamma_1) e^{-\rho t} - q_k (1 - \tau_a) w'_h e^{-\rho t}$$

Substituting (34) into (36) to eliminate q_k in the equation gives

$$(37) \quad \begin{aligned} \Rightarrow q'_h &= \rho q_h - q_h (1 - \tau_a) w'_h \dot{h}'_{c_h} - (1 - \gamma_1) \\ \therefore q_h &= \exp \int_0^{\infty} [(1 - \tau_a) w'_h \dot{h}'_{c_h} - \rho] ds - \int_0^{\infty} (1 - \gamma_1) ds \end{aligned}$$

¹⁰⁷ In fact, q_k is identical to Tobin's q . Here and after, subscriptions are dismissed for simplicity.

Equations (35) and (37) define the dynamics of the accumulation of the household's physical and human wealth, thus, also the household's welfare dynamics. The accumulation of physical capital depends on the value of Tobin's q_k in (35). According to the equation, Tobin's q_k represents the shadow price of a dollar of saving in terms of consumption goods. When q_k is greater (less) than 1, the value of a dollar of saving is greater (less) than its present time discounted value and the worker would prefer saving (de-saving) to present consumption and *vice versa*. When $q_k=1$, the worker consumes all her income net of depreciation and her stock of physical capital is stable. From (35), the condition for equilibrium of the worker's physical wealth accumulation is as follows

$$(38) \quad \tau_o = 1 - \frac{\rho}{r - d}$$

Thus, the income tax policy affects not only workers' current welfare but through saving also their future occupational choice and income. When the stock of the physical wealth reaches K^* the worker can choose to become a capitalist or engage in traditional household sector. In the opposite case, the existing capital stock is de-accumulated and the worker has no chance to move up and take another occupation.

The distinctive feature of this model is that it also considers the other path of long-term changes in the worker's welfare, which is related to her accumulation of human capital. Equation (37) shows that q_h is the shadow price of a dollar spent to develop human capital in terms of consumption goods net of the total utility from the incremental increase in human capital. Similar to the case of saving, when q_h is greater than 1, investment in human capital is preferred to the current other consumption and the worker would spend a certain amount of her disposable income on education and

preventive health care, *etc.* However, an increase in the income tax (transfers) also discourages (encourages) the investment into human capital. So, her investment into human capital can be defined as the inverse function of q_h , $\phi_{q_h} > 0$ and $\phi(1) = 0$.

Substituting (34) into the first equation of (37) to eliminate q_h gives the expression of the marginal increase in income as a result of the investment on human capital for the equilibrium path in human capital accumulation

$$(39) \quad w'_h \dot{h}'_{c_h} = \frac{q_k \rho - (1 - \gamma_1) \dot{h}'_{c_h}}{q_k (1 - \tau_a)}$$

The household expenditures on human capital, e.g. education and preventive health care, can be defined from (37)

$$(40) \quad c_{h_t} = \phi(q_h) = f(\gamma_1, \rho, \tau_a, q_k, w'_h, \dot{h}'_{c_h})$$

According to (33), the dynamic of household's consumption is adversely proportional to the value of q_k and is constant along the physical capital equilibrium path.

It is more usual to express dynamics of the household's consumption through its change over time. Note that for utility function (23) the elasticity of marginal utility with respect to consumption $\delta_c = -u'_c / cu''_c = 1$. Substituting the ratio of the differential of (33) in respect to time and the expression to (35) gives the growth of consumption between two consecutive periods

$$(41) \quad \begin{aligned} \dot{c}/c &= \delta_c [(1 - \tau_a)r - \rho] \\ \Rightarrow c_t &= c_{t_0} \exp \left\{ \frac{1}{\delta_c} \int_0^t [(1 - \tau_a)r - \rho] ds \right\} \end{aligned}$$

where c_{t_0} denotes the household consumption in the initial period t_0 .

So the growth of consumption is positively influenced by the interest rate and the marginal return for investment in human capital; and negatively influenced by the

net income tax rate. With regards to the total life span consumption, according to the transversality conditions (32)-(33), both physical and human wealth would be equal to zero in the infinity, so the total household consumption is the sum of the present values of its current income, the stream of income from its initial stock of physical capital, and streams of income due to changes in the stocks of physical and human capital

$$(42) \quad \int_0^{\infty} c_t e^{-\int_0^t r_v dv} dt = (1 - \tau_a) \left[\int_0^{\infty} w_{t_0} e^{-\int_0^t r_v dv} dt + \int_0^{\infty} r k_{t_0} e^{-\int_0^t r_v dv} dt + \right. \\ \left. - \int_0^{\infty} w'_h \dot{h}'_{c_h} l e^{-\int_0^t r_v dv} dt - \int_0^{\infty} r \dot{k}_t e^{-\int_0^t r_v dv} dt \right] = \bar{c}_{t_0} + (1 - \tau_a)(w_t + k_t)$$

3) The capitalist

Concerning the representative capitalist, let us suppose she invests all of her saving into the production function for income, so that her problem of maximisation of intertemporal utility is as follows, given (12)

$$(43) \quad \max_{c, c_h > 0} \int_0^{\infty} e^{-\rho t} [\gamma_1 \ln c + (1 - \gamma_1) h] dt \quad \text{subject to}$$

$$(44) \quad \dot{k} = \beta_m(.) k_m^{\frac{\varepsilon_{m3}}{1 - \varepsilon_{m2}}} - dk - c - c_h$$

The current value Hamiltonian and transversality condition of this problem is as follows (with costate variables q_k and q_h).

$$(45) \quad H = e^{-\rho t} [\gamma_1 \ln c + (1 - \gamma_1) h] + q_k e^{-\rho t} [\beta(.) k^{\frac{\varepsilon_{m3}}{1 - \varepsilon_{m2}}} - dk - c - c_h] + q_h e^{-\rho t} \dot{h}_{c_h}$$

$$(46) \quad \lim_{t \rightarrow \infty} q_k k_t e^{-\rho t} = 0$$

$$(47) \quad \lim_{t \rightarrow \infty} q_h h_t e^{-\rho t} = 0$$

The necessary and sufficient conditions for the maximum are

$$(48) \quad H'_c = \gamma_1 e^{-\rho t} / c - q_k e^{-\rho t} = 0 \quad \Rightarrow c = \gamma_1 / q_k$$

$$(49) \quad H'_{c_h} = -q_k e^{-\rho t} + q_h e^{-\rho t} \dot{h}'_{c_h} = 0 \quad \Rightarrow q_k = q_h \dot{h}'_{c_h}$$

$$\begin{aligned}
 d(q_k e^{-\rho t})/dt &= q'_k e^{-\rho t} - \rho q_k e^{-\rho t} = -H'_k = -q_k e^{-\rho t} \left[\beta(.) \frac{\varepsilon_{m3}}{1-\varepsilon_{m2}} k^{\frac{\varepsilon_{m3}-1}{1-\varepsilon_{m2}}} - d \right] \\
 (50) \quad \Rightarrow q'_k &= q_k \left[\rho + d - \beta(.) \frac{\varepsilon_{m3}}{1-\varepsilon_{m2}} k^{\frac{\varepsilon_{m3}-1}{1-\varepsilon_{m2}}} \right] \\
 \therefore q_k &= \exp \left\{ \int_0^\infty \left[\beta(.) \frac{\varepsilon_{m3}}{1-\varepsilon_{m2}} k^{\frac{\varepsilon_{m3}-1}{1-\varepsilon_{m2}}} - d - \rho \right] ds \right\}
 \end{aligned}$$

$$\begin{aligned}
 d(q_h e^{-\rho t})/dt &= q'_h e^{-\rho t} - \rho q_h e^{-\rho t} = -H'_h = -(1-\gamma_1) e^{-\rho t} \\
 \Rightarrow q'_h &= \rho q_h - (1-\gamma_1) \\
 (51) \quad \therefore q_h &= \exp \left\{ \int_0^\infty (-\rho) ds - \int_0^\infty (1-\gamma_1) ds \right\}
 \end{aligned}$$

The value of Tobin's q_k in equation (50) defines the investment in the production function, but not merely the private saving. When q_k is greater than 1 the investment into the sector is preferred. The inspection of the equation shows that q_k is a monotonic decreasing function of capital since $\alpha_m < 1$ ¹⁰⁸. Therefore, the condition for the market-led sector's equilibrium, i.e. $q_k=1$ is as follows

$$(52) \quad k_I = \left[\frac{\beta(.) \varepsilon_{m3}}{(\rho + d)(1-\varepsilon_{m3})} \right]^{\frac{1-\varepsilon_{m2}}{1-\varepsilon_{m3}}}$$

The growth of the capitalist's consumption is

$$\begin{aligned}
 \dot{c}/c &= \delta_c [(1-\tau_a)r_m - d - \rho] \\
 (53) \quad \Rightarrow c_t &= c_{t_0} \exp \left\{ \frac{1}{\rho} \int_0^\infty [(1-\tau_a)r_m - d - \rho] ds \right\}
 \end{aligned}$$

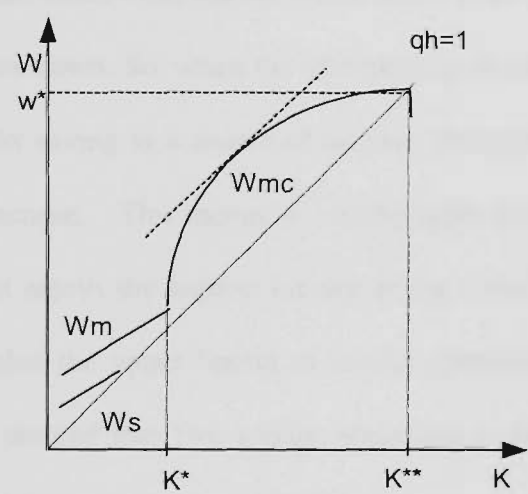
4) Dynamic changes in social welfare conditions

The above study of the household choice of consumption and investment in physical and human capital provides a number of important conclusions about the dynamics of social welfare conditions under the transition.

¹⁰⁸ Strictly speaking, given here k is expressed in the per worker term, this requires also another assumption that $k > 1$, which is always satisfied with appropriate selection of numerator.

Firstly, it can be shown that despite dramatic changes, the income and physical wealth accumulated by the representative capitalist corresponding to the equilibrium of the sector's physical capital accumulation represents the upper bound of wealth distribution in the economy. Indeed, according to (50), capital assets in the market-led sector converges to a certain level k^{**} . According to (52), when the asset is $k^* \leq k < k^{**}$, as $q_k > 1$ the representative

Figure 3. Welfare dynamics of capitalists compared with others



Legends: W_m , W_s are earnings by the representative capitalist, market-led sector's worker and state sector's worker, respectively.

capitalist invests all her capital into the stochastic production function (1). Given other conditions remain the same, when $k \geq k^{**}$, $q_k \leq 1$ and, thus, further investment in the sector is not preferred anymore. In the other works, k^{**} represents the upper bound of the capital, which can be employed in the market-led sector under technology (1). Since the capitalist earns the product of capital, her income w^* corresponding to k^{**} also represents the maximal income the capitalist can get from business.

Let us consider if saving can be the other source of her income¹⁰⁹. It appears that when $q_k \leq 1$ the capitalist may start accumulating physical wealth other than investment in the production function. However, in this case she is driven by concerns other than the saving interest rate. Firstly, in the long run the prevailing interest rate is equalised with the market-led sector's marginal product of capital. Secondly, if there exists a difference between the prevailing interest rate and the marginal product of

¹⁰⁹ Ferreira (ibid) suggests that there two groups of entrepreneurs, namely those with capital $k^* \leq k \leq k_l$; and those with $k > k_l > k^*$.

capital, e.g. due to the imperfect capital market, the difference shall be in favour of investment in the production function. Otherwise, capital would move from production to the bank and bring the interest rate down. So, when the entrepreneur stops investing in the sector, she also does not prefer saving as a source of income. Therefore, we can neglect saving as a source of her income. This means w^{**} is the upper bound of the capitalist's income. As the capitalist enjoys the highest income in the economy, given the same other conditions, w^{**} is also the upper bound of wealth distribution in the economy. Thus, capitalists can be divided into two groups according to the level of their accumulated capital. Their wealth can be presented as follows

$$E(w_{mc} | k_{mc} < k^{**}) = w_{mc} + k_{mc} < w^{**}_{mc} + k$$

$$E(w_{mc} | k_{mc} \geq k^{**}) = w^{**}_{mc} + k^{**} + \sum_t (w^{**}_{mc} - c_{mc})$$

Secondly, the welfare dynamics of workers can vary broadly due to accumulation of physical and human capital (particularly, depending on if the values of q_k and q_h are greater, equal or less than 1). However, the accumulation does not completely alter static comparative welfare statistics among occupations. Indeed, based on (42) wealth equations for workers in the economy can be written as follows

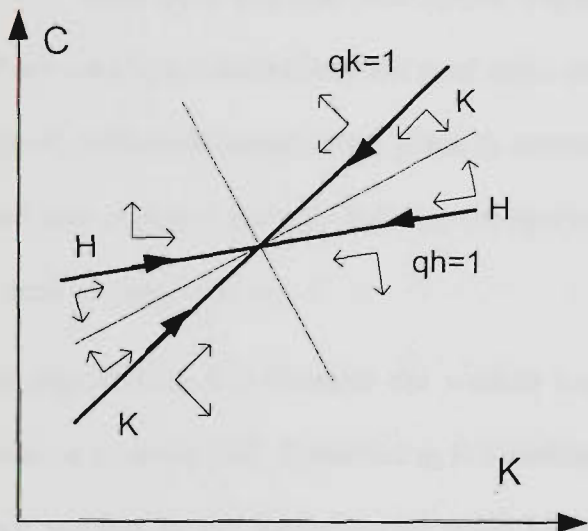
$$\text{For workers in the state-led sector: } W_{s,t} = W_{s,0} + \Delta k_{s,t} + \Delta w_{s,t} \quad ; \quad k_{s,t} < k^{*}$$

$$\text{For workers in the market-led sector: } W_{m,t} = W_{m,0} + \Delta k_{m,t} + \Delta w_{m,t} \quad ; \quad k_{m,t} < k^{*}$$

where $W_{.,0}$ and $W_{.,t}$ denote the worker’s wealth in initial period 0 and current period t ; $\Delta k_{(.) ,t}$ and $\Delta w_{(.) ,t}$ stand for growth of physical and human wealth due to their accumulation up to period t .

As shown by (35)-(40) the accumulation depends on the value of q_k and q_h , particularly if the values are greater, equal or less than 1. (38)-(39) indicate the existence of the saddle solution for worker’s problem of physical

Figure 4. Welfare dynamics of workers



Legends: C: consumption; K: savings; KK: stable path for physical wealth; HH: that of human capital accumulation.

and human wealth accumulation. The saddle solution is illustrated in Figure 4 and possible dynamics are summarised in Table 2.

Table 2. Taxonomy of welfare dynamics of workers

		q_k		
		<1	$=1$	>1
q_h	<1	G1. $\downarrow k \downarrow h$	G2. $k \downarrow h$	G3. $\uparrow k \downarrow h$
	$=1$	G4. $\downarrow k \quad h$	G5. $k \quad h$	G6. $\uparrow k \quad h$
	>1	G7. $\downarrow k \uparrow h$	G8. $k \uparrow h$	G9. $\uparrow k \uparrow h$

Compared with the initial welfare condition, workers in the two sectors can be better off through saving if $q_k > 1$ (three options in the last column) or through human capital accumulation if $q_h > 1$ (three options in the last row). On the contrary, they can be worse off due to de-saving, i.e. $q_k < 1$ (three options in the first column). Their welfare is definitely improved when either accumulation of physical wealth or accumulation of human capital takes place and the other is in equilibrium (i.e. options G6 and G8) or increases (option G9). Their welfare definitely deteriorates when there is either de-saving or a decrease in human capital when the other is in equilibrium

(options G4 and G2) or both capital decrease (option G1). The welfare dynamic is in the global equilibrium in case G5 when both physical and human capital do not alternate. Situations G3 and G7 are somehow unambitious and need more information for justification. Which typology of welfare dynamics takes place in respect of each occupation group can be defined and explored only by building an applied general equilibrium model. This will be done in Chapter 6.

Further, accumulation of capital does not alternate the welfare comparative statics between the two sector because equation (35) shows that q_k is invariant to sector characteristics¹¹⁰. However, since workers in the market-sector enjoy higher wages, they save more than those in the state-led sector.

Equation (37) shows that q_h is influenced by a sector's wage level and wage function. Given the same other conditions, the sector with the higher rate of return to human capital (i.e. W'_h) encourages more intensive human capital accumulation among its workers, leading to increasing income and accelerated accumulation.

The above indicates that although the accumulation of physical and human wealth can change the level of income and wealth in a particular occupation (i.e. through changing the individual wage rate or saving interest), the accumulation cannot change the comparative welfare statics across occupations, unless the amount of accumulated physical wealth is sufficient to allow the alternation of occupation to take place. This implies that (19) holds during the whole transition period.

B. Effects of the transition

The above model allows us to consider the SWC impacts of the transition from the centrally planning system to a market-oriented economy. The central piece of the

¹¹⁰ Assuming time preference coefficient is the same across sectors.

transformation includes economic liberalisation (i.e. abolishing restrictions imposed by the centrally planning system), ownership reform, and the restructuring ¹¹¹. The transition often produces adverse reorganisation/disorganisation due to the replacement of the pre-transition relationship between economic agents by a new one. The more developed and the centralised pre-transition economy and the shorter the replacement period, the more adverse the impact will be. However, this short-time effect appears small in the case of countries, which take a gradual transition approach, and, thus, can be incorporated into the effects of abolishing the centrally planning restrictions. Stabilisation and introduction of macro policies are important measures but not distinctive features of the transition.

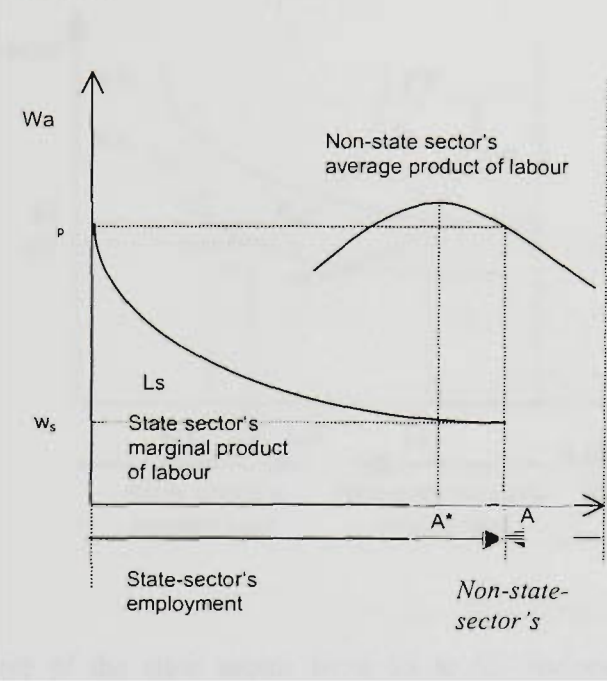
a. Effects of economic liberalisation

In the pre-transition economy, there exist two sectors, namely the state-led sector and household economy, operating as a pre-mature non-state sector. The economy was dominated by the state-led sector. However, the non-state sector was more efficient as the state-led sector lacks incentives. So, without restrictions only the private good would be produced. The restrictions were severe and took many forms.

¹¹¹ According to Blanchard, the transition produces its impact through four channels, namely reallocation of resources, disorganisation, restructuring, and introduction of macro policies. See Blanchard, O. (1997).

Characteristics of the pre-transition economy in respect to the real wage are illustrated in Figure 5. With the real wage and employment rates in the sectors indicated on the vertical and horizontal axes, respectively, the demand for labour by the state-led sector *SS* is measured from

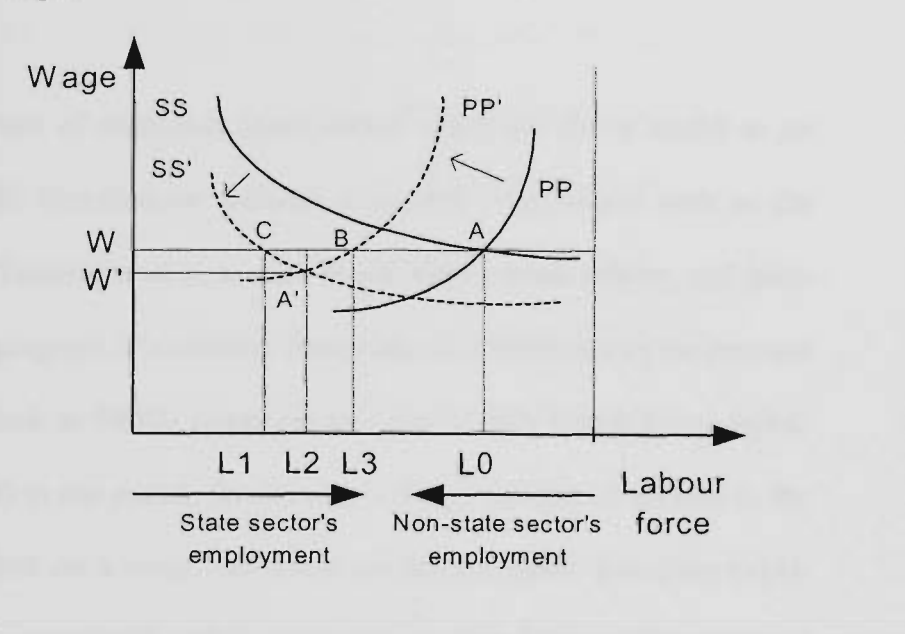
Figure 5. Two-sector equilibrium in a pre-transition economy



left to right and that of the non-state sector denoted as *PP* does from right to left on the horizontal axis. *L_s* is an increasing function of wages. In contrast, the labour demand in the household economy is defined by the average product of labour. The pre-transition equilibrium is shown at point *A*, where there is no unemployment; the real wage in the state equals *w_s*; and that in the non-state sector is *w_p*. Without restrictions, the equilibrium would move leftwards to point *A**, increasing employment and wages in the non-state sector.

Let us consider the impact of economic liberalisation, which is illustrated in Figure 6. Firstly, the liberalisation allows the market determination of price and reallocation of resources from the less efficient state sector to the more efficient market-led sector. This shifts the demand for labour in the market-led sector (curve

Figure 6. Effects of removing restrictions on employment and wages



may decline for some time at the early stage of the reform transition process, is still in force.

Consider the impact of economic liberalisation using the above model as an analytical tool. Economic liberalisation includes a number of measures such as the abolition of the central planning system, market liberalisation, trade reform, and price and fiscal reforms. The progress of economic liberalisation is reflected by an increase in transition indicators such as EBRD transition index or Melo's liberalisation index. According to equation (3) in our model, this increases the probability of success in the emerging market-led sector. As a result, the sector production grows according to (4). Expanding production is associated with an increasing wage rate, employment and income of both workers and entrepreneurs (see equations (5)-(11)). On the other hand, the development of the market-led sector extracts resources from the state-led sector, leading to a reduction of its production, employment and therefore the real wage.

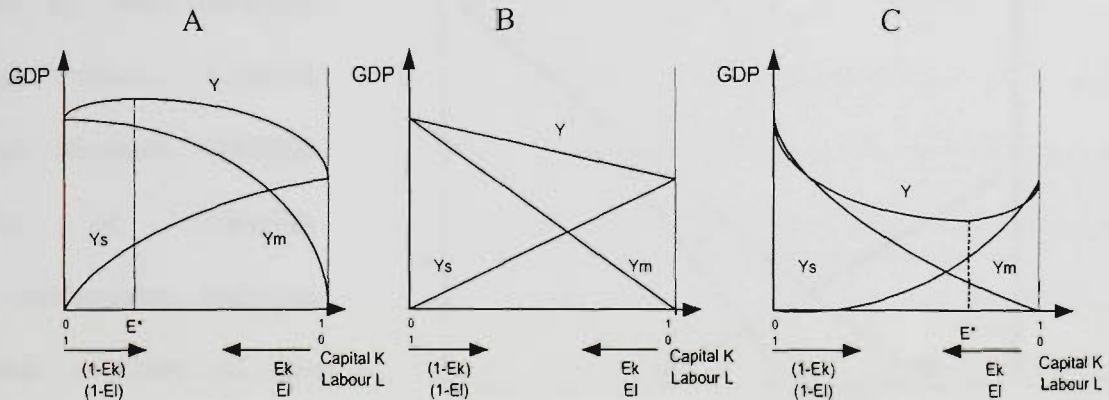
It can be shown that in the transition economy, economic liberalisation unambiguously increases income of workers and entrepreneurs in the market led sector. This important finding comes directly from (5)-(11), where the indicator of the progress of the transition (e.g. EBRD indicator) is proposed to enter as coefficient α^{ϵ_1} . Since $0 < \epsilon^{\beta} < 1$, $0 < \alpha \leq 1$ and $\epsilon_{m1} \geq 0$, an increase in ϵ results in the growth of earning in the sector. Further, as the indicator also enters the sector's labour demand (8), the progress of market liberalisation also positively influences the level of employment in the market-led sector. The impact of market liberalisation will be explored in detail in chapter 6.

b. Effects of the ownership reform

In the transition economy, ownership reform means transforming state- and cooperative- capital into other more effective forms of ownership, recognising property rights. Transition often starts by the alternation of ownership over a large portion of production capital available in the economy. The ownership reform plays a crucial role in the transition since it changes the endowment situation and relations in the society and serves as the basis for the formation of the new incentive system and market-based relations within the economy. In the countries, which adopted the gradual transition strategy, such as China and Vietnam, the overall ownership reform appears to be a long process. However, some critical steps, such as the elimination of the cooperative control over agricultural land and land reallocation to peasantry, took place at the very beginning and, in fact, created the momentum necessary for the whole reform process.

The potential effects of the ownership reform are illustrated in Figure 7 where level of output is indicated on the vertical axis, the shares of the non-state sector in the total capital ε_K and labour ε_L are measured from right to left and those of the state sector do from left to right on the horizontal axis. It assumes that with other variables constant, ownership reform reallocates increasing shares of resources from the state sector to the more efficient non-state sector. This results in the decrease in the production of the state sector and the expansion of the non-state sector. However, the dynamics of the sectors' development determines the effect of ownership reform on the total production. Figure 7A and Figure 7B represent the cases when production in the non-state sector grows rapidly and compensates for the decrease in the state sector. In contrast, Figure 7C shows the case when the non-state sector is unable to grow fast enough to cover the decrease in the state sector, resulting in a short-term fall in the total product. The exact behaviour of the total product depends on parameters of the ownership sectors and represents an interesting subject of empirical studies.

Figure 7. The dynamics of total production relative to the non-state sector's shares in total capital and labour

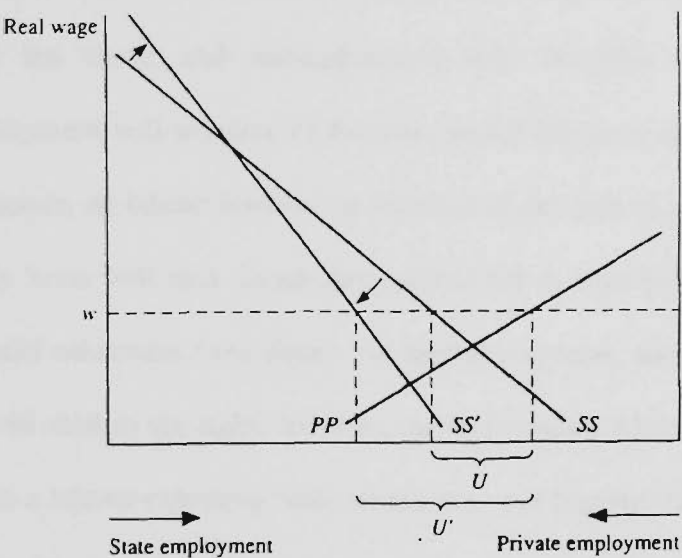


In the transition economy, the ownership reform unambiguously increases income of workers and entrepreneurs in the market led sector, but decreases that of workers in the state-led sector. The proof comes directly from (5), (8) and (11) where capital enters the equation's numerators. As the ownership reform transfers physical wealth from the state-led sector to the market-led sector, it reduces the former's capital while increasing the latter's capital. Since the sector's wage rate and employment are positively influenced by capital, both workers and capitalists are better off from ownership reform. In contrast, as capital in the state-led sector is reduced, its wage and employment is also decreases. The welfare effects of ownership reform will be studied quantitatively in chapter 6.

c. Effects of restructuring

The transition, particularly at its late stages, is also accompanied by more in-depth restructuring, which involves technological changes. Though improvement of economic efficiency, restructuring reshapes the economic structure of the economy and, thus, plays an increasing role in the long run. This particularly concerns the state

Figure 8. Effects of state sector's restructuring



Source: (Blanchard 1997)

sector, whose low effectiveness has been well documented, but it is also a critical problem in the non-state sector due to the opening up of the economy and increasing competition with external producers. There is a long list of measures to be conducted, starting from redefining product lines, closing ineffective production facilities and laying off workers, reducing labour hoarding and excessive inventory, renewing capital assets and introducing new managerial and incentive systems to fit the changes of ownership. Understandably, employment in a sector would decrease if technological progress is labour-saving and the elasticity between capital and labour is sufficiently low (Blanchard 1997).

Figure 8 illustrates the effect of restructuring via technological change in the state sector. The labour demand curves of the state sector SS and non-state sector PP are drawn as after the elimination of taxes and subsidies, and unemployment is equal to U. Assume that the restructuring involves the introduction of a new labour saving technology and increases the return on labour in the state sector. As long as the

elasticity of substitution between capital and labour is low, the effect of restructuring will be to twist labour demand from SS to SS'. State employment will decrease, private employment will remain the same, and unemployment will therefore increase. However, over time, employment will increase in the state sector because, at a given real wage, an increase in return on labour leads to an increase in the rate of return on capital in state firms. State firms will thus accumulate capital (or at least accumulate more capital than they would otherwise have done). As capital increases, the demand for labour by state firms will shift to the right, reducing unemployment. Alternatively, should the sector undertake a labour-extensive path, which may not happen due to the lack of incentives among its management and easy access to capital, the labour demand curve SS will twist anti-clockwise and to SS'', resulting in growth of production, labour and return to capital. The latter will shift the curve further rightwards in the next business cycle. As a result the employment and production will rise. Similar effects will be produced if the restructuring process takes place in the non-state sector with the only exception that the latter, which is affected from the lack of capital, tends to incline towards the labour-intensive technology more than the state sector.

It can be seen that in the transition economy, the restructuring improves the welfare of those workers who remained employed after restructuring and may not affect welfare of the retrenched. As analysed in Section 3.3.2.A.b.1.3, there is an important two-way relationship between restructuring and unemployment. At a given real wage, restructuring leads to an increase in productivity and in output, but also often results in a reduction in employment, which may then increase gradually. If the reduction in employment in one sector is not covered by the other sector, restructuring creates higher unemployment for some time. But high unemployment in turn may lead to strong opposition to restructuring since workers or managers who feel they may lose

their job as a result of the restructuring will oppose it unless adequately compensated. The higher the unemployment rate and lower unemployment compensation, the stronger will be their opposition and that may be in position to prevent restructuring, especially in the case of the state sector, which faces with soft budget constraint and, thus, decision on the restructuring is carried out by insiders.

d. Effects of macroeconomic policies

The effect of macroeconomic policies during the transition has been a subject of intensive debates for decades. There is a general consensus that the policies work together and it is often difficult to separate their effects. There is the commonality between the set of macro policies applied by the transition economies and by other countries, which undertake economic reform. However, in a transition economy the impacts of some monetary and fiscal policies may be quite different and more complex than those in an established market economy. In particular, at the early stage of the transition, stabilisation measures often lead to high inflation, which is likely to have adverse effects on output. However, the evidence shows that a tighter exchange rate, monetary, and fiscal policies tend to give a smaller output decline and a stronger/weaker output recovery. The other reason specific to transition economies is that the macroeconomic policies are likely to affect sectors differently influenced by the behaviour of the state sector.

However, the model focuses primarily on specific issues of welfare policy, namely redistribution through public transfers, which are directly related to social welfare conditions.

household's utility since the former have a higher level of consumption and the utility function (23) has negative second differential in respect of c . This serves as the justification for the government redistribution policy and the SWS in general.

In summary, this section has developed a model of the SWC in the transition economy from the viewpoint of occupational and consumption choices. The model attempts to quantify impacts of the transition on SWC through the following four channels. Firstly, the transition expands people's occupational choices, leading to changes in factor deployment and rewards. Secondly, it varies relative prices, affecting choice for production, exchange, and consumption, i.e. p . Thirdly, it amends people's choice of consumption and investment, encouraging their accumulation of physical and human wealth, which leads to changes in their incomes and welfare. Finally, the transition amends redistribution policies such as taxes and public transfers, which affect household welfare. A theoretical exploration of some properties of the model shows that the approach and model, in particular, is able to capture a number of essential changes in SWC during the transition. The major conclusion of the theoretical exploration is that in the long run the transition improves people's opportunities both in terms of freedom of choices and opulence but is probably associated with increasing risks and inequality. However, in the short-run, it may cause production contraction and worsening SWC, depending on the initial conditions and the transition policies. The novelty of the model is that it has extended the social choice and human development approaches to explore quantitatively both static and dynamic aspects of the SWC in the transition economy, that will be explored in detail in Chapter 6.

3.3.3 Model of social welfare system and its comparative statistics

The study framework described in Section 3.2 recognises the important role of both public and private arrangements for SWC in the transition economy. However, the above-mentioned model addresses primarily SWC and their interaction with public SWS through public transfers. It appears that without further complications, insights into changes in the social welfare system cannot be obtained, particularly those related to people's choices between public and private arrangements and changes in the provision of social services during the transition (e.g. targeting). Given the availability of data from the household living standards surveys in 1993-94 and 97-98, an econometric model appears more appropriate for studying the SWS. This section focuses on laying down the theoretical basis for developing the econometric model of the SWS in the developing transition economy, taking into account the important role of private transfers and their interactions with public transfers.

The key for the further analysis of the social welfare system is to consider it as a dynamic process consisting of the three following stages, namely household preliminary allocation of resources, social welfare maximisation, and household adjustment based on the outcome of the second stage. In the first stage, households maximise their intertemporal utility based on their own resources and the information they have about the potential external resources, which may be provided to them, e.g. through the social welfare system. In the second stage, social welfare programmes and private donors are also involved to maximise social welfare through public and/or private transfers. The former involves the redistribution of income from donor households to recipient ones via

social welfare programmes, which may imply both enforced (e.g. taxes) and voluntary contributions. On the other hand, the latter constitutes voluntary and direct redistribution among households. In the third stage, households adjust the preliminary allocation of their resources, taking into account the transfers. The sequence of events is due to asymmetric information: the information about household preference and resources are most accessible and accurate (and also involve lowest cost) at the household level itself than at inter-household and public domains. On the other hand, smaller cost of information allows households to undertake more frequent and flexible allocative decision making and adapt to the transfers, but not *vice versa*. So it is in interest of the rest of society to close the model not by simultaneous solving the utility maximisation problem but through consecutive processes¹¹². This strategy shall lead to a Nash equilibrium, since otherwise consumption and utility of both sides will be negatively affected.

Let us start by considering the social welfare system in a low-income transition economy. As mentioned above, the system relies on both public and private transfers (in cash and in-kind). Public transfers play an important role in almost social welfare programmes in a transition economy. This is obvious for social assistance programmes, which are the public means for transferring income from the richer to the poorer. Secondly, public transfers also represent an essential part of social insurance in the transition. This is because under the centrally planned economy, social insurance payments were financed from the state budget but not from workers' contributions. Thus,

¹¹² Similarly, Bestley (1997) proposes a two-step minimax solution in the case of a model of poverty reduction programmes.

under the old regime, self-financing social insurance funds did not exist and workers earned only the entitlement to social insurance payments but not actual amount they may receive. In practice, in all transition economies, especially in the early stage of the transition, pension and health insurance – the two biggest social insurance programmes – rely on transfers from the state budget to pay benefits to former government employees, who constitute their main beneficiaries. As a result, social insurance programmes can also be viewed best as the means for transfers from the working to the non-working. Finally, governments play an important role in social welfare programmes in a transition economy. Indeed, governments do not only steer but also directly manage and even deliver almost social welfare programmes, which serve as important tools actively used by the former to achieve their socio-economic and political objectives. As the transition progresses, there is an increasing role for the public in defining the social welfare programmes, which is expressed in policy formulation but also the involvement of emerging non-government organisations in programme implementation and fund mobilisation.

On the other hand, direct transfers between people, i.e. private transfers have proved to play a very important role in a transition economy, especially in the case of a developing country (Cox and Jimenez 1995; Cox, Fetzer et al. 1998). They constitute an important part of the traditional mechanism of income security and mutual help. Despite recent developments, Vietnam is still a traditional society and many workers in the modern sector or urban centre send a part of their income to support their parents and relatives in the extended family. However, the transition introduces fundamental changes

in economic and social life, which are found to cause erosion in the traditional mechanisms.

Public and private transfers often interact. This is because both the public transfer programmes and private donors desire to achieve their welfare targets with minimal cost and minimise their financial burdens. The social welfare system under central planning and even many centrally managed and delivered social welfare programmes under the transition often fail to do this due to high cost of information needed for central decision-making. However, in general under the transition there is an increasing tendency towards social welfare programmes, particularly decentralised, community based programmes, which take into account both prevalence and size of private transfers to define their potential beneficiaries and benefits, and *vice versa*. However, there does not exist a comprehensive model of such as a system. Perhaps, it is not obvious that comparative statistics of the system can be identified with some minimal assumption.

Thus, in general a social welfare system can be presented in the form of a social welfare maximisation problem¹¹³

$$(55) \quad \underset{\tau_i, T_i}{\text{Maximise}} \quad W = f(u_1, u_2, \dots, u_i, \dots, u_n)$$

where $u_i = U_i(c_i, \tau_i, T_i)$ denotes household utility, which in the context of the social welfare system can be presented as a function of the household consumption c_i , net public transfers τ_i , i.e. the public transfers it receives minus taxes it pays, and the net private transfer T_i , i.e. the transfers it receives directly from other households net the transfers it

¹¹³ Equally, the problem can be presented in its dual form as the minimisation of the cost of achieving social welfare objective(s) Ibid..

gives to other households. Assume that all taxes are used for financing public transfers. Thus, households can be divided into two groups, namely, recipients and donors, for whom τ_i (or T_i) is positive (or negative).

In the next subsection, the model will be further specified, largely based on the framework proposed by Bernheim, Shaleifer et al. (1985); Cox (1987); and Cox and Jakubson (1995) for private transfers.

A. Public transfers

Accordingly, in contrast with other theories, e.g. Bestley (1997), it is proposed that the government may be purely benevolent and without self-interest. Thus, public transfers can be driven not only by altruistic but also exchange motivation. The main idea is that although donors, presented by the government, care about the welfare of recipients they may not be purely altruistic and Becker's "rotten kid theorem" (Becker 1974) may not hold. In the other words, the former gets utility from the services, which recipients provide in return for the transfers. In terms of political economy, the services may be understood as the interest/benefit that the government wants from recipients of public transfers, e.g. the recipient's support to transition policies, or their participation in the community life¹¹⁴ or the behaviour that the government prefers. In financial terms, the services may be understood as the net present value of the taxes that the recipients have to pay in the future.

Consider the following model, in which the government maximises social welfare, which comprises utility of the representative recipient V and utility of the rest of

¹¹⁴ As the participation requires a certain level of welfare.

society U_d . The former enters utility function U_d because the rest of society takes care of the former. For simplicity, also assume the absence of both borrowing and saving¹¹⁵. The social welfare function (55) can be presented as follows

$$(56) \quad U = U(U_d(c_d, s, V(c_r, s)), V(c_r, s)) = U(c_d, s, V(c_r, s))$$

where c_r and c_d stand for consumption of the representative recipient and the rest of society; s is the service the former provides to the latter in return to the transfers. Or

$$(57) \quad U = U(I_d - T - \tau, s, V(I_r + T + \tau, s))$$

where I_r and I_d denote pre-transfer income of the representative recipient and the rest of society; τ is the amount of public transfers to the recipient from the rest of society. T is that of private transfers and considered as exogenous at this stage. We assume without affecting generality that T is also positive for the recipient of public transfers. The rest of the society minds about the recipient's well-being (i.e. $\partial U_d / \partial V_r > 0$) and enjoys the latter's services (i.e. $\partial U / \partial s > 0$). As usual, assume the recipient gets disutility from the services (i.e. $\partial V_r / \partial s < 0$), which upsets its enhanced utility due to the increase in consumption by τ . U and V are monotonically increasing functions of consumption c_d and c_r which are normal goods.

Obviously the recipient voluntarily participates in the act of public transfers if and only if its utility does not reduce compared with the case without the transfers.

$$(58) \quad V(I_r, 0) - V(I_r + T + \tau, s) \leq 0$$

This equation plays an important role. It distinguishes two motives of public transfers. When (58) is not binding, public transfers increase both recipient's

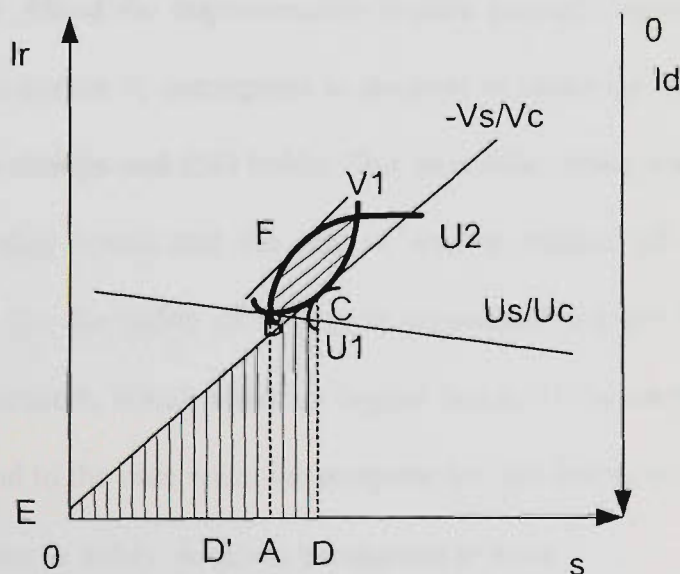
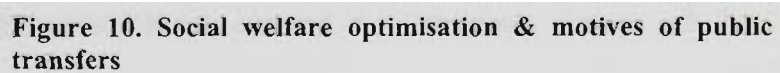
¹¹⁵ Indeed, both saving and borrowing may be limited by the underdeveloped capital market and the transition economy.

consumption and utility and, thus, are termed as altruistic¹¹⁶, following the terminology used by Cox(87). However, when (58) is binding, the recipient's utility remains unchanged since the growth in his consumption is neutralised by an increase in the services he has to provide. In this case, public transfers are said to be driven by the exchange motive.

Further, to maximise social welfare the government and the representative recipient choose the optimal levels of public transfer τ^* and services s^* . When chosen, the government impose τ^* to the richer in form of lump-sum taxes to finance the social welfare system.

$$(59) \quad \max_{\tau, s} U = U(I_d - T - \tau, s, V(I_r + T + \tau, s)) \quad s.t. \quad (58)$$

The distinguishing motives of public transfers and solution of its optimisation problem are illustrated as shown in Figure 10, where pre-transfer income of the recipient and the rest of society are shown on vertical axes (the latter is in up-down direction) and the



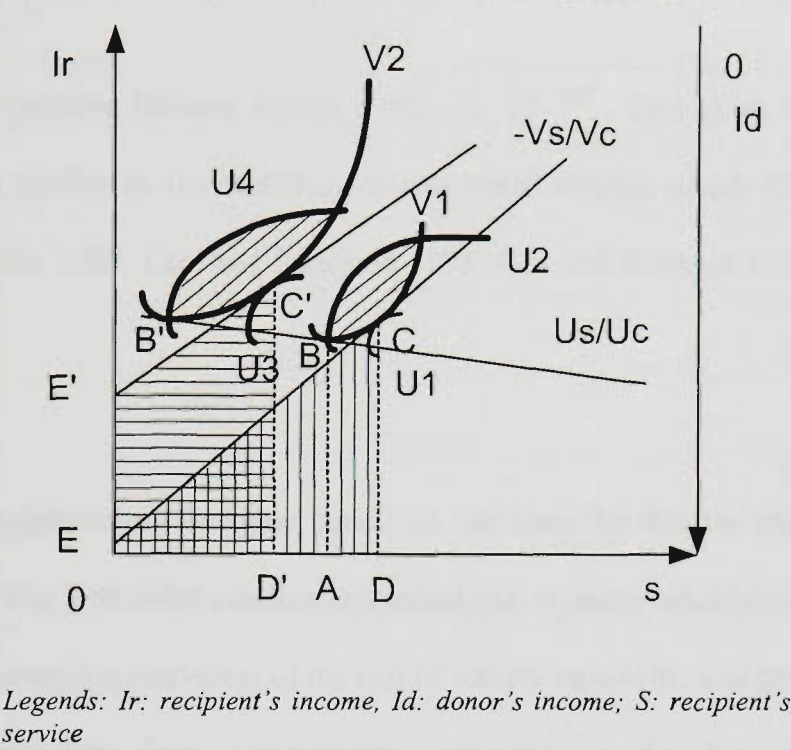
Legends: Ir: recipient's income, Id: donor's income; S: recipient's service

¹¹⁶ The term 'altruism' is used by a number of other authors in more strict sense to mean the case when the giver is not concerned about return services

recipient services on the horizontal axis. U_1 , U_2 and V_1 , V_2 are utility indifference curves of the representative donor and recipient, respectively, so that a curve located further to the southeast (northwest) corner corresponds to a higher level of U (V). Line U_s/U_c represents the donor's optimal demand for the recipient's services and is constructed from the points B where donor's indifference curves U_2 are tangent with vertical lines AB representing various levels of services. However, taking into account the recipient's utility, the optimal levels of services and transfers from the donor's viewpoint is given by point C where the recipient's indifference curve V_1 , which goes through B , is tangent with one of the donor's indifference curves, say U_1 . Line $-V_s/V_c$ is tangent to both curves U_1 and V_1 and represents the recipient's optimal supply of her services. The shaded area $CD\theta E$ represents the amount of transfers while OD does the amount of services provided in return. The crossed area between curves U_2 and V_1 represents the set of Pareto improvements compared with B . All of the improvements require greater transfers and services than those at B . Points on curves V_1 correspond to the case of exchange transfers when recipient's utility does not change and (58) holds. This case takes place when the recipient does not have bargaining power and the rest of society obtains all of the improvement in the total utility. So, the utility of society is maximised at point C . The remaining areas are altruistic transfers, which result in higher levels of the recipient's utility. Points on line U_2 correspond to the case when the recipient has the absolute bargaining power and obtains all improvement in utility, which is maximised at point F .

Obviously the optimal levels of public transfers and services alternate with changes in incomes. Figure 11 illustrates the impact of an increase in the recipient's income, for example. Normally, the increase often causes his marginal utility of consumption to

Figure 11. Change in recipient's income and public transfers



decrease and, thus, his marginal rate of substitution of transfers for services grows. So, the recipient requires more transfers for the same amount of services. Thus, his supply of services moves upwards to the left from the B to B' , while the donor's demand for services remains unchanged. This involves less services (line OD') and greater transfers (area $C'D'E'$) provided.

To deliver analytical characteristics of the solution of the optimisation problem, form the following Lagrangian

$$(60) \quad L = U(I_d - T - \tau, s, V(I_r + T + \tau, s)) + \lambda [V(I_r + T + \tau, s) - V(I_r + T, 0)]$$

Assume that interior solution exists $\tau^* > 0$ and $s^* > 0$. Their comparative statistics can be delivered by solving for $T_z = \partial T / \partial z$ and $s_z = \partial s / \partial z$ in the following system (Varian 1992:494)

$$(61) \quad (H) \begin{pmatrix} \tau_z \\ s_z \end{pmatrix} = - \begin{pmatrix} L_{\tau z} \\ L_{sz} \end{pmatrix}$$

where H is the semi-definite positive Hessian matrix, $z=\{I_r, I_d, T\}$ ¹¹⁷. This gives the following results, which are similar to the well-known and tested results, which Cox found for private transfers (Cox 1987; Cox and Jakubson 1995; Cox and Jimenez 1995; Cox, Hansen et al. 1999).

a. Altruistic transfers

According to the complementary slackness condition, we have the shadow price of the recipient utility $\lambda = 0$. The first order conditions implied that at under equilibrium, the marginal utility from consumption (services) of the rest of society equals the marginal utility (disutility) of the recipient from consumption (services) in the former's perspective.

$$(62) \quad \partial L / \partial T = L_T = -U_c + U_v V_c = 0$$

$$\partial L / \partial s = L_s = U_s + U_v V_s = 0$$

Solving (61) gives

$$(63) \quad \frac{\partial \tau}{\partial I_r} - \frac{\partial \tau}{\partial I_d} = -1 \therefore I > \partial \tau / \partial I_d > 0 \text{ and, thus, } -1 < \partial \tau / \partial I_r < 0$$

$$(64) \quad \frac{\partial s}{\partial I_r} - \frac{\partial s}{\partial I_d} = 0 \therefore \frac{\partial s}{\partial I_r} = \frac{\partial s}{\partial I_d}$$

The most important statistics come from (63). Firstly, it implies that as long as public transfers are altruistic, the amount of public transfers unambiguously rises (drops) with an increase in income of the rest of society (recipient) and *vice versa*. Secondly, the levels of consumption by the recipient and the rest of society depend on the total income

¹¹⁷ see (Cox 1987) for details

$(I_d + I_r)$ and are not affected by changes in distribution of the income between them. If the total income $(I_d + I_r)$ does not change, a dollar rise in the recipient's income results in a dollar reduction in the transfers he receives, so that the levels of consumption of the donor and the recipient remain unchanged. When the increase in the recipient's (donor's) income leads to an increase in the total income, the amount of transfers he receives (gives) would decrease (increase) but by a smaller amount, so that the levels of consumption of both the parties rise and the RHS of (63) remains negative. In other word, altruistic public transfers cannot alter consumption. Finally, there seems to be a large difference (equal minus unity) between the marginal elasticity of the transfers toward the recipient's income and that of the donor under altruism.

(64) means that the levels of services depend on the total income $(I_d + I_r)$ and are not affected by changes in distribution of the income. They ambiguously change when changes in income of the recipient and/or the rest of society leads to the alternation of the total income of the society.

Finally, an increase in private transfers to the recipient reduces altruistic public transfers to the person by the same amount so that his total consumption remains unchanged.

$$(65) \quad \partial \tau / \partial T < 0$$

b. Exchange transfers

In the exchange regime, the shadow price of the recipient utility $\lambda > 0$ and the optimal levels of services s^* and public transfers τ^* and most of the comparative statistics are different from those of the altruistic regime. The marginal utility from consumption

(services) of the rest of society is less (greater) than the marginal utility (disutility) of the recipient from consumption (services) in the former's perspective. For easier understanding of exchange transfers, introduce the concept of the recipient's price for his services p , which helps represent the transfer amount τ as money equivalent compensation the rest of society gives to the recipient for the services, i.e. $\tau = p s$. p is considered as an additional endogenous variable in the optimisation problem¹¹⁸. These imply the following results (Cox 1987; Cox, Hansen et al. 1999).

Firstly, in sharp contrast to altruism, changes in demand and supply of services are unambiguos. The demand of the rest of society for the recipient's services grows with a rise in the former's income but the recipient's supply of the services reduces when the recipient's income rises.

$$(66) \quad \partial s / \partial I_d > 0 \text{ and } \partial s / \partial I_r < 0$$

Secondly, the price of the recipient's services increases when the donor's income rises, but its change when the recipient's income alters is vague.

$$(67) \quad \partial p / \partial I_d > 0 \text{ and } \partial p / \partial I_r \begin{matrix} < \\ > \end{matrix} 0$$

Thirdly, more importantly, like the case of altruism, public transfers increase with a rise in income of the rest of society. However, their change when the recipient's income rises can be positive, but that is impossible under altruism.

$$(68) \quad \partial \tau / \partial I_d > 0 \text{ and } \partial \tau / \partial I_r \begin{matrix} > \\ < \end{matrix} 0$$

¹¹⁸ Exchange transfers can also be conveniently presented in the form of a cooperative game with the Nash bargaining equilibrium, as shown in Cox, D. and G. Jakubson (1995).

Indeed, the impact of a rise in recipient's income is determined by the substitution and price effects the recipient imposes in response to the change in his income. The effects are defined by the first and second RHS terms in (69), respectively.

$$(69) \quad \frac{\partial \tau}{\partial I_r} = \frac{\partial s}{\partial I_r} p + \frac{\partial p}{\partial I_r} s$$

Although $\partial \tau / \partial I_r$ can be negative in principle, Cox has shown that in contrast to altruism, under the exchange regime the amount of transfers is likely to respond positively to a rise in the recipient household's income as price responsiveness of the services to the rise in income $\partial p / \partial I_r$ is often positive and the elasticity of the services $(p/s)(\partial s / \partial p)$ is often small as shown in Figure 11. In other words, the less substitutable the service the more likely that $\partial \tau / \partial I_r$ is positive.

Finally, the above judgement about the effect of a rise in the recipient's income is also applied to the case of changes in private transfers to the recipient. So, the effect of private transfers on public transfers is also ambiguous, at least in principle.

$$(70) \quad \partial \tau / \partial T \begin{matrix} > \\ < \end{matrix} 0$$

c. Transfers incidence

Following Cox(1987), let propose that the decision about the transfers is made in two steps: first to decide if the transfers are to be conducted or not, then, given the first step's positive decision, to decide about the transfer amount. Similar to the case of private transfers shown in Cox (ibid.), the decision is positive if at the initial point $\tau = 0$ and $s = 0$ both the recipient and the rest of society are willing to substitute at least a unit of services

for a unit of transfers and *vice versa*. In the other words, their marginal rates of substitution (MRS) of transfers for services must be greater than zero:

(71) $MRS_d^0 = p_d^0 = U_s^0/U_c^0 > 0$; $MRS_r^0 = p_r^0 = -V_s^0/V_c^0 > 0$

Differentiating (71) regarding income and the private transfer gives their impact on the probability of the transfers, supposing $U_{cs}=0$ and $V_{cs}=0$

(72) $p_d^0 = \frac{\partial p_d^0}{\partial I_d} = -\frac{U_{cc}^0 U_s^0}{(U_c^0)^2} > 0$; $p_r^0 = -\frac{\partial p_s^0}{\partial I_r} = -\frac{V_{cc}^0 V_s^0}{(V_c^0)^2} < 0$; $p_r^0 = -\frac{\partial p_s^0}{\partial T} = -\frac{V_{cc}^0 V_s^0}{(V_c^0)^2} < 0$

Thus, the probability of public transfers increases with a rise in the donor’s income and reduces when the recipient’s income grows, not depending on whether they are altruistic or exchange transfers.

In sum, the above theoretical consideration about motives of public transfers gives the following prediction of the relationship between the transfers and the recipient’s income.

Table 3. Summary of comparative statistics of public transfers

Motive of the transfers	Effect of an increase in the recipient's income on		
	Probability of public transfers P(T>0)	Public transfer amount T (given P>0)	Impact on private transfers amount
Altruism	-	-	-
Exchange	-	-	-
+ $(\partial p / \partial I_r > 0)$ & $(p / s)(\partial s / \partial p) > -1$	-	+	*
+ $(\partial p / \partial I_r > 0)$ & $(p / s)(\partial s / \partial p) = -1$	-	0	0
+ $(\partial p / \partial I_r > 0)$ & $(p / s)(\partial s / \partial p) < -1$	-	-	-
+ $(\partial p / \partial I_r < 0)$	-	-	-

Source: adapted from (Cox 1987:519)

d. Institutional aspects of public transfers

Public transfers presume the role of the mediator – i.e. the government in almost cases – and a large number of recipients (greater than 1, in principle). Thus, in contrasts to the above model, the government has more bargaining power then recipients, and can influence their behaviour.

To explore the institutional aspects of public transfers, reformulate them as a strategic game, based on Bernheim's work on the strategic bequest motive (Bernheim, Shaleifer et al. 1985). Propose in each period the government has to distribute the total amount of taxes collected Y net the total cost of the distribution C among n recipients. Each recipient receives an amount τ_i for services s_i . As long as public transfers are partly benevolent partly self-interest, the government first announces a distribution rule $\beta^0(s) = \{\beta_i^0(s_i)\}$, $i=1, n$ which sets up a binary relationship between the services s_i recipient i may provide and the share of transfers β_i , which he will receive, in the total transfers $Y-C$. Obviously, the only restrictions on the rule is $\sum_1^n \beta(s_i) = 1$ so that $\sum_1^n \tau_i = \sum_1^n \beta(s_i)(Y-C) = Y-C$. Secondly, then recipients select their levels of services s_i so that $\beta^0(s_i) = \beta_i$. Finally, the government distributes the transfers to each recipient according to the rule and the level of his services. The solution of the game is that the government selects the optimal level of its own expenditures C^* and distribution rule β^0 and recipients select the optimal levels of services s_i^* which determine the optimal share β_i^* (and, thus, transfers τ_i^*) and maximise the total utility:

$$(73) \quad \max_{C, \beta^0(s), s} U(C, s, U_1, \dots, U_n) \text{ where } U_i = U_i[I_r + (Y-C) \beta_i]$$

$$[I_r + (Y-C) \beta_i, s] \in S \equiv \{(s_i, \tau_i) \mid V_i(I_{r_i} + \tau_i, s_i) \geq V_i(I_{r_i}, 0)\}, i=i, n$$

Obviously, if $n=1$ the solution is the same as (59). When $n>1$ the government is able to influence the behaviour of recipients by imposing a distribution rule that threatens to give a recipient a suboptimal transfer in case he does not meet some benchmark levels of services. For example, if B - the set of recipients who meet the benchmarks - is not empty then the total $Y-C$ will be divided only among the recipients based on the shares they have selected, leaving those, who do not meet the benchmarks, with no transfers.

$$\beta_i = \beta_i^* / \sum_{j \in B} B_j^*$$

If B is empty then $Y-C$ will be given to the recipient whose s_i is closed to the benchmarks. As recipients select the levels of their services simultaneously, the rule leads to the only optimal solution: the equilibrium rests at point C in Figure 11; all recipients shall provide the services at benchmark levels (thus, receive maximal transfers); and the government obtains all surplus gained from public transfers.

Thus, a partly benevolent government can use impure social transfers, especially the exchange regime, to influence the behaviour of recipients as long as it can specify and inform the latter alternative distributions that threaten the latter with suboptimal transfers. However, for sustainability of funding the influence shall serve the interest of the rest of society (i.e. donors, who finance the transfers) ¹¹⁹.

e. Distribution effects of public transfers

Obviously, transfers ensure more equal distribution of income between donors and recipient. Moreover, model (73) and (63) and (68) indicate that public transfers also

¹¹⁹ Image that negative transfers for donors

reduce income disparity among donors since their contribution also grows with the rise in their income, given other conditions are the same.

Although the probability of transfers always decreases when income grows, altruistic and exchange regimes tend to produce diametrically opposed effects on income equality among recipients. Falling with a rise in their income and *vice versa*, altruistic transfers always promote income equality. In contrast, under the exchange regime, public transfers often lead to an increase in income inequality, when it grows with a rise in recipient's income or private transfers. Intuitively, it is because the donors allocate their transfers not only on the basis of how desperate recipients are but also on the value of the services. Those with less substitutable (thus, more important for donors) services receive a greater amount of transfers given the same other conditions.

These indicate how public transfers shall be targeted. Firstly, incidences of public transfers are more likely among lower income people than higher income ones. Secondly, however, in terms of the amount transferred, altruistic transfers are targeted at the poorer while exchange transfers often are not.

B. Private transfers

Comparative statistics of private transfers and effects of public transfers on the former can be derived, reformulating the above problem as the utility optimisation from the perspective of the respective donor, instead of the rest of society as in Cox (1987) and Cox and Jakubson (1995). In this case, T and s are to be treated as endogenous and τ as exogenous. Due to their analogous function form, comparative statistics are similar in the cases of private and public transfers.

Table 4. Summary of comparative statistics of private transfers

Motive of the transfers	Effect of an increase in the recipient's income on		
	Probability of private transfers $P(T>0)$	Private transfer amount T (given $P>0$)	Impact on public transfers amount
Altruism	-	-	-
Exchange			
+ $(\partial p / \partial I_r > 0) \ \& \ (p / s)(\partial s / \partial p) > -1$	-	+	*
+ $(\partial p / \partial I_r > 0) \ \& \ (p / s)(\partial s / \partial p) = -1$	-	0	0
+ $(\partial p / \partial I_r > 0) \ \& \ (p / s)(\partial s / \partial p) < -1$	-	-	-
+ $(\partial p / \partial I_r < 0)$	-	-	-

Source: (Cox 1987:519)

C. Interactions between public and private transfers

To explore interactions between public and private transfers, one needs to look closer to the donor side of both public and private transfers (Andreoni 1989). In the absence of saving and borrowing, among n donors, donor i allocates his wealth income I_{di} among his own consumption x_i , lump-sum tax to finance public transfers to the poorer τ_i ; and voluntary private transfers t_i which also go to the poorer but directly to their recipients. Consumption and private transfers are normal goods. Firstly, his public and private transfers constitute a part of the public good - social welfare – that totals $Y = \sum_1^n \tau_i + \sum_1^n t_i$, to which donor i contributes $y_i = \tau_i + t_i$ and the rest of society does $Y_{-i} = \sum_{j \neq i}^n y_j$ and $T_{-i} = \sum_{j \neq i}^n t_j$. Personally, the donor does not receive any services in return for the amount he contributes to the public good, except an increase in his utility because he cares about the poor. Secondly, he gets services for his private transfers and enjoyment. So, private transfers also enter his following utility function as a private good

$$U_i = U_i(x_i, Y, g_i)$$

In general, the donor's problem of utility maximisation is as follows, given exogenous T_{-i} and τ_i .

$$(74) \quad \max_{x_i, Y, t_i} U_i(x_i, Y, t_i) \quad \text{subject to } x_i = Id_i + Y_{-i} - Y \quad \text{and } t_i = Y - Y_{-i} - \tau_i$$

There are two possible extreme regimes, namely pure altruism $U_i = U_i(x_i, Y)$ when the representative donor cares only about the public good, and pure egoism $U_i = U_i(x_i, g_i)$ when he is concerned only about the private good. Substituting the constraints into the objective function gives

$$(75) \quad \max_Y U_i(Id_i + Y_{-i} - Y, Y, Y - Y_{-i} - \tau_i)$$

If there exists an interior solution for (75) so that $t_i > 0$ for all i , then we can write the solution in terms of exogenous variables:

$$(76) \quad Y = f_i(Id_i + Y_{-i}, Y_{-i} + \tau_i) \quad \text{or}$$

$$(77) \quad y_i = f_i(Id_i + Y_{-i}, Y_{-i} + \tau_i) - Y_{-i}$$

The first argument in (77) comes from the altruistic argument of the utility function in (74) while the second argument comes from the egoist one. Denote partial differentials of (77) with respect to the arguments as f_{ia} and f_{ie} where a and e stand for altruism and egoism. Next denote as α_i that makes the total differential of (77) equal zero, i.e.

$$dY = f_{ia}(dId_i + dY_{-i}) + f_{ie}dY_{-i} = 0.$$

$$\alpha_i = \frac{dY_{-i}}{dId_i} \bigg|_Y = \frac{\partial f_i / \partial (Id_i + Y_{-i})}{\partial f_i / \partial (Id_i + Y_{-i}) + \partial f_i / \partial (Y_{-i} + \tau_i)} = \frac{f_{ia}}{f_{ia} + f_{ie}}$$

It can be shown that α_i serves as the index of altruism of donor i . If $\alpha_i > \alpha_j$, person i is more altruist than person j .

Let us consider how a change in the lump-sum tax to finance an increase in public transfers impacts on the total transfer amount. Propose that the change is applied to the first person. Differentiating (77) with respect to τ_i and rearranging gives

$$(78) \quad dY = \sum_{i=1}^n \frac{f_{ia} + f_{ie} - 1}{f_{ia} + f_{ie}} dY + (1 - \alpha_1) d\tau_1 = c(1 - \alpha_1) d\tau_1$$

$$\text{where } c = \left(1 + \sum_{i=1}^n \frac{1 - f_{ia} - f_{ie}}{f_{ia} + f_{ie}}\right)^{-1}$$

We have $0 \leq \partial Y / \partial \tau_i < 1$ since $0 < c \leq 1$; $0 < \alpha_i \leq 1$. This implies that public transfers only partly crowd out private transfers. The former is neutralised if and only if the donor cares only about the public good, i.e. $U_i = U_i(x_i, Y)$ and $\alpha_i = 1$ under pure altruism. Secondly, the relative size of the crowding-out effect is dependent directly on the degree of altruism of the person who is taxed. Thus, given levels of altruism are fixed, the crowding-out effect would be less if taxes are levied from less altruistic members of society.

Finally, the relative degrees of altruism between the donor and recipient of public transfers also influences the total transfer amount. Propose public transfers take place from person 1 to person 2, so that $d\tau_1 = d\tau = -d\tau_2$. The combined effect is

$$(79) \quad dY = \frac{dY}{d\tau_1} d\tau - \frac{dY}{d\tau_2} d\tau = c(\alpha_2 - \alpha_1) d\tau_1$$

Thus, the public transfers will increase the total transfer amount if and only if the recipient is more altruistic than the donor and the size of this effect will directly depend on only the degree of altruism of the persons. Moreover, while condition $\alpha_1 = \alpha_2$

neutralises the effect on the total transfer amount, pure altruism is necessary for the neutralisation of the effects of the transfers on consumption since $dy_i = (1 - \alpha_i) d\tau_i$; $i=1,2$.

The model suggests that the crowding-out effect of public transfers is incomplete.

D. The transfers and the transition

While patterns of changes in SWS will be explored in detail, qualitatively and quantitatively in Chapter 5 and 6, respectively, the above model allows us to predict a number of important impacts of the economic transition on the SWS from a theoretical exploration. Firstly, the transition often leads to short-term falls in production and deteriorates the general level of income. These result in increasing demands for greater public transfers to protect the living standards of those affected. Secondly, the transition also implies greater need for SWS due to increasing income risks and equality. Thirdly, the transition produces large impacts on poverty due to the abolition of the former socialist regime's egalitarian re-distribution. Finally, even more importantly, in the long-term the transition alternates the rule of the game and, thus, produces changes in the social welfare system, particularly in terms of its patterns and institutional structure of the public SWS as well as private arrangements. The first two impacts have already been depicted when discussing the above models. The two latter points will be explored below.

a. Transfers and poverty

Denote the number of the rich and the poor as n_d and n_r and assume that the transfers take place from the former to the latter. For simplicity, propose that utility functions U and V in (59) are additively separable, i.e. the donor's marginal utility from the recipient's utility is constant and equal to γ . So, γ represents the degree of concern

of the richer about the poorer. Since the total transfers equal the total contribution, model (59) can be reformulated as follows to reflect the transfers from the representative donor to the representative recipient.

$$(80) \quad \max_{\tau, s} U(I_d - \frac{n_r}{n_d}T - \frac{n_r}{n_d}\tau, s) + \gamma V(I_r + T + \tau, s) \quad s.t. (57)$$

So, the Lagrangian is

$$(81) \quad L = U(I_d - \frac{n_r}{n_d}T - \frac{n_r}{n_d}\tau, s) + (\gamma + \lambda)V(I_r + T + \tau, s) + \lambda V(I_r + T, 0)$$

Assume the existence of the solution for (80), one can define its comparative statistics by solving (61) with $z = \{n_r, n_d\}$. Comparative statistics of the exchange regime are as follows. Since $\lambda > 0$, altruism would diminish the trends exposed by the exchange regime but not alter them.

$$(82) \quad \frac{\partial \tau}{\partial n_r} = \frac{1}{|J|} \frac{1}{n_d} U_c [U_{ss} + (\gamma + \lambda)V_{ss}] < 0$$

$$\frac{\partial \tau}{\partial n_d} = -\frac{1}{|J|} \frac{n_r}{n_d^2} U_c [U_{ss} + (\gamma + \lambda)V_{ss}] > 0$$

where $|J| > 0$ is the determinant of H formed from (81).

An increase in the number of the poorer (richer) makes public transfers less (more) generous. The higher the number of the richer, the smaller changes in the public transfer amount a recipient receives. However, a greater number of the poorer reinforces the change induced by a change in the number of the richer. In other words, the transition process, which has weakened the income base of low-income population groups, also deteriorates the social welfare system that is proposed to protect their living standards. On the other hand, the transition process, which enhances the income base of the high-

income groups may also benefit the poorer through increasing transfers from the former to the latter but the benefits are smaller than what the richer get and grow more slowly with a rise in the number of the richer. This indicates the limited role of public transfers and the social welfare system in general in maintaining living standards during the transition. It cannot replace an equitable and shared growth.

$$(83) \quad \frac{\partial s}{\partial n_r} = \frac{1}{|J|} \frac{1}{n_d} U_c [(\gamma + \lambda) V_{cs} - \frac{n_r}{n_d} U_{cs}] < 0$$

$$\frac{\partial s}{\partial n_r} = -\frac{1}{|J|} \frac{n_r}{n_d^2} U_c [(\gamma + \lambda) V_{cs} - \frac{n_r}{n_d} U_{cs}] > 0$$

In terms of services, signs of expression (83) are defined based on usual signs of involved terms, i.e. $U_{cs} > 0$ and $V_{cs} < 0$. The more general condition for the signs to hold is $n_r/n_d = \gamma (V_{cs}/U_{cs})$. So, the services a recipient returns for the public transfers he receives decreases (increases) when a number of the poorer (richer) grows. Intuitively, this is because the demand for the services remains unchanged (increases). Here the services can be interpreted as support to the government transition policy (e.g. through voting). This explains the common phenomenon in transition countries that the progress of the transition coincides with the governments' increasing interest in poverty reduction and the use of the public transfers as a tool for mobilising public support for their policies. So, when the economic transition has resulted in mass impoverishment, public transfers and the social welfare system, in general, can offer little help for the affected unless there are additional inputs from exogenous sources or changes that increase the share of income transferred from the richer to the poorer. The latter indicates the need for changes in social welfare policy during the economic transition.

b. Institutional changes

The economic transition also involves changes in social welfare policy and institutional arrangements for the social welfare system. Since the relationship between the well-being of the poorer and that of the richer constitutes the central piece of social welfare policy, the latter can be quantified in terms of the marginal utility of the richer in respect of the utility of the poorer, i.e. $\gamma = U_v$ in (80). Obviously, $0 < \gamma < 1$. The greater γ , the greater the willingness towards income transfers from the richer to the poorer and, thus, the social welfare policy is more favourable to the poorer.

Should utility functions U and V be known, one may consider γ as an endogenous variable in the optimisation problem (80). Solving of the problem provides the equilibrium (thus, long-run) social welfare policy¹²⁰. Alternatively, consider γ as exogenous and define comparative statistics of the solution of the problem from (61) with $z = \{\gamma\}$. Comparative statistics of the exchange regime are as follows. Again, altruism weakens the trends but does not change them.

$$(84) \quad \frac{\partial \tau}{\partial \gamma} = \frac{1}{|J|} \{ -V_c [U_{ss} + (\gamma + \lambda)V_{ss}] + V_s [-\frac{n_r}{n_d} U_{cs} + (\gamma + \lambda)V_{cs}] \} > 0$$

$$(85) \quad \frac{\partial s}{\partial \gamma} = \frac{1}{|J|} \{ -V_s [\frac{n_r^2}{n_d^2} U_{cc} + (\gamma + \lambda)V_{cc}] + V_c [-\frac{n_r}{n_d} U_{cs} + (\gamma + \lambda)V_{cs}] \} < 0$$

A more pro-poor social welfare policy enhances the amount of public transfers and lessens the amount of services required in return. Taking into account (58), the latter means that the barrier imposed on potential recipients is lowered, so that more of the

¹²⁰ see Seyda, G. (1999). Essays on the political economy of redistribution. Irvine, University of California: 75. for a simple model in which the level of welfare programmes is determined by preferences of the richer and poorer and their lobbying.

poorer can participate in social welfare programmes and benefit from them. Thus, the policy enhances the programmes in terms of both the size of their funds and their coverage.

On the other hand, the transition also alternates the institutional arrangements of the social welfare system. In the pre-transition economy, the government was solely responsible for making public transfers. Under the transition, the government still has the critical role in directing, managing and delivering social welfare. However, with economic liberalisation and the acceptance of competition, emerging non-government organisations (NGOs) play an increasing role in public provision, substituting for the government activities.

Substitution effects between the NGOs and government services in provision of social welfare can be seen within the model (73). For simplicity, assume that there is only one NGO, which has the same preferences and objectives as the government but different technology to deliver social transfers to recipients. Let the government and NGO technologies be characterised by different levels of incurred expenditure C_g and C_n . Y_g and Y_n are the total transfers distributed through the government and the NGO. Obviously, to maximise the total utility the government and the NGO shall coordinate their distribution rule because otherwise their costs will be greater. Thus, the optimisation problem (73) can be presented as an optimisation problem in which recipients choose levels of their services, while the government and the NGO each select the level of transfer τ_g and τ_n to each recipient according to a joint distribution rule $\beta^0(s_g, s_r)$. The distribution rule comprises a unique combination of government and NGO own binary

relationships between a recipient serves returns (i.e. s_g and s_r) and the amounts of public transfers transferred through their channels (i.e. τ_g and τ_n).

$$(86) \quad \max_{C_g, C_n, \beta^0(s_g, s_n), s_g, s_n} U(C_g, C_n, s_g, s_n, U_1, \dots, U_n) \text{ where}$$

$$U_i = U_i[I_r + (Y_g + Y_n - C_g - C_n) \beta_i]$$

$$[I_r + (Y_g + Y_n - C_g - C_n) \beta_i, s_g, s_n] \in S$$

$$S \equiv \{(s_g, s_n, \tau_g, \tau_n) \mid V_i(I_r + \tau_g + \tau_n, s_g, s_n) \geq V_i(I_r, 0)\}, i = i, n$$

This strategy will result in a Nash equilibrium. If the total cost and the total transfer amount are the same as those in (80): $C = C_g + C_n$ and $Y = Y_g + Y_n$, the outcome of this game also remains the same as that of (80). This means that in principle the poorer may not benefit from the involvement of the NGO. As indicated in the above models, the benefits are passed to the richer, who fund public transfers.

The only principal difference is that now recipient's services and public transfers are divided between the government and NGO channels: $s_g + s_r = s$; $\tau_g + \tau_n = \tau$. (86) indicates that less costs result in greater transfers, which leads to higher utility according to (57). Therefore, if the two channels of transfers are perfect substitutes and transfers through the NGO channel incurs lower costs, it will crowd out the government until the marginal cost of the transfers through the two channels is equal.

Of course, the government and the NGO channels are not perfect substitutes. Firstly, in contrast to NGOs, the Government has a power to impose tax on the richer and ensure the stable sources of funds for social welfare programmes and avoid the problems of free riding. A higher level of tax will discourage both private transfers and voluntary

contributions through the NGO channel. If the tax is set low, a part of the income that contributors are willing to transfer to recipients, will be passed to recipients through channels other than government ones and gives a rise to the involvement of NGOs in social protection programmes. The total transfers that the representative recipient receives remain the same as in the case without the involvement of NGOs. However, he would better off in terms of his utility because the latter probably possesses better information about recipients than the government and, thus, is able to meet the recipients' need better or to reduce the recipients' costs of receiving transfers. In the both cases, contributors would also benefit from the involvement of the non-government organisations. This also results in the Nash equilibrium since other outcomes would be associated with higher costs.

Section 3.4 Data organisation and consolidation

A qualitative analysis of social welfare during the transition can be conducted based on the above-mentioned analytical framework. However, its feasibility and success of the analysis largely depend on the availability and reliability of data. Although a qualitative analysis often requires minimal data, this still represents a serious constraint in the case of a transition economy, especially an underdeveloped one such as Vietnam. Problems related to data collection and interpretation are well documented in a number of studies such as (McCarty, Paunlagui et al. 1992; World Bank 1993b; Fforde and De Vylder 1996). These impose a special requirement for the data collection and consolidation in support of the analysis. This section discusses sources of data and data consolidation for the analysis of SWC.

3.4.1 Sources of data

The existing data limitation and the comprehensiveness of the analytical framework necessitate the use of data from various sources such as the government's official statistical publications, and studies and surveys conducted by Vietnamese and foreign researchers in Vietnam. In particular, data collected from Vietnam's Living Standard Survey conducted by the GSO and the World Bank in 1992-93 and 1997-98, and the survey on the implementation of social protection policies conducted by the MOLISA and ILO in 1998 will be widely used in this study. The data complement well the lacking statistic data and allows exploring the impact of macro policies from microeconomic viewpoint.

Description of the World Bank's methodology of living standard measurement surveys and methods for analysis of their results are provided in Deaton, A. (1997) and Grosh, M. and P. Glewwe (1998). Their application in Vietnam and findings are

described in SPC/GSO (1994) and GSO(2000). Detailed descriptions of Vietnam's living standards surveys in 1992-93 and 1997-98, the data collected and discussion of issues related to data reliability and processing will be given in the respective part of the thesis when the data are used.

Compared with the living standards surveys, the MOLISA-ILO survey in 1998 was much smaller, covering only 3 provinces, 3 districts, 10 communes and 300 households participated in the VLSS2. It was designed by the MOLISA's Institute of Labour and Social Affairs and the author of this study in order to collect ad-hoc data on Vietnam's SWS at all levels, namely the national, provincial, district, commune and household levels, which were not available through neither the government reporting system nor existing surveys, including the VLSS 1 and 2.

3.4.2 Data consolidation and verification

The use CGE methodology poses special requirements for collection, validation and consolidation of data to be used as inputs for the SWC model. The comprehensive nature of the data used and their interrelation require thoughtful data organization and consolidation, which take the form of social accounting matrixes (SAMs) and systems of economic and social accounting matrices and extensions social accounting matrixes with extension (SESAMEs) for various years of Vietnam's transition (e.g. 1992-93 and 1997-98, at least). The SAM and SESAME methodology is discussed in details by Keuning (1996:80-7). An outline of a simple SESAME for the preparation of data for the model for SWC in Vietnam is presented in Figure 12.

The purpose of the SAMs and SESAMEs is two-fold. Firstly, it is aimed to classify relevant data pulled out from various sources according to sectors and agents and make cross checking to ensure their consistency and reliability. Secondly, it

provides a framework for following qualitative and quantitative analysis of the multi-dimensional data.

By definition, SAMs focus on essential balances and relations among economic agents and accounts, expressed in the monetary units, while in support of the monetary indicators, SEMAMEs also include physical units of the economic phenomena and cover social aspects, in correspondent years. The flexibility of the structure of SAMs and SESAMES allows them to reflect best the most essential of Vietnam's economy and social welfare during the transition. Its upper part represents the country's simplified SEMAMEs describing the production of the net product (i.e. the total product deducted material inputs or GDP) and its consumption in the monetary terms. The left upper corner shows sources of the total value-added product disaggregated by three ownership sectors, namely the market-led, state-led and traditional household sectors.

Figure 12. Outline of an annual social accounting matrix for Vietnam

[illegible]

In contrast, the left lower part of the SEMAMEs focuses on the distribution of the net product that serve as the basis for the maintaining and improving social welfare. So, the net products are distributed to payments in taxes, private and government incomes per sector. To study the social welfare impact of the transition, the private income is disaggregated by five occupations according to the SWC model, namely workers in each sector, capitalists in the market-led sector, and the urban unemployed.

The income of workers in the market-led and state led sectors includes incomes from wage, saving interest from their physical wealth, and the public lump-sum transfers. The income of the traditional household comprises wage, profit, and the public lump-sum transfers. Contrary, the dividends paid by the market-led sector and the unemployment payments are the only source of income of capitalists and the unemployed, respectively. The last agent is the government with its income generated from value-added and income taxes, and the profit of the state-led sector.

The right corner of the SEMAMEs describes the use of incomes of the agents. The private incomes are used to pay the income tax, private consumption, spending on human development activities and investment in the production in the case of capitalists and the traditional households or in the physical wealth accumulated by workers in the market-led and state-led sectors. On the other hand, the government revenue plus trade balance is used to finance lump-sum public transfers, unemployment payment (which however does not exit at this moment), investment subsidies, public investment and other public consumption. So, it is assumed that in the case of the developing transition economy, the government is responsive for financing the trade balance and the market equilibrium is achieved with changes in stock. Firstly, the value-added product produced in each sector equals the total amount of the product used by all the agents, including the government, for their consumption and investment. Secondly, the total

investment in the society equals the sum of the increases in fixed capital and stock plus the trade balance, i.e. the sum of export income and net remittances from and to abroad less import payment, and plus the net capital inflow.

In contrast, the lower part of the SESAME contains non-monetary socio-economic data required by the SWC model, such as the production functions, reform progress, fixed assets and employment per sector; worker characteristics (e.g. her average wage, income, consumption, expenses for education, saving and physical wealth as well as rates of taxes, public transfers and unemployment rates).

Thus, each cell in the SESAME quantifies the relationship among economic agents and their activities. As a whole the SEMAMES provide a full accounting of transactions in the economy in the monetary terms. Filling data into the proposed SESAME and their subsequent validation and consolidation will result in SESAME for various base years, which can be used as inputs for the SWC model.

Section 3.5 Summary and conclusions

This chapter has addressed the existing lack of an appropriate framework for analysis of social welfare during the transition, particularly in developing transition economies e.g. east Asian transition countries such as China and Vietnam. The lack represents a serious constrain to designing policy tools due to the complex interrelationship among economic and social phenomena and social welfare, the dynamic nature of changes, and the lack of data.

For the purpose, the chapter proposes an innovative analytical framework based on the capability concept of social welfare. The framework proposes that a study of social welfare in the transition economy shall focus on changes in people's choices, particularly their choices of occupations, consumption and investment. An innovative

dynamic model of SWC changes during the transition has been developed as a tool for a quantitative analysis of SWC and related policy design. The theoretical exploration of the model points out that compared with other reforms, which are undertaken by other countries, the transition dramatically expands the choices, leading to the improvement of the social welfare condition in the long run. This is related to the development of the market-led sector. However, the impact of the transition on the social welfare condition is complex. It results in increasing inequality and insecurity.

These necessitate anew, well-designed, and targeted social system to help people to better manage the emerging problems. With this respect, this chapter lays down a theoretical basis of an econometric model to explore the SWS in a developing transition economy. It is proposed that social welfare services in the transition economy may be of impure altruism and requires return services from their recipients. Given the important role of private welfare arrangement in developing countries, it is also proposed complement the study of the provision of public services by exploring the interactions between the public and private transfers.

Together the framework and models provides guidance for both qualitative and quantitative analyses of social welfare changes and in-depth cause-effect relations during the transition. This chapter also discusses sources of data and issues related to data consolidation for analyses of SWC.

This methodological development will be validated through its application for empirical analyses of the SWC and SWS in a developing transition economy, namely Vietnam in the following chapters. In particular, Chapters 4 and 5 provide qualitative analyses of the SWC and SWC in Vietnam, respectively. Based on the theoretical model and feedbacks from the qualitative analyses, Chapter 6 focuses first on the development

of an intertemporal computable general equilibrium model of social welfare conditions in Vietnam and its usages for simulation of transition policies and their impacts. In the remaining part of the chapter, the specification and estimation of an econometric model of the social welfare system in Vietnam will be carried out using data from two Vietnam's living standards surveys in 1993-94 and 1997-98. In the chapter, results of the simulation and estimation will be also discussed.

CHAPTER 4 SOCIAL WELFARE CONDITIONS DURING VIETNAM'S ECONOMIC TRANSITION

Section 4.1 Introduction

This chapter provides a qualitative analysis of Vietnam's economic transition and its impact on social welfare conditions, based on the analytical framework presented in Chapter 3. Section 4.2 gives an analysis of Vietnam economic transition in terms of its progress, patterns, and outcomes compared with other transition economies. Section 4.3 examines changes in Vietnam's SWC during the transition. Section 4.4 concludes the chapter with a summary of findings and major conclusions.

Section 4.2 Overview of Vietnam's transition

4.2.1 Initial conditions for Vietnam's transition

Vietnam's transition is best viewed within the context of the country's socio-economic development. As a result of the Vietnamese-French war, in 1954 the country was separated into the North and the South with different socio-economic systems. A central planning system was used in the North in the period from the late 1950s to 1975, when the South remained operating on a market basis. However, both of the systems never matured, being essentially war economies during the subsequent fierce war from 1959 to 1975. The country was re-unified in 1976 and the central planning system in the North was extended to the South without major changes in the period 1976-78.

Vietnam's central planning system shared many similarities with those in other socialist countries. In the early 1980s, it was characterised by massive direct interventions of the government in economic decision making, highly distorted prices and output structure, and the absence of the institutional and legal infrastructure necessary for the normal operation of markets (e.g. well-defined property rights,

commercial legislation, commercial banking system, financial and labour market, and a market-oriented taxation). Despite low income and long wars, by giving priority to income redistribution and provision of social services, the country was able to achieve the level of human resource development comparable with middle income countries (United Nations in Vietnam 1998b). Compared with pre-reform China, Vietnam was slightly better in terms of infant mortality rate (IMR) and literacy.

Table 5. Vietnam's starting conditions compared with other countries, the late 1980s-early 1990s (in percent except where stated otherwise)

Indicators	Viet nam ^a	Compared with other transition economies				In comparison with other countries as grouped by the World Bank			
		China ^a	CEE ^h	Russia	Other NIS & Mongolia ^h	Low- income countries ^b	India	Middle income ^e	OECD
Economic Indicators									
GNP per capita, 1990, in 1990 US\$ from World Bank Atlas ^c	188	404	2,268	4,110	2,141	320	380	2,220	20,170
GNP per capita, 1990, in 1990 US\$ at PPP ^c	1,100	1,000	4,647	6,440	4,660	1,086	1,090	4,289	15,615
Growth rate prior transition, % ^d	5.0	4.9	1.5	1.9	2.3	3.4	5.8	2.9	3.0
Urban population as % of the total, 1991	19	18	61	74	58	28	27	62	77
Investment as % of GDP, 1989 ^e	16	35	34	34	31	21	24	25	22
Industry as % of GDP, 1989	23	48	51	50	40	28	29	36	31
Energy use (kg of oil equivalent per 1US\$ of GDP) ^f	...	0.38	0.81	0.91	0.71	0.14	0.21	0.41	0.31
Economic liberalisation index, 89	0.53	0.46	0.16	0.04	0.12				
Repressed inflation, 87-90	15.0	2.3	5.5	25.7	19.8				
Black market premium, 90, %	464	208	339	1,828	2,589				
Year under central planning	11/32 ⁱ	29	43	74	56				
Trade with CMEA as % of GDP, 1990	7.2	1.0	8.3	11.1	23.1				
Social indicators									
Population, 1989, millions	64	1,102	122	149	139	1,002	850	1,105	773
Gini coefficient, 1989 ^g	36	30	26	24	24	46	34	45	33
Life expectancy at birth, 1989, years	66	70	71	69	70	56	60	68	77
Illiteracy rate, 1991	12	31	3	2	2	41	52	17	<5

Note: All measures for country groups are averages, weighted by population.

... Data not available

a. All data for China are for 1978 and those for Vietnam for 1988. Except where specifically noted otherwise (i.e. per capita GDP growth, energy use, Gini coefficients, and life expectancy).

b. Excluding China and India.

c. Data are for 1991 for NIS and Mongolia.

d. Average annual real GDP growth rate at market prices: data are for 1980-89 for CEE and comparisons, 1980-90 for NIS and Mongolia, 1966-78 for China.

e. Gross domestic investment.

f. At PPP using 1992 dollars: data are for 1990 for CEE; 1992 for NIS, Mongolia and comparisons, 1980 for China (staff estimated).

g. Data are for 1980 for China, 1992 for Vietnam

h. Data for groups are unweighted average of group member data

Source: Adapted from (World Bank 1996a: 2) and (IMF 2000: 160).

However, there were a number of distinctions compared with other centrally planned economies. Firstly, the economy was at a very low level of development. Its per capita GDP in 1980 was less than US\$200, the country was one of the most impoverished country among the centrally planned economies and in the world. Secondly, the economy was largely agrarian. In 1980, agriculture provided 40% of the total gross social products (GSP), 70% of the total employment, and livelihood for 80% of the population. Moreover, its agriculture was largely based on intensive wetland rice cultivation, which has remarkable potential to absorb labour and substitute it for capital (Bray 1989). Thirdly, there existed considerable dualisms between the rural and urban sectors, and between the state sector and the rest of the economy. Fourthly, the central planning system had never succeeded in consolidating much control over the economy, especially in the rural sector and in the South. Thus, prior to the transition, central planning controlled only about 100 products, which fell quickly to eight items in 1987. Those were much less than in other centrally planned economies. On the other hand, the private sector was large, particularly in the South, where less than 20% peasants participated in cooperatives and the informal sector was substantial in both rural and urban areas (Table 13). Finally, the country was heavily dependent on massive assistance from the Soviet Union and the Eastern European block, which were its main trade partners. However, in the value terms, in the late 1980s, trade was relatively small compared with Vietnam's GDP (7% in 1990). In general, the central planning system in Vietnam was less mature than in other socialist countries. In many aspects, it resembled the Chinese model of centrally planned economy, although there were huge differences in the levels of development and central planning between the two countries.

Another important distinction, which served as the direct cause of Vietnam's transition, was the growing socio-economic crisis in the 1980s. The average growth rate in 1976-80 was only 0.2% while population grew on average at 2.9% per annum, leading to a rapid decline in living standards. Growth of per capita GDP and domestic savings were negative, and hyperinflation remained for the following decade. The investment rate was 5-8% and the current and fiscal deficits were about 10% of GDP. All sectors were in deep stagnation. Agricultural production hardly kept up with the population growth, leaving the country's food production below the subsistence level. Bad harvests in 1987 resulted in widespread hunger. From 1988 the external assistance from CMEA, which helped to cover the fiscal deficits and finance the investment, had been falling and then ceased in the early 1990s.

In contrast with the general perception, Vietnam is not well endowed with natural resources on a per capita basis. Its population density is 900 people per square km of agricultural land - one of the highest in the world. In view of the serious deforestation in the last 25 years, weak infrastructure and very limited capital stock, the country has to rely on its human resources and preserve its fragile resources base (Dollar 1994). However, creation of productive employment to absorb the huge labour surplus in rural areas estimated at 25-30% of the rural labour force and the natural growth of the total labour force by about one million new comers to labour market every year always represents a significant socio-economic challenge.

4.2.2 Milestones of the transition

The transition in Vietnam has been a gradual process. It was preceded by attempts to revitalise the centrally planned system but maintain its fundamental

principles in the period from 1980 to 1985¹²¹. On one hand, there were measures to reduce the State's administrative control over the economy, shift the development priority from heavy industry to consumer industries, and give more attention to efficiency and individual economic incentives (CPV 1979). Major measures in this direction included the partial liberalisation of domestic trade (1979-80), the establishment of the two-tail price system (1981), and the introduction of the output-contract and three-plan systems in agricultural cooperatives and SOEs, respectively (1981). The latter gave farmers and SOEs some freedom to produce more than that defined in the compulsory plan, realise excessive products in the market, and retain a large share of the value-added. On the other hand, there were unsuccessful efforts to strengthen central planning through the collectivisation of agriculture in the South and the anti-market price-wage-money reform in 1985. As a result, initial gains due the new incentives were quickly disrupted (Table 6); fiscal deficits and inflation grew to threatening levels in 1985-86; and growth slowed down in 1985 and following years.

Table 6. Vietnam: Annual and average GDP growth by period of the transtion (1980-99)

Pre-transition		Path-seeking		Taking-off		Consolidating	
Year	Growth rates ^a	Year	Growth rates ^a	Year	Growth rates	Year	Growth rates
1980	3.7	1986	2.3	1989	4.7	1994	8.8
1981	5.1	1987	3.6	1990	5.1	1995	9.5
1982	8.2	1988	6.0	1991	6.0	1996	9.3
1983	7.1			1992	8.7	1997	8.2
1984	8.4			1993	8.1	1998	5.8
1985	5.6					1999	4.8
80-85^b	6.1	86-88	3.7	89-93	6.3	94-99	7.5

Note a. Estimated on the basis of the NMP system. Thus, to some extent, the figures should be used with precaution, particularly in period 1980-85.

b. The average growth rate for each per period is calculated as the geometrical mean

Source of data: 1980-85: (Harvie and Tran 1997), 1986-99: (World Bank 1999b; World Bank 2000d)

¹²¹ A number of authors mistakenly equalised period 1980-85 with the start of reforms in Vietnam Vō Nhân, T. (1990), Vu Tuan Anh, Ed. (1994), Vo Dai Luoc, Ed. (1995) and Fforde, A. and S. De Vylder (1996).

The start of Vietnam's transition in 1986 was marked by the decision of the Sixth Congress of the ruling party to gradually shift from the centrally planning towards 'a market-oriented economy with socialist orientation and state management' (CPV 1986), although the precise meaning of 'socialist orientation and state management' has never been clarified. The transition up to now can be divided into three periods.

Table 7. Vietnam: Macroeconomic stabilisation during the transition, 1989-2000

	Overall budget balance on accrual basis as % GDP	Overall payment balance (US\$ mill)	Total liquidity (M2) as % GDP	Annual growth of retail price index (%)
1986	-5.8	-315	8.2	487.2
1987	-4.4	-297	10.0	316.7
1988	-7.1	-320	10.5	310.9
1989	-11.4	-220	30.5	76.0
1990	-8.0	-142	27.1	36.4
1991	-3.7	50	26.5	82.7
1992	-3.7	268	24.6	37.7
1993	-6.0	-1,056	23.6	8.4
1994	-3.0	-409	25.3	9.3
1995	-1.1	-199	23.7	12.2
1996	-0.7	-278	23.8	4.3
1997	-1.5	-4	26.1	2.3
1998	-0.5	-525	28.0	6.5
1999	-0.6	768	25.4	1.8

Sources: World Bank (1993b, 1998c, 1999b, 2000d)

The first, 'path-seeking' period from 1986 to 1988 was characterised by gradual reduction in the central planning system and introducing market incentives at the micro level, such as abolition of the state compulsory plan (except for 35 key SOEs) and a dramatic reduction in the roles of the state and the party in microeconomic management (1987); the liberalisation of domestic trade (1987); the re-allocation of land, dismantlement of cooperatives, and return to the household economy in agriculture (1988); and the initial reform of SOEs and the recognition of the private sector (1987-88). In terms of macroeconomics, the reform was limited by reducing the segregation within the two-tier price system through gradually raising official prices and exchange

rates. Macroeconomic distortions quickly accumulated (e.g. in terms of increasing budget deficits and hyperinflation as shown in Table 7). As shown in Table 6, growth accelerated but remained low (annual growth rates averaged at 3.7%).

The transition took off in the second period from 1989 to 1993. There were bold measures to address macroeconomic distortions, which were intensified by the reduction and then the cessation of aid from the CMEA countries and the collapse of their market in 1988-90, and establish a macroeconomic environment enabling the operation of a market-oriented economy. The focus was given to macroeconomic stabilisation and market institutionalisation. The former included the abolition of the two-tier price system in favour of market determination of price and exchange rates (1989), the increase of real interest rates to positive levels (1990) and their gradual liberalisation (1993), maintaining a restricted monetary and wage policy (since 1989), and implementation of a restricted fiscal policy aimed at balancing the government budget and current account (through cutting direct subsidies and government expenditures (1989-93) and tax reform (1989). These provided the Government with a new set of market-based tools for economic management to replace the former direct micro-interventions. The market institutionalisation included the promotion of foreign direct investment (1989), liberalisation of foreign trade (1989-92), further SOEs reform, the establishment of the two-tier banking system and opening it for the private sectors (1990), and the development of a legal framework for market operation such as the Company Law (1990), Land Law (1992) and Bankruptcy Law (1993). As a result, since the early 1990s, Vietnam's economy has essentially operated on a market basis and both imbalances and inflation were brought down. The combination of market incentives and

an enabling macroeconomic environment quickly accelerated the average growth rate to 6.3% (Table 6) and brought inflation down from two-rigid to one-rigid levels (Table 7).

Table 8. Major reform measures and their timing by subject area

a. Macroeconomic stabilization:

- Balancing the government budget through weak indexing of the nominal wage (1986 to now) elimination of subsidies (1989-92), reducing size of civil service (1990- to now) and public expenditures (1989-1992), replacing the system of revenue collection based on SOEs contribution by turnover and profit taxes (1992) and then by VAT tax and uniform enterprise tax (1999; and decentralising budget management (1997)
- Removing administered prices (1989)
- Restricting monetary policies by raising interest rates (1989); appropriating lending regimes
- Balancing current account through devaluating the domestic currency (1989) and applying largely market determined unified exchange rates.

b. Market liberalisation:

- Liberalizing domestic trade (1986-89) and foreign trade: eliminating the state monopoly and barriers to foreign trade, e.g. import quotas (92,98); enacting & amending the Foreign Investment Law, introducing tariffs as instruments of trade policy & limited current account convertibility of the domestic currency
- Allowing greater labour mobility, both cross sectors and regions; enacting Vietnam's first labour code (1994);
- Developing a two-tier banking system, opening the banking sector to non-state banks

c. Economic restructuring:

- Redefining roles of the State in the economic management & abolishing the central planning, dismantling collective agriculture in favour of the household system (1987-88)
- Reallocating land to farmers (1986-93) and defining their rights for long-term land use under Land Law (1992,98);
- Reducing the number of state enterprises from 12,000 to about 6,000; enacting Law on SOEs (1995-96); piloting SOEs equitisation (1996-99);
- Private sector development: enacting the Company Law (1990, 94); Bankruptcy Law (1993)

d. Social adjustments

- Introduction of user-pay schemes in education, health care and other social services (1990-95);
- Reform of the social insurance system (1992-95);
- Developing safety net programmes for the affected: funds for the retrenched state employees (1992); national programmes for employment promotion (1993) and poverty reduction (1992-98) preferential credit for the poor (1993,95),
- Expanding social assistance for non-working poor.

Source: Adapted from (World Bank 1997: ii)

In the third 'consolidating' period from 1994 up to now, the positive impact was still in force and growth continued to accelerate till 1996. However, reform measures in this period were largely incremental, aiming at strengthening the institutional basis of the market economy. The most remarkable measures were decentralising budget management (1995), re-integration into the international economy and enacting new value-added tax regime (1997-98). Tight fiscal and monetary policies were maintained.

Even during the Asian financial crisis in 1997-99, Vietnam was able to maintain its macroeconomic stability by mild adjustments of exchange rates and tightened import restrictions (Table 7). However, the progress of reforms in a number of key areas, such as the SOEs reform, promotion of the private sector, strengthening the finance and banking system and public administration reform, remained sluggish in this period. As a result, annual growth rates started to slip down in 1997 and this tendency was further exaggerated by the Asian crisis in 1998-99, when annual growth rates dropped to 4.8% (World Bank 2000 d)

Table 8 presents a summary of the transition's measures by major subject area, namely macroeconomic stabilisation, market liberalisation, economic restructuring and social adjustment. Thus, the transition represents a comprehensive set of interrelated reforms. Macroeconomic stabilisation contains a number of measures in the areas of fiscal, monetary, taxation and price policy. Market liberalisation includes reforms of trade (including foreign trade and investment), finance, banking, and labour market. Economic restructuring includes re-defining roles of the state, the SOEs reform, private sector development, and market institution building. Social adjustment embraces development of the safety net, reform of social services and building civil society.

4.2.3 Comparative analysis of Vietnam's transition

Section 2.2.4 of Chapter 2 indicates that transition economies share some essential commonalities. Therefore, Vietnam's transition is best viewed in comparison with the experience gained by other transition economies in the recent decade.

Transition economies are a very diversified in terms of both initial conditions (see Table 5) and characteristics of their transition. However, they can be classified into 5 groups: the EU accession countries (without the Baltic countries), Baltic countries,

other Southeast European countries, Commonwealth of Independent States (CIS) and Mongolia, and East Asian transition countries (excluding Mongolia). In view of the broad scope of this topic, focus will be given mainly to issues relevant to social welfare.

Table 9. Selected characteristics of Vietnam's transition compared with other transition economies

Transition country/group ^a	Year transition began	Year stabilisation began	1999 EBRD average transition indicator	Real output ratio 99/89	Average inflation rate 89-99	PPP GDP per capita 1999 US\$		
						1989	1999	+ inc % - dec%
Vietnam	1986	1989	1.9	1.97	25.4	1100	1,815	+65
1. East Asia	1986		2.1	1.78	17.1	882	2,042	+132
China	1978		2.1	2.52	8.1	800	3,709	+363
2. CEE	1991	Mar-91	3.3	0.95	35.5	6,547	10,009	+53
Slovak R.	1991	Jan-91	3.3	1.01	14.3	7,600	10,255	+35
3. Baltic countr	1992	Jun-92	3.2	0.68	33.5	7,973	6,850	-14
Latvia	1992	Jun-92	3.1	0.56	35.1	8,590	5,893	-31
4. Other CEE	1990	Jun-93	2.5	0.77	3333.8	3,655	3,651	0
Croatia	1990	Oct-93	3.0	0.80	100.0	6,171	6,793	+10
5. CIS ^b	1992	Aug-94	2.3	0.53	149.1	4,755	3,337	-30
Russia	1992	Apr-95	2.5	0.55	88.0	7,720	6,815	-12

Note: a. data for country group are the unweighted average of group member data, a country with data closest to data of each group is also selected to represent the group

b. including Mongolia

Source: adapted from IMF(2000)

A. Goals

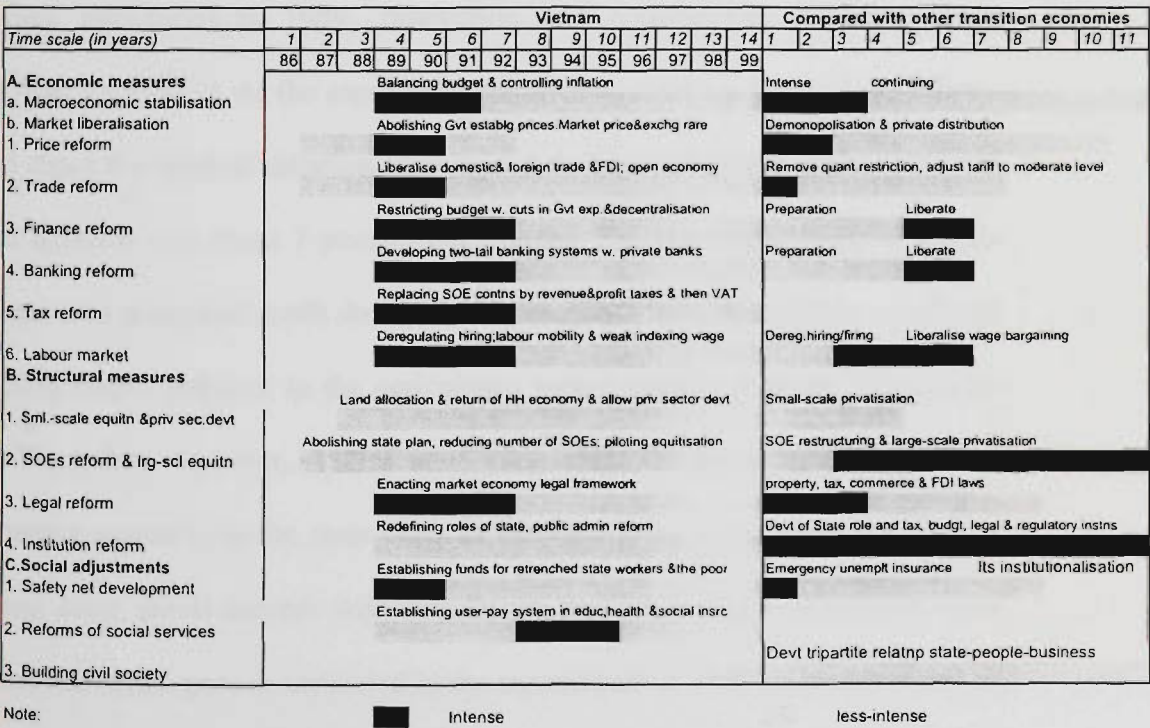
Vietnam also shares the common economic objective of the transition, which is to raise economic efficiency and promote growth (IMF 2000:131) by replacing the central planning system as the principal mode of economic organisation by a market-oriented economy. However, as described in Vietnam's socio-economic development strategy for the period 1991-2000 with orientation to year 2010, Vietnam also gives priority to achieving economic stability and equity (UNDP/UNICEP/UNFPA 1995; SRV 1995b).

The government long-term strategy for socio-economic development in Vietnam sets the following major development targets (i) an annual GDP growth rate of 9-10% and an increase in the real income per capita by 8-10 fold by the year 2020 with the emphasis on industrialization and modernization; (ii) a balance between economic and

social development with special attention to hunger eradication and poverty reduction through food security for all and expanding choices for the poor with the goal of halving the poverty rate by the year 2000 and eliminating all causes of poverty by 2010; (iii) a replacement level of fertility by the year 2005; (iv) the creation of conditions to ensure strong, sustainable growth, associated with peoples' empowerment through education and training, to reduce unemployment, create environmentally responsible citizens and improved infrastructure and a better functioning of the market mechanisms (United Nations in Vietnam 1998b).

B. Progress of Vietnam's transition in key areas

Figure 13. Progress of Vietnam's transition compared with other transition economies, 1986-99



Sources: Adapted from Fisher and Gelb (1991:102) and SRV (1993:2)

Figure 13 points out some distinguishing features of Vietnam's transition. In general, like China, Vietnam has undertaken a gradual approach to transition. The first reforms measures were to introduce market incentives at a micro level. However, Vietnam conducted its major macroeconomic reform measures much earlier than China,

and the intensity and duration of its measures in 1989-93 were comparable with those in the advanced transition countries. However, later on, contrary to the CEE and CIS countries, these were not supported by progress in a number of important areas such as economic restructuring (e.g. redefining role of the state, SOEs reform, private sector development and public administration reform) and social adjustment (e.g. reform of social services and building civil society (Fisher and Gelb 1991:102; .

C. Macroeconomic development

The fundamental problem of the macroeconomic reform in Vietnam was that the government and state enterprises were spending too much and this excess was being financed by Soviet aid and Central Bank credit. Strong measures to deal with this situation were introduced in 1989. Production and consumption subsidies were eliminated from the budget. At the same time, the interest rates on loans to state firms were raised about the level of inflation (that is to 9 percent per month in the spring of 1989, when inflation was about 7 percent per month). The state bank made a serious effort to control the growth of credit during the first half of 1989. This policy, combined with the strong output response in the agricultural sector, sharply reduced inflation by mid-1989. The policy, however, created severe hardships for state enterprises. Thus, there was strong pressure on the state bank to ease up on its credit and interest rate policies, once some initial success with disinflation had been achieved. Interest rates were lowered and credit growth expanded in the second half of 1989. Inflation resumed at a moderate rate. Overall, 1989 was a year of modest restraint. Domestic credit grew by about 150 percent, down from 400 percent in 1988.

In 1990-92 the government took additional steps to control the growth of credit and hence inflation. Credit was no longer used to finance the budget by 1991. Loans to state enterprises were also controlled more carefully and priced appropriately. This

hardening of the budget constraint led to a major restructuring of the state sector. Between 1988 and 1992 about one-third of the 1988 state-enterprise labour force left the sector, and the number of firms declined from 12,000 to 6,000. These policies gradually brought the expansion of credit under control. In 1995, domestic credit increased 20.3 percent, none of which went toward the budget, with credit to state firms increasing 16.7 percent and credit to the private sector increased 37.2 percent. The restrained monetary policy succeeded in bringing inflation down to about 10 percent per year during 1993 -95.

The disinflation programme required imposing discipline on state enterprises and on the budget. During 1985-89, the fiscal deficit ranged between 5 and 10 percent of GDP and had been financed largely by bank credit. The tight credit policies in 1990-92 necessitated a large fiscal adjustment. Revenue as a share of GDP was fairly stable during this period, so that the brunt of adjustment fell on the expenditure side of the budget. The government budget deficits were reduced from 11.4 % of GDP in 1989 to 3.7 % in 1991-92 (Table 7) and 0.5-0.6 % in 1998-99. Part of the savings came from a military demobilization that returned about half a million soldiers to the civilian labour force. In addition, the government cut back sharply on its investment programs. Furthermore, wage increases for civil servants lagged behind the ongoing, moderate inflation. Salaries for teachers and health workers had fallen so low by 1991 that it was difficult for communities to get them to perform their duties without additional stipends (World Bank 1993b, chapter 7).

The monetary and fiscal tightening in the early 1990s represented a classic structural adjustment to bring inflation and the fiscal deficit under control. Vietnam was unusual in that it did not receive any financial support from the International Monetary

Fund (IMF) or the World Bank during that adjustment period, owing to the opposition of their major shareholders. However, these institutions did offer policy advice and technical assistance. Vietnam's experience with disinflation was also unusual in that it was not accompanied by a recession. Real GDP growth decelerated to 5-6 percent during 1990—91, but that was still a healthy rate of growth. Once stabilization was achieved growth accelerated, averaging 9 percent for 1992—95. Because of this high growth and initial reforms of the tax system, government revenue increased rapidly after 1991, and the government was able to restore the investment and social expenditures cut during the austerity period. Thus, government expenditures as a share of GDP were higher in 1994 than in 1989, at the beginning of the fiscal adjustment (Figure 1.3). Furthermore, because per capita GDP had increased substantially during that period, real per capita government expenditures were nearly twice as high in 1994 as in 1989.

Structural adjustment is usually associated with cutbacks in government services. But Vietnam's experience was that successful adjustment combined with several good years of high growth enabled the government to provide more services afterwards. The government of Vietnam also improved its allocation of resources: it reduced expenditures that did not promote development (e.g. those for the military or to subsidize production) relative to development spending for infrastructure, health, and education.

Compared with Vietnam, most other transition economies also succeeded in macroeconomic stabilisation: bringing down high inflation at the beginning of the transition and reaching reasonable price stability and budget deficits by the mid-1990s. Except for China, there also was a substantial increase in inflation in the initial stage of the transition in other transition countries due to the price liberalisation, the large money

overhang from the period under the centrally planning, and monetisation of large budget deficits, which increased due to output contraction and fiscal restructuring. However, macroeconomic stabilisation was not smooth in all countries. There are several countries, particularly Belarus, Romania, Russia and Tajikistan, which experienced another resurgence of inflation in the second half of the 1990s due to external shock (e.g. regional war in the Balkan area) and their failure to follow the reform agenda consistently and vigorously. So, as of 2000, there remain six CIS and Southeast European countries, where macroeconomic imbalances are significant: either annual inflation excesses 40% or budget deficits exceeded 5% of GDP.

D. Market liberalisation and economic restructuring

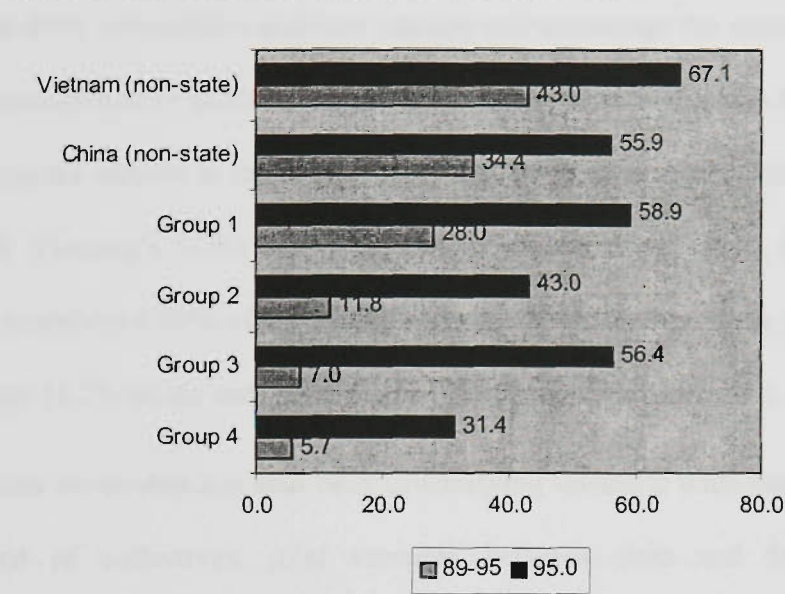
Progress of reforms in these areas is also important to the maintenance and improvement of the social welfare condition. For years, private production of goods and services had been tightly restricted.

Official policy changed in the late 1980s to increasingly tolerate and even encourage the private sector. Price liberalisation in 1989 gave the major impetus to this trend. In 1989, overall GDP growth accelerated to 8 percent. There was rapid growth in agriculture, services, and construction, all areas in which the private sector was able to respond quickly to strengthened incentives. On the other hand, industry, which remained largely under state control, showed negative growth at the early stage of transition. Rapid development of private micro-, small- and medium-scale enterprises in processing and service provision also contributed to the dramatic increase of the proportion of the non-state sector in GDP. As shown in Figure 14 by the mid-1990s, the non-state sector produced about a half of GDP with Vietnam having the largest

proportion of the non-state sector in GDP (67%), well in advance of other advanced reform economies in the Central Europe (58.9%) and China (55.9).

Slow progress of the SOEs reform may be explained by dynamics of the state sector in Vietnam, which is the only country among transition economies with increasing share of the state sector since 1989. Firstly, this is due to the fact

Figure 14. Nonstate sector output as percentage of GDP



Note: Firms are considered as private if less than 50% state owned. Data for Vietnam exclude public-private joint ventures. Data for China include also cooperatives and TVEs and agriculture considered as private in 1995. Source: World Bank (1996a: 15)

that many enterprises classified as state firms in this country are in fact joint ventures with private, mainly foreign, partners (Brada 1996). Secondly, this has resulted from the radical measures to reform state-owned enterprises undertaken in 1989 when the Government eliminated all direct and most of in-direct subsidies, cut the number of firms from about 11,000 to 6,000 by closing 2,000 firms and merging 3,000 others into other state enterprises, and started to expose some of state firms to market competition. About 900,000 employees were retrenched and the state sector ceased to provide extensive social benefits. At the same time a number of large projects with government investment such as oil exploration and hydro-electro-stations came to operation, complemented by increasing flows of foreign investment. As a result, output of state enterprises rose and revenues from them climbed from 6 to 11 % of GDP in just three

years. Thirdly, however, state enterprises in Vietnam still enjoy various protective and distortionary measures such as state monopoly of a number of sectors (e.g. telecommunication and utilities), preferential land provision, and easier access to credits. These deter competition and new entries, and encourage the state enterprises to undertake capital-intensive production. So, in the later 1990s, inefficient SOEs continue to receive financial support in terms of preferential credit from state-owned banks. This weakens both Vietnam's SOEs and bank sectors (World Bank 1997). By the end of 2000, SOEs contributed 90% of the total bad loans of Vietnam's bank system, which comprise about 11.2% of the total bank credit (Dzung The Nguyen 2001).

In China ownership has also been diversifying toward a wide variety of forms, including that of collectives, joint ventures between state and foreign private enterprises, foreign funded enterprises and domestic private enterprises. The growth of this so-called non-state sector has been increasing rapidly since the initiation of economic reform, and is now larger than the share of the formal state sector in the country's GDP.

Table 10. Vietnam's EBRD transition indicators compared with selected transition economies, 1999

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Note: a. data for country group are the unweighted average of group member data, a country with data closest to data of each group is also selected to represent the group

b. including Mongolia

Source: calculated from (IMF 2000)

The progress of the economic restructuring in transition economies can be assessed roughly in a quantitative manner through some indicators such as EBRD transition index or de Melo's liberalisation index¹²². Table 10 compares progress of Vietnam's transition in the selected areas with other transition countries in 1999.

The data show that by 1999 Vietnam has achieved a remarkable progress in economic liberalisation, particularly in setting competition policy and liberalisation of both domestic and foreign trade. Vietnam has experienced open foreign trade, foreign investment, and current account semi-convertibility since the early 1990s. In the mid-1990s, the country was almost equally as exposed to market forces as intermediate reformers, such as China and Russia, although it is found to be less liberalised than the more advanced reformers in CEE, since the government has more extensive controls on foreign trade and entry. By the mid-1990s, Vietnam's economy had become essentially a market-oriented economy, along with most of the transition economies. However, considering detailed indicators of the economic transition, its progress was rather mixed.

However, Table 10 also shows that compared with many other transition economies, the transition in Vietnam progressed much slower in almost all other aspects and in general. Particularly, in terms of large-scale privatisation (i.e. SOEs reform), the progress is very limited: the situation in this area is just comparable with that was in the SOEs sector in a typical centrally planned country before the transition. In 1999 its aggregated transition indicator was equal to 1.9, compared with 2.1-2.9 in intermediate reformers and 3.0-3.3 in advanced reformers such as CEE and Baltic countries. These indicate that there are still huge gaps compared with the target to build an efficient

¹²² See the footnote 53 on page 38.

market-oriented economy and show the urgent need to deepen and accelerate transition in Vietnam.

It is important to note that in contrast to the CEE and CIS countries, Vietnam's reform process is often crisis-driven and based on successful experience gained from local initiatives and experiments rather than on a centrally pre-determined blueprint (United Nations in Vietnam 1998b). Indeed, many important transition policies were driven by people's initiatives. For example, the agricultural contract system and redistribution of land to farmers, leading to subsequent dismantling agricultural cooperatives in 1986-91 were driven by peasants' choice to return to household economy¹²³.

E. Institutional development and social adjustment

As happened in the other countries, institutional reform in Vietnam has taken place in many other areas of the transition. In particular, reform of judicial institutions and enforcement mechanisms lagged far behind legal reform to set the legal framework for the operation of a market-oriented economy. Corruption and red tape remained an acute concern. Reform of the banking sector has remained difficult, with many banks still lacking the necessary expertise to operate on a commercial basis and with many having non-performing loans in their asset portfolios. Serious conflicts of interest plague many financial systems, and in most countries the scope of market-based finance is limited by poor debt recovery mechanisms. Tax administration, public administration, and fiscal decentralization are still at an early stage in many countries. The progress of the institutional reform has been reflected by some elements of the EBRD transition index such as indicators of governance and financial markets reforms.

¹²³ In Vietnam, cooperatives have never been officially dismantled by the government or the ruling party.

However, the economic transition also involves the renovation of the socio-political system prevalent in the countries. The transition in the Central and Eastern European (CEE) and CIS countries was accompanied by the radical replacement of the former political system by a system similar to those established in market economies. The transformation was not always smooth. In some countries, the power and administrative authority of central governments have diminished with the considerable, and sometime chaotic decentralization of revenues and functions to sub-national governments. In a number of countries (e.g. Balkan countries, Moldova, Armenia and Azerbaijan), the transformation resulted in subsequent political instability and even war. This produced an adverse impact upon the economy and in some cases adversely affected regional equity. In sharp contrast to these, the transition in Vietnam as well as in other East Asian transition countries progressed without significant modification of the political system, although 'to democratise social life by developing the rule of law' was also included in the initial objectives of the transition (CPV 1986; CPV 2001). In this respect, the Sixth National Congress of the Communist Party of Vietnam in 1986 formulated the objective of the transition in this area as 'to shift the country from a centralized planned system to a market-oriented economy with state management and a socialist orientation'. However, the concise meaning and boundaries of the concept 'state management and a socialist orientation' in a market-economy has never been sufficiently clarified. Thus attempts for institutional development in Vietnam and other East Asian countries had more limited progress than their economic achievements (CPV 2001).

The status of Vietnam's institutional development for a market economy can be quantitatively assessed and compared with other transition countries through the index

of institutional quality developed by Beatrice Weder¹²⁴. Both the Weder and Kaufmann-Zoido-Lobatón indexes are given in Table 11.

Table 11. Vietnam's index of institution quality compared with selected transition economies, 1999
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Note: a. data for country group are the unweighted average of group member data, a country with data closest to data of each group is also selected to represent the group

b. including Mongolia

Source: calculated from (IMF 2000)

As indicated in the table, although Vietnam, as well as other East Asian transition countries, has achieved remarkable political stability during the transition, their institutional base still faces with a number of constraints such as lack of accountability, government effectiveness, rule of law and excessive regulatory burden. As shown by the recent Asian financial crisis, these represent a serious problem for ensuring not only lasting economic development but also sustained improvement of quality of life of people.

In particular, this problem is reflected on the SWS reform, which has tended to be politically difficult in most of the transition economies, and in Vietnam in particular.

¹²⁴ The Weder index represents the aggregation of five of the six indices of governance developed by Kaufmann Kray and Zoido-Lobatón by aggregating more than 300 separate indicators collected from experts and commercial risk rating agencies. The five indices included in Weder's index concern democracy, government effectiveness, extent of regulation, rule of law and graft. The index and indices range from -25 and +25 with the average for the advanced market economies is 12.6. The fact that this index also highly correlated with the EBRD indicator of transition suggesting that success institutional development leads to more successful implementation of economic restructuring (IMF 2000).

Unemployment benefits have been introduced in advanced Central and Eastern European countries although they typically also were not a major focus in the early stage. The World Bank(1996a) has found that where such reform has taken place it has often been constrained by fiscal shortfalls. In the future, however, social policy reform is likely to become an increasingly high priority. Governments of transition countries are increasingly facing pressure to develop policies to deal with both increasing labour mobility and poverty within the framework of tight budgetary constraints. However, these issues will be discussed further in the remaining sections of this chapter.

4.2.4 Transition outcome and its causes

As shown in Table 12, the transition in Vietnam has proven successful in stabilising the economy, promoting economic growth, and improving well-being of most of Vietnamese. Firstly, the country has been able to achieve rather high average annual growth of GDP at 7.5% in the 1990s with the average annual growth of exports over 25%. The doubled agricultural production has turned Vietnam from a food-deficit position to the world's third largest exporter of rice since 1994. Secondly, inflation reduced from three-digit levels to a single digit with improved macro balances and a threefold increase in real investment from about 12% of GDP in 1984-92 to 28% in 1996 thanks to the dramatic growth in foreign investment flows to about 8% of GDP in 1996 and a five-fold increase in domestic savings from 3% of GDP to about 17% (World Bank 1997:iii). The third element is to be discussed in the next section.

Table 12. Viet Nam: Some key social-economic indicators in 1991-1998

Indicators	1991	1992	1993	1994	1995	1996	1997	1998	1999
GDP growth rate (% annum)	6.0	8.6	8.1	8.8	9.5	9.3	8.2	5.8	4.8
GDP by industry (%)									
+Agr. forestry & fishery	40,5	33.9	29.9	28.7	28,3	27,2	26,2	26,0	25.43
+Industry & construction	23,8	27.3	28.9	29.6	29,9	30,7	35,9	32,7	34.49
+Services	35,7	38.8	41.2	41.7	40,8	42,1	37,9	41,3	40.08
Populn growth rate (%)	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
Population (000 pers)	6693	68042	69168	70313	71476	72658	73860	75082	76325
+Rural %	5	19.14	19.24	19.50	19.71	20.02	20.50	20.51]
+Urban %	20.09	80.86	80.76	80.50	80.29	79.98	79.50	79.49	23.47
	79.91								76.53
Employment by ind. %									
+Agriculture	72.58	72.94	73.05	72.81	68.00	67.48	67.07	67.19	68.99
+Industry & constructn	13.60	13.43	13.36	13.59	13.25	12.93	12.52	12.46	12.08
+Services	13.82	13.63	13.59	13.60	18.75	19.59	20.40	20.35	18.93
Annual inflation (%)	67.5	17.5	5.2	14.4	12.2	4.3	2.3	6.5	1.8
% of poor HHs (%)*		30.01	26.00	23.14	20.37	19.23	17.68	15.66	n.a.

Note: * According to the MOLISA's poverty line and data

Source: Statistical year-books 1994-2000, World Bank 2000 d, MOLISA's Report

Major economic achievements can be summarised as follows (World Bank 1997:iii):

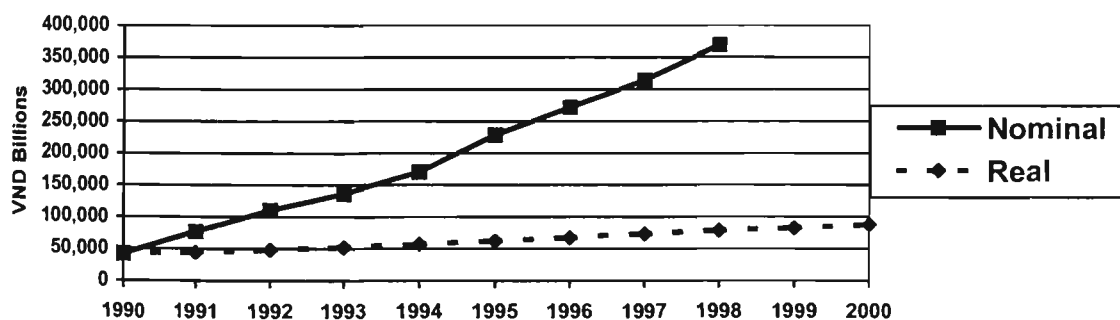
1. Per capita income growth of 5.2 % and 5.9 % per year in 1989-1993 and 1994-99, respectively;
2. Inflation reduced from three-digit levels to single digits;
3. Threefold increase in investment in real terms, rising from about 12% of GDP in 1984-92 to 28 percent in 1996;
4. Dramatic growth in foreign investment flows to about 8% of GDP in 1996;
5. Five-fold increase in domestic savings from 3% of GDP to about 17%;
6. Doubling in agricultural production moving Vietnam from a food-deficit position to become the world's second largest exporter of rice;
7. Major export boom with an annual growth at over 25% with a gradual increase of the share of processed goods;

The improvement in well-being of population will be discussed in the next section.

1. Economic development:

As shown in Table 6 and Table 7, in eight years from 1991 to 1998, GDP steadily increased at an average annual growth rate of over 8 percent, i.e. about 3.5 times faster than the annual population growth. Per capita GDP has been on the rise from US \$275 in 1995 to US \$335 in 1998. The inflation rate has decreased and has remained at low levels in recent years (67.5 percent in 1991, 12.7 percent in 1995 and 9.42 percent in 1998). This leads to a steady growth of both nominal and real GDP, shown in Figure 15.

Figure 15. Trend in GDP Growth, 1990-98



Source: UNDP/MOLISA 20/20 Study

Secondly, as shown in Table 13, the GDP growth coincided with a dramatic shift in the ownership structure of the economy in terms of both GDP and employment. The share of the private sector in the total GDP and the total employment has steadily increased from 28.1% and 13.4% in 1985 to 60.5% and 91.3% in 1999, respectively. Meantime, the share of the state and cooperative sectors in the total employment decreased ten times from 86.6% to 8.7% in the same period, although the sector was able to increase its share in the total output and maintain its dominating role in a number

of critical areas such as production of intermediate goods and the social sector. The shift in Vietnam's employment structure has clearly pointed out the tendency that a increasing majority of Vietnamese have chosen the non-state sector as their source of livelihood.

Table 13. Vietnam: Shares of ownership sectors in the total GDP and employment 1980-99
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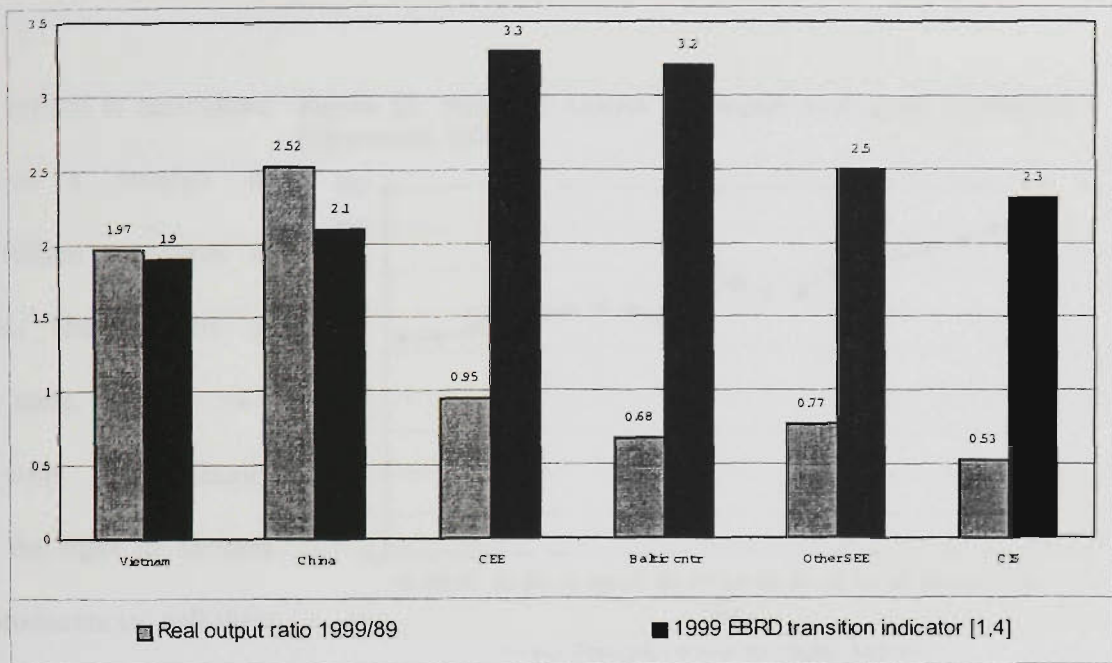
Note: a. Shares of GDP are based on NMP and shares of employment by ownership sector are for 1993
Sources: McCarty et al.(1992), World Bank (1990, 1999b, 2000 d), ADB (1998)

Thirdly, despite of the dramatic shift in economic structure, for the most Vietnamese, the occupational choices are still restricted, particularly by the underdeveloped status of Vietnam's economy. The proportion of agriculture in the total GDP decreased from 40.2% in 1985 to 25.4% in 1999 while the shares of the industrial and services sectors increased rapidly from 27.4% and 32.5% in 1985 to 34.5% and 40.1% in 1999, respectively. This change in the structure of GDP reflects a substantial change in the Vietnamese economy towards industrialisation and modernisation. However, the striking shift in structure of output has not been reflected in the employment structure per economic sector yet. After 14 years of transition, the share of work force in industry and service sectors increased only by 3% from 27.7% in 1995 to 31% in 1999 the expense of employment in agriculture. While this was partially

attributed to the initial high underemployment in agriculture, it indicates that employment generation in industry and other non-farm sectors was much slower than it could be. As a result, with annual natural growth rate of labour force averaged at 3%, every year most of about 1.3 million new entrants into labour market had to be absorbed in low-income agricultural and service sectors, where the underemployment was already as high as 25-30%. Slow employment generation in industry also affected urban unemployment, which reached 7-8 percent and became a serious social problem in urban areas. In other words, millions of labourers in low-income sectors are still restricted from better occupational choices with higher income. This problem are particular acute among some population groups such as ethnic minorities, women, and the youth.

The strong output performance of Vietnam as well as China was in sharp contrast to the tendencies observed in other transition economies in CEE and CIS. Figure 16 presents Vietnam's output performance in terms of output ratio between 1989 and 1999, and progress of structural reform compared with other transition economies. While there is a positive relation between the progress in the structural reform and the output ratio, the production gains were much more impressive in eastern Asian transition economies. Concerning output dynamics, at the start of the transition there was a substantial output contraction in the European and, especially, CIS transition countries where the contraction was stronger and also lasts longer. Output in a number of transition countries was also affected by civil unrest and armed conflicts. So, after a decade of transition, except for four Eastern Asian transition countries, only five European transition economies, all of which are radical reformers, were able to reach their pre-transition output level.

Figure 16. Vietnam's output performance and progress in structural reform compared with other transition economies, 1989-1999



Source: IMF (2000)

Vietnam's performance is explained by both its initial conditions and the way its reforms were carried out. What distinguished Vietnam from most transition economies was that, alongside the state sector, prior to the transition it had large agricultural and private sectors, in total producing about 60 percent of GDP and employing 85 percent of the labour force in 1985. Vietnam's transformation began in the agricultural sector and the progress in this area has produced dramatic positive impacts on social welfare conditions in the country. Fundamental measures took place in 1988-89, when peasants' choice to return to household economy was officially accepted, leading to the redistribution of land among farmers on an equitable basis and dismantlement of the collectives. Initially vague property rights to land were clarified in 1993, when a new land law recognised the peasants' right to use the land distributed to them on a long term basis up to 20 years and more. Latter, broad land use rights including the rights to

sell, purchase, mortgage and inheritate were also recognised (see World Bank 1993b, chapter 2).

The reform in agriculture also led to a number of important reform measures in other areas. The reforms of prices and trade, which took place in early 1989, finally recognised the right of farmers and other producers to sell their products on the market at market

Figure 17. Vietnam: Annual per capita food grain production (kg/person), 1979-98

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prices. Taking in to account the

Source: Fforde and de Vyllder 1988; for 1988—95: World Bank 1993b and 1994, 1999b

wide gaps between the market and official price, which, for example, reached ten-fold in the case of rice in 1988, the abolition of controlled prices and the system of state procurement in 1989 strengthened the incentive to produce. The low efficiency of cooperatives, the existence of labour surplus and ability of wet-land rice culture to absorb labour and substitute it for capital made reform in this sector relatively easy to get quick production gains. Paddy production responded quickly, resulting in large increases in per capita output in 1988 and 1989, as shown in Figure 17.

The dualist nature of the Vietnamese economy also contributed to Vietnam's ability to halt high inflation without suffering a recession in the period 1989-93. As a result of the stabilisation measures, interest rates were raised, government subsidies were cut, and imported inputs became more expensive due to the devaluation. These produced a predictable effect on the state sector, which showed negative growth in

1989. However, the negative effect of the stabilisation on farmers and other private producers was much less since they were not receiving credit from the formal sector or subsidies from the government. Thus for them, 1989 was a year in which inflation fell and prices were liberalized, creating a good environment for expansion. Moreover, the rapidly growing private sector also was able to absorb about 1.5 million people who left the public sector after 1989.

As argued by Dollar (1994) Vietnam's high return to investment in the early period of transition also was due to its initial condition. He pointed out that despite the dramatic reduction of foreign aid, overall investment did not fall during 1989-92 thanks to the emergence of positive domestic savings of 6.9% of GDP. However, its low ICOR estimated at about 2 in the period compared with the average level of 3-4 for developing countries did not reflect the efficiency of its investment. Instead, it was due to three reasons, namely (i) its economy operated below capacity prior the reform, (ii) some large investments from the past came into production (e.g. oil exploration, large irrigation schemes in the Mekong River delta), and (iii) Vietnam's economy became export-oriented as a result of the transition and therefore was able to benefit from fuller use of the country's largely under-utilised human resources.

Two other aspects of Vietnam's reform may help explain the outstanding results: its thorough opening to international markets and the timing of foreign assistance to support its reform. Opening itself to international markets included the unification of multiple exchange rates in 1989: the official rate was devalued from 900 dongs per dollar to 5,000 dongs per dollar - the rate prevailing in the black market. The Central Bank subsequently kept the official rate very close to the parallel rate. This bold devaluation greatly strengthened incentives to export. At the same time, administrative

controls on exports and imports were relaxed. As a result, exports have been a leading growth sector throughout the reform period, with real export growth averaging more than 25 percent per year. Rice exports were a major part of this success in 1989. Crude petroleum exports (not part of the reform program) contributed in 1990 and 1991. A wide range of exports has been on the rise in the past few years, including cash crops (rubber, cashews, coffee, aqua-products), labour-intensive manufactures and tourism services. By the mid-1995, Vietnam has become one of the transition economies most open to foreign trade and investment (Desai 1998). By 1995, net exports relative to GNP had reached 79% in Vietnam, a high figure for such a populous country. According to Sacks and Warner (1995) the shift from a closed to an open trade regime added more than 2 % points to Vietnam's annual growth. Combined with a large devaluation, growth of exports spurred production at a time when restrictive fiscal and monetary policies were contracting aggregate demand and growing imports.

Another area in which Vietnam differed from other low-income reformers was that it did not have access to official finance at the initial stage of the reform process. The current account deficit declined from more than 10 % of GDP in 1988 to near zero in 1992. It is also remarkable that investment increased sharply between 1988 and 1992, while foreign aid was drying up, in response to stabilization and strengthened property rights. Greater openness to foreign trade helped domestic savings to increase by 20 percent of GDP, from negative levels in the mid-1980s to 16 % of GDP in 1992. In fact, financing from the World Bank and the IMF only resumed in 1993. While the delay was largely political, it perhaps offers a useful lesson. Too much financing in the early stage of reform may delay adjustment rather than support it. In Vietnam's case, foreign aid came after good policies were in place.

The transition Vietnam essentially follows the dual-sector growth strategy (Dollar 1994). Actually, its growth has proceeded in three phases. Agriculture was the leading sector in 1989 as rice production responded to price liberalisation and the strengthening of property rights. Then, construction and services became the leading sectors in 1990 thanks to spillover effects. These sectors were also repressed during the old system and were able to expand thanks to expanding demand for housing and other services. The private sector was especially active and grew rapidly during this period. Industry, which was hard hit during the first few years of the transition, became the leading sector after 1991 thanks to oil exports, light manufacturing and agro-processing, which were largely associated with foreign investment. Later, exports became the leading sector, focusing largely on labour-intensive products.

4.2.5 Challenges to Vietnam's transition

However, there exist concerns about Vietnam's recent economic performance (World Bank 1997: vi):

1. Patterns of growth, particularly in the industry sector, have shifted in favour of protected capital-intensive production (the share of labour-intensive industry has declined from 58% to 51%); production in some key areas of industry yield low returns to the economy and are uncompetitive at world prices.
2. Private Sector Role: the corporate private sector still accounts for less than 1% of GDP, not including household economy in rural areas.
3. Labour Market Trends: employment creation has lagged behind growth of the labour force and GDP, leading to unemployment over 6% in 1996. New jobs are concentrated in the lower productivity household and informal sector. E.g., the

service sector accounting for about 56% of new jobs since 1990 has experienced an annual decline in productivity of about 2.3 %.

4. Income disparities have increased since 1991, especially between rural and urban areas (in 1995 average rural income was barely one fifth of the urban one).
5. Sustainability of stabilisation gains: the large current account deficit (over 11% of GDP in 1996) and the worsened financial performance of SOEs have impacted on Vietnam's recent stabilisation success.

There are three major challenges underlying the concerns (World Bank 1998a: 12). First, it has a large amount of labour relative to other factors of production, such as physical capital (including infrastructure), land, and natural resources. While the distribution of land among households is equitable, the population density on the country's agricultural land (1,000 people per square kilometre) is one of the highest among developing countries. Furthermore, population growth remains high. Also, the age pyramid adds to these problems. Absorbing the rapidly growing labour force (about 1 million new entrants per annum not taking into account those retrenched from the public sector) requires an extremely high growth of GDP at 9%. Any slippage from that rate will result in mounting unemployment.

This however could also be an opportunity for Vietnam to follow the same kind of labour intensive development strategy that has been successful in other East Asian economies. The common ingredients of this strategy have been macroeconomic stability, reliance on the private sector to finance most investment, a strong focus on human resource development and relative openness to foreign trade and investment (World Bank 1993a). Vietnam has made substantial progress in each of these areas.

Second, progress with structural reform remains one of the key factors that influence the country's growth. However, the state sector is still large and significant impediments to foreign trade and investment remain. Thus, divesting state enterprises, improving the environment for private investment and lowering trade barriers are all the key elements of the structural reform to sustain the recent growth. The World Bank considers that it would be easier for the Government to move on all of these interrelated policies at once (World Bank 1993).

Third, it is critical that the reform process continues to benefit the whole population equitably (World Bank 1993a). It indicates that although the initial stage of reforms in 1989-89 did reach a large number of households, the growth in the later stages in 1993-95 has been more narrowly concentrated in the urban areas around Ho Chi Minh City and Hanoi.

In 1997, the Government has identified six priorities for further fostering the transition as follows (United Nations in Vietnam 1998b):

- Improve the efficiency and competitiveness of the economy, mainly through creating a favourable incentive environment for export processing industries;
- Develop agriculture and rural areas towards industrialization and modernization by, among others, reconsidering the land tenure regime and removing constraints on trading of agricultural products, especially rice;
- Promote state enterprise reform and private enterprise as well as small and micro enterprises with job-creating potential;
- Reform the financial and banking sector by, inter alia, reforming tax policy and creating a transparent and sustainable public expenditure policy;

- Develop the social sector and protect the environment;
- Build a democratic, honest, competent and effective administration.

In sum, Vietnam's transition is a gradual reform process, which has resulted remarkable economic growth. The transition can be viewed best as a dramatic expansion of people's occupational choices. However, underdevelopment and slow progress of transition and generation of productive employment face many Vietnamese labourers with restricted choices for better occupation with higher income. These are reflected in Vietnam's SWC and SWS during the transition.

Section 4.3 Analysis of social welfare during Vietnam's transition

The transition is a complex process with gradual changes in both economic and social sectors. The above-mentioned transition measures heavily hit previously favoured sectors, particularly state employees, and urban areas: by 1992, about one million workers had been retrenched from the state sector as a result of reforms of SOEs and state administration, and the real wage of state employees fell by 60% compared with the 1985 due to their weak indexing. Social sectors suffered from a sharp reduction in government funding in the real terms, although the introduction of the user-pay system had taken place in education, health care and other social services since 1989. In social sectors, it involves a shift from the 'support-led' patterns to the 'growth-mediated' patterns. In the past, Vietnam achieved remarkable progress in social and human development by giving priority to and subsidizing social services. Now the priority has been given to a broadly based and participatory economic growth, which would equitably benefit majority of people, while providing security to those, who cannot participate in the process, through public expenditure programs social assistance programmes and safety net.

The purpose of this section is to judge changes in Vietnam's social welfare conditions during the transition by evaluating input indicators reflecting material opulence (e.g. per capita income, possession of durables, food consumption, savings and access to social services such as education, health and reproductive health care, and clean water supply), output indicators reflecting human resource development (such as education attainment, life expectancy and mortality, fertility, and population growth), and indicators of natural and human ecology. Both changes in the level and distribution of the indicators across population groups, especially the poorest ones, will be given attention (Dzung The Nguyen 2001).

4.3.1 Changes in opulence indicators:

Table 14. Vietnam: Growth of per capita GDP in 1994 prices by year and period of the transition (1986-99)

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*Note: * estimated*

Sources: World Bank (1990, 95, 99)

As shown in Table 14, at the macro level, the solid increase in per capita GDP in 1994 constant prices by 76% since the start of '*doi moi*' indicates expanding general opulence of goods and services in the country. This is due to the high GDP growth rates and a sharp drop in the population growth from 2.2% per annum in 1980s to 1.65% in 1990s. There is a correlation between the progress of the transition and the growth of per capita GDP, which reached its top in 1995 before steady declining to near the 1986-

88 level in 1999. However, Vietnam is still a very impoverished country with per capita GDP at US\$330 equivalent in 1998.

The tendency of general expansion in opulence is confirmed by data on household expenditures, which were collected through Vietnam Living Standard

Table 15. Vietnam: Household per capita consumption by quintile, D000' in 1998 prices, 1993-98

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Surveys in 1992-93 and 1997- Sources: GSO (1999)

98. As shown on Table 15, in the period, per capita living expenditures in 1998 prices of Vietnamese households increased 1.43 times. The remarkable improvement is observed in all expenditure quintiles. However, greater occupational choices do not mean equal opportunities. The rich were able to better off more than the poor, leading to increasing disparity among them and decreasing in equality. So, the gap in the expenditures between the richest and the poorest increased from 4.6 times in 1992-93 to 5.5 times in 1997-98.

Greater occupational choices also do not automatically result in equal opportunities among regions and geographical areas. Table 16 indicates that in Vietnam, the tendency for increasing disparity appears even more

Table 16. Vietnam: Household per capita consumption in 1998 prices by geographical region, D000', 1993-98

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Source: GSO(1999)

visible among geographical areas then among income groups. Urban dwellers were able to benefit more from the general increase of opulence, leading to an expansion of urban/rural gaps in welfare-related expenditures from 1.8 times in 1992-93 to 2.2 times in 1997-98. In the period, 66% and 45% of rural dwellers lived under the poverty line, compared with 25% and 9% of urban ones. However, the picture is more complicated when we look at different regions. The Southern East and Red River Delta regions, which are home for Ho Chi Minh City and Hanoi, the country's largest cities and development centres, benefited most, followed by the Northern Uplands and the Northern Central Coast, the poorest regions. The Mekong River Delta and Central Highlands, which produce most of rice and cash crops for market, benefited least. The Northern Uplands, Central Highlands, and the Northern Central Coast remained the poorest regions, where the poverty rates remained as high as 59%, 52% and 48%, respectively.

Moreover, as shown in Figure 18, despite the generally tendency for increasing opulence, a large portion of Vietnamese, especially those living in rural areas, still lack access to basic goods and services. According to the living standards measurement

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surveys, 58% and 37% of Vietnamese were unable to meet their basic needs, which were estimated at 1,160 and 1,790 thousand dongs per capita per year in 1992-93 and 1997-98, respectively. Of them, 24.9% and 15% cannot afford basic food requirements.

However, the average deficiencies in basic needs and, particularly, food rapidly reduced from 18.5% and 6% in 1992-93 to 9.5% and 3% in 1997-98. Compared with the 70% poverty rate in the mid-1980s, these are a remarkable achievement in poverty reduction. However, the achievement appears vulnerable to crisis situations since a large portion of the non-poor remain just above the poverty line (World Bank 1999) and, thus, subject to downward movement due to economic and natural irregularities.

As shown by Figure 19, there was also an improvement in food consumption. While food expenditures in household living expenditures in 1998 prices increased 34.9% from 1992-93 to 1997-98, its proportion in the total expenditure decreased from 56.2% to 53% with a shift up the food

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chain. The expenditure for meat, aquatic products, eggs, and milk at constant prices increased 1.52 times, raising its ratio in the total food expenditure from 27.4% to 31% in the period. This is an important indicator of the improvement of living standards for a poor country such as Vietnam. Furthermore, although in general poor households spent more of their per capita income on food and consumed less expensive foods such as rice and other grains, 25% and 15% of Vietnamese households could not afford basic food in 1992-93 and 1997-98, respectively. The respective figures for rural areas were even as high as 29% and 18%. Moreover, according to Ministry of Labour 04 January 1999) about 2% of the total population (i.e. 250-300 thousand households, mainly from ethnic minorities) still suffer from acute chronic hunger. This indicates the existence of serious problem in the country's SWS, and its food distribution system, in particular.

Furthermore, the increasing opulence of goods is also proved by the expansion of possession of durable goods and living conditions. The share of households having TV, radio & recorders, bicycles, motorbikes and big furniture increased from 22.4%, 25.6%, 64.8%, 10.7% and 62.5% in 1992-93 to 57.6%, 43.9%, 73.2%, 23.8% and 77% in 1997-98, respectively. The possession also tends to shift to higher quality but more expensive items and branches such as colour TV, video/game players and motorbikes. In terms of housing, the living area increased from 8.3 square metres in 1992-93 to 9.7 square metres in 1997-98, while the share of those living in temporary houses reduced from 36.9% to 25.9%, respectively.

The increase in general opulence was also reflected in the expansion of households' choice to save for their future consumption. The proportion of the households, which had savings and other liquid assets, increased from 48.3% (43.1% in rural areas and 69.1% in urban areas) in 1992-93 to 97.7% (rural: 98.4%, urban: 97.2%) in 1997-98. The average amount of the savings and liquid assets also increased from 2,689 thousand dongs, 1,986 thousand dongs, and 7,941 thousand dongs to 13,573 thousand dongs, 7,875 thousand dongs, and 16,948 thousand dongs, respectively, that was much higher than the increase in the retail price index in the period.

As shown in Table 17, access of population to social services also changed dramatically. In the decade following '*doi moi*', enrolment into all levels of education, except the primary one, show an unusual downward tendency whilst drop-out rates increased, before starting to demonstrate an improvement in 1993 and reaching the 1985 levels in 1994-95. However, upper secondary education, vocational training, and technical and tertiary education remained restricted for absolute majority of young people: only 6-9% of people of age 15-24 have a chance to enrol into the formal

educational and training institutions in 1985-95 and the remaining had to rely on on-the-job training and their ability to learn from work experience. Quality of education and its slow response to demands of the emerging labour market also remained a problem (MOET, UNDP et al. 1992).

Table 17. Vietnam: Access to social services, 1980-98

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Note: 1. For 1979 based on 1979 census, 2. For 1989 based on 1989 census, 3. For 1999 based on 1999 census, 4. For 79-83, 5. For 84-88. 6. For 89-93, 7. For 1996, 8. For 1980-85, 9. For 1990-99, Source: United Nations (1999), World Bank (1999b), GSO (1997), and online databases of the Statistics Division, United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)

Access to the formal health care system declined in terms of the steadily decreasing numbers of hospital beds, and medical assistants, nurses and midwives per 100,000 people and the deterioration in the system of commune-based health care centres. However, emerging private health and education services provided increasing alternatives, especially in supplying pharmaceutical products and in the urban areas.

4.3.2 Changes in output-oriented indicators

Available data confirm that the increasing opulence of goods and services has been translated into a gradual improvement of well-being of Vietnamese during the transition. Despite of the degradation of the formal health care system, life expectancy at birth was maintained at the 1980 level till the early 1990s, than gradually increased for both genders, whilst adult literacy showed a slow but steady growth in the two turbulent decades. In terms of the two indicators, Vietnam is well positioned in middle rank among countries over the world.

Mortality indicators are a close proxy for the level of development (Sen 1995a). The steady decrease in Vietnam's rates of death, infant mortality, and under-five child mortality indicated the improvement of well-being of its people. However, the exceptionally widely spread incidence of child malnutrition is still a serious concern, attributed to the existence of food shortages, diet imbalances, and inappropriateness of nutrition and sanitation practice within a considerable part of population (24% and 15% in 1992 and 1998, respectively).

Table 18. Vietnam: Social welfare output indicators, 1980-98

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Note: 1. For 1979 based on 1979 census, 2. For 1989 based on 1989 census, 3. For 1999 based on 1999 census, 4. For 1975-80, 5. For 1991, 6. For 1993, 7. For 79-83, 8. For 84-88. 9. For 89-93, 10. For 1996, 11. For 1980-85, 12. For 1990-99, ... Not available

Source: United Nations (1999), World Bank (1999b), GSO (1997), and online databases of the Statistics Division, United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)

Birth rates, total fertility, and population growth decreased during the two decades of the transition and can serve as indicators of well-being improvement since the latter often result in a household's decision to have less children in view of the increasing opportunity cost of having a child and expanding choice for women. However, similarly to the case of China, the changes were strongly influenced by government policies in population control and availability of reproductive health services, which were reinforced by a number of economic policies such as long-term allocation of land according to the current labour force but not the number of children in family and economic sanctions against those having more than two children. On other

hand, the sharp reductions in the birth rate and population growth were important factors contributing to economic growth and improvement of living standards.

4.3.3 Changes in equality

Inequality has increased although not much. While most of Vietnamese were able to benefit from the reforms and economic growth, the benefits were distributed disproportionately among social groups and localities. The Gini coefficient slightly increased from 0.330 in 1993 to 0.354 in 1998. Figure 18 and Figure 19 show that the gaps in income and consumption between the richest and poorest quintiles and between urban and rural areas also expanded. So rural dwellers, ethnic minorities, other vulnerable groups and the Northern Uplands, Central Highlands and North Central Regions remained among the poorest.

However, compared with other countries the distribution of economic and social benefits in Vietnam is quite equitable.

4.3.4 Changes in Human Development Indicators

Vietnam has improved the welfare of its population but compared with other countries the progress is slower. So, during 1992-95, Vietnam had incremental gains in HDI and all other indicators comprising the HDI but lost its rank by two points. Thus, there is an emerging challenge that the country has to catch up with other countries not only in terms of economic but also human development.

Table 19. Human Development Index

	HD93	HD94	HD95	HD96	HD97	HD98	HD99
Year to which the HDI refers to	90	92	93	94	95	96	97
Life expectancy at birth (year)	64.9	63.4	65.2	65.5	66	66.4	67.4
Adult literacy rate (%)	73.1	88.6	91.9	92.5	93	93.7	91.9
Combined enrolment ration* (%)	3.9	4.9	49	51	55	55	62
Real capita PPP (US\$/person)	1170	1250	1010	1040	1208	1236	1630
HDI value	0.472	0.514	0.539	0.523	0.557	0.56	0.664
Rank	116	116	120	121	121	122	117**

Note: * in 1992-94; mean year of schooling.

*** not comparable with other years due to changes in methodology*

Section 4.4 Chapter summary and conclusions

This chapter attempts to apply the analytical framework for a qualitative analysis of changes in social welfare conditions in Vietnam. It analyses Vietnam's on-going transition into a market-oriented economy in the broader context of the country's general socio-economic development and the on-going transition in other former central planning countries. Then, the chapter studies patterns of changes in well-being in the country during the transition. Initial conditions, major developments, key patterns, achievements and shortfalls, and the lessons are the focus of this qualitative analysis. Moreover, the commonality and specificity of Vietnam's experiences have been specified by comparing Vietnam's experiences with those in other transition economies, particularly China and East Europe.

The chapter concludes that in contrast with other transition economies, Vietnam's transition has been essentially bottom-up and driven by initiatives of people, who experience their choices for better occupation with higher income. The transition has produced not only production gains and macroeconomic stabilisation but also a rapid improvement of human welfare of the population. However, the occupational choices were restricted by underdevelopment status of the economy and the slow progress of transition. Moreover, these were accompanied by increasing inequality and lack of security. As an essential element of social welfare, the social welfare system - the country's response to the latter problem - will be explored in the Chapter 5.

CHAPTER 5 SOCIAL WELFARE SYSTEM DURING VIETNAM'S ECONOMIC TRANSITION

Section 5.1 Introduction

Chapters 3 and 4 have established the need to develop and strengthen a market-friendly social welfare system (SWS) during transition. The purpose of this chapter is two-fold. Firstly, it provides an overview of the structure and development of Vietnam's SWS, especially during the on-going economic transition. Secondly, based on the analytical framework, it conducts a qualitative analysis of the system in order to specify issues and evaluate its effectiveness. These will be done in comparison with the experiences of other transition economies.

As concluded in Chapter 1, the SWS should be considered more broadly than the traditional social protection system, and comprises, in addition to the former, employment policy, education, and health care. The focus of this chapter will be given to Vietnam's social protection system, which has been studied less than other elements of Vietnam's SWS. In particular, Section 5.2 will explore Vietnam's public social protection system, including its development, achievements compared with those of other transition economies, main instruments, and their coverage and efficacy. Section 5.3 is devoted to issues related to labour and employment policies. Sections 5.4 and 5.5 analyse the country's education and health care systems, respectively. Section 5.6 concludes the chapter with its summary and major conclusions.

Section 5.2 Changes in the social protection system

5.2.1 The development

The development of Vietnam's modern social protection system can be divided into four periods as follows:

a. The establishment (1954 – 75): Two social security systems based on the centrally planned and the market economies were established in the North and the South, respectively. The Northern system was built on the model developed in the Soviet Union but shared many of its features with the Chinese system such as its dualism. Major instruments were social insurance for state employees and cooperative workers (this policy was stipulated in 1962), preferential treatment for martyrs and war invalids (1956 and 1964), and emergency relief for people affected by disasters and war (1965). These still constitute the core of Vietnam's social security system. These measures were complemented by a number of other policies, such as the state guarantee of life employment, free public health care and education, and subsidized housing, transportation and basic food products. The social protection system was based on the government network of labour and social affairs agencies spreading from the centre to the grass-roots with an active role to state-owned enterprises and cooperatives in funding and providing social services in urban and rural areas, respectively. By contrast, the Southern system was based on models of developed market economies, however, these mainly operated in urban areas. Both systems involved a wide spectrum of civil society that made social security a greater social value during years of fierce war.

b. The period 1976-86 was characterised by the extension of the Northern system to the South, where the market-based system was demolished, and a nation-wide social protection system was established¹²⁵. The Government also steadily expanded its social welfare package to include new areas and target groups such as war refugees, the disabled, the elderly, the disabled and orphans. In general, the pre-transition social security system was characterized by the provision of an extensive social welfare

¹²⁵ The Government of Vietnam traditionally pays a great attention to the development of Vietnam's SWS. In particular, the report to the 4th National Congress of the leading Party in 1976 stated: 'In the next 5 years (1976-80) we must attach almost importance to increasing public welfare establishments'.

package by the state to the public. In a broad sense, it included not only direct benefits and services such as pensions and other social insurance for state employees and their families, care for living-alone elderly, the disabled and orphans, but also full employment and life job security, free public health care and education, and subsidized housing, transportation and basic food products. These benefits, along with a deliberate policy to minimize unearned income and wage differentials fostered an egalitarian distribution at a poverty level. This system had a number of specific characteristics as follows:

- a. Its strategy was to maintain an egalitarian but low level of living standards though priority support but not through rapid growth.
- b. The government played the dominating role not only in state management of social security, but also funding and delivery of almost all services, which operated through central planning.
- c. The social security was of the dual nature, i.e. strong differentiations between ownership sectors, and between rural and urban areas in terms of target groups, benefits, coverage, funding sources and institutional aspects; and
- d. The social security was work- or residence- anchored. State enterprises and cooperatives were both the production centres and major deliverers of many social security services for workers and their families. Very limited services (mainly, primary education and health care) were provided for outsiders but based on their residence status. These effectively limited workers' mobility.

c. In the period 1986-92, the social security system deteriorated since economic reform measures eroded the basis of the old SWS but the new market-oriented one had not been designed and set up. The gradual dismantlement of cooperatives, the abolition

of government life employment, the abolition of government subsidies for housing, food, and utilities, and cuts in social expenditures in real terms particularly affected the system. Some urgent measures were undertaken such as gradual introduction of the user-pay system, the establishment of a special fund to help retrenched state employees, and the establishment of social relief centres for the elderly and the disabled. However, the Government and cooperatives remained the dominating sources of funding and service providers in the urban and rural areas, respectively.

d. Since 1992, a number of measures have been made to adjust the social security system to the emerging market-oriented economy, such as enacting the Labour Code and the extension of social insurance to non-state employees in 1993-94, the establishment of national social insurance and health insurance agencies separated from the state management apparatus in the mid 1990s. The mid-1990s was marked by the establishment of the system's new element – poverty reduction assistance – with the establishment and operation of a number of national programmes such as the programmes for re-greening bare land, hunger eradication and poverty reduction, which operate as a safety net for the poor and poor areas. There also has been a shift in financing and management of other components of the SWS. Government support to basic health and education remains substantial and has even increased compared with the pre-transition period both in absolute terms and as a share of GDP, while the share of private spending has risen since the wide establishment of the user-pay system in health care, education and social/health insurance in 1993-94. Compared with other sectors, there was considerable delegation of funding and authority to local People's Committees and a decrease in the role of enterprises and cooperatives in service provision. This is complemented by the nation-wide network of specialised agencies under the direct supervision of the Ministry of Labour, War Invalids and Social Affairs

(MOLISA). However, both the level of spending and quality of the services remain low compared with need. A viable solution to the social welfare crisis is yet to be found because the economic impetus of market reform directly contradicts any policy to protect the weak.

5.2.2 Comparative analysis of Vietnam's social protection system

Compared with other transition economies, especially CEE and CIS, Vietnam's social protection system is much less developed. As shown in Table 20, the level of public expenditures for social protection in Vietnam was around 3 % of the total GDP in the 1990s. The level is the lowest among CEE and CIS transition economies, including the Central Asian countries such as Uzbekistan. In general, expenditures for social protection comprise a large share of GDP in CEE and CIS transition economies, which spend on social protection as much as low-income OECD economies in terms of percentage of GDP.

However, Vietnam spends a relatively high level of its GDP for social protection compared with other developing countries. Within the South Asian and Southeast Asian region, its level is comparable with Sri Lanka, where the SWS is much more developed than in the other countries, and much higher than in Malaysia (1.8%), India (1.5%), Philippines (0.7%), Thailand (0.2%), and Indonesia (0.02%).

On the other hand, as shown in Table 20, the composition of Vietnam's total social protection outlays is clearly distinctive: pensions account for more than 90 % of total expenditures. Other outlays are small and quite similar to those observed in other developing countries. There is no institutionalised public protection from unemployment. Other components of a social protection system, notably social assistance, comprise a small proportion of the total.

Table 20. Social expenditures by functions as % of GDP (1993)

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Sources: Vietnam: calculated from MOLISA BSS Study (98) ; Uzberkinstan & OECD: WB (93) Uzbekistan: *An Agenda for Economic Reform* (Washington DC); Russia, Ucraina, Poland & Latvia: Milakovic (98) *Income, Inequality and Poverty during the transition from Planned to Market Economy* (WB, Washington DC); South Asian (SA) and Southeast Asian (SEA) countries: calculated from (Getubig 1992:92-94)

Table 21 gives a comparison of Vietnam’s detailed outlays and dynamics of expenditures for social protection with those in the CEE and CIS transition economies. Firstly, in general the social protection system in CEE and CIS transition economies covers a wide range of risks, which are comparable with international standards (e.g. ILO Convention 102). Almost CEE and CIS transition economies have quickly institutionalised unemployment insurance as the main instrument to protect their workforce from the adverse impact of the transition. However, national schemes for residual protection of the poor, who are not eligible for any standard benefits, are almost absent (e.g. Russia). There is a common tendency for the share of expenditures for social protection, particularly pensions, in the total GDP to increase in the first half of the 1990s – the period of production contraction – and then gradually decrease later on as the economies regain growth.

In contrast, the social protection system in Vietnam deals with a very narrow range of risks. Institutionalised protection for unemployment as well as family and child allowance are absent while food subsidies - a popular element of social protection in many countries - are very limited¹²⁶. There is no guaranteed minimal level of income. Secondly, there is a large share of payments to government war veterans and families of

¹²⁶ In Vietnam, food aid is targeted at a very narrow group, including ethnic minorities with extreme difficulties, those affected by disasters or chronic hunger, and some resettlement schemes.

war martyrs, without which the outlays of social protection expenditure in Vietnam would be comparable to those in other South and Southeast Asian countries. Thirdly, with already limited resources, social assistance in Vietnam focuses largely on various residual social assistance schemes, which provide support to the most destitute among the non-working poor and those affected by covariate risks such as starvation and disasters. Finally, the assistance to the working poor represents the main response of Vietnam’s social protection system to adverse impacts of the transition. These only emerged in 1993, but grew fast and comprised nearly 15% of the total overlays in 1996 – a positive phenomenon among the transition countries.

Table 21. Dynamics of social expenditures by functions as % of GDP (1993)

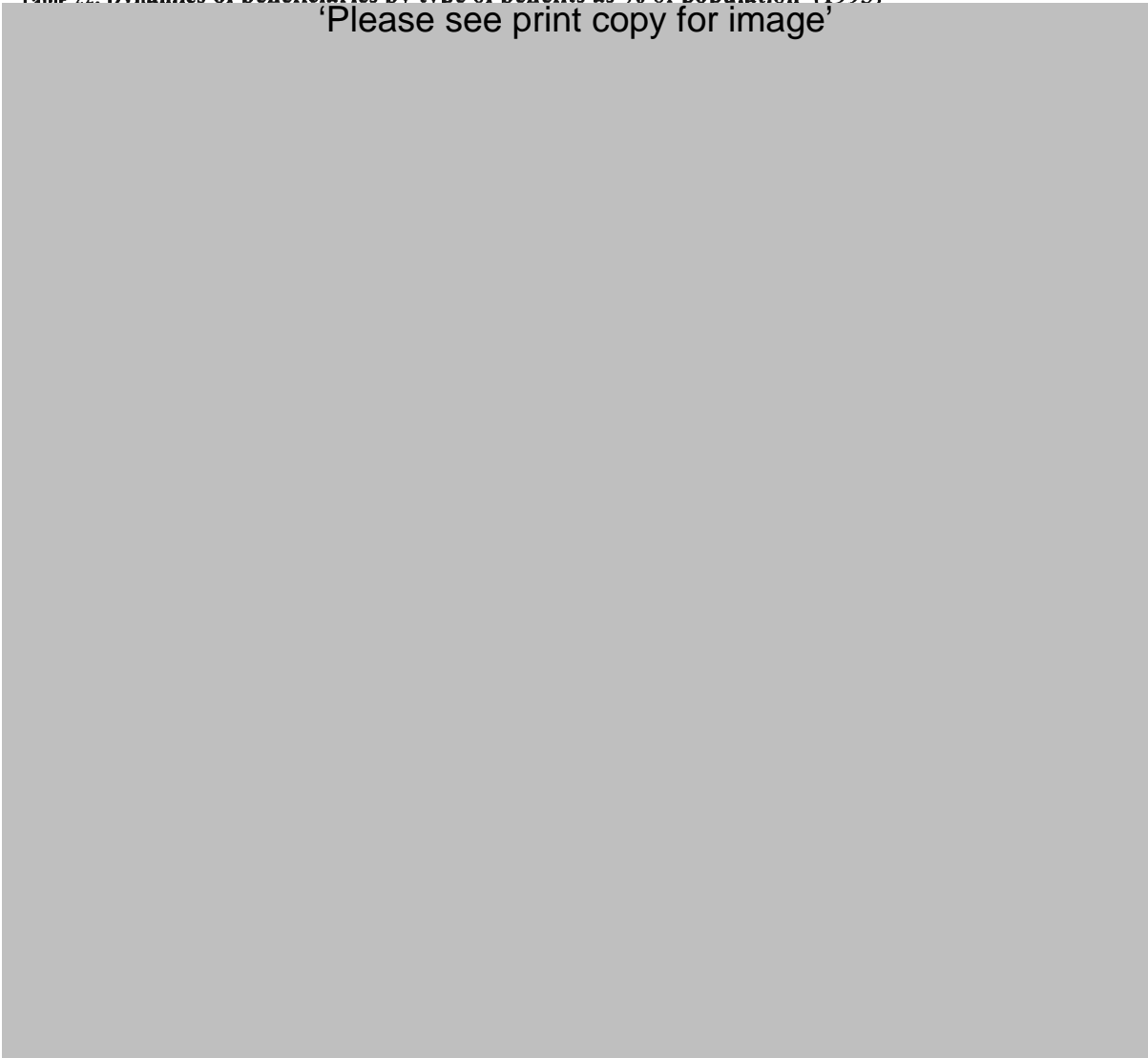
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Sources: Vietnam: MOLISA BSS Study (98), Russia & Poland: Milakovic (98) Income, Inequality and Poverty during the transition from Planned to Market Economy (WB, Washington DC)

Table 22 completes the overall picture of the social protection system in Vietnam compared with the selected transition economies by providing the proportion of beneficiaries compared with the total population.

Table 22. Dynamics of beneficiaries by type of benefits as % of population (1993)

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Sources: Vietnam: MOLISA BSS Study (98), Russia & Poland: Milakovic (98) *Income, Inequality and Poverty during the transition from Planned to Market Economy* (WB, Washington DC)

It is striking that about 20% of the population in the CEE and CIS countries receive public pension benefits, while in Vietnam the figure is only about 3%. Taking into account data on the overlays in Table 21, one may conclude that Vietnam’s war veterans and pensioners are overprotected in comparison with those in the CEE and CIS countries. Secondly, in Vietnam poverty-related schemes play a major and rapidly increasing role in providing social assistance to the population, while other forms of social assistance exist but with very limited coverage, especially in an impoverished country like Vietnam.

5.2.3 Instruments and their coverage

The objective of Vietnam's recent social security system is to "ensure a stable livelihood for [the] target groups and help them integrate with society." The government strategy is to achieve rapid and shared growth well balanced with social development, "combining the responsibility of the State and the community with the efforts of each individual" (SRV 1995a:30-31).

Vietnam's social protection system is characterised by a quite limited number of instruments. Despite some inconsistencies in terminology, the instruments can be classified into three components, namely (A) social security including social insurance and preferential treatment of war veterans, (B) social assistance, and (C) poverty reduction assistance, which are distinctive in terms of their target groups.

A. Social security

a. Social insurance

In Vietnam, social insurance was introduced first by the French colonial regime for Vietnamese staff working in French institutions and enterprises in the 1930s and covered only three areas, namely (i) old-age, (ii) sickness, and (iii) work injury. Based on this scheme, the government of independent Vietnam set up a new nation-wide system, covering only state employees (degrees 54/CL in November 1945 and 106/SL in June 1946). However, Vietnam's modern social insurance was fully established only in 1961 by the government's degree 218/CP, which defined the six areas of social insurance for state employees and soldiers, namely (i) old-age, (ii) death, (iii) sickness, (iv) invalidity, (v) work injury, and (vi) maternity. The system was non-contributory and the insurance payments were paid directly from the budget by the government labour agency, which also administered the system. Although there were some changes

in implementation arrangements, the design remained unchanged until the mid-1990s, when the scheme was changed to address the needs of workers in non-state sectors.

Based on the Labour Code enacted in 1995, and government degrees 43/CP and 60/CP in 1993 and 12/CP in January 1995, the new social insurance scheme provides five major benefits for (i) retirement pensions, (ii) survivors benefits, (iii) work accidents and industrial diseases, (iv) sickness benefits, and (v) paid maternity leave up to two births. There is limited provision for longer-term illness, and no unemployment benefits, although this is being worked on at present. The scheme is proposed to be self-financing, based on the principle of “pay as you go”: workers would contribute 5% of base salary while their employers pay 15% of base salary. The Government would cover payments for those retired prior to 1995. In principle, 15% and 5% of the 20 per cent are used to pay for retirement pensions and other benefits, respectively. The National Social Insurance Fund was also set up to administer the scheme.

The present social insurance comprises three instruments as follows (Preston 1999).

1) Compulsory social insurance scheme

In principle, this scheme is compulsory for all permanent workers in the formal sector, i.e. public sector and all non-state enterprises, which employ 10 or more wage workers. This means, this scheme would cover 11% of the total work force or 26 % wage workers. In practice, most of contributors are state employees and employers while almost all beneficiaries are former state workers. Among them, the government funds pensions of those who retired before the establishment of the fund through transfers from budget. There is also widespread non-compliance with legal contribution obligations concerning over one million workers primarily from the non-state sector.

The major problem of this scheme is its long-term financial unsustainability due to low retirement pension ages (55 for women, 60 for men, and even lower for a number of categories of workers and state employees, e.g. those involved in heavy and dangerous works) and high income replacement rates (up to 70% of the average level of salary or wages in the last 3 years). However, the scheme currently has a cash surplus because of the young age structure of the labour force, and the rapid expansion of the scheme compared with the number of beneficiaries.

2) *Voluntary social insurance:*

This scheme concerns workers in the informal sector, where the wage paid to workers is legally required to be set up so that the workers can join the fund on a voluntary basis. In practice, the voluntary membership is very low due to the lower level of workers' income in the sector and the scheme's still limited unattractiveness.

3) *Contributory health insurance*

Health insurance covers 80% of the cost of basic clinics and hospital services in public health care system (except for some priority target groups) but not the cost of consultations, medicines and specialist care. It currently covers about 13 per cent of the population. A half of them are people with employment-linked health insurance, for which a premium is fixed at 3% of the basic wage. Another large group include government pensioners and war veterans, who receive free or subsidised health insurance cards. There is also a significant voluntary membership, mainly students under a special scheme. Recently, there are increasing numbers of the poor whose contributions are covered by the health care element of targeted poverty-reduction programmes. However, both the benefits and quality of the health services, which the scheme actually delivers, are quite limited.

b. Preferential treatment of war veterans

Preferential treatment provides special support for people, such as revolution veterans and government war veterans and invalids as well as old parents and less-than-18-year-old children of government war martyrs. The objective of this politically very sensitive programme is to maintain the living standards of the people at the level not lower than the average level in the locality wherever they live. Currently, this scheme covers 1.4 million people, or about 2% of population or 5 % of households and utilises more than a half of the public funds for social protection. Table 23 shows that in sharp contrast with other countries, the number of beneficiaries of this programme is much greater than the number of beneficiaries of the social insurance scheme and is still growing, increasing pressure on budget. This does not reflect the fact that many of the people are also classified as priority beneficiaries under other social security programmes, particularly poverty reduction.

Table 23. Numbers of beneficiaries of pension schemes as % of total population
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Sources: Vietnam: MOLISA BSS Study (98), (Preston 1999)

In summary, the existing social insurance system is designed mainly for workers in the formal sector in urban areas, particularly those working in the public sector. Like social insurance in other developing countries, it has very limited coverage and offers a narrow range of benefits compared with international standards, including unemployment insurance, sole parent allowances, family allowance, or crop or livestock insurance. However, the schemes cover only a small proportion of the population. Social insurance covers mainly the upper income households, who are primarily occupied in formal sector employees. Thus, farmers, workers in informal sector, or the non-farm self-employed are often excluded. Similarly, most of the benefits paid out

under the various social transfer schemes, such as the budget-funded pensions for retired or disabled state sector employees, war pensions or preferential treatments, often go to the upper or upper middle income groups, with far less going to poor households. These transfers absorb a relatively large share (14%) of the Government Budget but only about 2.7% of GDP.

B. Social assistance:

In Vietnam, social assistance consists of two distinctive schemes according to the nature of the need for protection they address, namely (i) the social guarantee fund for regular relief; and (ii) the contingency fund for pre-harvest starvation and disaster relief. Theoretically, social assistance is the only programme covering the entire population in Vietnam. However, in practice, its benefits are limited to very narrow groups of people, subject to strict means testing.

a. The Social Guarantee Fund for Regular Relief

This fund is designed to fund residual measures to protect living standards of the people who cannot work, are in extreme poverty, and do not have other public and private supports, such as the lonely elderly, the heavily disabled, orphans, homeless people, and children in extreme difficult circumstances. Recently, it also used for funding supplementary assistance in education and health care for poor families and assistance to medical-social problem groups.

The funds are reserved in local government's annual budget and administered jointly by local departments of labour and finance. The size of benefits varies widely among localities, depending on availability of funds and modality involved. There are two major modalities. Firstly, most of beneficiaries stay in their community and have to re-qualify after a certain period (usually six months). Secondly, a very limited number

of beneficiaries, who need personal care, are placed in social welfare residential centres, which are a much more expensive option. In 1997-99 there were 220 centres under the management of either the Ministry of Labour, Invalids and Social Affairs or provincial people’s committees.

Recent trends in the fund’s coverage are shown in Table 24. Two things are striking about the statistics. First, both the numbers of the eligible and those who received assistance are very low compared with the total population. Total numbers receiving regular benefits represent only 0.2% of the population and 5%-50% of the estimated number the eligible. This indicates very high selectivity and, thus, many people who are actually eligible, probably do not receive necessary support. Secondly, the percentage of beneficiaries tends to increase while the number of the eligible disabled decreases but other categories grow rapidly as an improved budget revenue basis allows the government to allocate more funding and communes keep identifying larger numbers of poor people who appear to be eligible for benefits, compromising government eligibility criteria. However, when facing with budget constraints, the government often holds numbers down by tightening the existing eligibility criteria and granting restricted financial ceilings. Thirdly, benefits are usually much less than the poverty line and widely vary among localities.

Table 24. Trends in coverage of regular social relief

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Note: * not include those disabled people, who may be normally capable of most types of employment (e.g. the deaf) and about 400,000 former civil or military employees who are already receiving government disability pensions under the government pensions for war veterans.
Sources: Vietnam: MOLISA safety net study (99) and Preston(1999).

Among potential beneficiaries, the lonely elderly are most likely to receive assistance. However, the beneficiaries comprise a very small proportion of Vietnam's elderly (e.g. about 0.8 per cent of those aged 60 plus, and about 1.1 per cent of those aged 65 plus) and up till 1998 less than half of those eligible for assistance actually received it. The benefits were well below the national food poverty line, especially for those staying in communes. In 1998, average amounts granted, including and excluding cases in social welfare centres were D422,000 and D94,000 per person per year in 1998, respectively.

Orphans and unsupported children are a growing problem in Vietnam, that give rise to the problem of street children and child labour. The 1998 figures for orphans receiving assistance included 8,188 in Social Protection homes. In average only one fourth of the eligible children actually received the assistance. Average amounts paid for the care of orphans, including those in social protection institutions were D591,000 per year in 1998, i.e. one thirds of the internationally comparable poverty line.

Although the disabled comprise the largest group of people who are eligible for assistance, they represent only the third largest group of beneficiaries. According to the last detailed survey of disability in Vietnam, there were about 1.3 million disabled people in Vietnam in 1993-94 and the disability estimates have risen less than the population since 1993-94. The disabled numbers represented a rate of 2.4 per cent of all males classified as disabled, and 1.6 per cent of females. The higher disability rate for males is partly due to high war injury levels, and high industrial and traffic accidents. However, males predominate in all disability categories.

However, only less than a half of the disabled may potentially claim assistance from the fund for regular relief. The tightening of eligibility criteria for social

assistance in 1997-98 led to a dramatic cut back in the number of disabled who may be eligible for the assistance. Average payments were D556,000 per beneficiary per year in 1998, including the costs of the 5,249 being cared for in social welfare institutions. This much lower than the national average disability pension of D1,990,000 a year paid to people receiving disability pensions as former government civilian or military employees.

Compared with other groups, homeless people represent a much smaller but increasing group of people often described as vagrant beggars who seasonally migrate from rural to urban areas. In 1999 there were 2,010 people described as homeless or beggars receiving temporary assistance mainly in social welfare centres. The cost per person assisted in 1998 was very high (D1,453,000) due to the predominant use of institutions to cater for those assisted.

Recently, the fund has been also used to accommodate supplementary support in education and health care for the poor and provide financial support to local vocational training and employment centres and a number of programmes to deal with medical-social problem groups.

The former scheme takes the form of funding exemptions from or concessions on educational and vocational training tuition fees, grants of textbooks and notebooks for children from poor families as well as purchasing health insurance or funding health care for eligible poor families. In practice, there do not seem to be clear selection criteria as well as a rule, which government account pays for these expenditures, and some costs appear to be charged to other programmes. Numbers supplied were as follows.

Table 25. Supplementary Assistance in 1998

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Sources: Vietnam: MOLISA safety net study (99) and Preston(1999).

The transition coincided with an increase in incidences of various problems of the socio-medical nature. In 1998 the social guarantee fund for regular relief funded 60 centres dealing with medical-social problem groups, such as HIV/Aids cases, prostitutes, and drug addicts. Statistics for recent years are as follows

Table 26. Assistance to socio-medical problematic groups

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Sources: Vietnam: MOLISA safety net study (99) and Preston(1999).

b. Contingency Fund for Pre Harvest Starvation and Disaster Relief

The contingency fund for pre-harvest starvation and disaster relief covers two very different areas of social assistance, namely provision of government aid when an area is stricken by natural disasters and provision of supplementary assistance in the form of food aid to very poor people affected by chronic hunger in the pre-harvest starvation.

The contingency fund is built into the budget of local authorities from the allocation from the central budget as well as local resources and can be released as natural disasters or starvation hit the locality. The mixed funding sources and mixed

purposes of the fund lead to a number of practical problems at the local level. Firstly, patterns of spending are affected by uncertainty of the incidence of natural disasters. However, there is no mechanism for reallocation of this fund to the needy area from less needy ones. In years when there are no major disasters, the contingency fund tends to be used to support other local spending, e.g. spending to combat pre-harvest starvation or regular assistance. However, when major disasters strike the contingency fund is often inadequate, and additional resources have to be sought from the central government, national organisations, NGOs and foreign donors. Secondly, the residual nature of provision of food aid and natural disaster assistance makes them difficult to plan on a consistent basis. Thirdly, the requirement to raise local funds tends to be the most difficult in the poorest areas, where the fund is needed most. These also tend to be in the regions most prone to natural disasters since the high level of natural disasters is one of the reasons why they are poor areas.

Major outlays for disaster relief from the contingency fund in recent years have varied according to the severity of the natural disasters. So the spending from the fund was highest in 1997 and 1998, when Vietnam severely suffered from a number of typhoons. However, typically the assistance provided under this fund covers only a small part of part of the losses households suffered. The priority is to save lives and prevent disaster-linked deaths such as death from subsequent starvation. Actual deaths from the disaster are compensated at a standard payment of one million Dong per death, but most compensation for property damage is a partial grant in aid. Assessments of damage are made by commune authorities, and claims put forward for verification by the district authorities. Out of whatever contingency fund money they have at hand, or extra received from the government and international agencies or other donors, the local

authorities decide what if any compensation is to be given to those who have suffered property damage or other losses.

Estimated expenditure from the Contingency Fund in the same years was as follows. Even in the peak year of 1997 the 400 thousand million Dong spent by the Fund was equal to US\$36 mill. In 1996 the fund's outlay was worth about \$6 million, i.e. 1% of total damage estimated as over \$600 million in the same year (UNDP Disaster Management Team) ¹²⁷.

Table 27. Disaster Expenditure - million Dong

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Sources: Vietnam: MOLISA safety net study (99) and Preston(1999).

Concerning pre-harvest starvation, only about a half of the eligible actually received assistance in 1996-99. Chronic food starvation was primarily caused by extreme poverty but might also due to from other incidents, for example the need to pay medical costs because of significant illness. Food aid is also given to allow poor people to celebrate the Tet New Year festival. Table 28 shows the coverage of the pre-harvest starvation assistance in recent years.

Table 28. Pre Harvest Starvation Reports

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Sources: Vietnam: MOLISA safety net study (99) and Preston(1999).

In sum, the social assistance schemes represent the main formal Social Safety Nets for perhaps 80% of the population of Vietnam. Thus, the absolute majority of the population must rely either on access to the two social assistance funds, or the informal social safety net measures to in case of adversities. However, the major fluctuations in

¹²⁷ Actually, a part of the damage was met by redeployment of other sources to finance infrastructure reconstruction

the proportions assisted underline the unstable basis of the social assistance grants possible under the present scheme. Moreover, both the coverage and the benefits the social assistance schemes provide are also quite limited as their total outlay comprises only about 0.1% of GDP in the mid-1990s.

C. Poverty reduction assistance

Poverty reduction assistance represent the formal safety net, which assists people, particularly the poorest, ethnic minorities, and poor women and children, who have been trapped into chronic poverty, hunger, illiteracy and diseases, to get out of the situations by themselves and, to less extent, to maintain their minimal living standards. This developmental concept of a social safety net has been recently introduced into Vietnam since the start of the transition. Since 1992-93 the concept has been realised in the form of programmes for poverty reduction and employment generation. In 1998 the Government consolidated poverty-related programmes into the national target programme (NTP) for hunger eradication and poverty reduction (HEPR). The analysis in this sub-section is drawn from Dzung The Nguyen (1999).

Conceptually, the NTP for HEPR is a nationwide overarching and inclusive framework for coordinated and integrated multi-level efforts related to HEPR. In fact, the NTP brings several HEPR-related sectoral programmes together without substantive changes to their existing management structure and related sectoral policies, and aims them at the HEPR targets. The programme widely employs public expenditures in support of HEPR, combining developmental and residual elements in almost all programme measures. To an extent, the NTP is a part of the existing broader safety net for the vulnerable in Viet Nam (Van de Walle 1999). Concerns about financial sustainability, efficiency and the need to develop pro-poor macroeconomic policies have not been reflected in the programme documents. This particularly disturbing in

view of the shrinking government budget due to the economic slowdowns and increasing demand for more investment in economic and infrastructure sectors (SRV 23 July 1998).

The framework consists of nine components, which represent subject areas of HEPR interventions in each sector. Each component is assigned to a line ministry, which is in charge of organizing the implementation of the sectoral interventions in localities and the development of HEPR related sectoral policies. The nine components are as follows:

- a) Construction of commune basic infrastructure. This component includes development of rural roads to the commune center (473 communes without road access), commune primary school (29 communes without schools and 800 communes lacking class rooms), health care center (616 communes), household power supply (1570 communes and 6 million households), rural water supply (33% communes or 4.5 million households) and commune market places (3610 communes). This component also includes local population resettlement to make access to the infrastructure easier. The total cost in 1998-2000 is VND 3825 billion. The central and provincial government budgets support about 25%-50% of total cost in term of equipment, material and labour cost of those who work in construction sites, concentrating on 1715 communes faced with extreme difficulties. In the coming years, investment priority shall be given to 1000 communes under the Programme for socio-economic Development in Communes faced with Extreme Difficulties (PDCED) to ensure that in every year in at least each commune, some commune infrastructure is constructed. Districts and communes with more favorable conditions have to rely more on

their local resources. The central agency in charge of this component is CEMMA.

- b) Promoting agricultural and off-farm production and employment for the poor through ensuring farmers' access to land (e.g. land reclamation, provision of credit to the poor to redeem their plot of land mortgaged or sold to landlords), providing production tools, developing small industries and services, and providing vocational training. The total cost in 1998-2000 is VND 200 billion, of which the government budget supports 50%. The central agency in charge of this component is MARD.
- c) Credit for the poor component aims to provide preferential credit to 90-95% of poor households by the end 2000 with the average loan of D2-2.5 million, a maturity period up to 36 months, and no collateral is needed. The total credit funds required are estimated at VND 6,000 billion. The central agency in charge of this component is SBV.
- d) Health care for the poor component is aimed at improving access of the poor to health care services by providing 100% of starving households and 80% of poor households with free medical services (or at reduced costs). This is carried out through providing them with free-of-charge medicare cards (or certifications) for free-of-charge medical services at government medical facilities, direct provision of the services, and upgrading commune health care centers. The total funds required in 1998-2000 are VND 800 billion. The central agency in charge of this component is MOH.
- e) Education for the poor aims to eradicate illiteracy and school drop-outs among poor children and gradually increase their attendance in higher education. There

are a number of activities under this component such as exempting or reducing school fees and contributions, providing free notebooks or scholarships at primary school, enacting preferential enrollment to boarding schools and higher education and scholarships for them, and upgrading and constructing commune schools. The total funds required in 1998-2000 are estimated at VND 834 billion. The central agency in charge of this component is MOET.

- f) Extension will provide 100% of starving households and 50% of poor households with productive skills and knowledge in household businesses, train local extension workers and managerial staff, establish networks of institutions to assist the poor, mutual assistance groups of the poor for self-help, and promote voluntary movement in support of the poor. The total funds required in 1998-2000 are VND 200 billion. MARD and MOLISA share responsibility for extension services in support of agriculture production and off-farm employment generation, respectively.
- g) The training component aims to raise awareness and capability of commune leaders in programme implementation. In particular, it provides HEPR staff at the central and provincial levels with general knowledge about socio-economic development and HEPR; and improves their skills in the HEPR programme management. At the district level, in addition to the general knowledge about socio-economic development and the system of government HEPR policies, the component will train HEPR staff in project preparation, planning, data collection, assessment and reporting, as well as training methodologies so that they can train staff at the commune and hamlet levels. The total funds required for training in poor mountainous communes in 1998-2000 are VND 100 billion,

of which 40% is from the government budget. MOLISA & CEMMA are the central agencies in charge of this component.

h) Sedentarization, internal migration & new economic zones. This component aims at permanent settlement of 1.2 million people through organized internal migration (mainly in the Northern Uplands and Central Highlands), and stabilization of life for 1.9 million already settled people through assistance in production, development of basic infrastructure, and meeting basic needs. The total funds required in 1998-2000 are VND 1200 billion of which 88% are from the government budget. The central agency in charge of this component is MARD.

i) Assistance to ethnic minorities faced with extreme difficulties aims to assist 20 endangered ethnic minority groups with the total population of less than 10,000 persons each in stabilizing their life, developing production, improving 'dan tri' (i.e general knowledge) and preserving their cultural identity. The total funds required in 1998-2000 are VND 262 billion. All the funds are from the government budget. The central agency in charge of this component is CEMMA.

All activities under the above components have already been implemented under the same modality by the same agencies for years. An exception is the training component that was implemented in a scatted manner by several sectoral agencies.

Relative sizes of programme components taken in term of their planned funds are shown in Figure 20. The amount, which stands for the credit component, is the required increase of credit funds. Thus, rural

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commune infrastructure, credit, and sedentarization are the three most sizable components of the program.

The components are referred by the Government as ‘*du an*’ (i.e. project), but in fact no comprehensive set of synchronized objectives, outputs, activities, implementation strategy and performance criteria has been specified for any of them. In fact, the components are treated as tasks assigned by the government to respective ministries and PPCs (and then by the ministries and PPCs to their subordinate bodies) in addition to their core mandate tasks. The agencies are expected to elaborate the tasks into specific activities in their annual plans. When the plans are approved, the agencies implement HEPR activities in a regular manner. Since each line agency often has not less than a dozen such tasks, HEPR is easily crowded out with emergencies or other priorities which may emerge in the agenda of the government or the people’s committees or other activities in which the line agencies find their closer interests.

Most of the components are carried out by combining local efforts and vertical sectoral interventions under other national target programmes, national programmes¹²⁸ and policies as well as a number of donor-assisted projects that contain objectives and activities directly benefiting poor people and communes. They are termed by the government as programmes or projects '*participating in HEPR*'.

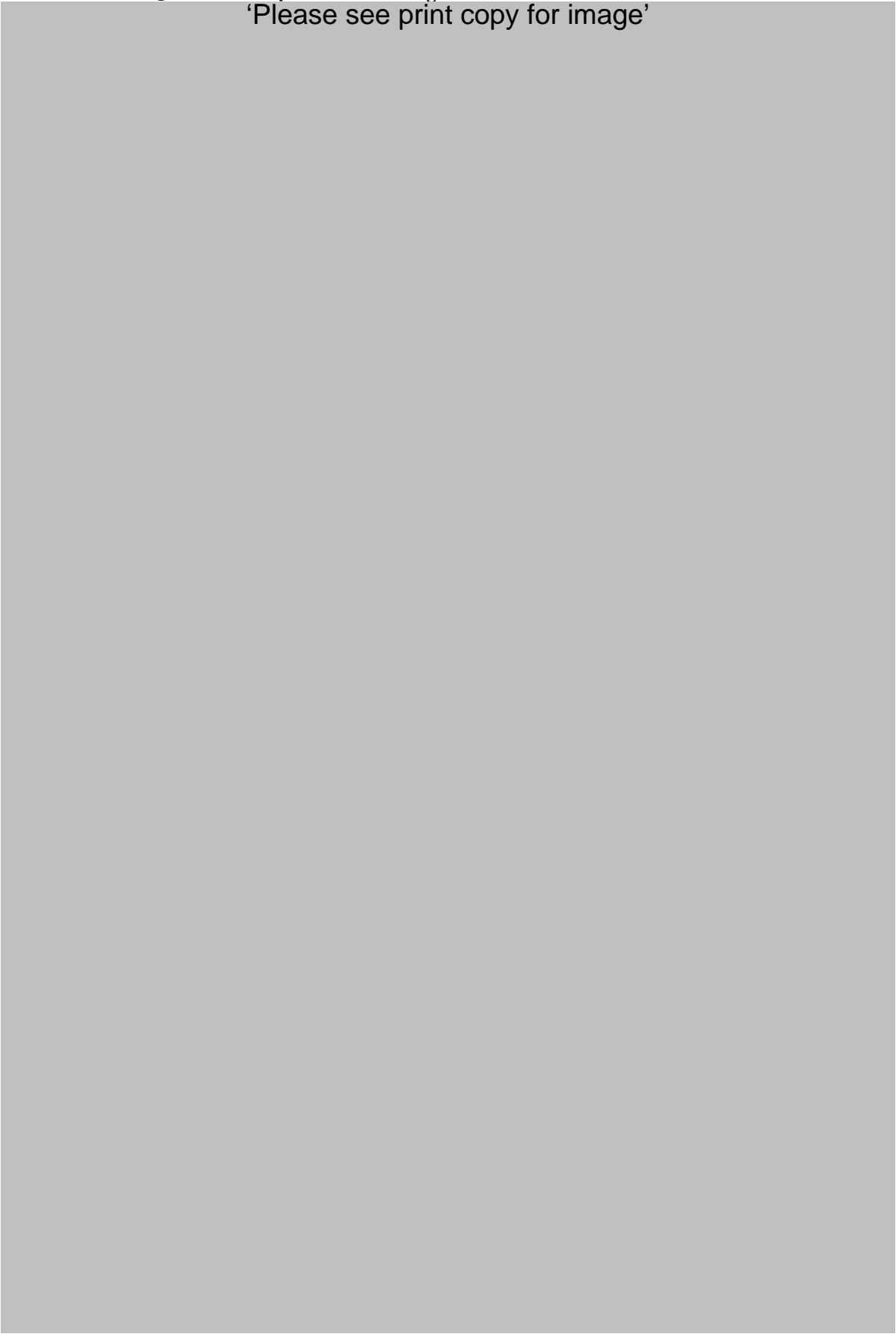
While maintaining the content, related policies, and the managerial structure of participating programmes, the government refocuses them or some of their components on HEPR targets by emphasizing those objectives and activities that directly benefit poor people and communes. In the annual plan of each participating program, the government assigns the shares of the resources to be used in support of HEPR targets. For this purpose, the government is based on the planned number of poor people or households or communes in the total number of people, households or communes to be served by the program.

The participating programmes as well as their specific objectives and resources in support of HEPR shall be reflected in plans of the programme managing ministries and in HEPR plans at the national and local levels. A list of government programmes and their specific objectives '*participating*' in HEPR is given in Table 29. The mechanism of integration will be explained later (MPI-MOF-MOLISA 15 March 1999).

¹²⁸ According to the government's official concept, a programme is a set of objectives, approaches, activities and inputs. However, in practice, it often comprises a simple set of planning goals, mechanisms, organizational measures and estimated resources for the achievement of the goals. In general, the scope of a national programme is limited within a sector and, thus, managed by a line ministry. The national target programme is a programme involving several sectors and managed by a multi-sectoral National Steering Committee and the focal ministry called as the program-managing ministry.

Table 29. Programmes and policies to be integrated

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Note: NA: data are not available yet.

MOLISA's estimation, including also voluntary contribution from ministries and general companies.

* A participating programme often has other objectives that are not related to HEPR and, thus, not indicated in the table. The percentages of funds to be used in support of HEPR, which are indicated in the third column, are defined as the percentages of the total amount to be disbursed in direct benefits of poor people or communes in the total funds to be allocated to the respective HEPR-related objective or activity. However, it does mean that the support has to be limited within the scope defined by the objective or activity (for example, health care for the poor can cover services other than the dangerous social diseases).

** The amount has already included in the total amount of funding for the NTP

Source: MPI-MOF-MOLISA (15 March 1999) and Ministry of Labour (04 January 1999)

Although shares of funds in support of HEPR were been specified for five of the programmes, in total it is expected that in 1999 at least about VND 600 billion will be disbursed for direct benefits of poor people and communes under the participating programmes (not including local HEPR funds). Since most of the programmes' funds will be allocated to and disbursed by local levels, the integration is proposed to be carried out by PPCs when they assign annual plans to their subordinate bodies according to the MPI's planning guideline and technical instructions from line ministries, if necessary. However, at this stage due to limited capacity, the integration is largely focused on coordination and integration of the use of resources but not very much on the integration of the programmes' activities themselves.

With the integration of HEPR-related programmes, each component involves a number of interrelated activities. For example, the health component of the NTP contains four major activities: (i) providing poor households with free medicare cards (or certificates of the poor status) for free-of-charge medical services at government health facilities (under the formal health insurance system) or direct provision of free-of-charge health services through commune health care centers or mobile voluntary health care teams. These are planned and funded directly by local authorities; (ii) providing the poor households and communes with prevention and treatment from dangerous diseases such as malaria, goiter, leprosy and TB under the respective NTP for

health; (iii) upgrading commune health care centers under local initiatives and/or the NTP for health and PDCED; and (iv) constructing new commune health care centers under local initiatives and/or NTPs for health and population control, PDCED as well as under a number of components of the NTP for HEPR, e.g. infrastructure development, sedentarization and assistance to ethnic communities (MOLISA-MOH-MOF 29 January 1999) .

Between 1992 and 1998 Viet Nam achieved both an impressive economic growth and a remarkable progress in poverty reduction. According to MOLISA¹²⁹, the country nearly halved its poverty rate in 1992-98. However, the number of poor households decreased by only one third. In the period, the poverty rate was reduced from 30% (i.e. 3.8. million households with 20 million persons) to 15.7% (i.e. 2.4 million households and 12.5 million persons) or by about 2% (i.e. 250-300 thousand households) per year. The number of households suffered from chronic hunger was reduced from 700 thousand households to around 300 thousand. The number of poor communes (i.e. those with poverty rate above 40%) and communes lacking basic infrastructure (road, electricity, school, health station, market place and water supply) decreased from 1900 and 1309 in 1994 to 1498 and 1168 in 1997 respectively. By the end of 1998, there have been 10 provinces and cities with a poverty rate less than 10% and 21 provinces with a poverty rate from 11 to 19% (Ministry of Labor 04 January 1999). However, as pointed out by World Bank(1995;1999), UNDP/UNICEF/UNFPA(1995); United Nations in Vietnam(1998a), and Dzung The

¹²⁹ MOLISA is the government focal point for providing information and data on poverty and poverty reduction in Viet Nam. In general, MOLISA data are based on reports from various levels of the government machinery, which have quite different interest, capacity and resources for the purpose. No quality control mechanism is set up in place. Therefore, the data still suffer from inconsistency and lack of completeness.

Nguyen(1998), the achievement largely attributed to the broad-based and shared rapid growth induced by the transition.

E. Institutional aspects of Vietnam's social protection system

In sharp contrasts with other countries but similar to other transition economies, the SWS in Vietnam is administered and delivered by the government's general purpose administration, particularly the nation-wide network of the Ministry of Labour, War Invalids and Social Affairs (MOLISA) and local People's Committees. This structure has both advantages and disadvantages. The former includes greater local knowledge of household circumstances, ability to link household to development options, and variability in standards which may reflect local economic realities. Major disadvantages are the lack of specialised expertise in assessing need or entitlement; large variations in local practice, and possibility of local bias in allocations.

The ability to consider development options as well as social assistance in meeting household needs has some analogies with trends in developed countries to merge or co-locate employment services and benefit payment agencies.

On balance, the general issue of a long run organisational structure for paying social assistance is not an immediate priority and can be deferred for later examination.

5.2.4 Micro analysis of efficiency and effectiveness of selected instruments

This section attempts to provide an analysis of the main groups of nation-wide social protection instruments in Vietnam, based on the information available from the two household surveys conducted by the General Statistical Office in 1992-93 and 1997-98 – the only reliable and representative sources of micro data available. Since the surveys were designed for a general study – although very extensive – of household welfare but not specifically on social protection, data about targeting are absent. They

are complemented by data from the MOLISA-ILO case study in 1998 that covered 300 households, which participated in the surveys.

The unit of analysis is the household but not the individual due to the well-known problem of defining a meaningful poverty line for a single individual living in the society, where extended households dominate (Atkinson 1995) as well as data limitations. Assume intra-household distribution and resource sharing are equitable; and society and the government are set to reduce poverty as the top priority. Thus, the 'need' of a beneficiary of social protection for the benefits she receives can be defined on the basis of the household income data (Rostagno and Utili 1998). For the purpose, household pre-transfer income is compared with the 'equivalent' poverty line, which represents the standard poverty line inflated by the Engel scale and the household can be classified into one of the three following 'need' groups:

- Group A includes those whose after-transfer income equals or remains below the poverty line and, therefore, are assumed to need transfers most;
- Group B – the intermediate group - comprises those whose after-transfer income exceeds the poverty line; and
- Group C contains those whose pre-transfer income is higher than the poverty line, i.e. those who are proposed to need transfers least.

Table 30 unveils the striking fact that Vietnam's social protection system provides its benefits to those who appear to be least in need: Group C constitutes the majority among those who receive social protection benefits, including the schemes which are supposed to be strongly targeted at the poor such as social assistance and

poverty reduction grants. However, there has been a remarkable improvement in targeting among all schemes since 1992-93. Moreover, in 1997-98, pension transfers and government loans contributed considerably to reducing poverty among their recipients, raising the disposable income level of 22% and 12.8% of households to get their beneficiaries out of poverty. For other schemes, the proportions are less impressive.

Table 30. Vietnam: Targeting of social welfare schemes, % in the total number of beneficiaries, 1992-98

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Sources: calculated from VLSS 92-93 and 97-98

However, there is an even more striking contrast between the patterns of social protection system in rural and urban areas. As shown in Table 31, poverty reduction assistance appeared to serve better people in need in both rural and urban areas. For other schemes, the tendency is observed only in rural areas. In urban areas, it appeared that benefits from other schemes were increasingly focused on those who did not have apparent need at the expense of those in need.

Table 31. Vietnam: Targeting of social welfare schemes per rural/urban, % in the total number of beneficiaries, 1992-98

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Sources: calculated from VLSS 92-93 and 97-98

The efficiency of the social protection system can be assessed in terms of the amounts transferred from two different viewpoints, namely its vertical and horizontal efficiencies. As defined by Weisbrod (1970:125-6), the former reflects the degree to which the social protection system concentrates its resources on the target group, minimising leakages of resources to the rest. The latter measures the degree to which the system benefits all in the target group. To analyse the welfare impact of the system, the vertical and horizontal efficiencies are estimated relative to the equivalent poverty line. As mentioned by Rostagno and Utili (1998), poverty reduction might not be the guiding principle when some of the examined schemes, such as social insurance, were designed. However, given the widespread incidence of poverty and scarcity of resources allocated for income security of target groups, the measurement can justify itself. Table 32 present estimates of Vietnam’s SWS vertical efficiency.

Table 32. Vietnam’s social protection: Vertical efficiency (% of the equivalent poverty line)

1992-93				1997-98			
Pre-transfer income	Pre-tr income plus the specific transfer	Pre-tr income plus all public transfers	Total public support received	Pre-transfer income	Pre-tr income plus the specific transfer	Pre-tr income plus all public transfers	Total public support received



Sources: calculated from VLSS 92-93 and 97-98

The first three columns of each considered year in Table 32 provide equivalent incomes before and after public transfers to beneficiaries in each social protection scheme per ‘need’ group. The last column gives the size of the total public transfers. The figures indicate that there exist large spill-over effects. Firstly, the least needy were well-positioned under all of the schemes, including those supposed to be strictly targeted to the poor. Secondly, it is striking that although the sizes of benefits grew compared with 1992-93, in 1997-98 the most needy appeared to be the group which consistently benefited least from social protection: across all schemes the average benefits they received were about one third less than the least needy. This was in contrast with the situation in 1992-93 when the sizes of social assistance and government loans the most needy received were slightly greater. The intermediate group

benefited most from social protection. Thirdly, while beneficiaries of each scheme benefited most from the scheme, they also received considerable benefits from other public protection schemes. Sizes of both the primary and secondary sources of public transfers increased considerably in the period from 1992-93 to 1997-98. The effect of the SWS on the income level of its beneficiaries in terms of the number of households remaining under the poverty line and the difference between their after-transfer income and the poverty line is shown in Table 33.

Table 33. Vietnam: Effects of public transfers on income and poverty
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Sources: calculated from VLSS 92-93 and 97-98

While resources were scarce and incidences of poverty are widespread among beneficiaries of Vietnam’s social protection, particularly those under the schemes other than public security (Table 30), the least needy and intermediate groups are consistently

over-protected while the most needy are under-protected (Table 33). Clearly, Vietnam’s social protection system has failed to meet the vertical efficiency criterion. It appears that it lacks flexibility to gauge its support according to the need of potential beneficiaries.

Table 34. Effectiveness of social protection as a whole

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Note: (1) % of the HHs whose pre-transfer income was less than equivalent poverty line
(2) average poverty gap of the HH covered by the social protection system
(3) the difference between the pre- and after transfer poverty gaps
(5) effectiveness as ratio between the poverty gap reduction effect and resource spent
Sources: calculated from VLSS 92-93 and 97-98

The extent to which Vietnam’s social protection system helps to improve the living standards of its beneficiaries is shown in Table 34, which is calculated for beneficiaries of public transfers on the basis of data collected from household surveys in 1992-93 and 1997-98. Despite an increase in the proportion of the needy in the total number of beneficiaries (column 1) and their poverty gaps (column 2) as a result of the improved targeting (Table 30), the average effects in reducing the poverty gaps also increased (in fact, they nearly doubled). As expected, private transfers and pensions played the most important roles, both in terms of the effects and the resources used,

although the role of social assistance has also become sizable recently. It is striking that the effectiveness rate of the social protection system was consistently greater than that of private transfers and shows an increasing tendency. This can be explained by the former’s better targeting compared with private transfers, which largely are based on relationships within extended families.

Social protection transfers also expose some impacts on income distribution. As shown in Table 35, inequality measured in terms of income was much greater than that measured by household expenditures. The impact of pension transfers on income equality is quite sizable in 1992-93 as well as 1997-98, while other schemes have much less significant impacts.

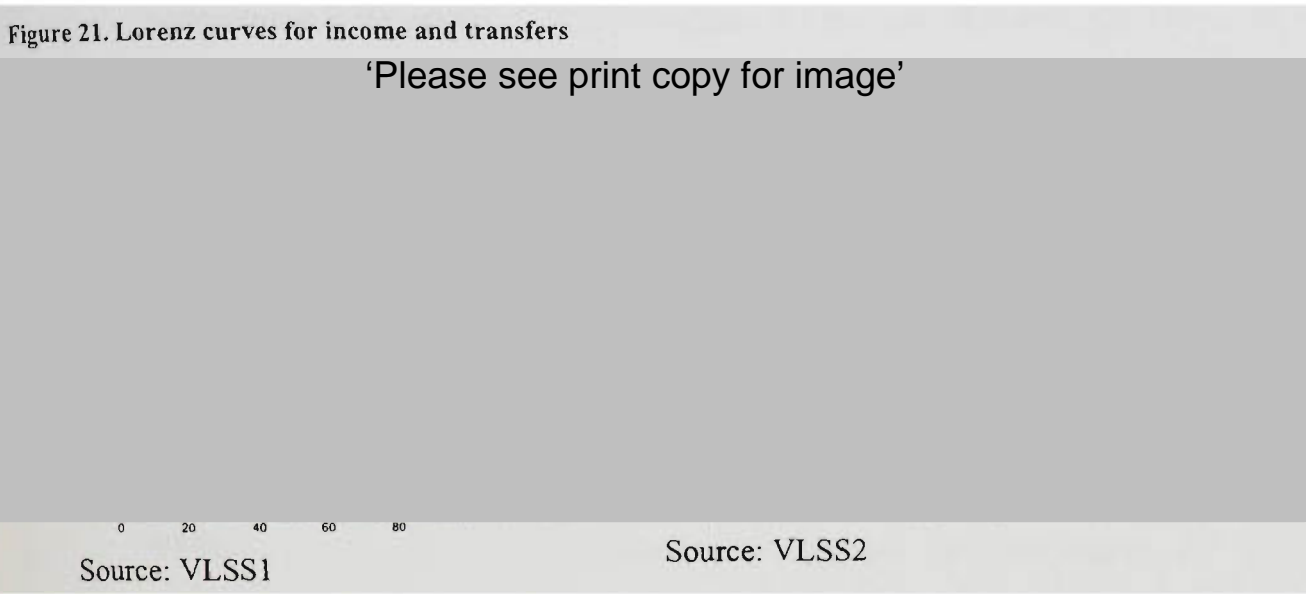
Table 35. Distribution effect: Gini coefficients

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Sources: calculated from VLSS 92-93 and 97-98

However, given the small proportion of the beneficiaries compared with the total population, the impact of social protection on income distribution among the total population is not so sizable. However, the fact that Lorenz curves representing the

accumulated share of income per population decile in Figure 21 are close but do not intersect clearly indicates that social protection transfers also have improved income distribution within the total population.



In summary, the social protection system in Vietnam has evolved recently. The system is in sharp contrast to the social protection systems in the CEE and CIS transition economies and shares many similarities with the system established in China and other developing countries with established market mechanisms. To some extent, it has been designed for and still focuses on provision of social security for public sector employees in urban areas and, thus, is characterised by both a very limited number of instruments, their coverage and benefits compared with international standards. Although almost its resources are currently utilised for pension-like public transfers related to the past government services of a wide range of people, there have been innovative efforts to address the needs of the most destitute, including both the non-working and working poor. However, there are a number of unsound elements in the design of the system, which limit its efficiency and effectiveness, in addition to resource limitations. This indicates that the transition-induced degradation of the old social

protection system increasing exposes the majority of Vietnamese to various risks and insecurity. On the other hand, given the government's strong commitment to social welfare, particularly poverty reduction, this indicates considerable potential for further improvement in the system.

Section 5.3 *Changes in labour and employment policies*

Employment has been the most important source of income for the working population in both urban and rural areas of Vietnam, particularly in the North where the centrally planned system dominated. As a job was to be secured for a lifetime, employment was also the most important source of social security, provision of which was also linked to work units, e.g. cooperatives in the rural areas and SOEs in the urban areas

There were dramatic changes in agriculture. Collective land was contracted to peasant households on an equal basis to rural labourers in 1986-89 and then re-distributed among them on a long-term basis in 1989-91. This has become the major source of stable employment and income for rural families. However, the collapse of cooperatives also disintegrated the system of collective labour allocation and security. Thus, in practice very few rural household give up their land, even when non-agricultural employment with better income is available. To protect themselves from failure in non-farm employment, they divide family labour so that some family members continue to cultivate the allocated plots.

The situation is quite different in non-farm employment. On the one hand, non-state firms are allowed to set up wages, benefits and labour arrangements without government intervention. An exception is foreign investment enterprises, for whom the government set the minimal wage higher than for domestic firms and closely monitors

its implementation. On the other hand, labour issues in SOEs were given special attention. The wage in the public sector was partially monetised in 1993: there are no longer subsidized housing, health services, education and social insurance. However, systematic weak indexing decreases real wages from time to time (e.g. 30-50% in the period 1989-94). The first reform measures were to enable more flexible labour allocation and provide SOEs with a greater flexibility in hiring and firing employees. Decision 217/HDBT dated 14/11/1987 on reforming central planning and cost-accounting in business allowed SOEs to determine themselves all aspects of their business operations, including labour and salary regimes.

Although unemployment benefits do not exist, there are attempts to establish various forms of the one-time unemployment compensation. Decision 176/HDBT dated 9/10/1989 provided guidance for SOEs to address the problem of labour abundance, while protecting welfare of the retrenched. The SOEs are allowed to restructure their labour force, apply various flexible non-full-time work schemes, and lay off. Those to be laid off would be entitled to one-time packaged severance payment on the basis of the number of years worked (but not less than 3 months salary and to be paid from the SOE's funds although those in trouble would receive government funding up to 50% of the total payment); or allowances for the temporarily laid-off (not more than 3 months); and the early retirement and compensation for the loss of health care services. While the decision 176/HDBT was effective only in 1989 and 90, according to decision 315/HDBT dated 1/9/1990 the above scheme is also applied for employees in dissolved SOEs. According to the decision, the amount collected from the sale of assets of a dissolved SOE will be used first to pay for the salary and insurance the SOE was due to its employees and then for the payment of benefits defined by decision 176/HDBT. The retrenched also would be given priority in employment in other SOEs and various

training programmes. As a result, in 1989-92 according to MOLISA more than 700,000 former state employees were retrenched, of which only 70,000 received the severance payment (totalling VND300 billion, of which 58% was funded from the State budget). However, the above schemes were not applied afterwards due to budget constraints and inability of SOEs to pay their obligations. The progress in SOEs reform and labour market development was slow, also reflecting both the resistance of the state-sector workforce and the government's concern about social stability. So, in 1990-93 the state sector was restructured in order to reduce labour redundancy by providing separating packages and finding ways to absorb the labour surplus internally.

Although officially not restricted, labour mobility is still constrained by work permits, which are linked to place of residence. However, there is an increasing flow of migration of labour from rural to urban areas, especially big cities. According to the MOLISA, in 1997 there were 170,000 and 800,000 rural job seekers in Hanoi and Ho Chi Minh City, respectively

As part of the employment reform, the government made great efforts to implement a labour contract system. Under the first Labour Code passed by the National Assembly on 23/6/1994, the relationship between the employer and the employees is established and regulated on the basis of labour contracts, which both them have been granted full rights to enter or terminate. The government assumes the monitoring and arbitrating roles in case of labour disputes, while its role in providing welfare of its employees was dramatic reduced. Subsequently, in SOEs lifetime employment is no longer offered, contract renewal is subject to the performance and financial standing of the enterprise. It was proposed that the old system of life-long employment security (*'bien che'*) continues to apply for the existing labour force while the contract system

would apply to newly recruited staff. Theoretically, enterprises are authorized to lay-off workers in the case of financial difficulties or in the case of labour discipline violation. However, although about 40% SOEs are unprofitable, they continue to operate and workers continue to keep their jobs. So far large scale unemployment has been avoided. However, an increasing number of workers have been 'temporarily laid-off on long 'vacation' with reduced wages. Thus unemployment pressures are mounting.

However, there are increasing risks and insecurity due to growing unemployment, which is the most serious threat to the livelihood of workers in the urban areas as there is no unemployment insurance. In 1990-97 the official unemployment rate was between 1.8-2.5% and reached 6% in 1998-99 when the country was stricken by the impact of the Asian crisis. Because of the restrictive definition of unemployment and the absence of registration, the actual number of the unemployed is far larger. According to the annual labour and employment surveys conducted by the Ministry of Labour, Invalids and Social Affairs (MOLISA), open urban unemployment went up from about 6% of the total working age population in 1996-97 to 6.8% in 1998 and 7.4% in 1999 and became a serious concern, especially big cities. However, the figures did not reflect disguised unemployment, which has spread widely. Another MOLISA study of 3,639 enterprises in the mid-1998 unveiled that 9% of their workforce (i.e. 60,000 persons) did not have any job to do and for some SOEs in electric engineering and coal mining, the percentage was 27.3%. This indicates that without creation of at least about 100,000 new job places per annum to absorb the backlog in ten years, the SOEs reform, and economic restructuring would further increase urban unemployment. In rural areas, underemployment also increased from 24% in to 29%, while open unemployment also rose from 1% to 2.5% in the period.

This is particularly affected the Red River Delta area, where the population density is particularly high.

In China, social benefits and security during the transition continue to be essentially linked to job places, but as employment security becomes increasingly uncertain, there is a growing number of workers in the rural and other non-state sectors involved in an alternative social security system. Unless safety nets are set up, any dramatic change in government employment policy can push many into poverty. In fact the absence of large scale unemployment has enabled the industrial labour force to share the fruits of economic growth.

With the declining role of the state in welfare provision and the inadequate support from the social security system, dismissing job security has a negative impact on the living standards of workers in unprofitable SOEs, not to mention the unemployed.

5.3.1 Labor supply:

As shown in Figure 22, from the supply side, Vietnam already possesses a fairly sound base of human resources. People at working age (eg. 15-55 for females and 15-60 for males) comprise almost 65% of population (e.g. 50.2 million people in 1997 according to the 1997 MOLISA's Survey on

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Source: (Dzung The Nguyen, Mark et al. 1998)

Labour and Employment), of which 74% (e.g. 36.3 million in 1997) are economically active, i.e. working or looking for job. 80.9 and 19.1% of them are in rural and urban areas, respectively. Females equally participate in the labour force and constitute 50.6% of the labour force. The labour force is characterised by the domination of the young age groups: those aged between 15 and 34 constitute about 56%. In the 1990s, the labour force grew at 3.3% per annum, compared with 2.5% in the 1970s (Dzung The Nguyen, Mark et al. 1998).

Compared with many low-income countries, Vietnam's labour force is well educated. In fact, 45% of them have completed primary school while 28% of them have completed secondary and higher education. Only 21% and 6% of them are illiterate or have not finished the primary education, respectively. However, in terms of its structure, the picture changes: only 8% are classified as skilled technicians and workers that is far below the level of 40-50% reached by neighbouring countries (MPI, 1997).

5.3.2 Changes in employment

There have been dramatic changes in employment during the transition. Employment creation has been accelerated compared with the initial period of the transition until the growth of employment was negatively impacted by the Asian crisis in 1998-99. There are three important observations. Firstly, in terms of ownership, the non-state sector plays the key role in employment creation during the transition. After shrinking in 1990-92, when SOEs were reorganized and more than 700,000 state employees were retrenched, the number of employment in the state sector increased but not by much. Thus, most of the retrenched, about 1 million former soldiers and 0.25 returned overseas workers and about 1.2 million new entrants to the labour market annually were absorbed by the non-state sector. However, the figures may exaggerate the tendency, since it also includes more than 20 million peasants who returned to the

household economy as cooperatives were abolished. Secondly, in terms of economic sectors, most of employment during the transition was created in agriculture and services. In 1989-96, agriculture accounted for about 60% of new net employment. In the two subsequent periods, the numbers of jobs created in the service sector and industry were higher than in agriculture. However, the tendency has been reversed again during the Asian crisis, when the growth of employment in the service sector and industry fell dramatically, forcing agriculture to absorb almost all the rest. Thirdly, the absolute majority of new jobs created in agriculture and services are low paid, making productivity growth in the sectors in the economy as a whole very modest. Finally, job creation was slow compared with growth: the elasticity of GDP with respect to employment is 1.01 while the marginal effect is 2.842.

Table 36. Vietnam: Changes in structure of employment under the transition, 1986-99

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Note: * not includes the cooperative sector in 1989-1992

** calculated based on GDP in 1994 constant prices

Sources: World Bank (1993b, 1998c, 1999b, 2000c)

However, the increasing unemployment and underemployment are also attributed to the rapid growth of labour force at 3.3% per annum as a consequence of the after-war child boom in the 1970s and slow employment generation compared with the growth of GDP. Vietnam's growth pattern in the 1990s is characterised by its low employment elasticity: in average, a 3-percent GDP growth generated only a 1-percent increase in employment. This is largely due to the constrained development of the non-state sector, particularly the household economy and small enterprises, which tend to utilise more labour intensive technology, contrary to the state sector. However, in the 1990s, the non-state sector was able to absorb most of 1.2-1.3 million new entrants into labour market every year and turned it into the largest source of employment and livelihood of Vietnamese. Given slower growth of the economy, and, consequently, the urban sector and limited prospects of further employment expansion in agriculture, future job creation would largely rely on non-agricultural employment generation in rural areas. It is estimated that in 2000, the urban unemployment rate would increase to 14% if the growth of GDP continues to be sluggish at 5% per annum and the rural underemployment rate is maintained at about 25%. A 7-percent GDP growth would help to reduce urban unemployment rate to 11%. Alternatively, the unemployment rate would go down to 8% if there was a remarkable shift in favour of labour-intensive technology. Obviously, the latter is unthinkable without strong measures for non-state sector promotion and SOEs reform.

Section 5.4 Changes in education policies

Access of the population to social services also changed dramatically in the 1990s. Regarding education, after the start of reform, enrolment into all levels of education, except primary, show an unusual downward tendency while dropout rates increased, before starting to demonstrate an improvement in 1993 and reaching the 1985

levels in 1994-95. In general, the access to education in Vietnam is comparable to that in countries with much higher GDP per capita. In fact, universal primary education is attained in most provinces; secondary education enrolment has grown rapidly and 77% of the age group are in lower secondary and 36% in upper secondary; while enrolment into higher education doubled in the last 5 years and the number of students in vocational, technical and tertiary education almost reaches 1 million.

During the transition, a number of changes have produced important impacts on Vietnam's education and training system. Firstly, the unified 12-year schooling system has been applied in the whole country since 1989 and the Ministry of General Education and the Ministry of Higher, Technical and Vocational Education merged into the single Ministry of Education and Training in 1990, which is in charge of all educational services in the country. In 1993 by Decree 90/CP dated 24/11/1993 the government further unified the education and training system by setting a comprehensive structural framework for the national education system and its degrees in conformation with common international practice. Secondly, universal compulsory primary education has been enforced since 1989. Thirdly, the government has increased its spending on education and training both in absolute terms and as a percentage of overall government spending during the 1990s.

Moreover, since 1993 public institutions have been allowed to collect tuition fees and various school charges, though within some limits, to cover the learning and school facility costs, except for primary education. Prior that, education was tuition free at all levels: crèches and kindergartens were subsidized by cooperatives or state enterprises while the rest were fully subsidized by the government. So, in 1994, households cover 43% of the total spending on education in Vietnam. However, the

percentage varies within a wide range from 48%, 59% and 62% in primary, lower and upper secondary education to 12% and 19% in vocational and technical training and tertiary education, showing a bias in favour of the richer (World Bank 1996b). On average, central government budget covers one quarter and two quarters of the rest, respectively. Finally, there has been gradual elimination of restrictions on the private sector's role. So, semi-public and private schools comprise a small but rapidly increasing proportion of enrolments. Without government funding they are able to play a particularly important role in pre-school education, in vocational and technical education and training, leading to a rapid increase of the latter.

The major issue in the Vietnamese education and vocational training systems is their slow response to the demands of the labour market. According to the Government, about 88% of the total labour force are unskilled workers, and every fifth of the skilled labour has not received any formal technical or secondary vocational training. Moreover, about one third of trained workers do not have basic required work skills even according to Vietnam's standards. Thus, despite Vietnam's abundant human resources and the high level of education attained, its economy suffers from a lack of skilled workers. This largely due to the fact that upper secondary education, vocational training, and technical and tertiary education remain restricted for an absolute majority of young people: in the 1990s only 6-9% of people of age 15-24 have a chance to enrol into formal higher educational and vocational institutions and the rest had to rely on on-the-job training and their ability to learn from work experience. Secondly, quality of education and training also remained a problem due to the lack of qualifications and incentives among teaching staff, outdated teaching methodologies and content (especially in higher education), and the sector's inefficient management and coordination capacity (MOET, UNDP et al. 1992 and Dzong The Nguyen et al. 1998).

Section 5.5 Changes in the health care system

Concerning health sector, Vietnam also has attained remarkable achievements, compared with its level of economic development, particularly in terms of infant mortality rate, maternal mortality rate, 95-percent full immunization among children, malaria and TB control, 55-percent fertility reduction (compared with 1995-97). However, child malnutrition (44% in 1996 and 34% in 1998) and the abortion rate are still at very high levels by standards. Vietnam's morbidity patterns are typical for a poor country with high rates of infectious diseases, parasitic infections and malnutrition due to poor quality in prevention, treatment and rehabilitation. Occupational diseases, cancer and cardio-vascular diseases, STDs, HIV/AIDS, drug abuse, and traffic injuries are on the rise.

There also have been dramatic changes in the health care system during the transition. Prior to transition, there was an extensive system of commune health care centres, which were funded by cooperatives (particularly in the North) and local government, where cooperatives did not exist. The centres were responsible for preventive medicine and treatment of common simple diseases. Hospitals were run by the government. The system was centralized but was able to provide almost people with free-of charge health care services although its coverage and quality were not uniform and bias toward state employees and urban dwellers. The collapse of cooperatives and cuts in government expenditure in the initial periods of the transition resulted in a downfall of the commune-based health care system.

The downward tendency was reflected in terms of the steadily decreasing numbers of hospital beds, and medical assistants, nurses and midwives per 100,000 people, and quality of services at higher levels. However, this tendency has been reversed since 1994, when the government decided to pay salaries for commune health

workers and refurbish more than 2000 commune health centers with equipment and essential drugs.

Charges for the use of public health services have been legalised so that they can recover a part of the cost and create incentives among staff (decision 95/CP dated 27/8/94). The share of user fees increased from 9% of total expenditures for diagnosis and treatment in public hospitals in 1991 to 35% in 1998, despite the poor and the people subject to preferential treatment, who enjoy the fee exemption, constituting up to 22.4% of the total number of service users.

Since 1989 the Government has legalized private medical and pharmaceutical services, although a comprehensive legal framework for it was established only on 29/1/1994. By 30/10/1998 there were 41,667 private facilities, mainly located in urban centres and these accounted for 54% and 32% of all health care services in Hanoi and Ho Chi Minh City- two biggest urban centers in the country. The emerging private sector provided increasing alternatives, especially in supplying pharmaceutical products and in the urban areas.

However, there occurred striking inequality in accessing health services due to the limited coverage of the health insurance system. For identical services, the poorest quintile has to pay 45% of its annual non-food expenditure per capita per visit to a public hospital, while the richest quintile pays only 4%. As a result, most of the poor turn to health services only when they are seriously affected and quality services are often not accessible to them.

Interregional disparities in health status, especially between the urban and rural areas, populous deltas and remote mountainous areas, are significant and increasing. So, infant mortality in the Central Highlands is over twice that of the Southeast and Red

River regions. Almost half the births in the Central Coast and Central Highlands are not attended by health personnel compared with 12-18% in the Southeast and the Red River areas.

Figure 23. Vietnam: Total government expenditures for education, health, and social protection, in VND billions, 1995-2000

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Source: (SRV 1998a)

Financing remains a major common issue among social services. In the 1990s, the introduction of the user-pay system dramatically changed the way education and health services were financed. Now, the government plays a quite limited role in their financing (e.g. 45% for education and even less for health), while still dominating delivery of service. However, the slowdown negatively impacts the sectors by undermining sources of government revenues, especially SOEs, export-import, and FDI sector – their major sources. Under this pressure, the share of state revenues in GDP steadily decreased from 25% in the mid-1990s to 22% in 1997 and about 20-21% afterwards. As a response, the Government had to cut back both current and capital expenditures, including expenditures for social sectors in 1998 in both nominal and real terms, leading to the need for greater mobilisation of resources from the population.

Given the already heavy burden of these expenditures on their household budget and increasing pressure on their sources of incomes, this may constrain access for them and their family members to the social services, including the basic ones. On the other hand, the slowdown also affects private spending on social services due to its strong positive relationship with public spending on education and health. Furthermore, the slowdown impacts different localities differently. The existing budget mechanism often reinforces interprovincial revenue disparities. Therefore, while none of provinces is expected to escape the consequences of the reduction in growth, certain localities, particularly poor ones, are more adversely affected by negative impacts of the slowdown and the crisis than others.

Intra-sectoral reallocations are also important in view of the existing bias in public expenditures towards non-basic education and non-basic health. On average, expenditures for primary education and commune health centres, which the poor can access most, comprise merely 44% and 6% of the total public expenditures for education and health, respectively. Reduction of the bias would help to cope with financial constraints. In other word, to respond to the slowdown, there is an urgent demand for a more equitable and pro-poor mechanisms for financing social sectors. At the national level, there is also the need to protect annual allocations and actual spending on basic social services during the time of reduced state revenues. For this purpose, the reallocation of external debt service expenditure towards basic social services shall be an alternative to be considered by the government and donor community.

Section 5.8 Chapter summary and conclusions

This chapter reviewed the development of the SWS in Vietnam and specified its principal changes during the economic transition as the whole and by major component.

The qualitative analysis in this chapter covers most critical elements of the system such as social protection, including social insurance, social assistance, and poverty reduction assistance. Other related sector policies such as labour and employment, education and health are also reviewed. A micro analysis of efficiency and effectiveness of selective social protection instruments is also provided.

It has been established that the social protection system in Vietnam is in sharp contrast to with the social protection in the CEE and CIS transition economies and shares many similarities with the system established in China and other developing countries. To some extent, it has been designed for and still focuses on provision of social security for public sector's employees in urban areas and, thus, is characterised by both a very limited number of instruments, coverage, and benefits compared by international standards. Although almost all its resources are currently utilised for pension-like public transfers related to the past government services of a wide range of people, there have been innovative efforts to address the needs of the most destitute, including both the non-working and working poorest. However, there are a number of unsound elements in the design of the system, which limit its efficiency and effectiveness, in addition to resource limitations.

Employment, education and health care represent three pillars of Vietnam's SWS. All of them have dramatically evolved since the start of the transition. However, they still suffer from their slow response to the new market mechanism, weak targeting and lack of resources which together have resulted in low service quality. However, given the government's strong commitment to social welfare, particularly poverty reduction, this indicates considerable potential for further improvement of the system.

CHAPTER 6 MODELLING SOCIAL WELFARE IMPACTS OF THE TRANSITION AND POLICY SIMULATION

Section 6.1 Introduction

Qualitative analysis is useful in validating the methodology developed in Chapter 3 and unveiling patterns of change in SWC and SWS in Vietnam during the transition. However, the qualitative analysis is insufficient to define their determinants and underlying relationship. This chapter will specify computable general equilibrium and econometric models of the SWC and SWS on the theoretical models developed in Sections 3.3.2 and 3.3.3 of Chapter 3, respectively. It will also carry out their estimation and calibration, and conduct policy simulations. For the exploration of the SWS, econometric multivariable analysis has been proved as an appropriate tool given the underdeveloped and dualist nature of developing transition economies such as Vietnam (Van de Walle 1995).

Section 2 and 3 are devoted to each of the models. Each section will start from model specification and description of data, followed by presenting the results of the model estimation, validation, and calibration. Then each section concludes by describing results of policy simulations using the calibrated model. The chapter concludes with section 5, which summaries major findings and conclusions.

Section 6.2 *Modelling dynamics of social welfare condition in the transition economy*

6.2.1 Finalising dynamic model of occupation and consumption choices

In sections 3.2.A.a-c of Chapter 3, the theoretical basis for dynamic modelling in the two-ownership-sector transition economy with focus on people's occupation and consumption choices was developed. This section will complete the development of the model by considering investment choice, expectations, and macroeconomic balances. These are in line with pioneering works done by Goulder and Summers (1989); Blanchard and Fisher (1990); Go (1994); Devarajan, Go et al. (1997); Devarajan and Go (1998), and particularly Dixon, Parmenter et al. (1992).

A. Dynamics of investment

With respect to investment, assume that under the transition both non-state and state firms maximise the intertemporal value of their business, i.e. the time discounted stream of the earnings from capital net the investment cost, by choosing the optimal level of investment. Their earnings functions are shown as W_{mc} and W_{sc} in (3.11) ¹³⁰.

Next, as usual, assume that investment requires additional costs in terms of labour and wage, which are proportional to the amount of the investment I_i squared, i.e.

$$(87) \quad L_i = \theta_i I_i^2$$

where θ_i is a sector specific investment parameter, $i=m,s$. And the investment cost will be

$$(88) \quad C_i = pI_i + \theta_i w_i I_i^2$$

¹³⁰ Here and later on, the chapter number is included in the reference numbers of equations defined in other chapters, for easy reference.

Moreover, the government promotes development of each sector by imposing investment subsidies τ_k ¹³¹. Thus, the firm and household's investment problem can be presented as follows

$$(89) \quad \max_{I_i} \int_0^{\infty} e^{-\rho t} [(1-\tau_a)W_{ic} - (1-\tau_k)(pI_i + \theta w_i I_i^2)] dt$$

subject to the following constraint on the growth of capital

$$(90) \quad \dot{K}_i = I_i - dK_i$$

Set up the current value Hamiltonian, using costate variable q_i

$$(91) \quad H = e^{-\rho t} [(1-\tau_a)W_{ic} - (1-\tau_k)(pI_i + \theta w_i I_i^2)] + q_i e^{-\rho t} (I_i - dK_i)$$

$$(92) \quad \lim_{t \rightarrow \infty} q_i K_i e^{-\rho t} = 0$$

The necessary and sufficient conditions for the maximum are

$$(93) \quad H'_i = -e^{-\rho t} (1-\tau_k)(p + 2\theta w_i I_i) + q_i e^{-\rho t} = 0$$

$$(94) \quad \begin{aligned} d(q_i e^{-\rho t})/dt &= q'_i e^{-\rho t} - \rho q_i e^{-\rho t} = -H'_K = -(1-\tau_a)W'_{ic_K} e^{-\rho t} + dq_i e^{-\rho t} \\ \Rightarrow q'_i &= (\rho + d)q_i - (1-\tau_a)W'_{ic_K} \end{aligned}$$

Solving (93) gives the optimal level of investment as follows

$$(95) \quad I_i^* = \frac{1}{2\theta w_i} \left(\frac{q_i}{1-\tau_k} - p \right) \quad ; i=m,s$$

Substitute (95) to (90) and rewrite it as the differential equation defining the accumulation of the physical capital

$$(96) \quad K'_i = \frac{q_i}{2\theta w_i (1-\tau_k)} - dK - \frac{p}{2\theta w_i} \quad ; i=m,s$$

¹³¹ So, in the transition economy, redistribution policy is proposed to be carried out through unified value-added tax τ and investment subsidies τ_k , which target firms, income tax τ_a , lump-sum public transfers ls and unemployment benefits, which are aimed at individuals, and public consumption.

On the other hand, differentiating (3.12) with respect to K_i and substituting them to (94) give Euler equations defining the value of costate variable q_i , which determines the dynamics of investment in the respective sector.

$$(97) \quad q'_i = (\rho + d)q_i - \frac{(1-\tau_a)\varepsilon_{i3}}{1-\varepsilon_{i2}} \beta_i(.) K_i^{\frac{\varepsilon_{i3}+\varepsilon_{i2}-1}{1-\varepsilon_{i2}}} ; i=m,s$$

As the eigenvalues of the system of simultaneous equations (96) & (97) are $-d$ and $(\rho+d)$, which are distinctive and having alternating signs, the solution of the investment problem has the saddle-path property. To define values q_i^{ss} and K_i^{ss} of the variables at the steady state, solving (96) - (97) for zero values gives four simultaneous equations¹³²

$$(98) \quad K_i^{ss} = \frac{1}{2\theta d w_i^{ss}} \left(\frac{q_i^{ss}}{1-\tau^{ss}} - p^{ss} \right) ; i=m,s$$

$$(99) \quad (\rho + d)q_i^{ss} = \frac{(1-\tau^{ss})\varepsilon_{i3}}{1-\varepsilon_{i2}} \beta_i(.) K_i^{ss \frac{\varepsilon_{i3}+\varepsilon_{i2}-1}{1-\varepsilon_{i2}}} ; i=m,s$$

Note that returns to scale in this model depend on the values of the exponent of L and K , namely ε_{ij} , $i=m,s$; $j=2,3$.

B. Household expenditures and saving

In this model, worker's disposal income is defined as the sum of her wage, saving interest and public lump-sum transfers net income tax, i.e.

$$(100) \quad y_i = (1-\tau_a)(w_i + r k_i) + w_m a ; i=m,s$$

where a is the level of the public transfers expressed in terms of the market-led sector's wage rate w_m .

¹³² These equations allow avoiding problems of computing complex integrals similar to 3.35 and 3.37. q_i^{ss} and K_i^{ss} can be solved implicitly from these equations when the constant return to scale is implied. See Dixon et al (ibid., 289-94)

Suppose the human capital creation $\dot{h}_{i,t}$ and the wage earning function $W_i(\bar{w}_i, h_i)$ defined in (3.25) and (3.27), take the following linear form

$$(101) \quad \dot{h}_i(c_{h_i}, h_i) = h_1 + h_2 c_{h_i} + h_3 c_{h_i}^2 + h_4 h_i + h_5 h_i^2$$

$$(102) \quad w_i = W_i(\bar{w}_i, h_i) = w_1 + w_2 \bar{w}_i + w_3 \bar{w}_i^2 + w_4 h_i + w_5 h_i^2$$

Substituting (101) into (3.34) and (3.37) specifies the equations, which define the household spending on human development and Tobin's q for human capital accumulation.

$$(103) \quad c_{h_i} = \frac{1}{2h_3} \left(\frac{q_{h_i}}{q_{h_i}} - h_2 \right) \quad ; i = m, s$$

$$(104) \quad q'_{h_i} = q_{h_i} [\rho - (1 - \tau_a)(w_4 + 2w_5 h_i)(h_2 + 2h_3 c_{h_i})] - (1 - \gamma) \quad ; i = m, s$$

$$(105) \quad h_i' = \dot{h}_i(c_{h_i}, h_i) - d_h h_i = h_1 + h_2 c_{h_i} + h_3 c_{h_i}^2 + h_4 h_i + h_5 h_i^2 - d_h h_i \quad ; i = m, s$$

As the eigenvalues of the system of simultaneous equations (106) and (107) are $(h_4 + 2h_5 h_i - d_h)$ and $[\rho - (1 - \tau_a)(w_4 + 2w_5 h_i)(h_2 + 2h_3 c_{h_i})] > 0$, the solution of the human capital investment problem has the saddle-path property if and only if $h_i < (d_h - h_4)/2h_5$. To define values $q_{h_i}^{ss}$ and h_i^{ss} of the variables at the steady state, solving (104)-(105) for zero values gives

$$(106) \quad q_{h_i}^{ss} = (1 - \gamma) / [\rho - (1 - \tau_a^{ss})(w_4 + 2w_5 h_i^{ss})(h_2 + 2h_3 c_{h_i}^{ss})] \quad ; i = m, s$$

$$(107) \quad h_i^{ss} = \{(d_h - h_4) \pm [(d_h - h_4)^2 - 4h_5(h_1 + h_2 c_{h_i} + h_3 c_{h_i}^2)]^{1/2}\} / 2h_5 \quad ; i = m, s$$

With the household's consumption determined by (3.33), the household's investment in physical wealth (i.e. saving) s and the stock of its physical wealth k_t are

$$(108) \quad s_i = y_i - p c_i - p c_{h_i} \quad ; i = m, s$$

$$(109) \quad k_{i,t} = (1 - d) k_{i,t-1} + s_i \quad ; i = m, s$$

Contrary, the disposal income and consumption of the unemployed equals the unemployment benefits he receives.

$$(110) \quad y_u = c_u = w_m b$$

where b is the level of unemployment benefits expressed in terms of the market-led sector's wage rate.

On the contrary, as established in Section 3.3.2.A.c.4, the dividend D_m for capital represents the only source of income of capitalists. Thus, their disposal income is

$$(111) \quad y_{mc} = (1 - \tau_a) D_m$$

Further, as the welfare condition of capitalists depends only on investment in the market-led sector, assume that they consume all of the disposal income. Thus,

$$(112) \quad c_m = y_{mc}$$

The above system of equations completely defines the dynamics of consumption and investment at the household and firm levels. Based on these, as the aggregate indicator of change in opulence, the change in the average income can be calculated according to (3.20). On the other hand, as the aggregate indicator of equality, the Gini coefficient can be calculated according to (3.21)¹³³ or (3.22)¹³⁴

C. Expectations

In fact, people's choices are affected by their expectations, which are determined by their capability, in particular their own knowledge and experience as well as their access to information. These factors are influenced by the progress of the transition but have not yet received a quantitative treatment in existing works¹³⁵.

In this respect, following Dixon, Parmenter et al. (1992:355-83), I define expectations of the variables, which are exogenous to the investment problem, such as price p , taxes, and wage rate w_i and allow their expectations to be completely and

¹³³ This requires exogenously determined Gini coefficients for each of the occupations.

¹³⁴ Milanovic (1998) argues that relative change in average incomes among classes represents the most important cause of increasing inequality in the transition economies.

¹³⁵ UNDP/UNICEF (1996) raises issues of information and transparency as a key element of the governance reform in Vietnam during the transition.

incompletely rational. In the former case, the economic agents, i.e. firms and individuals, perfectly foresee the variables necessary for their decision on consumption/saving and investment choices. This implies that the values of the variables in each period will be the same as the values generated by the equilibrium model. In the case of incomplete rational expectations, the latter are formed by combining the values generated by the equilibrium model with their exogenous component. Formally,

$$(113) \quad z^e = z^\phi (z_x)^{(1-\phi)}$$

where z^e is the expectation of the concerned variable (e.g. $z = w_i, p, \tau, \tau_a, \tau_k$); z is its value generated by the equilibrium model, z_x is its exogenous expectation. ϕ is the parameter reflecting the rationality of people's expectations and is defined exogenously on the empirical basis. Obviously, $\phi=1$ and $\phi=0$ are correspondent to the completely rational and irrational expectations, respectively.

D. Macro balances

Next, I complete the model by specifying its closure in terms of macro balances. Firstly, the equilibrium in the labour market requires that the total labour supply L equals the total number of workers employed in the production L_i^* and in investment activities L_i^* in both sectors, and the number of the unemployed U . Thus,

$$(114) \quad L = \sum_i L_i^* + \sum_i L_{i_i} + U \quad ; i=m,s$$

Secondly, concerning the balance in the capital market, assume that the government does not save. Walras's law requires that the total investment equals the total after-tax value-added product net the total wage and dividend paid to workers employed in production and capitalists, respectively, and the total workers' saving net the saving interest, and the inflow of *FDI*.

$$(115) \quad (1 - \tau_k) \sum_{i=m,s} (I_i + \theta w_i I_i^2) = \sum_{i=m,s} [(1 - \tau) p Y_i - w_i L_i^* - D_i + (s_i - r k_i)(L_i^* + L_i)] + FDI$$

For simplicity assume that all private savings are mobilised as a source of investment in the market-led sector in addition to capitalists' investment and the inflow of FDI. Thus, the sector's total investment is defined according to (97) and shall be equal to the sector's after-tax value-added product net the total wages paid to the workers employed in the production, net after-subsidy investment and the investment cost, net the inflow of foreign direct investment *FDI*, and net the total private saving and saving interest. In other words, the dividend paid to capitalists can be defined as follows

$$(116) \quad D_m = (1 - \tau) p Y_m - w_m L_m^* - (1 - \tau_k)(I_m + w_m L_s) + \sum_{i=m,s} (s_i - r k_i)(L_i^* + L_i) + FDI$$

In contrast, the investment in the state sector is equal to its value-added product net the total wages, the dividends transferred to the Government and taxes. This means the sector's excessive investment need, if it takes place, is expected to be financed only by the budget.

$$(117) \quad D_s = (1 - \tau) p Y_s - w_s L_s^* - (1 - \tau_k)(I_s + w_s L_s)$$

Thirdly, in respect to the public expenditures, given (3.17) rewrite government consumption as the sum of total revenue from the value-added tax τ , the dividend received from the state-led sector D_s , income tax τ_o applied to both incomes from labour and capital, and the current trade deficit *TB* net the investment subsidies, lump-sum public transfers *a* paid to workers, and unemployment benefits

$$(118) \quad G = \tau \sum_{m,s} p Y_i + D_s + \tau_o \sum_{m,s} w_i (L_i^* + L_{l_i}) + \tau_o D_m + TB + \\ - \tau_k \sum_{m,s} (p I_i + \theta w_i I_i^2) - a w_m \sum_{m,s} (L_i^* + L_{l_i}) - c w_m U$$

Finally, the equilibrium in the good market requires that the value-added product produced in each sector equals the sum of the products used in the total private consumption C , the total public consumption G , and the total domestic investment I according to fixed correspondent shares $s_{(i)}$

$$(119) \quad (1+\tau)pY_i = s_{C_i}C_i + s_{G_i}G_i + s_{I_i}\left(\sum_{m,s} I_i - FDI\right)$$

This completes the specification of the dynamic model of SWC in the transition economy. A complete list of the model's equations, variables, and parameters is given in annex 1. This stylised model captures essentials of intertemporal consumption and investment of major agents in a developing transition economy, which is characterised by the segmentation not only among production sectors and the role of the state in the wage setting, public transfers, external borrowing and payment. The model does not represent a closed economy as FDI and trade balance have been taken into account. But the model is not a strictly open economy as it does not reflect changes in international prices and exchange rates. Although this can be done, as shown by Go (1994); Devarajan, Go et al. (1997); Devarajan and Go (1998), the interactions between the domestic and external sectors are deliberately simplified to keep the model simple.

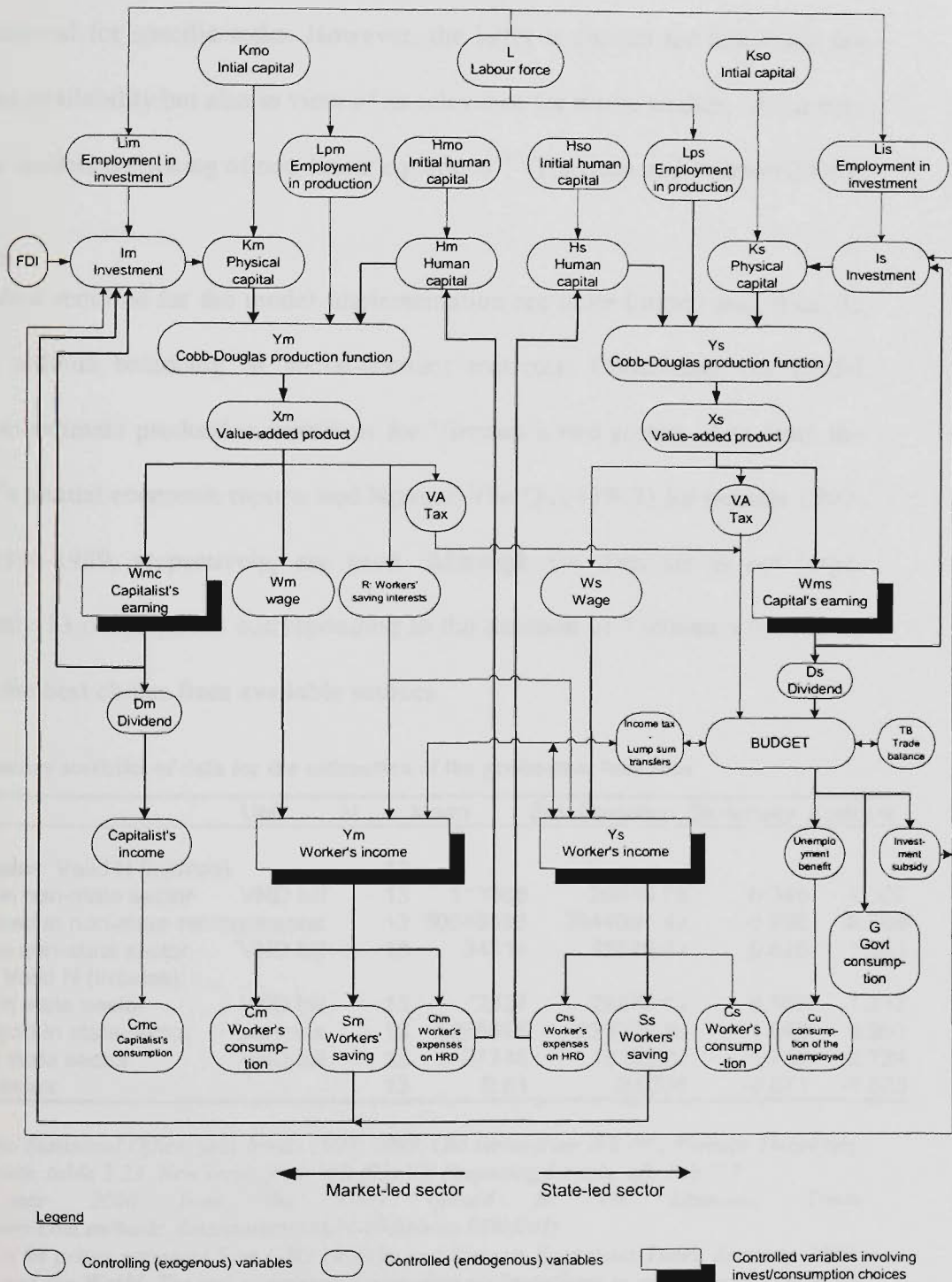
6.2.2 Model implementation and calibration

A. Solution strategy

The model is essentially an intertemporal CGE model. Its solution strategy is straightforward from the list of equations. To derive a solution, all general and intertemporal equilibrium conditions must be satisfied. Firstly, at each state, the production of the value-added product; labour demand; investment; private income, consumption, saving and expenses on education; government consumption and other aggregated welfare indicators are defined by equations described in part A.a of the

annex 1. The general equilibrium conditions include equilibriums in the markets for labour and goods. The equilibrium condition on capital is not implicitly included to reduce the model's dimensions according to Walras's law. Secondly, the lead variables, namely Torbin's q_l , q_k and q_h together determine the unique path to the following state of stock variables such as capital K , workers' saving S and human capital H , imitating investment and consumption choices. Values of the lead variables are resolved by the back-solving equations described in part A.c. Thirdly, patterns of the movement in the time space are controlled by forward-looking and foresight rules in part A.b, which define futures prices, wage rate, and tax rates on the basis of equilibrium values generated by the model and exogenously determined values. Finally, as usually applied in solving infinite-horizon models, the steady state conditions, shown in part A.d., are to be imposed to the lead variables and stock variables at the terminal period. On the other hand, initial values of the stock variables are supplied from empirical observations. Thus, as long as the steady state exists, the transversality conditions are satisfied, and the model converges into the intertemporal equilibrium. The model's structure is shown in Figure 24.

Figure 24. Structure of the SWC model



The model and solution strategy can be solved by a number of high-level modelling languages, particularly the General Modelling System (GAMS) and the General Equilibrium Modelling Package (GEMPACK). Both of them are software for general-purpose economic modelling. The former is increasingly used by a number of

authors¹³⁶ due to its simplicity in implementation and the existence of various solution algorithms tailored for specific tasks. However, the latter is chosen for this study not only due to its availability but also in view of its relevance for future studies, which may involve large models consisting of non-linear equations¹³⁷ (Harrison and Pearson 2000).

B. Data

The data required for the model implementation are quite limited and, thus, do not involve tedious balancing of social-account matrixes. Concerning the model parameters, to estimate production functions for Vietnam’s two sectors, data from the World Bank’s annual economic reports and Nguyen Van Quy (1997) for periods 1990-2000 and 1988-1989, respectively, are used. Although the data set is not large, containing only 13 observations corresponding to the duration of Vietnam’s transition, it represents the best choice from available sources.

Table 37. Summary statistics of data for the estimation of the production functions

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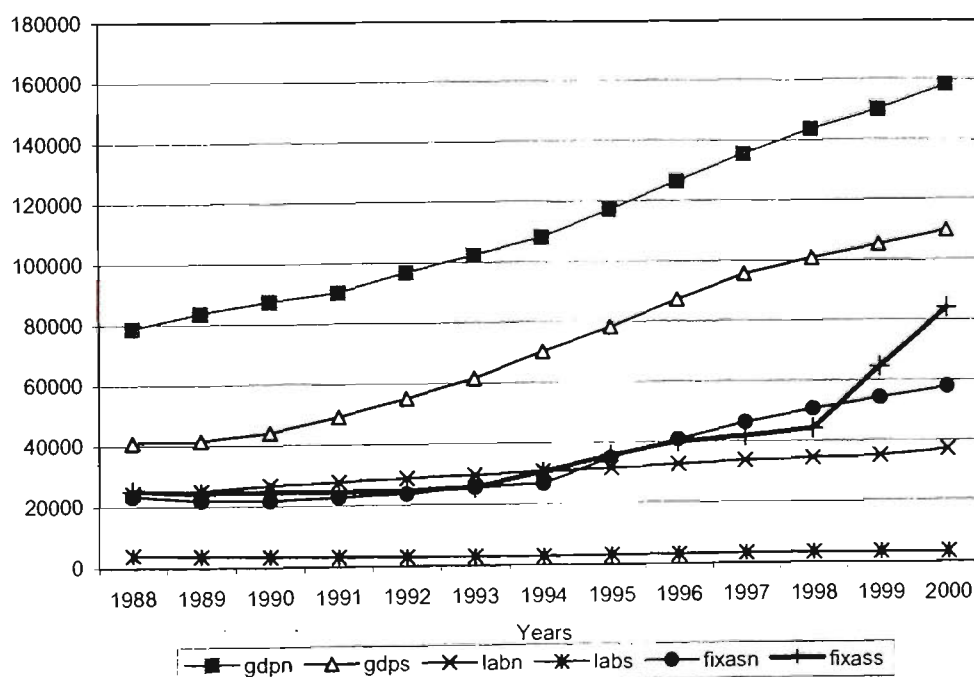
Sources:

1. GDP: General Statistical Office, year books 1997, 1999. Old series from WB (97) Vietnam Deepening Reform for Growth, table 2.2A. New series from WB (99) VN Preparing for take-off. Tab. 2.2 GDP in year 2000 from the GSO quoted in VN Economic Times ([WWW.vneconomy.com/en/basic_data/statistics/tk14-09.htm](http://www.vneconomy.com/en/basic_data/statistics/tk14-09.htm) on 01/03/01)
2. Fixed assets in 94 prices estimated from GSO 1998-99 and Vietnam Economics Times, Economy 1999-2000: Vietnam and the World. The rest is estimated from data on investment in current prices from VN Economic Times ([WWW.vneconomy.com/en/basic_data/statistics/tke06-02.htm](http://www.vneconomy.com/en/basic_data/statistics/tke06-02.htm) on 01/03/01).
3. Employment: Before 1997: WB (97) Vietnam Deepening Reform for Growth. 1997-99: WB VN 2001: Three pillar. 2000: MOLISA, VN Economic Times, http://www.vneconomy.com.vn/en/labour_market/today/00-0025.htm, 23/03/01
4. Liberalisation index: IMF world Economic Outlook, Advanced copy, Sept 2000, tab.3.10 ; 1988 & 98-00 are author’s estimation

¹³⁶ See Go(ibid.) and Devarajan et all (ibid.), for example.
¹³⁷ E.g. ORANI and MONASH

Given the wide-spread introduction of the household contracting system in agriculture in 1990-93 before the cooperative system was dismantled, data on agriculture are included in the non-state sector¹³⁸. The labour inputs are measured in persons and taken from the database. The capital inputs are measured in terms of fixed assets in billions of Vietnamese currency (VND), which are estimated for each year as the sum of their values at the beginning of a year net its depreciation and the value of the newly installed assets. The liberalisation indexes are taken from (IMF 2000) for period 1989-1997 and estimated for 1998-2000 by the author. The data are summarised in the following table. There are no outliers and the values of skewness and kurtosis are less than 2, indicating that the data can be considered as normally distributed.

Figure 25. Vietnam: Trends of value-added product, employment and fixed capital in the non-state and state sectors, 1989-2000



Note: In the legends, *gdpn*, *labn* and *fixasn* represent GDP, employment and fixed capital assets in the non-state sector, while *gdps*, *labs* and *fixass* stand for those in the state sector.

¹³⁸ Land has been a statistically insignificant variable and, therefore, excluded from the production functions.

Their trends are illustrated in Figure 25. The figure shows the contrasting patterns of growth in the value-added products of the non-state and state sectors. While the former is characterised by mediocre growth in both labour and capital inputs, the latter takes a much more capital-intensive growth path with a dramatic increase in fixed assets and quite stable employment.

On the other hand, the human capital creation function $\dot{h}_{i,t}$ and the wage earning function $W_i(\bar{w}_i, h_i)$ are estimated from the data collected from the Living Standards Measurement Survey in 1997-98, which has not only a more extensive coverage in terms of the number of households participating, but, more importantly, it also reflects fuller household expenditures on vocational training. For the estimation of $\dot{h}_{i,t}$, from household records I calculate the total yearly household expenditure on education (including expenditure on tuition and registration fees, extra-class tuition, contributions to parents' association, to the school facility development fund and to school's special events, fees for examinations and forms, buying uniforms and other clothing required by the school, purchase (or rental) of textbooks, purchase of papers and other school stationaries, transportation and value of food at the school (if any) and other expense such as school related accident insurance) and on training (including expenditures on foreign languages, computer skills learning. The household's average years of education and training (HRD) are calculated as the average of its members' years of formal education and vocational training at the moment of the survey. The incremental growth of the household's HRD in the survey year is estimated as the number of the household's members attending formal education and training in the survey year divided by the total number of the household members. The main statistics of the households with non-zero expenses on education and training are shown in Table 38.

Table 38: Summary statistics of data for the estimation of the HRD function
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Source: VLSS 1997-98

For the estimation of the household (HH) wage earning function $W_i(\bar{w}_i, h_i)$ as the proxy for the HH earning function¹³⁹ per ownership sector, average wage rates are estimated per each of 62 types of wage jobs (e.g. leader, professionals in various fields, personal services, workers in agriculture, forestry and fishery, skilled manual workers, assemblers and machine operators, unskilled workers and other jobs), each of 60 industries (e.g. agriculture, mining, industry, utilities and construction, commerce, transport and communication, finance and other services and categories) and each of the two ownership sectors) using household members’ employment records, which reflect both the numbers of hours worked for wages in the survey year and the total wage and salary received, including wages, salaries, bonus, and different cash and in-kind allowances relevant to the jobs such as lunch, payments for overtime, night shift, vacation or hazardous conditions, for on-the-job training, for responsibility, seniority, travelling, royalties and honoraria and other forms of compensation). The main statistics of the households with non-zero wage incomes are shown in Table 38.

¹³⁹ While members of a household can be classified per ownership sector by their major employment, this appears hardly applicable at the household level.

Table 39. Summary statistics of data for the estimation of the wage earning functions

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Source: VLSS 1997-98

The data for the calibration of the model are modest and do not require complex balancing of SESAME matrixes. The main constraint is that transition economies and Vietnam’s economy in particular were not in a stable path both before and after the transition, so that the model’s initial condition shall be estimated from actual data. For this purpose, I use two sets of Vietnam’s data for 1994 and 1998. As shown in Fig. 1, each set comprises the following information (i) GDP and the two factor inputs, namely labour and capital, in 1994 prices, private consumption, investment, and government consumption, broken down by sector; (ii) revenue by major components (value-added and income tax, investment subsidies); and balance of payments and the FDI inflow. The years selected as benchmarks are due to the availability of household data for those years and the stability of Vietnam’s economy in the period¹⁴⁰.

¹⁴⁰ The calibration of CGE models needs not only to begin from an equilibrium state of the concerned economy (Devarajan et al, 1998) but also its entire equilibrium path to be compared with. As the conditions do not always strictly hold in both developing and transition economies, primary attention is given to the replication of dynamics.

C. Model estimation and calibration

a. Estimation of the production functions

The results of the estimation of the production functions are shown in Table 40.

Table 40. Vietnam: Estimates of production functions per ownership sector

	Non-state sector				State sector			
	Coeff's & Elasticity	T-test	Mean	Marginal effect at mean	Coeff's & Elasticity	T-test	Mean	Marginal effect at mean
Constant	-6.506	-2.686**			8.635	30.744***		
LN of the liberalisation index	0.191	1.713	0.61	35653.7	1.222	8.068***	0.61	144891.1
LN of labour input	0.898	6.021***	30645153	0.003337	0.00805	1.217	3298615	0.000177
LN of capital input	0.264	9.699***	34714	0.865966	0.288	15.276***	37718	0.552261
Mean of GDP by sector			113868				72327	
Adjusted R ²		0.997				0.999		
Durbin-Watson test		1.815				1.728		
Sample size		13				13		

Source: The author's estimation

Note: *** significant at 1% level
 ** significant at 5% level
 * significant at 10% level

The result of the Durbin-Watson test indicates that the results are acceptable in terms of serial correlation. The tolerance statistics with respect to independent variables are from 0.06-0.34 and rather high correlation coefficients among them indicate the existence of multi-collinearity, which however is explained by the fact that the independent variables in time series often move together.

In general, the results of the estimation are as expected. The two sectors show different patterns of development. Firstly, the non-state sector exhibits increasing returns to scale while the state sector depicts decreasing returns to scale. Secondly, small values of the state sector elasticity in respect of labour inputs and its t-test compared with capital inputs indicate that the growth in the state sector is more capital-intensive in sharp contrast to the non-state sector. Thirdly, the recent reform policies have produced more profound positive impacts on the growth of the state sector than on the non-state sector.

b. Estimation of the household human capital and wage earning functions

Table 41 gives estimates for the household human capital creation $\dot{h}_{i,t}$.

Table 41. Vietnam: Estimates of the household human capital function

Model	Coefficients B	t-test	Collinearity statistics	Mean	Elasticity
Constant	0.263	34.376***			
HH expences on education	0.00007847	13.931***	.117	1018.83	0.1315
Squared HH exp on education	-0.00000001155	-10.302***	.119	2520358.26	
HH existing ave years formal HRD	0.01558	8.546***	.100	7.6823	0.2973
Squared HH existing ave HRD	-0.0006209	-5.750***	.099	75.5967	
Mean of the growth of HH ave years formal HRD				0.3866	
Adjusted R ²		0.104			
Sample size		3808			

Note: * Including the effect of the variable's squared term
Source: The author's e estimation
Note: *** significant at 1% level
** significant at 5% level
* significant at 10% level

T-test and the collinearity diagnostics indicate that the results are statistically significant. Durbin-Watson test can be conducted but its result would have very limited meaning as the panel data comprises observations in only two periods, namely 1992-93 and 1997-98. The results confirm that the growth of household average years of formal education and training are positively influenced by its expenditures for the purpose and its existing average level of education and training. This also applied to the estimates of the household wage earning function $W_i(\bar{w}_i, h_i)$ shown in Table 42.

Table 42. Vietnam: Estimates of HH wage earning functions

	Non-state sector				State sector			
	Coeff's B	t-test	Mean	Elasticity	Coeff's B	t-test	Mean	Elasticity
Constant	1.496	10.117***			1.818	3.332***		
Average wage rate	0.444	14.920***	4.6414	0.5015	0.625	13.811***	4.8387	0.6750
HH ave years of formal HRD			6.4279		-0.235	-2.523***	11.9850	-0.0830
Squared HH years of formal HRD	0.009951	8.064***	55.4873	0.0156**	0.01530	3.747***	159.7673	
Mean of wage earnings			4.1092				4.4802	
Adjusted R ²		0.124				0.180		
Sample size		2861				1381		

Note: * Including the effect of the variable's squared term
** Calculated at the variable mean but not its squared term
Source: The author's e estimation
Note: *** significant at 1% level
** significant at 5% level

* *significant at 10% level*

Given the positive coefficient related to the household average years of HRD squared, the hypothesis about the positive relationship between the household earnings and the general growth of the respective sector and the household human capital can be considered as validated, in general. The negative elasticity of wage earning in the state sector can be explained as a result of the sector's well-documented labour 'hoarding', which is particularly extended to well-educated and skilled labour.

c. The model calibration

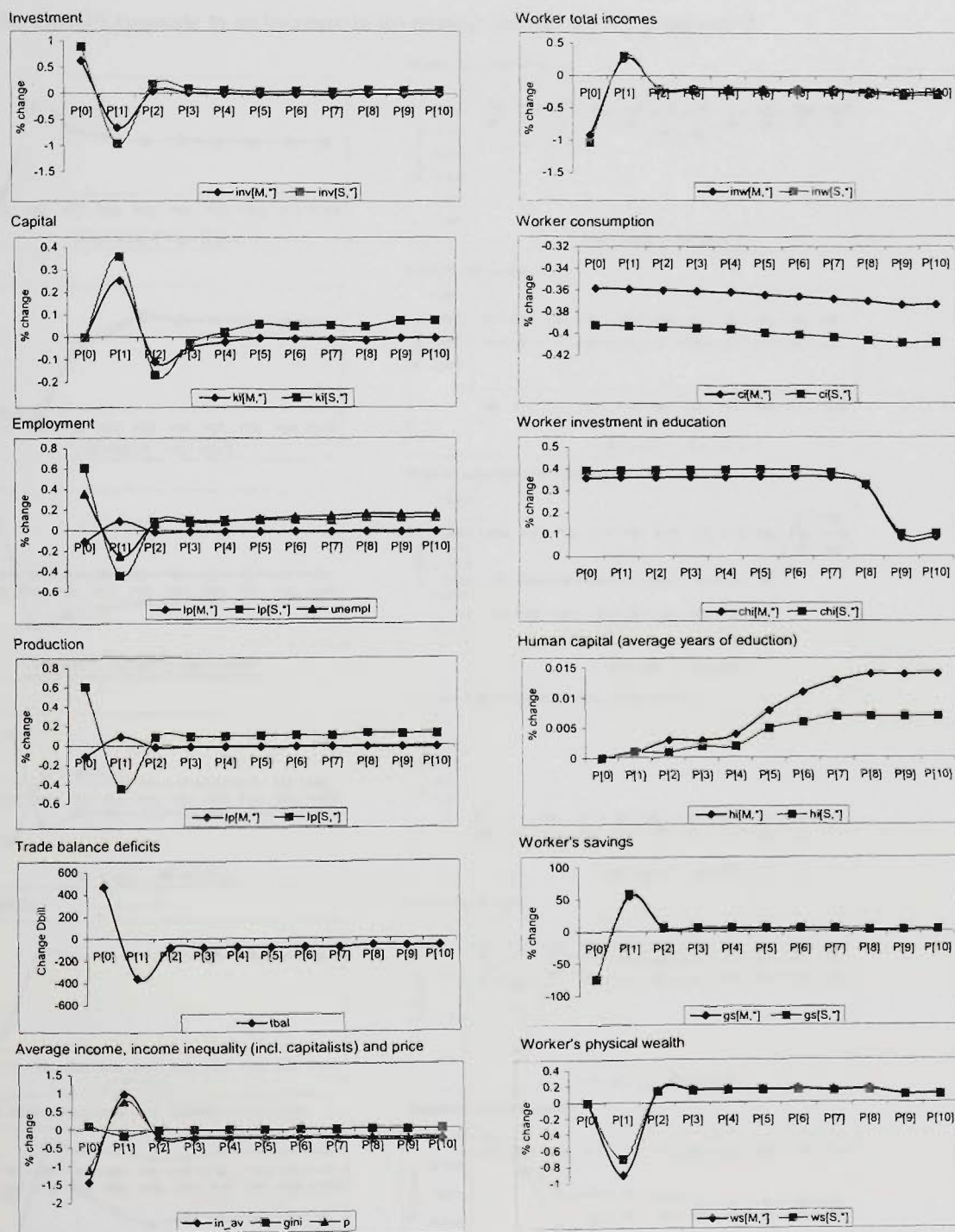
The model is calibrated on the basis of the data on Vietnam's economy in 1994 and some parameters from Dixon (ibid.) and Devarajan (ibid). This is done by solving related equations for the values of parameters and exogenous variables, which are corresponding to the steady state of the transition economy. Although the model implementation with the GEMPACK modelling software allows a flexible choice of exogenous variable, the following 16 variables are chosen as exogenous variables for the model's calibration and experiments, namely the index of liberalisation (*reform*), the total labour force in the economy (*totlab*), the government consumption (*g*), the foreign direct investment (*fdi*), income tax (*dti*), value-added tax (*dtsg*); investment subsidy (*dti*), the ratio between the per capita lump-sum public transfers and the market wage rate (*ls*) and the ratio between unemployment benefits and the market wage rate (*unemplpay*), exogenously-defined expected market wage rate (*wix*), price (*px*), and changes in income tax (*dtix*) and employment subsidy (*dtis*), and the initial values of stocks of capital (*KI*), workers' human capital (*HI*), and physical wealth (*WS*) (see also note to the concerned figures). The calibrated values of the model's parameters are given with their list included in annex 2.

Next, the model's implementation allows flexibility in selection of the number of periods for simulation up to 40. However, as the purpose of this modelling exercise is limited by exploring general welfare dynamics of transition policies, the number is chosen to be 11 periods on the basis of the speed of the model's convergence and the computer resources.

Properties of the calibrated model are thoroughly investigated by the author in order to provide some evidence that the model is free from implementation errors. For the purpose, the modelled economy was set up at the stable state and exposed to various shocks from redistribution instruments embedded in the model, such as value-added tax, income tax, investment subsidy, lump-sum public transfers and unemployment benefits. The model produces projections of percent changes¹⁴¹ of endogenous variables compared with their initial values for each period. For easy analysis, the results are represented as series of charts, which illustrate the dynamics of the variables most important for assessment of the welfare conditions over time. For example, Figure 26, Figure 27, and Figure 28 show the model's typical responses to external shocks as results of 5% increases in income tax, investment subsidy and lump-sum public transfers from period 2, respectively, which are quite consistent with results predicted by other models (Dixon, Parmenter et al. 1992; Malakellis 2000). The figures indicate that there is a clear distinction between the long-term and short-term welfare impacts of the policy shocks.

¹⁴¹ An exception is the trade balance deficits, which are expressed in absolute changes in terms of VNDbill.

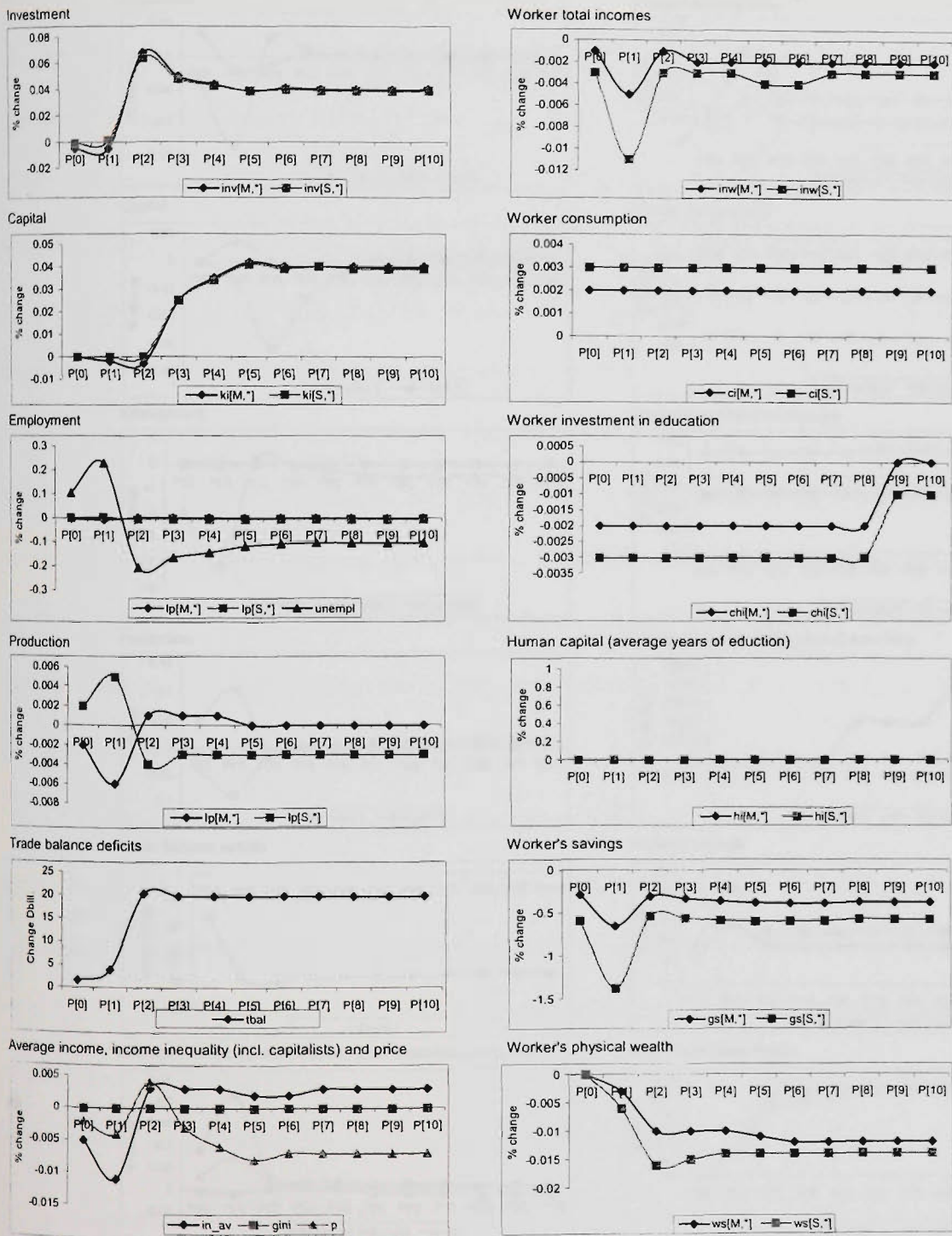
Figure 26. The model's response to an increase by 5% in income tax from year 2



Note: Exogenous variables include reform totlab g fdi dti dtsg dts ls unemplpay wix px dtix dtsx & initial KI, HI, WS

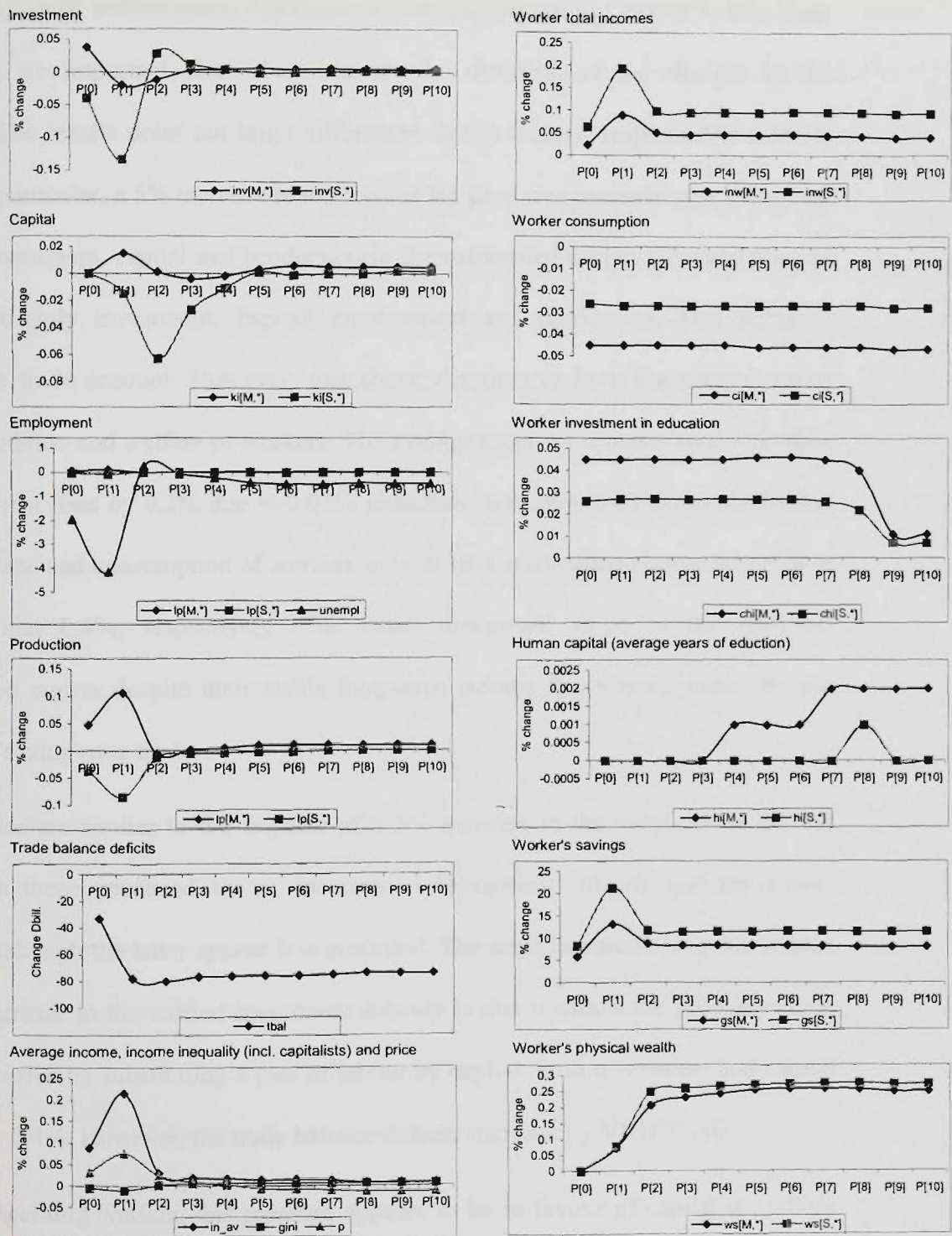
Which, here and after, stand for the index of liberalisation, total labour supply, government consumption, foreign direct investment, changes in income tax, in value-added tax and investment subsidy, lump-sum public transfers, unemployment benefits, exogenous expectations of wage rates, price and the taxes, and the initial values of physical capital, workers' human capital and physical wealth in each sector, respectively.

Figure 27. The model’s response to an increase in investment subsidy by 5% from year 2



Note: Exogenous variables include reform tollab g fdi dti dtsg dts ls unemplpay wix px dtix dtsx & initial KI, HI, WS

Figure 28. The model's response to an increase in lump-sum public transfers by 5% from year 2



Note: Exogenous variables include reform totlab g fdi dti dtsg dts ls wix px dtix dtss & initial KI, HI, WS

Firstly, long-run impacts of the policy changes are reached in the steady phase of the model's time horizon. In all of these experiments, all endogenous variables converge

into their long-run steady states consistent with balanced-growth, which can be explained by static redistribution mechanisms alone, as shown in Chapter 3. The long-run results are important since they indicate the direction of the changes in the economy. The results point out large differences in the sectors' responses to external shocks. In particular, a 5% increase in the income tax produces unremarkable effects on long-run investment, capital and production in the market-led sector. Contrary, the tax increased slightly investment, capital, employment and production. This helps to balance the trade account. However, this shock deteriorates both the general social welfare condition and welfare of workers. The average income decreases by 0.3% while unemployment rises by 0.2% due to 0.02% reduction in employment in the market-led sector. Income and consumption of workers in both state and market sectors also reduce by 0.3% and 0.4%, respectively. The small downward slope in the workers' consumption curves despite their stable long-term income flows is explained by the increase in saving over time.

These are similar to the impacts of a 5% increase in the value-added tax but differ from those produced by an increase in investment subsidy and the public transfers, although the latter appear less profound. The most important long-run impact of a 5% increase in the unified investment subsidy is that it makes the economy more capital intensive by substituting a part of labour by capital: both investment and capital increase by 0.4%. However, the trade balance deficits increase by VND20 bill.

Concerning welfare, this measure appears to be in favour of capitalists, whose income increases by 0.02% and causes 0.003% increase in the average income. In contrast, workers' welfare deteriorates in terms of income, consumption, human capital and physical wealth accumulation. On the other hand, the most important impact of a

5% increase in the rate of lump-sum public transfers compared with the market wage is a growth in worker income by 0.05%-0.1% by the cost of increasing trade deficits by VND80 bill. However, the model predicts a drop of workers' consumption by 0.03-0.04% due to their greater investment in human capital and savings.

Secondly, the model's short run results are also consistent with theoretical predictions and findings of other models e.g. (Dixon, Parmenter et al. 1992:Chapter 5). The major distinction from static models is that the policy changes produce impacts not only in the implementation and transition phases, i.e. when the shocks are implemented and the economy makes adjustments towards them, but also in the pre-shock phase. This is caused by the forward-looking behaviour of economic agents. There are two forward-looking mechanisms embedded in the model. The first mechanism works through intertemporal maximisation of firm's value and determines the amount of investment in each period, and, thus, changes in capital stock in each sector with a lag of one year according to equations (89) and (95). The second mechanism works through the intertemporal maximisation of household utility and defines household consumption, saving and investment in human capital according to (3.42). The second mechanism distinguishes this model from earlier work. In particular, the log form of household utility from consumption implies that consumption is smoothed over time by adjusting household savings and accumulation (or de-accumulation) of physical wealth. The extent of forward-looking behaviour is determined by the expectation equations (113).

As shown in the figures, the model's short-run results are quite distinctive from those of (Dixon, Parmenter et al. 1992) and, to some extent, (Malakellis 2000). However, the results are consistent with intertemporal profit and utility maximisation,

which determines the short-term dynamics of investment, capital, employment and wage rates and changes in workers' consumption, investment in human capital and savings, respectively. Concerning profit maximisation, the general pattern is that agents adjust their investment in the pre-shock phase to minimise the tax amount to be paid (or maximise the subsidy they receive). As shown in Figure 27, anticipating a future increase in investment subsidy in period 2, agents reduce their investment in the pre-shock phase and maximise it in period 2 when the greater subsidy rate takes place. In contrast, in the case of an increase in income tax (or value-added tax), both sectors immediately maximise their investment in period 0 before minimising it in period 1 so that its capital stock and returns from capital are maximised before the tax is applied. Patterns of pre-shock employment and production of the state sector appear a puzzle, which however is explained by the sector's wage setting mechanism. As the wage rate in the private sector rises, the wage rate in the state sector also grows. This reduces its employment in the next period. As a result, the sector faces a production contraction in period 1. However, its dividends still increase by 0.563% and 1.358% compared with the initial level. Concerning welfare, the model predicts that short-term income is maximised in the pre-shock period before the increases in value-added tax and the public transfers take place. The distinguishing feature of this model is that workers are able to instantaneously adjust their consumption and investment in human capital and keep them constant by adjusting private savings. Further, endogenous variables under the model tend to converge to their steady state quite fast after the introduction of the policy changes, so that the transition phase lasts only within 1-3 periods, except those related to human capital accumulation

In sum, the above illustrative experiments show that the model's properties are consistent with theoretical predictions. Moreover, the properties should be taken into

consideration while using the model for simulation of transition policies and analysing their impacts on the SWC in the economy.

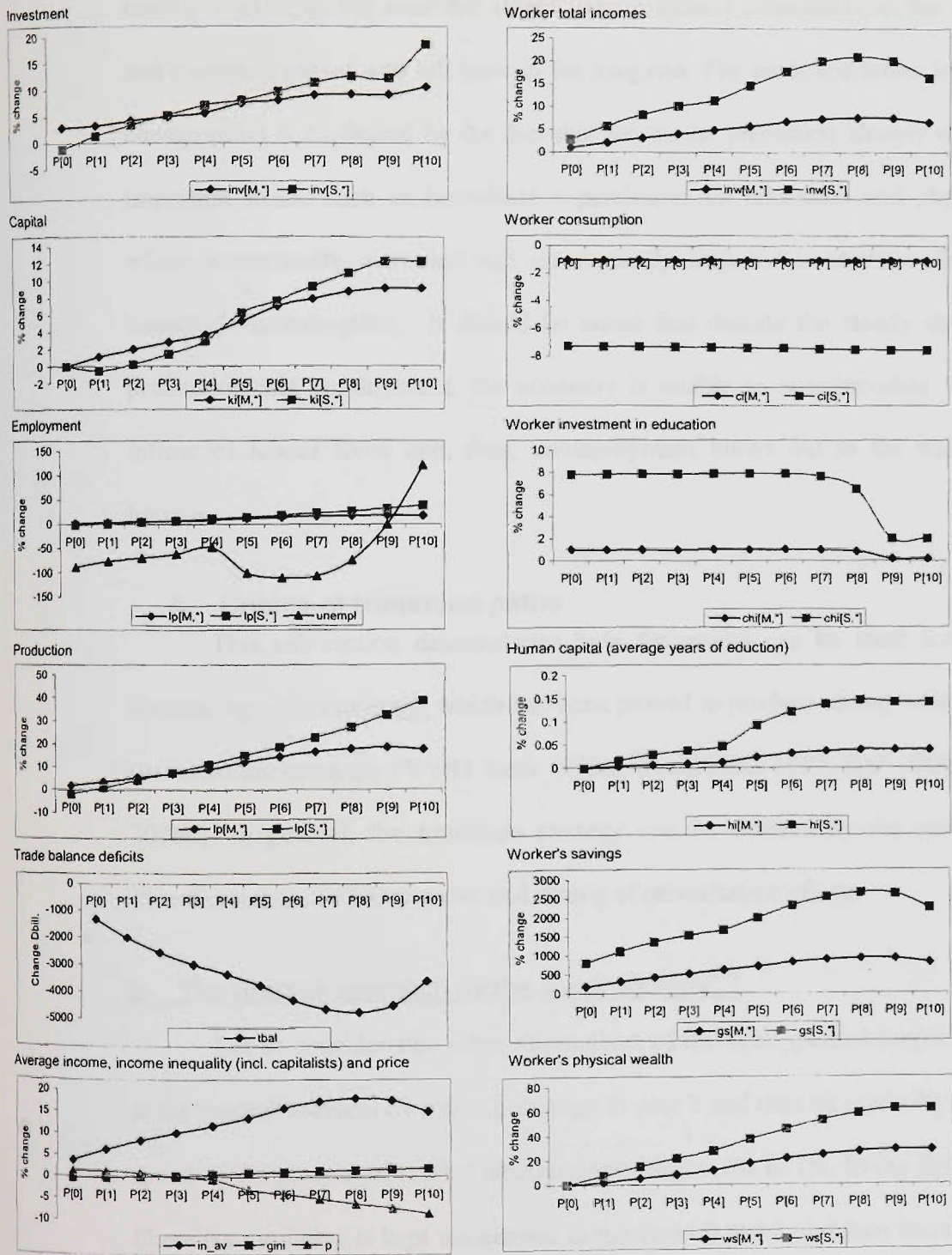
6.2.3 Policy simulation

This section demonstrates how this simple model can be used to examine the impact of potential policy options on SWC in Vietnam. The policy options to be considered include the speed of the market liberalisation, privatisation, and changes in redistribution instruments such as taxes, public transfers, and unemployment benefits. For this purpose, the scenario with steady growth of the labour force at 2% per annum and the index of liberalisation by 0.5% per year ¹⁴² is selected as the control scenario, which all other scenarios are to be compared with. In the control scenario, the value of unemployment benefits compared with the market wage rate is set up at a very small level (e.g. 0.001) to reflect the fact that the benefits still do not exist in Vietnam and represents a subject of intensive policy discussion within the Government. This stylised scenario is chosen as a proxy of the scenario with actual variation of the index of the liberalisation index because its simplicity allows analysing the results produced with more convenience. The exogenous variables in all of these experiments are the same as chosen for the model's calibration. For convenience in interpretation, simulation results are also presented in a series of figures. Major characters of the control scenario are shown in Figure 29.

As shown in the figure, the control scenario is able to reflect the essential dynamics of Vietnam's transition in the previous decade, which was characterised by the steady growth of investment, capital, employment, and an improvement in the trade balance.

¹⁴² Roughly, the figures represent the average annual growth of Vietnam's labour force and the average annual increase of the index of market liberalisation in period 1994-2000.

Figure 29. Vietnam: Control scenario with annual 2% growth of labour force and slow gradual market liberalisation



Note: Exogenous variables include reform totlab g fdi dti dtsg dts ls wix px dtix dtsx & initial KI, HI, WS

Workers' average incomes and savings grow steadily in both ownership sectors' as well as the total average income. However, income inequality in terms of the Gini

coefficient slightly increases. Workers' expenses on education and training, particularly among workers in the state-led sector, also increased remarkably in the pre-transition and transition period and fall back in the long run. The predicted lower level of private consumption is explained by the fact that the model prediction already excludes some important items, such as household expenditures on education and physical wealth, which dramatically increased and are normally included in statistic observations of household consumption. It should be noted that despite the steady development of production and employment, the economy is unable to accommodate the increasing inflow of labour force and, thus, unemployment blows out at the end of the time horizon.

A. Choice of transition paths

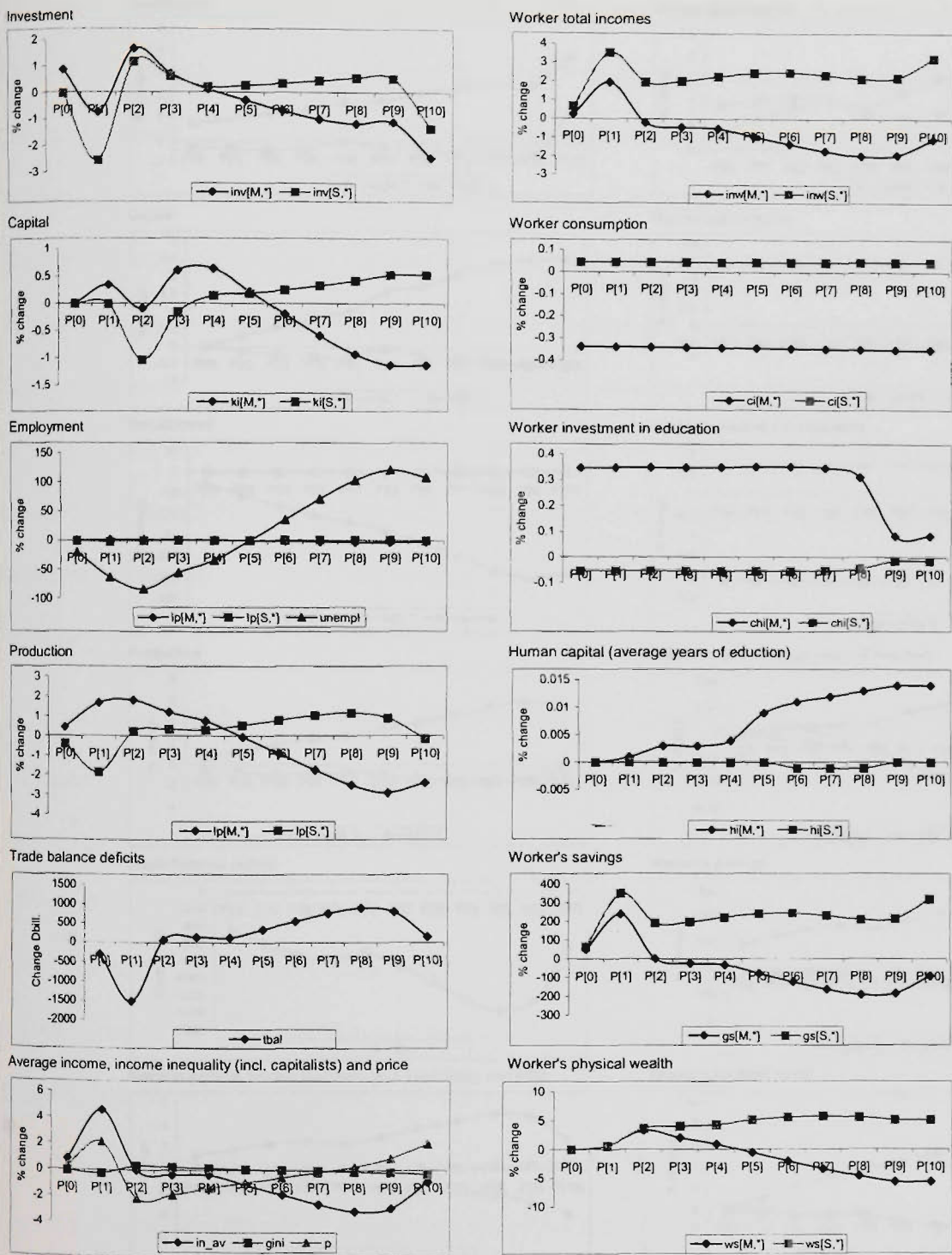
This sub-section demonstrates how the model can be used for defining the optimal transition strategy, which has been proved to produce strong welfare impacts in the transition economy (World Bank 1996a; World Bank 1997; IMF 2000; World Bank 2000d). In general, the transition strategy can be defined by the speed of market liberalisation as well as the size and timing of privatisation efforts.

a. The gradual approach vs the shock therapy¹⁴³

Let us consider two other alternatives of the slow gradual market liberalisation in the control scenario by a shock-therapy in year 2 and then by gradually increasing the speed of the process of market liberalisation from 0.5% to 1%. In the first scenario, the liberalisation index is kept unchanged in the years 0 and 1 and then increased by 3% in year 2. The results of the two simulations are expressed in terms of derivations from the control scenario and represented in Figure 30 and Figure 31.

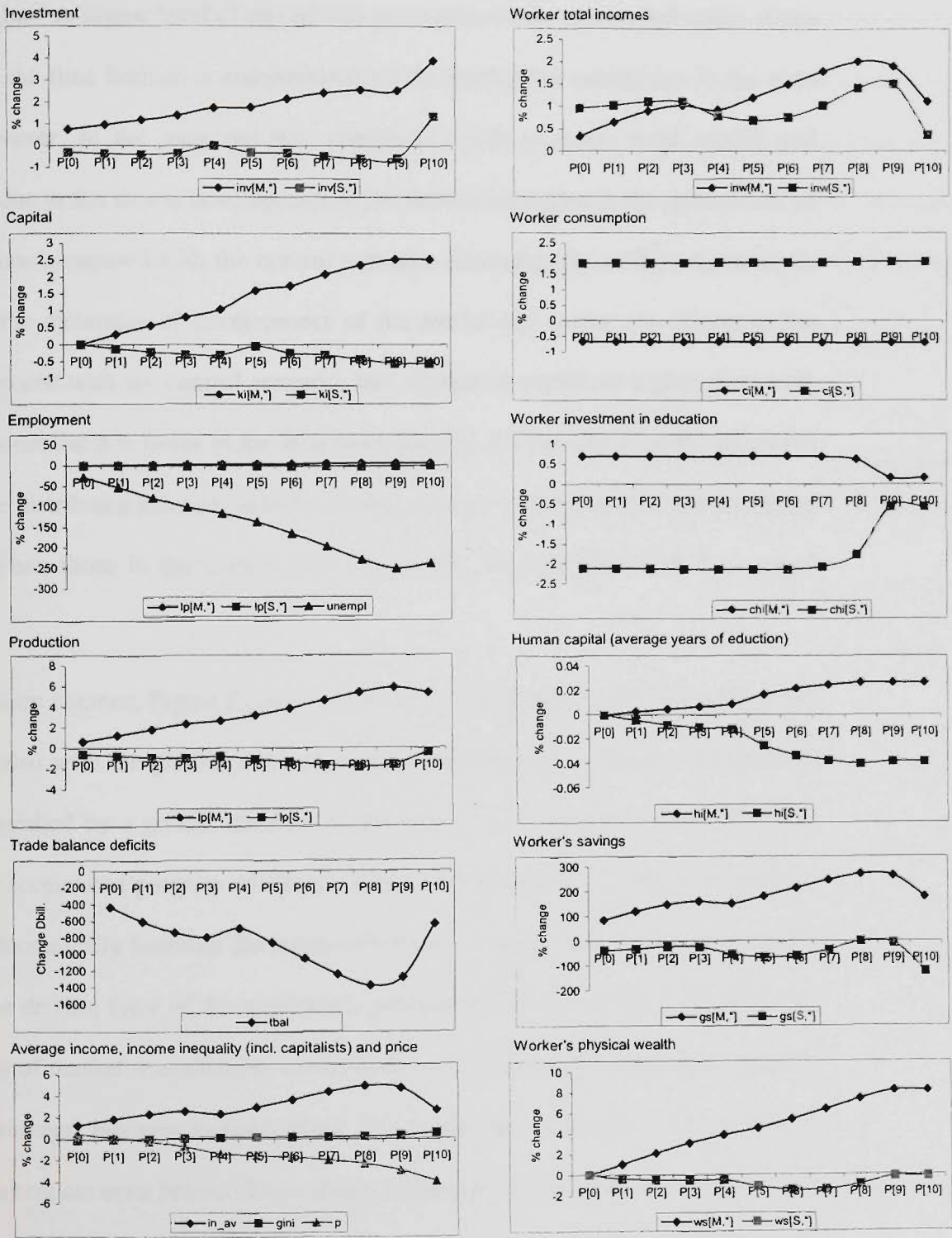
¹⁴³ Concerning definitions of these distinctive transition strategies and the importance of the choice of the transition strategy, see Section 2.2.4.B.b in Chapter 2.

Figure 30. Vietnam: Effects of a shock-therapy approach to market liberalisation compared with the control scenario



Note: Exogenous variables include reform tollab g fdi dti dtsg dts ls wix px dtix dtxs & initial KI, HI, WS

Figure 31. Vietnam: Effects of speeding market liberalisation to 1% per annum compared with the control scenario



Note: Exogenous variables include reform totlab g fdi dtsg dts ls wix px dtix dtsx & initial KI, HI, WS

It can be concluded from Figure 30 that in the conditions of Vietnam the shock-therapy approach is not superior to the gradual approach. Compared with the control

scenario, results of this alternative appear less stable. Moreover, there is no obvious production gain as higher level of capital and production in the market-led sector in the first half of the time horizon is compensated by the production contraction in the state sector. However, in the long run this alternative leads to lower total capital and production due to the slower development of the market-led sector in the second half of the time frame compared with the control scenario. Secondly, the welfare dynamics is tied up to the dynamics of development of the market-led sector. As shown in the figure, compared with the control scenario, this alternative results in higher short-term average income but it is lower in the long term. Finally, the benefits from the transition appear to be distributed disproportionately among sectors: workers in the state sector are better off when those in the market sector are worse off compared with the control scenario.

In sharp contrast, Figure 31 clearly indicates the superiority of the second policy alternative also with the gradual but faster market liberalisation. This policy option is also distinguished by a greater stability of the results. It is interesting to note that in general the accelerated progress of reform slightly offsets the development of the state sector but dramatically fostering the steady development of the market-led sector, which becomes the driving force of the remarkable welfare improvement. Thus, doubling the initial speed of market liberalisation would lead to a 2.4% increase in average income, of which workers' incomes increase about 1%. Under this alternative, the market-led sector's workers are even better off than those in the state sector. However, the former's consumption level is slightly lower than the control scenario due to their greater investment in human capital and physical wealth. In contrast, workers in the state sector consume more while spending less on education and savings than in the control scenario. However, there is a slight increase in income inequality.

In short, the two policy experiments confirm that it is appropriate for Vietnam to take a gradual approach to the transition, both in terms of the overall social welfare effects and the economic stability. But the country's achievements, particularly in the areas of the SWC, would be much greater if the country was able to accelerate the process of market liberalisation. Moreover, the policy experiments also provide quantitative evidence about the driving role of the market-led sector in social welfare improvement during the transition.

b. Effect of ownership reform

To identify effects of the ownership reform, let assume that an effort to transfer 10% of fixed assets in the state sector to the market-led sector takes place in year 0. This choice of shock does not allow examining pre-shock effects but is necessary to ensure the comparativeness with the control scenario. The results of this simulation are reported in Figure 32.

It is clear that the model gives more insights into effects of the ownership reform, especially their dynamics, than those considered in Section #.3.2.B.b of Chapter 3. Although, the ownership reform does not have long-term effects on investment and capital of the market-sector, in the long run the former does reduce investment and capital in the state sector by 1.6% and 1.1%, respectively, as depicted in Figure 7C. There are three important long-run effects. Firstly, the privatisation lowers levels of production in the market and state sectors by 1% and 3%, respectively. Secondly, it results in greater unemployment both in the short- and long run. Thirdly, this transition measure produces remarkably positive effects on SWC: the average income increases by 6.1%, of which worker incomes in the market and state sector grow by 6.5 and 9.1%, respectively. Worker consumption steadily increases to 6.3% compared with the control

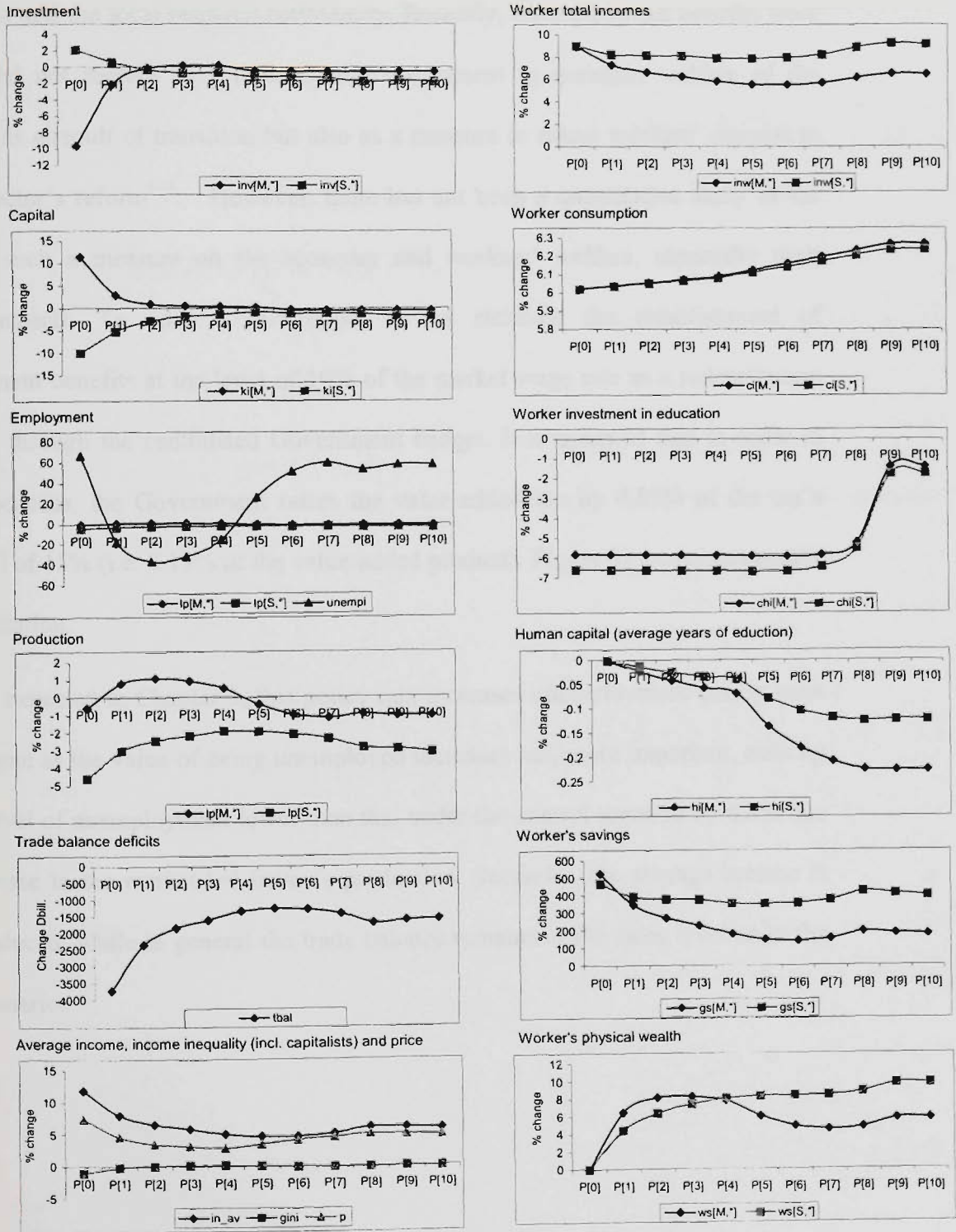
scenario. These are associated with an increase of workers' physical wealth by 6-8%, despite a slight deterioration of human capital. The first findings stress the need to support the ownership reform by other transition measures such as liberalisation, which are complementary.

In sum, the above experiments confirm the appropriateness of Vietnam's gradual approach to the transition. However, they also suggest that the existing transition policies are still far from optimal and greater positive welfare effects can be achieved through fostering the process of market liberalisation and ownership reform. Fostering the development of the market-led sector has been proved quantitatively as essential for the improvement of SWC in the transition economy. Finally, it has been shown that this quite stylised model can contribute to the on-going debate on the speed and timing of the transition. In particular, even without further complications, the model can be used not only for the prediction and analysis of potential impacts of various transition measures but also for defining their optimal mix and timing through simulating potential options, as shown in the following sub-section.

B. Choice of redistribution instruments

One of common features of above policy scenarios is that transition measures often lead to short- or long-term increases in unemployment or, to less extent, a deterioration of worker consumption, not to mention about production contraction and inflating trade deficits. Given the transition agenda, frequent policy responses to these often include alternations in the SWS, particularly unemployment benefits and other public transfers. This section demonstrates how the model can be used for evaluating potential effects of the social welfare policies and their design to address the emerging problems.

Figure 32. Vietnam: Effects of privatisation of 10% assets of the state sector in year 0 compared with the control scenario



Note: Exogenous variables include reform totlab g fdi dti dtsg dts ls wix px dtix dtsx & initial KI, HI, WS

a. Introduction of unemployment benefits

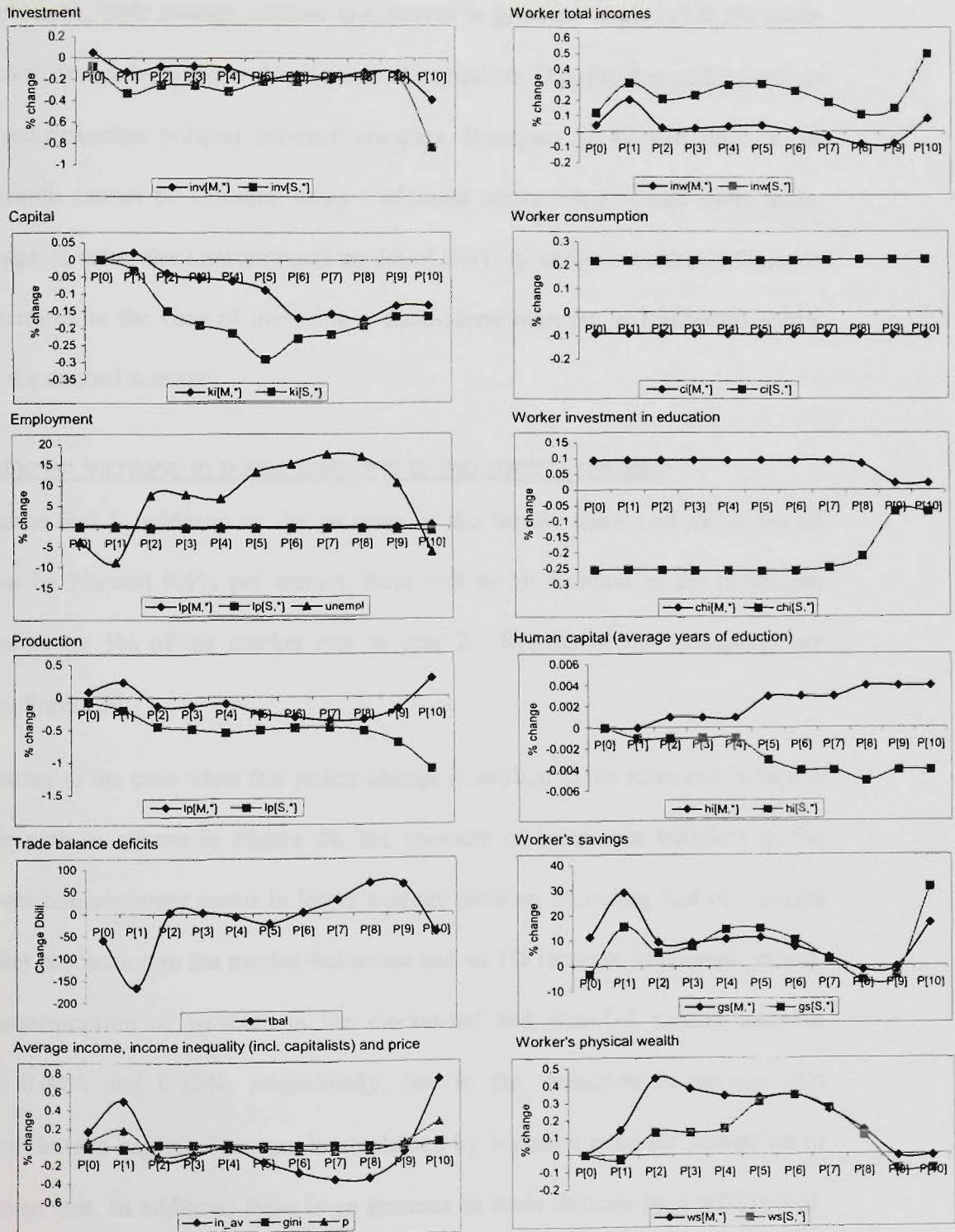
Unlike almost CEE and CIS countries but similar to many other developing countries, there have been no unemployment benefits established in Vietnam yet.

However, their establishment is the subject of intensive discussions within the Government and the local research community. Recently, unemployment benefits have been viewed not merely as a redistribution instrument to maintain welfare of the retrenched as a result of transition but also as a measure to create workers' support to the state sector's reform¹⁴⁴. However, there has not been a quantitative study of the effects of such a measure on the economy and workers' welfare, especially their dynamic aspects. To address this issue, let us simulate the establishment of unemployment benefits at the level of 10% of the market wage rate as a redistribution instrument through the centralised Government budget. It is assumed that in order to fund the benefits, the Government raises the value-added tax by 0.85% of the tax's initial level of 15% (i.e. 0.13% of the value-added product). Figure 33 represents results of the simulation.

As expected in Chapter 3, this policy mix increases unemployment during most of time frame as the value of being unemployed increases but, more important, ends up with the level of unemployment lower than that under the control scenario by 6.3% due to an increase in the market-led sector's production. Secondly, the average income is slightly reduced, while in general the trade balance remains at the same level as in the control scenario.

¹⁴⁴ See Section 3.3.2.A.b.2.2 in Chapter 3.

Figure 33. Vietnam: Effects of the introduction of unemployment benefits at the level of 10% of the market rate compared with the control scenario



Note: Exogenous variables include reform totlab g fdi dti dtsg dts ls wix px dtix dtsx & initial KI, HI, WS

Thirdly, workers' income in both sectors would surge due to the expected introduction of unemployment benefits in the short run. But in the medium and long

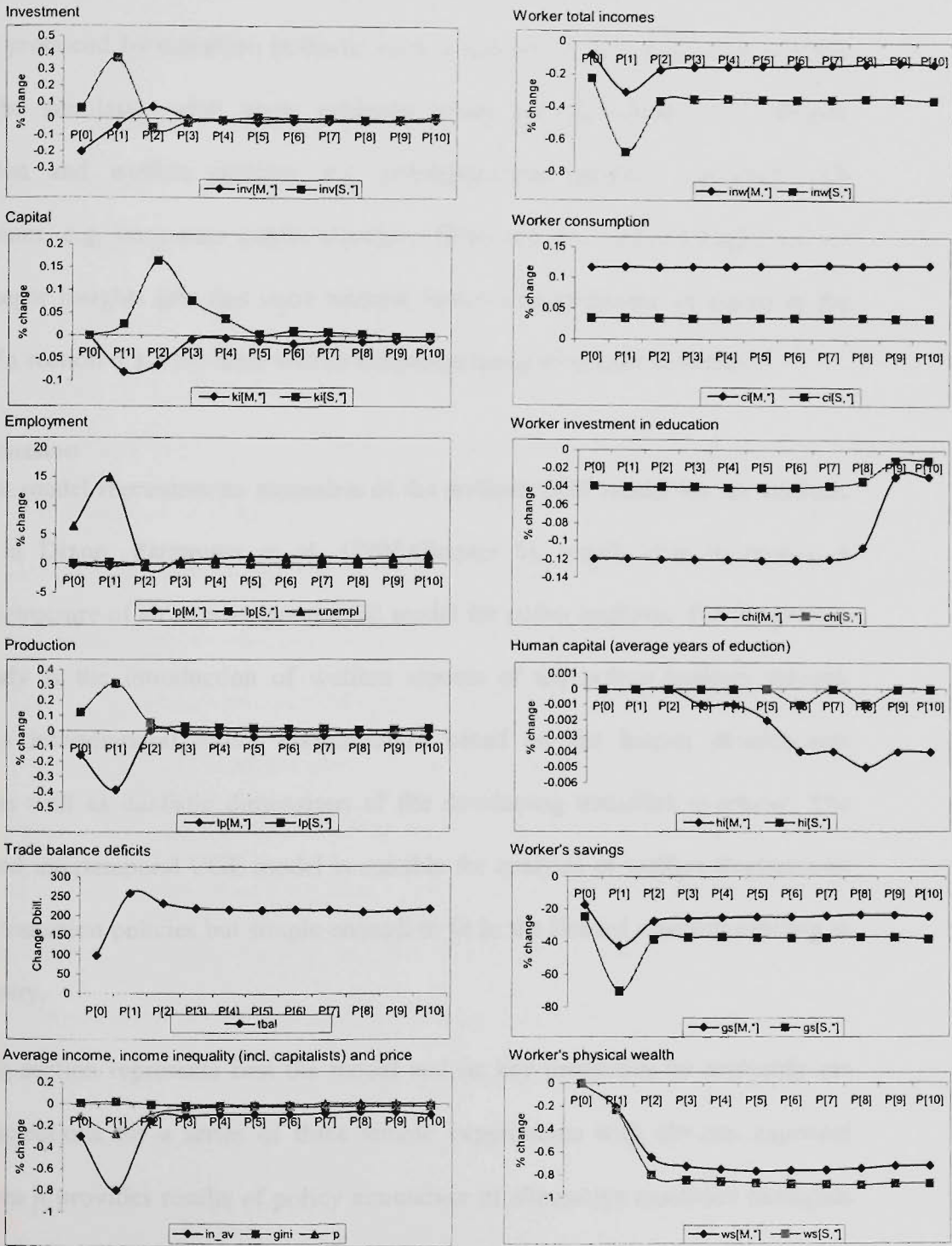
run, this redistribution measure would benefit largely workers in the state-led sector, although not much: their average income is expected to grow by about 0.2-0.3% while consumption increases by 0.2% at the expense of capitalists. Finally, the model predicts that these redistribution policies produce complex dynamics of all variables in the economy, which cannot be foreseen using traditional methodologies and static tools. The advantage of using the intertemporal model of SWC to analyse welfare policies is also demonstrated in the case of imposing a stand-alone increase in lump-sum public transfers to the control scenario.

b. Imposing an increase in public transfers to the control scenario

Assume that in addition to the increase in the labour force and the index of liberalisation by 2% and 0.5% per annum, there will be an increase in the lump-sum public transfers by 5% of the market rate in year 2. Results of the simulation are illustrated in Figure 34.

Contrary to the case when this policy change is applied to the economy, which is in its stable path as shown in Figure 28, the increase of lump-sum transfers in the dynamic transition economy result in lower average income, including that of workers due to weaker production in the market-led sector and an 1% increase in unemployment. However, consumption of workers in the market-led and state-led sectors increase slightly by 0.04% and 0.12%, respectively, due to the reduction in savings and investment in human capital. This can be explained by lessened need for protection in case of income lost. In addition, there is an increase in trade deficits by VND216 bill. Based on the simulation result, it can be concluded that lump-sum public transfers are a less effective instrument for improvement of the SWC in Vietnam than more targeted instrument such as unemployment benefits.

Figure 34. Vietnam: Effects of 5% increase in public transfers in year 2 compared with the control scenario.



Note: Exogenous variables include reform totlab g fdi dti dtsg dts ls wix px dtix dtsx & initial KI, HI, WS

In sum, the two experiments show that redistribution policies can alter SWC in the transition economy. The effects are quite complicated but appear less considerable than those produced by transition policies, such as market liberalisation or ownership reform. The simulation also gives evidence about the effectiveness of targeted redistribution and welfare policies, e.g. unemployment benefits, compared with universal ones, e.g. lump-sum public transfers. However, this stylised model cannot provide deeper insights into this issue without further disaggregation of agents in the economy. In section 6.3.3 the issue will be addressed using econometric methods.

6.2.4 Discussion

This model represents an extension of the stylised CGE model for tax analysis described in Dixon, Parmenter et al. (1992:Chapter 5), which aims to outline a theoretical structure of an intertemporal CGE model for policy analysis. The innovation in this study is the introduction of welfare aspects of the policy analysis through bringing in intertemporal utility maximisation based on the human development approach as well as dualistic dimensions of the developing transition economy. The implemented intertemporal CGE model is suitable for analysis of welfare implications of various transition policies but simple enough to fit in the limited capacity existing in such a country.

This section represents first the model and its key properties by analysing the model's projections for a series of three simple experiments with obvious expected results. Then it provides results of policy simulation of alternative transition strategies and welfare policies and analyses them on the basis of a control scenario. A number of important conclusions can be drawn from these exercises. Firstly, the theoretical basis and the model structure described in Section 3.3.2 of Chapter 3 and the earlier part of Chapter 6 appears suitable for quantitative analysis of transition policies on SWC in the

developing transition economy such as Vietnam. The integration between macro- and micro-modelling with rational expectations and a strong welfare focus generates the interesting dynamics of the model.

Secondly, this quite stylised model gives much more comprehensive information about impacts of various policy changes and dynamics of the economy and its welfare than comparable static or multi-step CGE models.

Thirdly, the policy simulation in this section provides strong quantitative evidence in support of Vietnam's transition strategy. The results of the simulation suggest that both long- and short-term effects of transition policies and redistribution instruments are dependent on their design and the way they are implemented. The three experiments with alternative transition strategies allow us to conclude that different strategies result in different long-run increases in GDP, sector capital formation and trade balance but also different improvement of key indicators of social welfare such as employment and unemployment, average income and income inequality, workers' income and consumption as well as the accumulation of their human capital and physical wealth. Moreover, the results produced under the scenarios with gradual transition strategies tend to be more stable. In general, the experiments confirm the appropriateness of the transition strategy and policies undertaken by the country. However, they also show quantitatively that the country could achieve greater welfare achievement by accelerating its reform process, particularly in the areas of market liberalisation and ownership reform. Another distinctive feature of the model and the experiments are that they also give insight into the complex relationship among household income, consumption and its accumulation of human capital and physical

wealth and their interaction with the economy. Thus, increases in income often are not accompanied by increases in consumption and vice versa.

The simulation also points out that the short- and medium term effects of transition policies often involve large fluctuations, which are particularly sensitive to the design and implementation of the policy. These effects and the possibility of long-term negative welfare impact of the transition policies emphasise the need for protection policies during the transition. Experiments with two redistribution instruments show positive welfare effects of unemployment benefits in the conditions existing in Vietnam and indicate the ineffectiveness of universal redistribution. This leads to the need for stronger targeting redistribution measures, which will be explored in the next section.

However, this stylised model can be further extended and developed in various ways, such as further disaggregating the sectors (e.g. disaggregating the non-state sector into the market-led and traditional household economy), the agents (e.g. disaggregating workers in the non-state sector into more detailed occupation groups such as various kinds of farmers (large, middle, small and landless). More complex economic mechanisms can also be incorporated into the model (e.g. more complex interactions between domestic and foreign sectors and mechanisms of price formation). Finally, more complex tool for analysis of the model can also be utilised such as the use of the Johanson linearised solution for the calculation of elasticities, which can help understanding of model behaviour and makes it easier to explain the model's result.

Section 6.3 Econometric modelling of Vietnam's social protection system

This section specifies an econometric model of Vietnam's SWS during the transition, based on the theoretical model developed in Section 3.3.3. The model takes into account the important role of private transfers and their interactions with public

transfers. It will allow simulation of policy options and assessing their impacts on SWC at the household level in the developing transition economy. This contrasts with the cases where there already exists significant public transfers (Cox and Jakubson 1995).

This section starts by describing the data sources before providing the specification of the econometric model and discussing specific data needs and data transformation. Then the section presents estimates of the model of Vietnam's SWS. The section is completed by using the model for the simulation of the potential policy options of Vietnam's SWS, such as the introduction of the unemployment benefits and the expansion of the coverage of the social insurance system, and discussing the results.

6.3.1 Sources of data and data transformation

In most cases, the socio-economic data collected in transition economies, particularly in Vietnam, are still insufficient for exploring either direct interactions between transfer donors and recipients or the dynamics of the SWS. However, they can be sufficient for studying changes in its structure, specifying determinants of both public and private transfers, and exploring their impacts on welfare of their recipients. In the case of Vietnam, the data collected through Vietnam's two Living Standards Surveys (VLSS), which were conducted in 1993-1994 (VLSS1) and 1997-98 (VLSS2) by the Vietnam General Statistical Department with the technical assistance from the World Bank, can be used.

The surveys covered 4800 and 6002 households carefully sampled across the country, respectively. For implementation reason, households under VLSS1 were selected randomly not across provinces but in groups of two villages/blocks (16 households each) in each commune randomly selected on the basis of the 1989 census. 4704 households from VLSS1 also participated in the second VLSS2. The remaining

households of the VLSS2 were selected from the total sample of the GSO 1995 Multi-Purpose Household Survey not proportional to population but according to the specific sampling weights, which allow adequate disaggregation of results by the survey's domains. The surveys were carried out by teams of interviewers, who had received special training, in 12 consecutive months according to the methodology of household living standard measurement patterned by the World Bank. The data collected from the two surveys form a unique panel data set covering a wide range of issues concerning household welfare such as demography, education and schooling, health, employment, migration, housing and utilities, fertility, incomes (including non-market income), expenditures, credit and saving, and anthropometrics, as well as information about the rural community and price levels. The data sets represent primarily a collection of data at the household level, although there are a number of data also collected at the individual level. Compared with other relevant surveys, which were conducted by various government agencies, including the GSO, the VLSS data are distinguished by their broad coverage and reliability due to the sound theoretical basis and quality implementation.

Although the surveys were not designed specifically to explore the social welfare system, their data contain information about several aspects of Vietnam's SWS at the household levels, such as inter-vivos transfers among households and public transfers. The latter are aggregated into broad categories such as social security benefits and social assistance, although the benefits grouped in each category can be quite distinctive in terms of their purpose and targeting mechanisms, e.g. the transfers from the contingency funds for regular relief and emergencies are grouped together with government veterans' disability transfers. In this respect, compared with VLSS1, VLSS2 data give additional information about emerging public transfer schemes such as

the assistance the household received from government poverty reduction programmes and from private and international non-government organisations. However, there is no information about household's eligibility to various SWS programmes, that can give direct answers on how well the SWS is targeted.

The following screening procedure has been applied to limit the influence of outliers. Firstly, household records with the top and the bottom percentiles of pre-transfer income and consumption expenditures were excluded from the initial data sets. Secondly, cases with negative incomes were also filtered off, resulting in 4432 and 5620 cases left from 4800 and 6002 initial cases in VLSS 1 and 2, respectively. Thirdly, each data set of all value data of the VLSS1 and VLSS2 were inflated to the unified price levels as of January 1994 and January 1998, respectively, according to price coefficients defined for each month and region. Then all value data of the VLSS1 were inflated to the price level of VLSS2 data as of January 1998 based on the inflation rates used for the definition of the 1997-98 poverty line (World Bank 1999a). Finally, the two data sets were pooled together to form a panel of two cross-section subsets of data. Although weights are used for the quantitative analysis in Chapter 5, according to Deaton (1997: 67-73) the weights are ignored when estimating transfer functions as the use of the weights does not improve the estimation's consistency¹⁴⁵.

Summary statistics of the data used for estimation of transfer functions and impacts of the SWS are given in Table 43..

¹⁴⁵ Strictly speaking, by this we assume the regressions are homogenous across the panel, that will be confirmed by results of Chow tests.

Table 43. Vietnam: Summary statistics of the panel data used for estimation of transfer functions in period 1992-98

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Sources: VLSS1 & VLSS2 (Calculated without weights).

The statistics confirm the importance of the SWS system for household welfare during the economic transition in Vietnam. Firstly, private arrangements have an essential role. A half and a quarter of households received or gave private transfers, which however represent large amounts compared with their pre-transfer income (specifically, 18% and 11%). Secondly, compared with private transfers, public schemes have much smaller coverage as their three pillars, namely social security, social assistance and poverty reduction assistance cover merely 13%, 10%, and 5% of the total population. However, their contributions are quite sizable compared with their recipients’ pre-transfer income, at 23%, 6% and 14%, respectively. Thirdly, the public

schemes and private arrangements are not mutually exclusive but work together with close interactions. In particular, recipients of the public transfers also receive or make sizable private transfers, and vice versa. Thus, the nature of their interactions and possible crowding-out effects are of practical interest. Finally, as some key welfare indicators, such as the average per capita consumption, the total school drop-out rate and the percentage of the poor, among the transfer recipients are quite high compared with the average levels of the total population, their linkages with the transfers may give insights into the effectiveness of the existing SWS.

However, the availability of the panel of data collected from both VLSS 1 and 2, offers an unique possibility of a quantitative exploration of structural changes in Vietnam's SWS in period from 1992-93 to 1997-98. For the purpose, Table 44 gives summary statistics about the recent changes in Vietnam's SWS, which are calculated on the basis of data used for transfer function estimation. Both percentages of households which received private and public transfers (except social security) and the size of transferred amounts increased in 1997-98 compared with 1993-94, but the changes are not large in general. The increase in the coverage and size of poverty reduction assistance and receipt of private transfers accompanied represent the most remarkable changes in the SWS.

Table 44. Vietnam: Changes in scope and average value of transfers, 1992-93 and 1997-98

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Source: VLSS1 and VLSS2 (Calculated without weights).

6.3.2 Specification of the econometric model

The major assumption is the existence of information asymmetry between the public and private transfer donors. The underdeveloped status of the formal SWS in the developing transition economy gives us the reason to assume that private transfer donors have more accurate and up-to-date information about recipient households' welfare and incomes, including their receipts of public transfers, and, thus, are able to respond to the information. In sharp contrast, public transfers do not. Thus, primarily it is private transfers, which responds to changes in public transfers, but not *vice versa*.

Further, based on the theoretical model of public and private transfers developed in Section 3.3.3, two-part econometric models are developed to specify determinants of various transfer schemes. The first part represents a probit analysis of the household's probability to receive transfers and determinants of the probability. The second part evaluates the intensity of the support subject to its occurrence and represents an OLS estimation of the amount the household receives. Given the simultaneous interaction between public and private transfers, the method of instrumental variables is used to estimate functions of private transfers and various indicators of household welfare, such as consumption, school drop-out rate, and under-five child malnutrition rate¹⁴⁶. In particular, estimated values of public transfers are used in evaluation of private transfers instead of the former's actual values.

Let the intensity of a public transfer scheme to be written in the following form

(120) $T_{pub_i} = \beta_{11} + \beta_{12} y + \beta_{13} T^*_{pri} + \sum_{j=4}^{n_1} \beta_{1j} H_{1j} + \sum_{j=n_1+1}^{m_1} \beta_{1j} R_{1j} + \varepsilon_i$

where T_{pub_i} is the amount of benefits a household receives from the scheme i , $i=1,2,3$ corresponding to social security, social assistance or poverty reduction assistance; y is

¹⁴⁶ The methodology can accommodate various changes in the list of welfare indicators to be considered.

the household pre-transfer income, T_{pri}^* is the existence of private transfers (i.e. assuming amounts private transfers are unknown to public transfer agents due to imperfect information); H and R are vectors of household and commune characteristics empirically selected for the multivariable analysis; and ε_1 is a random error term. As found in Chapter 3, negative coefficients β_{12} and β_{13} indicate that a welfare is scheme altruistic. By contrast, positive values of the coefficients serve as the evidence of an exchange-oriented social welfare scheme.

Then, the decision to provide the transfers to the household and the latter's acceptance can be reflected by a dummy variable $T_{pub_i}^* = 1$ if $T_{pub_i} > 0$ and $T_{pub_i}^* = 0$ if $T_{pub_i} = 0$. Thus, the first part of a two-part model of the public welfare scheme can be presented as the following binary probit function:

$$(121) \quad Prob(T_{pub_i}^* = 1) = \Phi(\tilde{\beta}_{11} + \tilde{\beta}_{12} y + \tilde{\beta}_{13} T_{pri}^* + \sum_{j=4}^{n_1} \tilde{\beta}_{1j} H_{1j} + \sum_{j=n_1+1}^{m_1} \tilde{\beta}_{1j} R_{1j} + \tilde{\varepsilon}_1 > 0)$$

where coefficients $\tilde{\beta}_{12}$ and $\tilde{\beta}_{13}$ are expected to be negative as indicated in Chapter 3. Thus, (120) specifies the amount of public transfers received by a household in case if the transfers take place as determined by (121).

Similarly to public transfers, from the theoretical part we also have the following function, which specifies the amount of private transfers received by the household

$$(122) \quad T_{pri} = \beta_{21} + \beta_{22} y + \sum_{i=1}^3 \beta_{23i} T_{pub_i} + \sum_{j=4}^{n_2} \beta_{2j} H_{2j} + \sum_{j=n_2+1}^{m_2} \beta_{2j} R_{2j} + \varepsilon_2$$

subject to the following function of private transfer probability

$$(123) \quad Prob(T_{pri}^* = 1) = \Phi(\tilde{\beta}_{21} + \tilde{\beta}_{22} y + \tilde{\beta}_{23} T_{pub_i} + \sum_{j=4}^{n_1} \tilde{\beta}_{2j} H_{2j} + \sum_{j=n_2+1}^{m_{21}} \tilde{\beta}_{2j} R_{2j} + \tilde{\varepsilon}_2 > 0)$$

where T_{pub_i} stands for expected amount, which a household received from the respective public transfer scheme.

On the other hand, a household may also give private transfers to other households. The amount of private transfers given by the household can be specify by the following function.

$$(124) \quad Tg_{pri} = \beta_{31} + \beta_{32} \gamma + \sum_{i=1}^3 \beta_{33_i} T_{pub_i} + \beta_{34_i} T_{pri} + \sum_{j=5}^{n_3} \beta_{3j} H_{3j} + \sum_{j=n_3+1}^{m_3} \beta_{3j} R_{3j} + \varepsilon_3$$

given non-zero probability of private transfer giving

(125)

$$Prob(Tg_{pri}^* = 1) = \Phi(\tilde{\beta}_{31} + \tilde{\beta}_{32} \gamma + \sum_{i=1}^3 \tilde{\beta}_{33_i} T_{pub_i} + \tilde{\beta}_{34_i} T_{pri} + \sum_{j=5}^{n_3} \tilde{\beta}_{3j} H_{3j} + \sum_{j=n_3+1}^{m_3} \tilde{\beta}_{3j} R_{3j} + \tilde{\varepsilon}_3 > 0)$$

where T_{pri} is the expected value of the private transfers received.

In (122) and (124) negative coefficients β_{22} and β_{23} , and β_{32} and β_{33} indicate that private transfer donors are likely to be driven by altruistic motives. In contrast, positive coefficients β_{22} and β_{23} , and β_{32} and β_{33} are evidence of the exchange-oriented motivation of the private transfers.

Further, the impact of the existing SWS, particularly public and private transfers, on household welfare are explored in terms of household consumption and total school enrolment. The two indicators are selected to represent household welfare in the model of SWC in line with its utility objective function. However, for convenience in estimation, school enrolment is replaced by school drop-out rate, which is calculated as the percentage of the number of children, who were under school age but did not going to school in the survey years, in the total number of household school-age children. The relationship between the indicators of household welfare and household pre-transfer

income and the public and private transfers are estimated by the following set of equations in the reduced form:

Household expenditure

$$(126) \quad c = \beta_{41} + \beta_{42}y + \sum_{j=1}^3 \beta_{43j} T_{pub_i} + \beta_{44} T_{pri} + \beta_{45} Tg_{pri} + \sum_{j=6}^{n_4} \beta_{4j} H_{4j} + \sum_{j=n_4+1}^{m_4} \beta_{4j} R_{4j} + \varepsilon_4$$

where Tg_{pri} is the expected value of the private transfers given.

Household's child school enrolment

$$(127) \quad Ed = \beta_{51} + \beta_{52}y + \sum_{j=1}^3 \beta_{53j} T_{pub_i} + \beta_{54} T_{pri} + \beta_{55} Tg_{pri} + \sum_{j=6}^{n_4} \beta_{5j} H_{5j} + \sum_{j=n_4+1}^{m_4} \beta_{5j} R_{5j} + \varepsilon_5$$

There are seven endogenous variables, namely T_{pub_i} ($i=1,2,3$); T_{pri} , Tg_{pri} , c , and Ed . β_{ij} ; $i=1,3,5$; $j=1,m_4$ and $\tilde{\beta}_{ij}$, $i=1,3$; $j=1,m_4$ are parameters to be estimated, while ε_i ; $i=1,8$ are random error terms, which are proposed to be normally distributed with zero mean and unit variance. The rest are exogenous. Equations (121), (123), (125) are to be estimated by probit models, taking into account all households in the sample. On the other hand, the related equations (120), (122), (124), (126), (127) are interrelated and are to be estimated by OLS for cases with the value of correspondent dependent variable under (121) or (123) or (125) equal 1. For the estimation of (124), (126) and (127) the estimated values of the transfers and values of the inversed Mills ratio¹⁴⁷ are used as instrumental variables (Heckman 1979; Amemiya 1985). The consistency of the estimates of the two-step estimation with the sample selection and the use of instrument variables has been theoretically proved in Cox and Jakubson (1995:Annex C). In

¹⁴⁷ While the Mills ratio is the expectation of the structural residual in the probit estimation, the inversed Mills ratio represents the ratio of normal density to the cumulative normal distribution function. The latter is to be named as the selection variable in the estimated equations (124), (126) and (127) (Heckman, *ibid*).

addition to the estimation, a Chow test is applied with the selection of the data set into two subsets with data collected from VLSS1 and VLSS2 in order to specify if there were structural changes in the transfer and welfare functions in the period 1993-1998. Since results of the Durbin-Watson test would have limited meaning as the panel data comprise observations in only two periods, the results are not reported.

The estimation is carried out using the statistical package TSP Version 4.4 so that the estimated standard errors are heteroskedastic-consistent. In general, statistically insignificant independent variables are gradually excluded in order of the value of the t -test. However, the some key independent variables such as the incomes and being in urban areas are often kept for explanatory purposes or to highlight the statistical insignificance of the interested relationship between the independent variables and the dependent variable.

Next, it has been established empirically that the estimation is most robust when money-value variables such as amounts of transfers and household capital as well as land and hours worked are expressed in per capita unit and transformed into natural logarithms. This is because the transformation reduces skewness and Kurtosis of the data.

Further, according to the above-mentioned specification, a number of household and commune characteristics are to be included in equations (120)-(127) as elements of vectors H and R . The variables can be broadly divided into four groups, namely, income and endowment, employment, education, health, demographic variables, and commune characteristics (Cox and Jimenez 1995; Cox, Fetzer et al. 1998) and described in detail as follows.

Household incomes are usually the most important determinants of household welfare. In the model, they are captured in terms of household pre-transfer income, transfers, and expenditures. Firstly, the household annual pre-transfer income is calculated according to the methodology indicated in GSO (2000) and includes incomes from agricultural activities, non-agricultural self-employment and waged works, plus non-labour incomes such as rent, gifts and interest, except income from selling houses, land use rights, and jewellery. The income from agricultural activities comprises incomes from cultivation, cattle and poultry breeding, aquaculture, processing the farm products by the household itself, and renting farm machines and land. The incomes are defined as the difference between the annual revenues and spending on the agricultural activities net post-harvest losses. It is important to note that the incomes also include the value of non-market products used or exchanged by households. The income from non-agricultural self-employment is calculated as its net income plus household self-consumption. The income from wages and salaries includes incomes from major and secondary jobs over the last 7 days and incomes from major and secondary jobs over the past 12 months, if the latter are different from the former. Incomes for each activity include wages, salaries, bonus and different allowances in cash and kind.

Secondly, annual public transfers include social security benefits (such as government pension, retirement and disability payments), social assistance (e.g. the payments to families of war martyrs and to disabled veterans, scholarships, assistance to the disabled and victims of disasters, reliefs and subsidies from the government, social organisations and enterprises) and assistance in poverty reduction (e.g. in cash and kind supports from government poverty reduction programmes, private organisation, and international NGOs, including preferential loans). On the other hand, the private

transfers received comprise in cash and kind incomes received from persons outside the household, gifts, dowry and inheritance received, and loans from relatives and friends. The private transfers given embrace cash and in-kind incomes given to persons outside the household, gifts, dowry and inheritances given, the household contribution to the local security fund and local associations such as charity and old age. The inclusion of the loans in both public and private transfers is due to the important role they play in welfare of poor households. To correctly reflect the incidence of transfers, the correspondent transfers are neglected in following analysis if their total is less than VND50,000 in 1998 prices as the small amount cannot produce any impact on welfare of even a very poor household in rural areas.

Thirdly, household annual consumption contains expenditures on daily and holiday food and non-food articles (including self-produced products), education (including tuition, extra-class tuition, contributions to school development fund and to parents' association, and fees for application forms and exams), medical services (including medical examination, treatment, medicines, travelling and hospitalisation), power, water supply and garbage, durables (calculated as the annual use value for each item based partly on its amortisation and partly on its opportunity cost) and housing (calculated on the basis of the ratio between 3% of the value of the house of the quintile 3 and its non-food expenditures, separated for urban and rural areas). To ensure the comparativeness between the data sets of the two surveys, expenditures for a number of items such as expenses on skill and vocational training, health insurance, firewood and cigarettes and tobacco are excluded. The variables are calculated for the last 12 months for each household in each survey. In addition to these, a number of other physical endowments are also included as the model's independent variables such as the household total fixed capital and its total arable land. Money-value variables are inflated

to the price level of 1 January 1998 using regional and time price inflators defined for each surveys and the poverty-line price inflator between the two surveys (World Bank 1999a).

Education variables reflect the household's human resources – a well-recognised determinant of transfers. In the model it is taken into account through the net school enrolment rate (i.e. the enrolment rate among children of 6-17-year age in the household), the level of education of the household head in terms of degree completed, and the average number of years spent on formal education and the highest level accomplished by its members.

To find if the transfers are responsive to the household employment situation, a number of employment variables are included such as the total number of hours worked by the household in the last 12 month, the numbers of household members above 15 years not working due to being unemployed, heavily handicapped, retired, or studying full time as well as dummy variables reflecting the employment status of the household head, and if in fact there are more than one income earners in the household.

Health problems often result in the need for financial support due to both income loss and greater expenditure. In the model, they are captured by two variables, namely the total number of days household members were ill and the total number of working days lost due to their sickness in the last 12 months.

To study the targeting of SWS, the model also includes a number of other household demographic characteristics such as the head's age, sex, marital status, ethnicity, family size, age composition, and the number of children who do not live in the household. Firstly, Milanovic (1995) concludes that in sharp contrast to developed market economies, public transfers in former socialist countries in the CEE and CIS

countries are often based on household demographic characteristics instead of income. Secondly, Cox, Eser et al. (1998) indicates that age influences both altruistic and exchange-motivated private transfers. Studies in many countries indicate that the aged, female-headed households, and large-size families are often more vulnerable to social and economic changes and therefore are in greater need of support, particularly from the SWS. Thus, the household characteristics allow exploring the responsiveness of the SWS towards household's vulnerability, in despite of the absence of other more specific indicators e.g. the extent of household members disability and their eligibility to various SWS schemes.

Next, the model also includes a number of commune characteristics which may influence the transfers as suggest by the qualitative analysis in Chapter 5, such as the commune's major ethnicity and religion, the existence of government economic development programmes in the commune, existence of disasters which caused losses in crops of more than 10%, access to motor roads, electricity supply to a majority of households, the commune average wage rates (as a proxy of the local labour market), location in urban/rural areas and geographical regions. Following (Cox, Fetzer et al. 1998), I also include in the model the commune average household expenditures and its variance as proxies for commune welfare and its distribution.

Finally, in addition to the Chow tests, a dummy variable referring to year 1998 and its product with household per capita income are also included in both probit and OLS estimation to further detail potential structural changes in period 1993-98.

6.3.3 Results of estimation

The results of the estimation of transfer functions and impact of transfers on household welfare as functions of the amount transferred and household and commune

characteristics are presented in tabular form and are shown in Table 40-Table 53. The tables also include elasticities in respect to the probability and the amount of transfers estimated for statistically significant variables.

In general, the results fit well into the theoretical predictions. The probability of receiving transfers including public transfers, namely social security, social assistance, and poverty reduction, and private transfers are negatively correlated with the recipient's household income. This indicates that in terms of the probability, Vietnam's existing social welfare system is favourably targeted at lower-income groups as the probability of receiving the benefits increases when household pre-transfer income decreases. However, the picture looks more complex when amounts of transfers and other household characteristics are concerned. These will be analysed in the remaining part of this section.

A. Social security transfers

Like in other countries, social security is the largest public transfer scheme in Vietnam. However, there are only 1307 recipients of social security transfers out of 10143 households in the data set (=13%). The result of the estimation of its function is shown in Table 40. The fraction of correct predictions in the probit estimation reaches 0.894.

As the value of *Chow test* is $F(21,1265) = 1.585 < F^*(0.05,21,1265) = 1.81$, the hypothesis that there is no structural change in social security schemes in the period 1993-1998 cannot be rejected. However, the as the coefficient attached to dummy variable "Year 1998" is positive, it appears that the social security transfers function has been shifted up by almost 13.4% by 1997-98, indicating a general increase in the amount of the transfers. The coefficients attached to the product between the dummy

variable and household per capita income in the probit and OLS estimates are also statistically significant. The negative sign of the coefficients attached to the household per capita income and its product with the dummy variable are consistent of prediction in Section 3.3 and suggest that the poorer tend to have greater chance to receive social security transfers as an 1%-increase income reduces the probability of the receipt by 0.089%. This had been reinforced by 1997-98 as according to the 1997-98 survey, a reduction of household per capita income by 1% would increase the household's chance to receive social security transfers by 0.144% and the amount the household would receive by 0.081% in 1997-98. However, as the recipient's service s in return to the transfers, and, thus, $(\partial s / \partial p)(p/s)$ are not observed in the survey data, we cannot conclude if the existing social security system is altruistic or exchange-oriented.

The estimation also provides interesting findings regarding the relationship between social security transfers and household characteristics. The results point out that the existing social security schemes helps cover risk of income lost at old age, as a replacement for the traditional social insurance. Both the probability and the amount of social security transfers are positively related to the age of the household's head, the number of non-working retired, and the dummy variable indicating if the household head is non-working retired. However, the negative sign of coefficient attached to the number of household members of 60-year age and above suggests that social security still does not address the need of these larger contingents very well.

Table 45. Vietnam: Estimates of social security transfer functions

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Note: Calculated from VLSSI&2

1: The dependent variable is the household's receipt of social security transfers, which equals 1 if the amount is greater than 0, equals 0 otherwise.

2: The dependent variable is the natural log of the non-zero amount of the social security transfers, which the household received.

3: Calculated at variables' means Y and x as the analytical derivative (dP/dX) divided by mean Y for log-transformed variables and by (x/Y) for the rest.

3. Equal to estimated coefficients B for log-transformed variables. For other variables, it is calculated as the coefficients multiplied by means x .

*** significant at 1% level

** significant at 5% level

* significant at 10% level

Another finding is that the existing social security in Vietnam is to the households with higher education attainment (e.g. the average years of formal education and training, the average highest education degree, and household head's education achievement) in terms of both the probability and the amount of social security transfers. It is interesting to note that households with the female head tend to have a higher probability of receiving social security transfers and in larger amounts, while the reverse is observed among households living in communes where Buddhism – the most popular religion in the country - is the main religion. Moreover, social security transfers appear to be statistically independent if households are located in urban or rural areas despite the fact that the schemes largely cover urban areas.

But an exploration of the relationship between the probability and the amount of social security transfers with other household and community characteristics reveals that other vulnerable groups, such as poor households, households with the widowed female head, and large households benefit less from the existing schemes. This is explained by the nature of social security schemes which are based on social insurance and the government pension system, to which the vulnerable groups have very limited access. This stresses the need for other mechanisms of public transfers such as social assistance and poverty reduction assistance.

B. Social assistance transfers

There are 10% of households in the data set which received social assistance transfers in the data sets of the 1993-94 and 1997-98 surveys used for the analysis. As shown in Table 46, patterns of social assistance transfers are quite distinctive from those of social security transfers. The fraction of correct predictions in the probit estimation is 0.899 although the R^2 of the probit is quite low. The value of *Chow test* is $F(16,990) = 1.685 < F^*(0.05, 16, 990) = 2.01$ indicating that the hypothesis that there was no structural change in social assistance in Vietnam cannot be rejected. However, as indicated by positive coefficients attached to the dummy variable 1998, both the coverage and volume of social assistance had been considerably extended by 1997-98 compared with 1993-94. Given the same other conditions, a household's probability of receiving social assistance and the amount received increased triple and one third, respectively. Secondly, in terms of probability of the transfers, it appears that social assistance has increasingly been targeted at lower-income groups. In 1997-98, a 1% decrease in household per capita income increases the household's probability of receiving social assistance by nearly 0.2%.

A remarkable difference from social security transfers is that when the social assistance transfers take place, the amount remains positively related to the household income. In other words, social assistance in Vietnam is exchange-oriented and, thus, requires recipient's services in return¹⁴⁸. This finding is important because of its implications for the coverage, design, and operation of the scheme.

¹⁴⁸ In practice, being justified by the limitation of funds, beneficiaries are often selected from the eligible according to a number of criteria, which usually include also various forms of contribution and services the eligible made to the community or local authorities.

Table 46. Vietnam: Estimates of social assistance transfer functions

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Note: Calculated from VLSS1&2

1: The dependent variable is the household’s receipt of social assistance transfers, which equals 1 if the amount is greater than 0, and equals 0 otherwise.

2: The dependent variable is the natural log of the non-zero amount of the socialassistancey transfers, which the household received.

3: Calculated at variables’ means Y and x as the analytical derivative (dP/dX) divided by mean Y for log-transformed variables and by (x/Y) for the rest.

4. Equal to estimated coefficients B for log-transformed variables. For other variables, it is calculated as the coefficients multiplied by means x .

Thirdly, there is a close relationship between social assistance transfers and private transfers. The probability of receiving social assistance transfers among recipients of private transfers is higher than among the others by 0.015%. However, the amount of social assistance they receive is lower. This can be explained by the fact that those who receive private transfers are also in need and eligible for social assistance. But the agents responsible for social assistance are able to collect information about the receipt of private transfers and adjust the amount of the public transfers accordingly.

Concerning other household and community characteristics, in terms of probability, the existing social assistance schemes positively respond to the number of the non-working retired, full time students and days lost due to illness household. However, only the positive relations between the transfer amount and the number of the non-working retired and the head's being a non-working handicapped are statistically significant. Surprisingly, households living in communes, where crops were lost more than 10% in the year prior to the survey, do have less chance to receive social assistance. This appears to be a weakness of the existing SWS financial management, which does not allow contingency emergency funds to be transferred to disaster-affected provinces from those not affected. This may also be caused by using the funds for purposes other than providing direct support to households. On the other hand, subject to the receipt of social assistance, the amount of social assistance households in disaster-affected areas receive is greater by 0.15% compared with other areas.

Next, the amount of social assistance transfers positively responds to education achievement of the head (particularly if the head completed the lower secondary education). The social assistance appears independent of the location of households.

Finally, there is an important finding that in Vietnam the existing social assistance is not targeted at the poor. For the latter, having per capita income lower than the subsistence level also means having less chance to receive public assistance by 0.05% and to get smaller amount of the assistance by 0.09% compared with the non-poor, if the assistance takes place. This finding underlines the importance of poverty reduction assistance to welfare in the transition economy, which is often distinguished itself by a vast number of the poor.

C. Poverty reduction assistance

Almost all poverty reduction assistance schemes in Vietnam were established after 1994. Thus, there are only 15 cases with this kind of public transfers in the VLSS1 data set. Therefore, the Chow test is not applied. In total, there are only 5% of 10144 households in the data set which received public transfers in the two surveys. Table 47 shows results of the estimation of these transfer functions. The fraction of correct predictions in the probit estimation is 0.95.

Understandably, compared with other public transfers, poverty reduction assistance is much better aimed at the poor. Concerning probit, the positive sign attached to the dummy variable “being poor household” is evidence that under the existing schemes of poverty reduction assistance poor households have a greater chance to receive the assistance (by merely 0.12%)¹⁴⁹ compared with the non-poor. Like social assistance, poverty reduction assistance in Vietnam is exchange-oriented: the lower household per capita income, the smaller amount the household receives.

¹⁴⁹ The sign attached to household per capita income and to its product with the dummy variable Year 1998 would also confirm this tendency but they are statistically insignificant.

Table 47. Vietnam: Estimates of poverty reduction assistance function

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Note: Calculated from VLSSI&2

1: The dependent variable is the household's receipt of poverty reduction assistance, which equals 1 if the amount is greater than 0, and equals 0 otherwise.

2: The dependent variable is the natural log of the non-zero amount of the poverty reduction assistance transfers, which the household received.

3. Calculated at variables' means Y and x as the analytical derivative (dP/dX) divided by mean Y for log-transformed variables and by (x/Y) for the rest.

4. Equal to estimated coefficients B for log-transformed variables. For other variables, it is calculated as the coefficients multiplied by means x .

This is explained by the fact that almost all poverty reduction assistance is provided in terms of low-interest loans, to which the poorer have limited access to the requirements for collateral and business plans as well as more restricted opportunity. This is consistent with the fact that the amount of poverty reduction transfers positively relates to the household per capita area of arable land and other fixed capital, and those households, for which agriculture is not the main source of livelihood, tend to receive a greater amount of assistance. Poverty reduction assistance is favourable to young households and households where the head is an income earner or with a greater number of income earners. Patterns of poverty reduction assistance to households in disaster-affected areas are similar to those of social assistance.

Concerning other household characteristics, poverty reduction assistance appears also favourable to vulnerable households such as those with widowed female heads or with a greater number of children, non-working retired, handicapped and full-time students in terms of probability or the amount of the transfers. Households with higher average education attainment, households with the head completing higher rather than lower secondary school have less chance to receive poverty reduction assistance.

D. Private transfers given

In sharp contrast to earlier works on this subject, this study considers private transfers, including the inter-vivo dispatch and receipt of in-kind and in-cash transfers, among households as an organic and important part of the SWS in the developing transition economy. A purpose of this econometric model is to test if private transfers are influenced by public ones. In view of the interactions between the variables, the predicted values of the latter would be used for their estimation. The results of estimation of the functions of the private transfers giving are shown in Table 48.

There are 24.3% households which gave private transfers in the data set, much more than those involved in each form of public transfers. The fraction of correct predictions in the probit estimation is 0.777. Firstly, the hypothesis about the non-existence of structural change in transfer functions in period 1993-1998 cannot be rejected as the value of *Chow* test is $F(25,2420) = 1.538 < F^*(0.05,25,2420) = 1.71$. However, coefficients attached to the dummy variable “Year 1998” are statistically significant with a negative sign in the probit, positive sign in the OLS, and quite large elasticities¹⁵⁰. This means that fewer households gave contributions in 1997-98 than in 1993-94 but the amount of contribution tends to be larger. Secondly, as expected, the probability and the amount of the transfers a household gave are positively related to its income. Thirdly, the probability of giving a contribution is positively related to the amount of social security the household receives. However, relations between a household’s private contribution and other public transfers are statistically insignificant. Fourthly, recipients of private transfers have a higher probability to make private transfers themselves.

¹⁵⁰ As the elasticity of “Year 1998” equals –0.55 while that of “Year 1998 x Per capita income” equals 0.16, the general impact of an increase in household income is still negative.

Table 48. Vietnam: Estimates of the private giving function

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Note: Calculated from VLSS1&2

1: The dependent variable is the household's dispatch of private transfers, which equals 1 if the amount is greater than 0, and equals 0 otherwise.

2: The dependent variable is the natural log of the non-zero amount of the transfers, which the household gave.

3. Calculated at variables' means Y and x as the analytical derivative (dP/dX) divided by mean Y for log-transformed variables and by (x/Y) for the rest.

4. Equal to estimated coefficients B for log-transformed variables. For other variables, it is calculated as the coefficients multiplied by means x .

Another important finding is that private transfer giving decreases if household per capita income drops below the poverty line or if the area where the household lives is affected by disaster. This points out the limitation of private protection arrangements as it leaves households without or with reduced assistance when the whole commune or region is stricken by covariate risks such as disaster and economic irregularities. In other words, there is a need to develop an efficient formal protection system, including public transfers, to protect the needy when private arrangements fail.

Finally, private transfer giving also appears to be strongly influenced by commune and regional characteristics. In particular, households in richer communes (i.e. with higher average per capita consumption) or in communes with greater gaps in consumption tend to give contributions more often. However, those living in urban areas do not give more than those in rural areas.

E. Private transfer receipt

As 50% households in the data set received private transfers, the latter seems to have an important impact on their welfare and the SWC in general. Table 49 shows results of the estimation of its functions. The value of *Chow* test is $F(30,5039)=364.55 \cdot 10^{29} > F^*(0.05,30,5039)$ confirming the existence of remarkable structural change in the private transfers. By 1997-98, the amount of private transfers a household receives becomes statistically influenced by its per capita income. So, in

1997-97, an 1% increase in household per capita income would reduce the amount of private transfer receipts by 0.12%. However, the probability of the receipts remains statistically independent from household per capita income as well as the dummy variable “Year 1998”. Based on the data from VLSS1 alone, Cox, Fetzer et al. (1998); Le Minh Tam (1999) suggest a stronger functional relationship between private transfer receipts and household per capita income.

There are also a number of other important findings. Firstly, there are strong relationships between the receipt of public transfers and that of private transfers. Probability of receiving private transfers is negatively related to the receipt of social assistance but positively related to the household’s receipt of social assistance. The functional relationship between the amounts of any public transfers the household received and the amount of private transfers is statistically significant but negative. However, taking into consideration also the effects of the public transfers on probability of the private transfers, the crowding-out effect is still not large. So, subject to the receipt of private transfers, a 1% increase in social security, social assistance, or poverty reduction transfers reduces the amount of private transfers the household received only by 0.025%, 0.059% and 0.061%, respectively.

In sum, the above represents a system of equations, which are estimated on the basis of data set collected under both the VLSS1 and 2 and represent the comprehensive SWS in Vietnam. An analysis of the results of the estimation has unveiled many important characteristics of public and private components of the existing SWS in Vietnam as well as the close relationship and crowding-out effects between public and private transfers. Together the protective mechanisms produce complex impacts on welfare of households, which will be explored below.

Table 49. Vietnam: Estimates of the private receipt function

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Note: Calculated from VLSSI&2
1: The dependent variable is the household’s receipt of private transfers, which equals 1 if the amount is greater than 0, and equals 0 otherwise.
2: The dependent variable is the natural log of the non-zero amount of the transfers, which the household received.
3: Calculated at variables’ means Y and x as the analytical derivative (dP/dX) divided by mean Y for log-transformed variables and by (x/Y) for the rest.
4. Equal to estimated coefficients B for log-transformed variables. For other variables, it is calculated as the coefficients multiplied by means x.

F. Overall impacts of the SWS on household welfare

As mentioned above, welfare impacts of the existing SWS are to be assessed in terms of household’s expenditures and the drop-out rate of school-age children in the household. Table 50 shows the overall impacts of the SWS estimated for the total population in the data set, using the predicted values of public and private transfers.

Secondly, as found by Cox, Fetzer et al, (ibid) and Le Minh Tam, (ibid), private transfer receipts are favourably aimed at households with older heads, with a greater number of the elderly, or with the female head. Private transfer receipts are also found to be influenced by other household characteristics such as education (e.g. the head’s literacy and household average years of education), per capita capital and land area, commune average wage rate and consumption, and location. Even more important, this study establishes that private transfers in Vietnam are not aimed at those who are in special need for social protection such as the poor and households in areas affected by disasters. Given the same conditions, the households have less chance to receive private transfers and, when the transfers take place, their amount tend to be less compared with the others.

Table 50. Vietnam: Estimates of the general impacts of SWS
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Note: Calculated from VLSS1&2

1 & 2: The dependent variables are the natural log of the non-zero amounts of household expenditure and drop-out rate.

3. Equal to estimated coefficients B for log-transformed variables. For other variables, it is calculated as the coefficients multiplied by means x .

Values of Chow-test for household expenditure and school drop-out rate functions are $F(31,10085)=5.7973 > F^*(0.05,31,10085)=1.62$ and $F(30,10087)=4.6102 > F^*(0.05,30,11085)=1.62$, respectively, signalling the existence of structural changes in the functions in the period from 1993-94 to 1997-98. Firstly, with an elasticity of 0.064, per capita pre-transfer income has a strong positive impact on household consumption and school enrolment but the latter is statistically insignificant at the 5% confidence level. These positive effects of pre-transfer income were much reinforced by 1997-98 with elasticities of the product of the income and dummy “Year 1998” with respect to consumption and school drop-out rate at 0.035 and -0.853 . Secondly, the negative sign of the coefficient for the dummy ‘Year 1998’ in the consumption function shows that household consumption in 1998 would be reduced by 0.287%. As suggested by the dynamic SWC model in section 6.2, this can be explained as a result of a greater share of saving in household income.

Secondly, another important finding is that among public transfer schemes, only poverty reduction assistance and social security transfers have statistically significant impacts on general consumption and school enrolment, respectively. However, both the impacts are negative. The former is a result of the focus of poverty reduction assistance on the poor, whose level of consumption is lower than the average, and the exchange-

oriented nature of the scheme. The latter is explained by the reversed relation between the amount of social security a household receives and its size and the large elasticity of the latter in respect to the school drop-out rate. In contrast, both giving and receiving private transfers have statistically significant positive effects on general welfare both in terms of consumption and school enrolment. However, the impact of private transfer receipts are quite small compared with giving and poverty reduction assistance.

Thirdly, in contrast, much stronger influences on household welfare are produced by household and commune characteristics. Household head's age, female head, education attainment of head and household, per capita capital, and commune average consumption have positive impacts. As expected, being poor dramatically deteriorates household consumption and school enrolment with elasticities equal to -0.22 and -0.11 , respectively.

However, the above estimation still does not provide an answer to the question how well the SWS performs its purpose, i.e. to protect welfare of particular groups of the population. The following presents results of an attempt to explore impacts of various public transfer schemes on the welfare of their beneficiaries.

G Welfare impacts of public transfers schemes

Concerning social security transfers, values of Chow-test for household expenditure is and school drop-out rate functions are $F(26,1256)=1.593 < F^*(0.05,26,1256)=1.69$ and $F(14,637)=-33.876$ with upper tail area = 1.00, respectively. So, the hypotheses about the absence of structural changes in the welfare functions cannot be rejected. As coefficients attached to the dummy variable "Year 1998" and its product with income are statistically insignificant, it appears that the structural change of the school drop rate function did not take place in the surveyed periods. However, in

the case of the consumption function, coefficients attached to the variables are highly significant, suggesting a shift in the function in the period.

Table 51. Vietnam: Estimates of impacts of social securities schemes

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Note: Calculated from VLSS1&2

1 & 2: The dependent variables are the natural log of the non-zero amounts of household expenditure and drop-out rate.

3. Equal to estimated coefficients B for log-transformed variables. For other variables, it is calculated as the coefficients multiplied by means x .

Estimates of impacts of the existing SWS on beneficiaries of each of the existing public transfer schemes are shown in Concerning social security transfers, values of Chow-test for household expenditure is and school drop-out rate functions are $F(26,1256)=1.593 < F^*(0.05,26,1256)=1.69$ and $F(14,637)=-33.876$ with upper tail area = 1.00, respectively. So, the hypotheses about the absence of structural changes in the welfare functions cannot be rejected. As coefficients attached to the dummy variable “Year 1998” and its product with income are statistically insignificant, it appears that the structural change of the school drop rate function did not take place in the surveyed periods. However, in the case of the consumption function, coefficients attached to the variables are highly significant, suggesting a shift in the function in the period.

Table 51-Table 53. In general, the tables confirm the above findings regarding to the overall impact of the existing SWS.

As shown in Concerning social security transfers, values of Chow-test for household expenditure is and school drop-out rate functions are $F(26,1256)=1.593 < F^*(0.05,26,1256)=1.69$ and $F(14,637)=-33.876$ with upper tail area = 1.00, respectively. So, the hypotheses about the absence of structural changes in the welfare functions cannot be rejected. As coefficients attached to the dummy variable “Year 1998” and its product with income are statistically insignificant, it appears that the structural change of the school drop rate function did not take place in the surveyed periods. However, in the case of the consumption function, coefficients attached to the variables are highly significant, suggesting a shift in the function in the period.

Table 51, the impact of social security follows patterns similar to those of the impact of the SWS, as the whole. Firstly, household’s capital per capita produces a remarkable positive impact on household consumption and school enrolment. Secondly, surprisingly, existing social security schemes do not make a statistically significant impact on household welfare. Similar to the case of the overall impacts, among the public transfer schemes only poverty reduction assistance is able to show a significant impact on household consumption but the impact is negative. Private transfers have significant impacts on the consumption of the household. Again, the impact of private transfer receipt is quite small. Thirdly, household and community characteristics also produce quite similar effects on household welfare.

Next, Table 52 shows the impacts of SWS on beneficiaries of existing social assistance schemes. The hypotheses about the absence of structural changes in consumption and school drop-out rate among the schemes’ beneficiaries cannot be rejected as values of Chow-test for household expenditure and school drop-out rate are $F(28,965)=0.817 < F^*(0.05,28,965)=1.65$ (upper tail area = 0.738) and $F(21,571)=-12.887$ (upper tail area = 1.00), respectively. However, all other things being equal, in 1997-98 beneficiaries of social assistance had lower level of consumption compared with 1993-94, due to the negative sign of coefficient attached to the dummy variable “Year 1998”.

Table 52. Vietnam: Estimates of impacts of social assistances programmes

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Note: Calculated from VLSS1&2
1 & 2: The dependent variables are the natural log of the non-zero amounts of household expenditure and drop-out rate.
3. Equal to estimated coefficients B for log-transformed variables. For other variables, it is calculated as the coefficients multiplied by means x.

Again, household per capita capital makes a positive impact on household consumption and school enrolment. Secondly, the amount of social assistance the household receives negatively affects school enrolment of its children while the amount does not produce a significant impact on consumption. Poverty reduction assistance shows a significant but negative impact on household consumption, while social security does not matter among beneficiaries of social assistance. Impacts of private transfers are significant and positive but also only on household consumption.

Finally, Table 53 gives estimates of the SWS on beneficiaries of the existing poverty reduction assistance. An increase in household per capita income would increase the school enrolment rate but does not have statistically significant influence on consumption of beneficiaries of the assistance, in sharp contrast to other schemes and the overall impact of the SWS as the whole.

A 1% increase in the amount of poverty reduction assistance a household receives would raise its consumption by 0.05%. However, the school drop-out rate also increases by 0.49%. This effect is similar to that of social assistance transfers and might be explained by their focus on poor and sizable households, whose children already have a higher drop-out rate. Another explanation is that as the assistance is provided in the form of a loan, households have to mobilise additional labour of their children for domestic or income generation works to ensure the repayment. Thirdly, among beneficiaries of poverty reduction assistance, receipt of private transfers does not make statistically significant impact on welfare.

Table 53. Vietnam: Estimates of impacts of poverty reductions programmes

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Note: Calculated from VLSS1&2
1 & 2: The dependent variables are the natural log of the non-zero amounts of household expenditure and drop-out rate.
3. Equal to estimated coefficients B for log-transformed variables. For other variables, it is calculated as the coefficients multiplied by means x.

6.3.4 Discussion

In sharp contrast with other works done in this subject area, this section presents a comprehensive econometric model of the SWS in the transition economy and results of estimation of parameters of the model for Vietnam on the basis of data collected from both household living standard surveys in 1993-94 and 1997-98. The model's innovation is that it takes into account not only various public schemes but also private arrangements as integral elements of the SWS in a developing transition economy and provides linkages between the SWS, household and community characteristics, and household welfare. The model allows defining reactions of each component of the SWS to changes in other components or changes in various household and commune characteristics, e.g. pre-transfer income, employment, human resources, productive assets, being poor or affected by disaster, or commune's average consumption and its variations in an integrated and interactive manner. Moreover, the model allows estimating welfare effects of the changes, e.g. in terms of consumption and school enrolment.

Analysing results of the model's estimation also provides interesting insights into the SWS in Vietnam. Firstly, despite various shifts in transfer functions, there is still little evidence in support of the assumption about the alteration of the patterns of the social protection system in Vietnam. In other words, SWS reform is still lagging behind reform efforts in other areas and this may create additional constraints for Vietnam's transition to a market-oriented economy. Secondly, according to the estimation and subsequent analysis, various public transfer schemes produce crowding-out effects on private transfers. Although the effects are not found to be large, beneficiaries of the schemes are clearly not better-off by the full amount the formal schemes provided as proposed earlier. Thirdly, Vietnam's existing SWS seems to be not

very well targeted at vulnerable groups, particularly the poor, the disabled, unemployed, large families, and those affected by disasters. This can be explained by the fact that the transfers from the government veterans' disability funds, which are large in size but target a distinctive group were not separated from the transfers from other social protection schemes. Finally, weak linkages between elements of the SWS and welfare of their beneficiaries raise questions about the effectiveness of the former. This concerns both existing public transfer schemes and private transfers and represents a serious challenge for reform and further development of the system.

This econometric model addresses the issue of redistribution through the SWS, which has not been dealt with in the dynamic model of SWC in the transition economy and, thus, represents an extension of the latter. The fact that the estimates of the private transfer functions are comparable with findings of various previous studies indicates that the theoretical model is relevant. Thus it can be useful for further exploration of other aspects of a social welfare system in transition such as modelling impacts of various welfare policies, particularly those related to public transfers, to various population groups, or reactions of the SWS to various changes in the socio-economic environment. Outputs of these efforts can serve as valuable inputs for design of measures to reform the existing SWS.

Further the model itself can serve as a tool for designing and evaluating policies concerning the SWS in Vietnam. For this purpose, it can be extended to look at various disaggregated levels e.g. particular SWS programmes such as the National Programme for Poverty Reduction and Hunger Reduction or the provision of preferential loans for the poor. There may be also a number of methodological improvements such as the utilisation of other welfare indicators, other functional forms and threshold analysis.

The model can also be used in various innovative manners e.g. for mapping of the usage of SWS funds across population groups and geographic areas.

Section 6.5 Chapter summary and conclusions

This chapter has developed tools for quantitative analysis of social welfare conditions and the social welfare system in a developing transition economy and applied them for an in-depth exploration of multi-faced welfare impacts of a wide range of Vietnam's transition policies. The chapter has validated the methodological developments presented in Chapter 3 and a number of important findings from qualitative analyses of Vietnam's SWC and SWS in Chapter 4 and 5, respectively. On the other hand, the application of the analytical tools helps to establish close cause-effect relations between various transition policies and social welfare during Vietnam's transition and unveil their patterns. Thus, the developed models can contribute to designing various transition and redistribution policies.

In particular, in this chapter an intertemporal model of SWC in the transition economy has been completely specified, estimated and implemented, based on the methodological development in Section 3.3.2 of Chapter 3. The novelty of the model includes its integration between macro- and micro-modelling based on both consumption and investment choices and the reflection of rational expectations. These provide insights into the complex dynamics of SWC, which are nonassessable, using other methodologies. Having been validated, the model is used to conduct six experiments to explore the impacts of various transition and redistribution policies on SWC. It has been established quantitatively that different transition policies produce different impacts on Vietnam's SWC and the long-term impacts are often quite different from the short-term ones. Secondly, the policy experiments confirm the superiority of the gradual transition strategy in Vietnam's situation. However, the country can still obtain greater welfare effects by fostering the process of market liberalisation and

ownership reform and implementing them in a coherent manner. Thirdly, it has been proved that the development of the market-led sector plays an essential role in the improvement of SWC in the transition economy. Finally, compared with the macro transition policies, redistribution policies, particularly unemployment benefits and public transfers, produce less remarkable effects on SWC at the aggregated level. Further, under the transition, more targeted redistribution policies, such as unemployment benefits, appear more preferable than universal ones, e.g. lump-sum public transfers. Thus, this chapter contributes to the on-going debate on the speed and timing of the transition, particularly in the case of Vietnam. Without further complications, the model can be used not only for the prediction and analysis of potential impacts of various transition measures but also for defining their optimal mix and timing.

This chapter also deals with redistribution issues, which have not been addressed in the above-mentioned SWC model. In particular, the chapter specifies and estimates an econometric model of the SWS during Vietnam's transition based on the methodological development in Section 3.3.3 of Chapter 3 and data collected from two household living standards surveys in 93-94 and 97-98. The novelty of this model is that it simultaneously takes into account both public and private transfers as integrated components of the SWS in the developing transition economy. The model allows defining reactions of private transfers to changes in various public transfer schemes components and estimating the impact of the changes on household welfare. Moreover, the analysis of results of the estimation has uncovered a number of critical problems facing Vietnam's existing SWS. Firstly, the reform of Vietnam's SWS appears lagging behind other reform efforts. Secondly, private transfers play an important role in the SWS and the existing public transfer schemes have quite a limited impact on welfare of

households in general and their beneficiaries, in particular. The exception is the relatively newly established poverty reduction assistance. Thirdly, various public transfer schemes crowd out private transfers, although the effect appears not large. Further, social assistance and poverty reduction assistance are exchange-oriented, i.e. require recipients' service in return. So, the recipients of public transfers are clearly not better off by the full amount they receive. Finally, the analysis raises the limited targeting at vulnerable groups, such as the poor, the disabled, the unemployed, large family, and those affected by disasters, and the weak linkages between various components of the SWS with welfare of their beneficiaries as key problems facing Vietnam's SWS. These concern both public and private transfers.

CHAPTER 7 SUMMARY AND CONCLUSIONS

Section 7.1 *Introduction*

The main objective of this study is to analyse complex changes in social welfare in a developing transition economy, in particular Vietnam. For this purpose, the thesis develops innovative framework and methodological tools for qualitative and quantitative analyses of changes in both social welfare conditions and the social welfare system during the transition and for establishment of cause-effect relations between the changes and transition policies. These study topics are of both theoretical and practical interests.

The main contribution of this thesis is two-fold, namely methodological development and its application. Concerning the former, the main contribution include:

- The establishment of a conceptual framework for studying social welfare in a developing transition economy. The framework considers the transition as a dramatic expansion of people's occupational choices;
- The development of intertemporal and econometric models for studying social welfare conditions and social welfare system, respectively; and
- The specification of the models, solution algorithms and their implementation.

Concerning the application aspect, it has been demonstrated that

- The conceptual framework and the models developed in this study are suitable for both qualitative and quantitative analyses of social welfare in the transition economy. The models can also be used for policy analysis and design;

- The established intertemporal and econometric models provide insights into the existing SWS, particularly related to the dynamics of changes in the SWC and patterns of the SWS.
- The transition from the central planning system to a market economy has produced dramatic impacts on both social welfare conditions and the social welfare system in Vietnam. However, the transition policies chosen or SWS schemes established are not always optimal. In this context, a number of important improvements have been proposed.

Section 7.2 summarises the study's main findings and conclusions. The thesis is concluded by Section 7.3, which discusses limitations of the study and proposes some areas of future research.

Section 7.2 *Main achievements and conclusions*

One of the major contributions of the thesis is the development of a comprehensive methodology for studying social welfare in a developing transition economy. For this purpose, in chapter 2 the thesis clarifies concepts of social welfare in a transition economy and provides a review of literature on this subject. In this context, the novelty of the thesis is to make a clear distinction between social welfare conditions and the social welfare system and to consider them together as two components of social welfare in an integrated and interactive manner. This chapter also unveils a number of existing methodological gaps to be addressed, particularly the lack of a comprehensive framework and appropriate tools for qualitative and quantitative analysis of social welfare and its dynamics in the transition economy.

Secondly, in order to analyse the complex and multi-facet impacts of the transition on social welfare both qualitatively and quantitatively, the thesis proposes an

innovative framework, which views the transition as the expansion of people's choices of their occupation, consumption, and investment. Within this framework, social welfare is to be considered in terms of opulence, equality, and safety. These allow studying the two aspects of social welfare in an integrated and interactive manner. There are certain commonalities between the proposed framework and the human development approach, which has already been articulated by United Nations Development Programme for a decade and increasingly accepted among researchers and practitioners at both international and national levels. However, the proposed framework looks deeper at social welfare, since the occupational choice determines not only people's livelihood but also their role in society. Moreover, it better addresses specific aspects of a transition economy, e.g. the emergence and development of the market-led sector as a new source of people's livelihood (Section 3.2 of chapter 3).

Thirdly, in contrast to many other studies on this subject, this thesis has also developed the necessary tools for a quantitative analysis of social welfare during the transition. On one hand, the thesis has developed the theoretical basis for modelling changes in SWC in a developing transition economy based on occupation, consumption, and investment choices (section 3.3.2 in chapter 3 and section 6.2.1 in chapter 6). The main novelty of this stylised model include the combination of neoclassical intertemporal profit and utility optimisation of respective agents with various structuralist features of the developing transition economy (e.g. the segmentation between the market-led and state-led sectors), the introduction of HDI-like utility functions and rational expectations, and the focus on welfare aspects of the transition economy. A theoretical exploration of the model in chapter 3 allows us to conclude that in the long-run the transition improves people's opportunities both in terms of extended

occupational choices and opulence but is associated with increasing risks and inequality. In the short-run, the transition may cause production contraction and worsening SWC, depending on the initial conditions and adopted transition policies.

On the other hand, the thesis also forms the theoretical basis for an econometric model of the SWS in a developing transition economy such as Vietnam (section 3.3.2 in chapter 3 and section 6.3.2 in chapter 6). The model is distinguished by taking into account both public and private transfers as integrated and interacting elements of the SWS and allowing assessment of impacts of changes in various elements of SWS and in household and commune characteristics on other elements and household welfare. The theoretical analysis of the model proposes that like private transfers, public transfers may be of impure altruism (i.e. require return services from their recipients) and may crowd out the private transfers. Even more important, the theoretical analysis shows the limited role of public transfers and the SWS in general in maintaining living standards during the transition and, thus, cannot replace macro transition policies, which aim to ensure rapid and equitable growth. The model also predicts an increasing role for NGOs in providing social services during the transition.

Fourthly, the thesis conducted a qualitative analysis of changes in social welfare during the transition from the centrally-planned system to a market-oriented economy in a developing country, particularly Vietnam. Chapter 4 provides a critical overview of the transition process in Vietnam in the broad context of the country's socio-economic development and the on-going transition in other transition economies. Concerning the impacts of the transition on the country's social welfare conditions, it is concluded that in contrast with almost all other transition countries, Vietnam's transition has produced not only remarkable production gains and increasing macroeconomic stability, but also

a rapid improvement in human welfare. However, as predicted by the theoretical analysis, Vietnam's transition has also been accompanied by growing, although still slowly, inequality and insecurity.

The response of Vietnam's SWS to the increasing need for a strengthened and market-friendly SWS during the transition is qualitatively analysed in chapter 5. Special attention is given to the analysis of the social protection system but changes in other elements of a broader SWS such as labour and employment policies, education, and health care are also analysed. The analysis brings us to the conclusion that in sharp contrasts to that in Central and Eastern Europe and Commonwealth of Independent States, Vietnam's social protection system shares many similarities with the SWS in China and other developing countries. In general, it is designed for provision of social protection for public employees and focuses on urban areas. Compared with other transition economies, Vietnam's SWS is characterised by the large share of pension-like public transfers, limited number of instruments as well as their restricted coverage, benefits, and efficiency. However, there are innovative efforts to address the needs of the most destitute, including working and non-working poor. Other pillars of Vietnam's SWS, such as labour and employment policies, education and health care, have dramatically evolved since the start of the transition. However, as indicated by the theoretical analysis, in general Vietnam's SWS still suffers from limited effectiveness due to its slow response to the new and evolving economic environment, weak targeting, and lack of resources.

Finally, the thesis demonstrates how an intertemporal model of SWC with rational expectations and an econometric model of SWS can be built on the basis of the methodological development and applications for practical quantitative analysis of

social welfare in a developing country such as Vietnam. As shown in section 6.2 in chapter 6, the former represents the first intertemporal CGE model of Vietnam's transition economy. The model has been kept simple enough to suit the existing capacity in the country and database to enable a wider application later on. The six experiments conducted by the thesis with different transition and welfare policies have provided additional insights into the transition process in Vietnam compared with the qualitative analysis in chapter 4. In particular, they confirm that different transition policies tend to produce different effects on SWC and long-term impacts can be quite different from short-term ones. In this respect, the model can give information about the complex welfare dynamics, which are not available from other methods of study. Next, the modelling has established quantitatively that while the transition strategies chosen are relevant and have resulted in a remarkable improvement in social welfare conditions, they are not optimal. Fostering the reform process, particularly through accelerating market liberalisation and ownership reform, certainly leads to more impressive achievements. However, the transition policies are interlinked and need to be carried out coherently. Further, as improvement of SWC in the transition economy is positively linked with the development of the non-state sector, the latter is most critical for further enhancement of living standards and poverty reduction. Moreover, SWC is better off from more targeted social policies such as the establishment of unemployment benefits while "populist" policies such as lump-sum public transfers do not produce the effect.

The analysis of the results of the estimation of the econometric model of the SWS also has unveiled a number of important features of Vietnam's existing SWS (section 6.3 in chapter 6). In support of the qualitative analysis in chapter 5, the quantitative analysis has established that the existing public transfer schemes produce

statistically quite insignificant impacts on the welfare of Vietnamese households in general and recipient households in particular. Only poverty reduction assistance – a relatively recently emerging scheme – represents an exception by making a statistically significant positive impact on household welfare. Next, in contrast with social security, social assistance and poverty reduction assistance are impure altruistic and, thus, require recipients' service in return. It has also confirmed that the social protection system is weakly targeted at the most needy, in particular the poor, those affected by disasters, and the vulnerable. Further, private transfers play an essential role in Vietnam's SWS but they are crowded out by public transfers, although slightly. More important, as private transfers are deteriorated a result of covariate risks and irregularities, such as natural disasters, there is a need to strengthen the formal SWS, particularly public transfer schemes. However, in general, there is limited evidence about structural changes in the SWS in period between the two living standard surveys in 1992-93 and 1997-98. In other words, in Vietnam SWS reform is still lagging behind reform measures in other areas and this may create additional constraints on the on-going reform process. The above also represents direction for future reform of Vietnam's SWS and social policies, in general.

The study's major conclusions can be summarised as follows:

- The transition tends to produce dramatic impacts on social welfare, including both social welfare conditions and the social welfare system, due to the induced fundamental changes in people's choices of occupations, consumption and investment. Contrary to almost other transition economies, Vietnam's transition has resulted in a remarkable improvement of living standards, which is largely attributable to the broad-based development of

the market-led sector. While the choice of the gradual approach appears relevant for the situation in Vietnam, a number of transition and welfare policies chosen are not the optimal. In particular, within the transition strategy the country would obtain even greater welfare achievements by accelerating the reform process, particularly in the areas of market liberalisation and ownership reform.

- There is a strong demand for strengthening the country's social welfare system due to growing inequality and insecurity as a result of the transition. While private arrangements play essential roles in the system as a whole, the existing public transfers schemes suffer from restricted coverage and benefits, inadequate targeting and, thus, produce very limited impacts on household welfare in general and the welfare of their recipients in particular. It is proposed that the major direction for Vietnam's SWS reform, which is still lagging behind reform measures in other areas, is to improve its targeting by introducing new targeted instruments such as unemployment benefits and designing the existing public transfer programmes, taking into full account their interaction with private transfers.
- As the analytical framework, methodology and tools presented in the thesis can provide insights into social welfare dynamics in the transition economy, which are inaccessible using other methods, it is suitable not only for analysis but also for design and analysis of the policy mix necessary for improvement of social welfare in the economy. With minor modifications, the methodological developments can also be applied for other developing countries.

Given the focus of the study as well as the strong commitment of the Government and donor community to sustainable social development in Vietnam, it is likely that the study's methodology and conclusions contribute to the formulation, implementation, and evaluation of Government policies and donor intervention programmes related to social welfare and economic transition in the country.

In short, the study contributes to analytical and empirical knowledge on social welfare in developing transition economies and, particularly, in Vietnam, addressing the existing gaps in the subject areas, which have been at the centre of interest of a number of economists, social scientists, policy makers, and practitioners at the national and international levels. Specifically, the study produces value-added theoretical knowledge about concepts of social welfare in a developing transition economy, and methodology and tools for its comprehensive study. The methodology and analytical tools can be used for monitoring, assessment, and design appropriate socio-economic policies. On the other hand, the study also generates new valuable knowledge about Vietnam's transition and its social welfare.

Thus, the study has addressed all of its study questions, validated research hypotheses and, thus, achieved all of its objectives set up in section 1.2 of Chapter 1, namely, (i) to establish a conceptual framework for the comprehensive study of social welfare during the transition, (ii) to develop tools for quantitative analysis, and (iii) to apply the tools for a qualitative and quantitative analysis of changes in Vietnam's social welfare and designing appropriate policy responses.

Section 7.3 *Limitations and some proposals for future research*

However, apart from the implied assumptions of the conceptual framework, there are a number of limitations of the thesis, which concern the analytical tools

developed and their applications. Firstly, the qualitative analysis of SWC and SWS in chapters 4 and 5 can be sharpened if disaggregated data were available. The data on development and wages in Vietnam's non-state sector and public transfer recipients' assessment are currently unavailable. An attempt to address the latter issue was made under MOLISA-ILO study on social protection in Vietnam (Dzung The Nguyen 1999; Preston 1999), but the generated data appear unreliable due to the sample's small size. On the other hand, the author has not yet gained access to the detailed data on Vietnam's non-state sector.

Secondly, it appears that there is a possibility to validate the intertemporal SWC model and explain its behaviour by using Johansen's linearised solution of the model, which is less accurate than the used multi-step simulation procedure but in many cases can produce the right qualitative results (Harrison and Pearson 2000:section 2.10). More important, solving the system of equations given in the solution's equation file can give elasticity of endogenous variables with respect to exogenous ones. Although the elasticity can be applied only to small changes in the exogenous variables, they would help explaining quantitatively the model's responses to the external shocks and, thus, give some guidance for designing policy experiments. On the other hand, by assuming fixed international price and exchange rates, the model has not fully reflected interactions between the domestic and foreign sectors, which are important in the case of Vietnam.

Thirdly, concerning the model of the SWS, the thesis has not explored the relationship between public and private transfers and other indicators of household welfare, such as child malnutrition and the extent of child labour. Further, the thesis has established evidence that contrary to the common assumption, both social assistance and

poverty reduction assistance in Vietnam are impurely altruistic, but the nature of their recipients' service in return and welfare implications of the finding remained undisclosed, although they may be of both theoretical and practical importance.

Finally, regarding the application aspects, both the SWC and SWS models are still at quite aggregated levels, thus, giving quite limited information about welfare impacts of the transition on more detailed population groups. With this respect, the disaggregation of the non-state sector into the market-led sector in urban areas and the traditional household sector in the rural areas represents a special interest.

The above-mentioned limitations are largely caused by the confrontation between the broad scope and complexity of the issues addressed and the limited scope and objective of this study. On the other hand, the limitations indicate that in addition to the above-mentioned important achievements and conclusions, the study also poses a wide range of theoretical and practical issues to be explored in the future.

In particular, the following proposes some areas for research in the near future, which is driven by the desire to further improve the research methodology developed in this study, particularly the two models of the SWC and SWS, to make them more robust and capable to address issues concerning social welfare in the transition economy. Many of the proposals come directly from the existing limitations.

The intertemporal model SWC should be further developed in various ways. Firstly, disaggregation of the non-state sector into the market-led and traditional household economy would give further interesting insights into welfare dynamics in the developing transition economy, e.g. Vietnam, where about 80% of population and 90% the poor live in rural areas. Further disaggregation by economic sectors along the ownership sectors (e.g. by industry, agriculture, and services) or by more detailed

occupation groups (e.g. large, middle, small and landless farmers in agriculture) will help in obtaining more valuable information about the dynamics of the economy and its SWC. Secondly, impacts of changes in international prices and the exchange rate on domestic price formation are to be incorporated into the model, taking into account rational expectations. This will expand the ability of the model to explore welfare impacts of not only the transition but also the country's reintegration into the international market, which also represents an important outcome of Vietnam's transition. Finally, more complex tools shall be employed for analysing results of the simulation. In particular, attempts shall be taken to use Johansen linearised solution for defining the elasticity of the model's endogenous variable with respect to exogenous variables and, then, using the elasticity for explanation of model's results.

Concerning the econometric model, it can be used to explore welfare impacts of different measures within various existing social welfare programmes, e.g. the provision of preferential loans for the poor within the National Programme for Poverty Reduction and Hunger Reduction or disaster relief under the social assistance. The use of other welfare indicators, other functional forms, or even threshold analysis shall be attempted. In terms of application, the model can also be used in various innovative manners. In particular, important policy recommendations can be generated by employing the model for mapping the distribution of social welfare funds across population groups and geographic areas, which can be done using larger database on household characteristics collected from the 1999 census.

In conclusion, the thesis represents an attempt to analyse changes in social welfare in a developing transition economy, particularly Vietnam. It has developed an innovative framework, methodology and tools for both qualitative and quantitative

analyses and applied them in the case of Vietnam. The analyses have resulted in many important theoretical and practical conclusions about the interactions between Vietnam's transition and its social welfare. Moreover, the study also proposes a wide range of issues to be further explored in the future.

APPENDICES

Annex. 1. List of equations and variables in the model of social welfare conditions in a transition economy

A. The equations

a. Intra-period equations

Coefficient of technological progress

$$(128) \quad A_i = W'_h(\bar{w}_i, h_i) \quad ; i=m,s$$

Value-added product per sector

$$(129) \quad E(Y_i | K_i \geq K^*) = A_i \alpha^{\varepsilon_{i1}} L_i^{\varepsilon_{i2}} K_i^{\varepsilon_{i3}} \quad ; i=m,s$$

Capital's profit earning functions

$$(130) \quad E(W_{ic} | K \geq K^*) = \beta_i K_i^{\frac{\varepsilon_{i1}}{1-\varepsilon_{i2}}} \quad ; i=mc,s$$

$$(131) \quad \beta_i = \frac{1-\varepsilon_{i2}}{\varepsilon_{i2}} \alpha^{\frac{\varepsilon_{i2}}{1-\varepsilon_{i2}}} \left(\frac{(1-\tau)\varepsilon_{i2} p A_i}{w_i^e} \right)^{\frac{1}{1-\varepsilon_{i2}}} w_i^e \quad ; i=mc,s$$

Investment per sector

$$(132) \quad I_i^* = \frac{1}{2\theta w_i^e} \left(\frac{q_I}{1-\tau^e} - p^e \right) \quad ; i=m,s$$

Labour demand/employment in production per sector

$$(133) \quad L_i^* = \left(\frac{(1-\tau)p\varepsilon_{i2} A_i}{w_i} \right)^{\frac{1}{1-\varepsilon_{i2}}} \alpha^{\frac{\varepsilon_{i1}}{1-\varepsilon_{i2}}} K_i^{\frac{\varepsilon_{i3}}{1-\varepsilon_{i2}}} \quad ; i=m,s$$

Labour demand/employment in investment activities per sector

$$(134) \quad L_i = \theta_i I_i^2 \quad ; i=m,s$$

Dividends

- Market-led sector

$$(135) \quad D_m = (1-\tau) p Y_m - w_m L_m^* - (1-\tau_k)(I_m + w_m L_s) + \sum_{i=m,s} (s_i - r k_i)(L_i^* + L_i) + FDI$$

- State-led sector

$$(136) \quad D_s = (1 - \tau_p) p Y_s - w_s L_s^* - (1 - \tau_k)(I_s + w_s L_s)$$

State-set wage rate in the state-led sector

$$(137) \quad w_s = w_m (1 - \lambda + \lambda b + \lambda c \frac{\Delta L_{dm}}{U + \Delta L_u + \lambda L_s})$$

Worker's disposal income

$$(138) \quad y_i = (1 - \tau_a)(w_i + r k_i) + w_m a ; i = m, s, \text{ where } k_i \text{ is worker's physical wealth}$$

Worker's consumption

$$(139) \quad c_i = \gamma_1 / q_{k_i} ; i = m, s$$

Worker's spending on human capital development

$$(140) \quad c_{h_i} = \frac{1}{2h_3} \left(\frac{q_{k_i}}{q_{h_i}} - h_2 \right) ; i = m, s$$

Worker's saving and investment in physical wealth per occupation

$$(141) \quad s_i = y_i - c_i - c_{h_i} ; i = m, s$$

Capitalists' disposal income

$$(142) \quad y_{mc} = (1 - \tau_a) D_m$$

Capitalists' consumption

$$(143) \quad c_m = y_{mc}$$

Income and consumption of the unemployed

$$(144) \quad y_u = c_u = w_m b$$

where b is the level of unemployment benefits expressed in terms of the market-led sector's wage rate.

Government spending

$$(145) \quad G = \tau_p \sum_{m,s} Y_i + D_s + \tau_a \sum_{m,s} w_i (L_i^* + L_{l_i}) + \tau_a D_m + TB + \\ - \tau_k \sum_{m,s} (p I_i + \theta w_i I_i^2) - a w_m \sum_{m,s} (L_i^* + L_{l_i}) - c w_m U$$

Labour market equilibrium

$$(146) \quad L = \sum_i L_i^* + \sum_i L_{l_i} + U \quad ; i=m,s$$

Good market equilibrium

$$(147) \quad (1+\tau)pY_i = s_{C_i}C_i + s_{G_i}G_i + s_{I_i}(\sum_{m,s} I_i - FDI)$$

Capital market equilibrium

$$(148) \quad (1-\tau_k) \sum_{i=m,s} (I_i + \theta w_i I_i^2) = \sum_{i=m,s} [(1-\tau)pY_i - w_i L_i^* - D_i + (s_i - rk_i)(L_i^* + L_i)] + FDI$$

Change in workers' average wage

$$(149) \quad \Delta w = \sum_{i=m,s} S_i (\Delta p_i + \Delta w_i)$$

Gini coefficient

$$(150) \quad GINI = \frac{1}{w} \sum_{i=m,mc,s,u} \sum_{j=m,mc,s,u; j \neq i} (w_i - w_j) S_i S_j$$

b. Expectations

$$(151) \quad z^e = z^\phi (z_x)^{(1-\phi)} \quad ; z = w_i, p, \tau, \tau_w, \tau_k$$

c. Evolution of variables

Evolution of capital per sector

$$(152) \quad (q_{l_{i(t+b)}} - q_{l_{it}}) / b = (\rho + d)q_{l_{it}} - \frac{(1-\tau^e) \epsilon_{i3}}{1-\epsilon_{i2}} \beta_{it} K_{it}^{\frac{\epsilon_{i3}+\epsilon_{i2}-1}{1-\epsilon_{i2}}} \quad ; i=m,s$$

$$(153) \quad (q_{l_{h(t+b)}} - q_{l_{ht}}) / b = (\rho + d)q_{l_{ht}} - (1-\tau^e) \epsilon_{h3} \beta_{ht} K_{ht}^{(\epsilon_{h3}-1)}$$

$$(154) \quad (K_{i(t+b)} - K_{it}) / b = I_{it} - dK_{it} \quad ; i=m,s$$

Evolution of workers' physical wealth

$$(155) \quad (q_{k_{i(t+b)}} - q_{k_{it}}) / b = [\rho - (1-\tau_a^e)(r-d)]q_{k_{it}} \quad ; i=m,s$$

$$(156) \quad q'_k = q_k [\rho + d - \beta(\cdot) \frac{\epsilon_{m3}-1}{1-\epsilon_{m2}} k^{\frac{\epsilon_{m3}-1}{1-\epsilon_{m2}}}] \quad ; i=mc$$

$$(157) \quad \Delta s = (1-\tau_a)(w+rS) - pc - pc_h \quad ; i=m,s$$

$$(158) \quad S_t = (1-d)S_{t-1} + \Delta s$$

Evolution of workers' human capital

(159) $q'_h = q_h[\rho - (1 - \tau_o)(w_4 + 2w_5h)(h_2 + 2h_3c_h)] - (1 - \gamma) \quad ; i=m,s$

(160) $q'_h = \rho q_h - (1 - \gamma_1) \quad ; i=mc$

(161) $h' = \hat{h}_i(c_{h,i}, h) - d_h h = h_1 + h_2 c_h + h_3 c_h^2 + h_4 h + h_5 h^2 - d_h h \quad ; i=m,mc,s$

d. Boundary conditions

The model's boundary conditions can be classified into 2 groups, namely values of the initial stocks of wealth and values of the correspondent steady-state Torbin's q_i ; $i=l,h,k$. The values of the initial stocks of capital K_{i_0} per sector $i=m,s$; workers' initial human capital H_{i_0} and physical wealth k_{i_0} per occupation $i=m,s$ are observed from statistical data. However, as transition economies often are not in its steady state, the values of the stocks correspondent to the steady state have to be estimated on the basis of the data.

On the other hand, the model's end condition that the economy shall be at the steady state in the terminal period requires that values of stock variables in the terminal period equal those in the previous period. Denote T as the terminal period, we have

(162) $K_{i,t} = K_{i,t-1} \quad i=m,s$

(163) $k_{i,t} = k_{i,t-1} \quad i=m,s$

(164) $h_{i,t} = h_{i,t-1} \quad i=m,s$

B. The variables and parameters

Table 54. Variables in the intertemporal model of social welfare conditions during Vietnam's transition

Variable name in the text	Variable name in programme	Description		Variable's initial value		
				Both sectors	Market-led sector	State-led sector
		Model's parameters				
ϕ	LAMBDA_n LAMBDA_x	Forward-looking expectation	Perfect expectation	LAMBDA_n=1 LAMBDA_x=1		
			Fixed expectation	LAMBDA_n=0 LAMBDA_x=0		
	YEAR	Number of years simulated		80		
	NINTERVAL	Number of grid intervals		10		
ρ	RHO	Time discount rate		0.04995		
r	R	Interest rate		0.15		
d	DELTA	Depreciation rate		0.1		
γ	GAMMA	Coefficient of consumption preference		0.5		

θ	THETA	Coefficient of investment costs		0.6259259	0.425926
A	A	Tech progress		0.001494	5625.133724
ε_{i1}	EPSILON1	Elasticity of production functions towards index of liberalisation		0.191	1.222
ε_{i2}	EPSILON2	Elasticity of production functions towards labour		0.898	0.008053
ε_{i3}	EPSILON3	Elasticity of production functions towards capital		0.264	0.288
	ALPHAC	Share of sectors in private consumption		0.747753	0.252247
	ALPHAG	Share of sectors in government consumption		0.252247	0.747753
	ALPHA I	Share of sectors in investment consumption		0.45	0.55
w_1	W1	Constant coefficient in wage function		1.496	1.818
w_2	W WAG	Coefficient to the average wage		0.444	0.625
w_3	W EDU1	Coefficient to years of education		0	-0.235
w_4	W EDU2	Coefficient to squared years of education		0.00995	0.0153
h_1	H1	Constant coefficient in human capital formation function	0.263		
h_2	H_EXP1	Coefficient to household expenses on education	78.47		
h_3	H_EXP2	Coefficient to squared household expenses on education	-11550		
h_4	H_EDU1	Coefficient to HH average years of education	0.01558		
h_5	H_EDU2	Coefficient to squared HH average years of education	-0.0006209		
c	EMPL_DIF	Difference in values of being employed and unemployed	0.7		
λ	LAYOUTS	Layout coefficient	0.05		
		Controlled (state) variables			
I	INV	Investment in bill VND		2673.7	3053.5
K	K	Fixed Assets in bill VND		26737.0	30535.0
L	TOTLAB	Total labour force in persons	34366253.0		
L_i	LP	Employment in production in persons		29859498.0	11*2844502.0
L_i	LI_L	Employment in investment in persons		876502.0	83498.0
U	UNEMPL	Unemployment in persons	702253.0		
p	P	Relative prices	1.0		
Y_i	X L	GDP in bill VND		3802.0	69188.0
D_i	DI_L	Dividends in bill VND		21066.0	2504.0
w_i	WI	Wage rates in bill VND/prsn-year		0.00218524	0.00215366
	INW	Worker income in bill VND/prsn-year		0.0026945	0.0023629
c_i	CI	Worker consumption in bill VND/prsn-year		0.00214032	0.00203211
\dot{k}_i	GS	Worker saving in bill VND/prsn-year		0.00002460	0.00002363
	WS	Worker physincal wealth in bill VND/prs		0.008	0.010
c_h	CHI	Worker educ expend in bill VND/prs-year		0.00029522	0.00030718
h	HI	Worker educ expend in bill VND/prs-year		5.5	8.0
w_{mc}	INC	Capitalists' income in bill VND	17727		
c_{mc}	CCL	Capitalists' consumption in bill VND	16104.0		
G	G	Government consumption in bill VND	53312.4		
TB	TBAL	Current account deficits in bill VND	2677.0		
FDI	FDI	Foreign Direct Investment in bill VND	76.3		
α	REFORM	Reform progress	0.62		
		Controlling variables (redistribution instruments)			
τ	TSG	Value-added tax	0.15		
τ_a	TI	Income tax	0.01		
τ_k	TS	Investment subsidy	0.02		
a	LS	Public transfers rate compared with market wage rate	0.05		
b	UNEMPLPAY	Unemployment payment rate compared with market rate	0.00010		
τ_a^x	TIX	Exogenous expected income tax	0.02		
τ_k^x	TSX	Exogenous expected investment subsidies	0.01		
τ_a^e	TIE	Actual income tax	0.015		
τ_k^e	TSE	Actual investment subsidies	0.015		
w^e	WIE	Actual wage rate		0.0023	0.0022

Annex. 2. Implementation of the intertemporal model of social welfare condition during Vietnam's transition

A. GEMPACK codes

```

! Beginning of 2s_VN.TAB File !
!-----
2s_VN.TAB Version 1
2 sector Intertemporal General Equilibrium Model of Social Welfare Condition
in a developing transition economy (Vietnam)

Adapted from Chapter5, P.Dixon etc "Notes and Problems in Applied GEE ("DPPW")&
demonstration program CRTS.TAB (Ver.2) distributed with the GEMPACK package

Works with command file 2s_VN.CMP and data file 2s_VN.data
!-----

VARIABLE      (DEFAULT = LINEAR);
EQUATION      (DEFAULT = LINEAR);
VARIABLE      (DEFAULT = PERCENT_CHANGE);
COEFFICIENT   (DEFAULT = NON_PARAMETER);
FORMULA       (DEFAULT = ALWAYS);

! FILES !
FILE (TEXT) DATA           # main data file           #;
FILE (TEXT) TIME            # years specifying the grid spacing      #;
FILE (TEXT) EXPECT          # expectation parameters          #;

! MODEL'S PARAMETERS !

! Select forward-looking behaviour:
if LAMBDA_n=1 and LAMBDA_x=1: a perfect expectation model.
If LAMBDA_n=0 and LAMBDA_x=1: a fixed expectations model.!

COEFFICIENT LAMBDA_n          # links prices and price expectations #;
COEFFICIENT LAMBDA_x          # links tax rates and their expectation #;
READ LAMBDA_n FROM FILE EXPECT ;
READ LAMBDA_x FROM FILE EXPECT ;

! Specify the model's accuracy by selecting the number of grids in each period!

COEFFICIENT (INTEGER) NINTERVAL # Number of grids in each period #;
READ NINTERVAL FROM FILE DATA ;

SET (INTERTEMPORAL) ALLTIME MAXIMUM SIZE 41 ( P[0] - P[NINTERVAL]) ;
SET (INTERTEMPORAL) FWDTIME MAXIMUM SIZE 40 ( P[0] - P[NINTERVAL-1]) ;
SET (INTERTEMPORAL) ENDTIME SIZE 1 ( P[NINTERVAL]) ;
SUBSET fwdtime IS SUBSET OF alltime ;
SUBSET endtime IS SUBSET OF alltime ;

! SETS !
! Two sector model !

SET SEC # 2 sectors: M = market-led, S = state-led # (M,S) ;

! Behaviour parameters (ref. table A5.2 of DPPW for most of them !

COEFFICIENT (PARAMETER) RHO          # time discount coeff #;
COEFFICIENT (PARAMETER) R           # interest rate #;
COEFFICIENT (PARAMETER) DELTA        # depreciation rate #;
COEFFICIENT (PARAMETER) GAMMA        # coeff pref cons vs ED #;
COEFFICIENT (PARAMETER)(all,I,SEC) THETA(I) # sector's invt parameters #;
COEFFICIENT (PARAMETER)(all,I,SEC) EPSILON1(I) # exponent of reform coeff #;
COEFFICIENT (PARAMETER)(all,I,SEC) EPSILON2(I) # labor exponent #;
COEFFICIENT (PARAMETER)(all,I,SEC) EPSILON3(I) # capital stock exponent #;
COEFFICIENT (PARAMETER)(all,I,SEC) ALPHAC(I) # % private cons'n of goods #;
COEFFICIENT (PARAMETER)(all,I,SEC) ALPHAG(I) # % govt spending on goods #;
COEFFICIENT (PARAMETER)(all,I,SEC) ALPHAI(I) # % invt spending on goods I #;

!
Wage as function of ave wage and human capital:
W(i)= W1(I) + W_WAG(I)*W(I)+ W_EDU1(I)*HI(I)+W_EDU2(I)*HI(I)^2
!
COEFFICIENT (PARAMETER)              !# coeff wage funct #!
      (all,I,SEC) W1(I) ;
      (all,I,SEC) W_WAG(I) ;
      (all,I,SEC) W_EDU1(I);
      (all,I,SEC) W_EDU2(I);

! Human capital formation as funt'n of priv exp on educ & existg human capital:
DH= H1 + H_EXP1*CHI(i)+ H_EXP2*CHI(i)^2 + H_EDU1*HI(i)+ H_EDU2*HI(i)^2 !

```

```

COEFFICIENT (PARAMETER) H1                      # coeff in HC funct  #;
                        H_EXP1;
                        H_EXP2;
                        H_EDU1;
                        H_EDU2 ;

COEFFICIENT (PARAMETER) EMPL_DIF                #diff in value of being empld & unempld #;
COEFFICIENT (PARAMETER) LAYOUTS                %% remained empld after SOE's restrucutr #;

READ      RHO      FROM FILE DATA ;
READ      R        FROM FILE DATA ;
READ      DELTA    FROM FILE DATA ;
READ      GAMMA    FROM FILE DATA ;
READ (ALL,I,SEC) THETA(I) FROM FILE DATA ;
READ (ALL,I,SEC) EPSILON1(I) FROM FILE DATA ;
READ (ALL,I,SEC) EPSILON2(I) FROM FILE DATA ;
READ (ALL,I,SEC) EPSILON3(I) FROM FILE DATA ;
READ (ALL,I,SEC) ALPHAC(I) FROM FILE DATA ;
READ (ALL,I,SEC) ALPHAG(I) FROM FILE DATA ;
READ (ALL,I,SEC) ALPHAI(I) FROM FILE DATA ;

READ (ALL,I,SEC) W1(I)      FROM FILE DATA ;
READ (ALL,I,SEC) W_WAG(I)   FROM FILE DATA ;
READ (ALL,I,SEC) W_EDU1(I)  FROM FILE DATA ;
READ (ALL,I,SEC) W_EDU2(I)  FROM FILE DATA ;
READ      H1      FROM FILE DATA ;
READ      H_EXP1   FROM FILE DATA ;
READ      H_EXP2   FROM FILE DATA ;
READ      H_EDU1   FROM FILE DATA ;
READ      H_EDU2   FROM FILE DATA ;
READ      EMPL_DIF FROM FILE DATA ;
READ      LAYOUTS  FROM FILE DATA ;

! VARIABLES: Most are percentage changes But some are actual changes !

VARIABLE (all,I,SEC) (all,T,alltime) lambdak(I,T) %%_change mar val capital  #;
VARIABLE (all,I,SEC) (all,T,alltime) lambdas(I,T) %%_change mar val saving   #;
VARIABLE (all,I,SEC) (all,T,alltime) lambdah(I,T) %%_change mar val human capl #;

VARIABLE (all,I,SEC) (all,T,alltime) inv(I,T)      %%_change investment      #;
VARIABLE (all,I,SEC) (all,T,alltime) ki(I,T)       %%_change capital stock      #;

VARIABLE (all,T,alltime) totlab(T)                 %%_change total labor supply #;
VARIABLE (all,I,SEC) (all,T,alltime) lp(I,T)       %%_change lab empld in prod  #;
VARIABLE (all,I,SEC) (all,T,alltime) li(I,T)       %%_change labor for inv inst #;
VARIABLE (all,T,alltime) unempl(T)                 %%_change in unemployment   #;

VARIABLE (all,T,alltime) p(T)                      %%_change price val-ad prod  #;
VARIABLE (all,I,SEC) (all,T,alltime) x(I,T)        %%_change value added product#;

VARIABLE (all,I,SEC) (all,T,alltime) di(I,T)       %%_change in dividends      #;

VARIABLE (all,I,SEC) (all,T,alltime) wi(I,T)       %%_change in wage rate      #;
VARIABLE (all,I,SEC) (all,T,alltime) inw(I,T)      %%_change in worker's income #;
VARIABLE (all,I,SEC) (all,T,alltime) ci(I,T)       %%_change worker's consum'n #;
VARIABLE (all,I,SEC) (all,T,alltime) gs(I,T)       %%_change worker's saving   #;
VARIABLE (all,I,SEC) (all,T,alltime) ws(I,T)       %%_change in wkr's ph.wealth #;
VARIABLE (all,I,SEC) (all,T,alltime) chi(I,T)      %%_change wkr's exp for HCap #;
VARIABLE (all,I,SEC) (all,T,alltime) hi(I,T)       %%_change human capital     #;

VARIABLE (all,T,alltime) inc(T)                    %%_change capitalists' income#;
VARIABLE (all,T,alltime) ccc(T)                   %%_change capitalists' consn #;
VARIABLE (all,T,alltime) ccca(T)                  %%_change caps' ave consumpn #;

VARIABLE (all,T,alltime) in_av(T)                 %%_change average income    #;
VARIABLE (all,T,alltime) gini(T)                  %%_change inequality Gini   #;

VARIABLE (all,T,alltime) g(T)                    %%_change govt's spending   #;
VARIABLE (CHANGE) (all,T,alltime) tbal(T)         %%_change general balance   #;
VARIABLE (all,T,alltime) fdi(T)                  %%_change foreign investment #;

VARIABLE (CHANGE) (all,T,alltime) dtsg(T)         #Change in value-added tax #;
VARIABLE (CHANGE) (all,T,alltime) dti(T)          #Change in income tax      #;
VARIABLE (CHANGE) (all,T,alltime) dts(T)          #Change investment subsidy #;
VARIABLE (all,T,alltime) ls(T)                   %%_change in pub transfers   #;
VARIABLE (all,T,alltime) unemplpay(T)             %%_change in unempl payment #;

VARIABLE (all,I,SEC) (all,T,alltime) wix(I,T)     %%_change exog expd wage rate#;
VARIABLE (all,T,alltime) px(T)                   %%_change exog expd price   #;
VARIABLE (CHANGE) (all,T,alltime) dtix(T)         #Change exog expd income tax #;
VARIABLE (CHANGE) (all,T,alltime) dtsx(T)         #Change exog expd inv subsidy#;

VARIABLE (all,I,SEC) (all,T,alltime) wie(I,T)     %%_change act expd wage rate #;
VARIABLE (all,T,alltime) pe(T)                   %%_change act expd price    #;
VARIABLE (CHANGE) (all,T,alltime) dtie(T)         #Change act expd income tax #;

```



```

VARIABLE (CHANGE) (all,T,alltime) dtse(T) #Change act expd invt subsidy#;

VARIABLE (all,T,alltime) zeta(T) %%_change in price deflator #;
VARIABLE (all,I,SEC) (all,T,alltime) beta(I,T) %%_change earning of unit cap#;

VARIABLE (all,I,SEC) (all,T,alltime) a(I,T) %%_change in techn coeff #;
VARIABLE (all,T,alltime) reform(T) %%_change liberalisation coeff#;

! ASSOCIATING LEVEL VARIABLES & THEIR UPDATING !

COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) INV_L(I,T) # level sec investment #;
UPDATE (ALL,I,SEC) (ALL,T,ALLTIME) INV_L(I,T) = inv(I,T);

COEFFICIENT (GE 0) (ALL,I,SEC) (ALL,T,ALLTIME) K_L(I,T) # capital per sector #;
UPDATE (ALL,I,SEC) (ALL,T,ALLTIME) K_L(I,T) = ki(I,T);

COEFFICIENT (GE 0) (ALL,T,ALLTIME) TOTLAB_L(T) # level total labour #;
UPDATE (ALL,T,ALLTIME) TOTLAB_L(T) = totlab(T);

COEFFICIENT (GE 0) (ALL,I,SEC) (ALL,T,ALLTIME) LP_L(I,T) # employment per sec #;
UPDATE (ALL,I,SEC) (ALL,T,ALLTIME) LP_L(I,T) = lp(I,T);

COEFFICIENT (GE 0) (ALL,I,SEC) (ALL,T,ALLTIME) LI_L(I,T) # sec invt labour #;
UPDATE (ALL,I,SEC) (ALL,T,ALLTIME) LI_L(I,T) = li(I,T);

COEFFICIENT (GE 0) (ALL,T,ALLTIME) UNEMPL_L(T) # level unemployment #;
UPDATE (ALL,T,ALLTIME) UNEMPL_L(T) = unempl(T);

COEFFICIENT (GE 0) (ALL,T,ALLTIME) P_L(T) # level price for goods #;
UPDATE (ALL,T,ALLTIME) P_L(T) = p(T);

COEFFICIENT (GE 0) (ALL,I,SEC) (ALL,T,ALLTIME) X_L(I,T) # sectors' va product #;
UPDATE (ALL,I,SEC) (ALL,T,ALLTIME) X_L(I,T) = x(I,T);

COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) DI_L(I,T) # level dividend per sector #;
UPDATE (ALL,I,SEC) (ALL,T,ALLTIME) DI_L(I,T) = di(I,T);

COEFFICIENT (GE 0) (ALL,I,SEC) (ALL,T,ALLTIME) WI_L(I,T) # level wage rate #;
UPDATE (ALL,I,SEC) (ALL,T,ALLTIME) WI_L(I,T) = wi(I,T);

COEFFICIENT (GE 0) (all,I,SEC) (all,T,alltime) INW_L(I,T) # worker's income #;
UPDATE (ALL,I,SEC) (ALL,T,ALLTIME) INW_L(I,T) = inw(I,T);

COEFFICIENT (GE 0) (ALL,I,SEC) (ALL,T,ALLTIME) CI_L(I,T) # tot priv consum'n #;
UPDATE (ALL,I,SEC) (ALL,T,ALLTIME) CI_L(I,T) = ci(I,T);

COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) GS_L(I,T) # level worker's saving #;
UPDATE (ALL,I,SEC) (ALL,T,ALLTIME) GS_L(I,T) = gs(I,T);

COEFFICIENT (GE 0) (ALL,I,SEC) (ALL,T,ALLTIME) WS_L(I,T) # worker's wealth #;
UPDATE (ALL,I,SEC) (ALL,T,ALLTIME) WS_L(I,T) = ws(I,T);

COEFFICIENT (GE 0) (ALL,I,SEC) (ALL,T,ALLTIME) CHI_L(I,T) # exp for HC format #;
UPDATE (ALL,I,SEC) (ALL,T,ALLTIME) CHI_L(I,T) = chi(I,T);

COEFFICIENT (GE 0) (all,i,SEC) (ALL,T,ALLTIME) HI_L(I,T) # human capital #;
UPDATE (all,i,SEC) (ALL,T,ALLTIME) HI_L(I,T) = hi(I,T);

COEFFICIENT (all,T,alltime) INC_L(T) # capitalist's income #;
UPDATE (ALL,T,ALLTIME) INC_L(T) = inc(T);

COEFFICIENT (all,T,alltime) CCC_L(T) # capitalists' consumptions #;
UPDATE (ALL,T,ALLTIME) CCC_L(T) = ccc(T);

COEFFICIENT (ALL,T,ALLTIME) G_L(T) # level tot gov consump'n #;
UPDATE (ALL,T,ALLTIME) G_L(T) = g(T);

COEFFICIENT (ALL,T,ALLTIME) TBAL_L(T) # level general balance #;
UPDATE (CHANGE) (ALL,T,ALLTIME) TBAL_L(T) = tbal(t);

COEFFICIENT (ALL,T,ALLTIME) FDI_L(T) # level general balance #;
UPDATE (ALL,T,ALLTIME) FDI_L(T) = fdi(t);

COEFFICIENT (ALL,T,ALLTIME) TSG_L(t) # level of value-added tax #;
UPDATE (CHANGE) (ALL,T,ALLTIME) TSG_L(t) = dtsg(t);

COEFFICIENT (ALL,T,ALLTIME) TI_L(T) # level of income tax #;
UPDATE (CHANGE) (ALL,T,ALLTIME) TI_L(T) = dti(t);

COEFFICIENT (ALL,T,ALLTIME) TS_L(T) # level of invt subsidy #;
UPDATE (CHANGE) (ALL,T,ALLTIME) TS_L(T) = dts(T);

COEFFICIENT (ALL,T,ALLTIME) LS_L(T) # level of pub transfers #;
UPDATE (ALL,T,ALLTIME) LS_L(T) = ls(T);

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COEFFICIENT      (ALL,T,ALLTIME) UNEMPLPAY_L(T) # level unempl payment #;
UPDATE           (ALL,T,ALLTIME) UNEMPLPAY_L(T) = unemplpay(T) ;

COEFFICIENT      (ALL,T,ALLTIME) TIX_L(T)      #level exog expd income tax#;
UPDATE (CHANGE)  (ALL,T,ALLTIME) TIX_L(T) = dtix(t) ;

COEFFICIENT      (ALL,T,ALLTIME) TSX_L(T)      #level ex expd inv subsidy #;
UPDATE (CHANGE)  (ALL,T,ALLTIME) TSX_L(T) = dtsx(T) ;

COEFFICIENT      (ALL,T,ALLTIME) TIE_L(T)      #level act exp income tax #;
UPDATE (CHANGE)  (ALL,T,ALLTIME) TIE_L(T) = dtie(t) ;

COEFFICIENT      (ALL,T,ALLTIME) TSE_L(T)      #level act exp invt subsidy#;
UPDATE (CHANGE)  (ALL,T,ALLTIME) TSE_L(T) = dtse(T) ;

COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) WIE_L(I,T) #level act exp wage rate #;
UPDATE       (ALL,I,SEC) (ALL,T,ALLTIME) WIE_L(I,T) = wie(i,t) ;

COEFFICIENT (GE 0) (ALL,I,SEC) (ALL,T,ALLTIME) A_L(I,T) #level act exp wage rate #;
UPDATE       (ALL,I,SEC) (ALL,T,ALLTIME) A_L(I,T) = a(I,T) ;

COEFFICIENT (GE 0) (ALL,T,ALLTIME) REFORM_L(T) #level act exp wage rate #;
UPDATE       (ALL,T,ALLTIME) REFORM_L(T) = reform(T) ;

READ (ALL,I,SEC) (ALL,T,ALLTIME) INV_L(I,T)      FROM FILE DATA ;
READ (ALL,I,SEC) (ALL,T,ALLTIME) K_L(I,T)        FROM FILE DATA ;

READ      (ALL,T,ALLTIME) TOTLAB_L(T)            FROM FILE DATA ;
READ (ALL,I,SEC) (ALL,T,ALLTIME) LP_L(I,T)        FROM FILE DATA ;
READ (ALL,I,SEC) (ALL,T,ALLTIME) LI_L(I,T)        FROM FILE DATA ;
READ      (ALL,T,ALLTIME) UNEMPL_L(T)            FROM FILE DATA ;

READ      (ALL,T,ALLTIME) P_L(T)                  FROM FILE DATA ;
READ (ALL,I,SEC) (ALL,T,ALLTIME) X_L(I,T)        FROM FILE DATA ;

READ (ALL,I,SEC) (ALL,T,ALLTIME) DI_L(I,T)        FROM FILE DATA ;
READ (ALL,I,SEC) (ALL,T,ALLTIME) WI_L(I,T)        FROM FILE DATA ;
READ (ALL,I,SEC) (ALL,T,ALLTIME) INW_L(I,T)        FROM FILE DATA ;
READ (ALL,I,SEC) (ALL,T,ALLTIME) CI_L(I,T)        FROM FILE DATA ;
READ (ALL,I,SEC) (ALL,T,ALLTIME) GS_L(I,T)        FROM FILE DATA ;
READ (ALL,I,SEC) (ALL,T,ALLTIME) WS_L(I,T)        FROM FILE DATA ;
READ (ALL,I,SEC) (ALL,T,ALLTIME) CHI_L(I,T)       FROM FILE DATA ;

READ (ALL,I,SEC) (ALL,T,ALLTIME) HI_L(I,T)        FROM FILE DATA ;
READ      (ALL,T,ALLTIME) INC_L(T)                FROM FILE DATA ;
READ      (ALL,T,ALLTIME) CCC_L(T)                FROM FILE DATA ;

READ      (ALL,T,ALLTIME) G_L(T)                  FROM FILE DATA ;
READ      (ALL,T,ALLTIME) TBAL_L(T)               FROM FILE DATA ;
READ      (ALL,T,ALLTIME) FDI_L(T)                FROM FILE DATA ;
READ      (ALL,T,ALLTIME) TSG_L(T)                FROM FILE DATA ;
READ      (ALL,T,ALLTIME) TI_L(T)                 FROM FILE DATA ;
READ      (ALL,T,ALLTIME) TS_L(T)                 FROM FILE DATA ;
READ      (ALL,T,ALLTIME) LS_L(T)                 FROM FILE DATA ;
READ      (ALL,T,ALLTIME) UNEMPLPAY_L(T)          FROM FILE DATA ;
READ      (ALL,T,ALLTIME) TIX_L(T)                FROM FILE DATA ;
READ      (ALL,T,ALLTIME) TSX_L(T)                FROM FILE DATA ;
READ      (ALL,T,ALLTIME) TIE_L(T)                FROM FILE DATA ;
READ      (ALL,T,ALLTIME) TSE_L(T)                FROM FILE DATA ;
READ (ALL,I,SEC) (ALL,T,ALLTIME) WIE_L(I,T)        FROM FILE DATA ;
READ (ALL,I,SEC) (ALL,T,ALLTIME) A_L(I,T)          FROM FILE DATA ;
READ      (ALL,T,ALLTIME) REFORM_L(T)             FROM FILE DATA ;

COEFFICIENT (all,i,SEC) (ALL,T,ALLTIME) LAMBDAL_L(i,T) #lev mar val of capital #;
FORMULA ! Use DPPW equations (5.1.8) and (5.1.13) ! (ALL,I,SEC) (ALL,T,ALLTIME)
LAMBDAL_L(I,T)=[2*WIE_L(i,t)*THETA(I)*INV_L(I,T)+P_L(T)]*
[(1-TIE_L(T))*(1-TSE_L(T))] ;
DISPLAY LAMBDAL_L ;

COEFFICIENT (all,i,SEC) (ALL,T,ALLTIME) LAMBDAS_L(I,T) #lev mar val of pr saving#;
FORMULA      (ALL,I,SEC) (ALL,T,ALLTIME)
LAMBDAS_L(I,T)= GAMMA /CI_L(I,T) ;
DISPLAY LAMBDAS_L ;

! Turning off human capital accumulation !

ZERODIVIDE (NONZERO_BY_ZERO) DEFAULT 1.0 ;
COEFFICIENT (all,i,SEC) (ALL,T,ALLTIME) LAMBDALH_L(i,T) # marg val human capital #;
FORMULA      (ALL,I,SEC) (ALL,T,ALLTIME)
LAMBDALH_L(I,T)= LAMBDAS_L(I,T)/[H_EXP1+2*H_EXP2*CHI_L(I,T)] ;
DISPLAY LAMBDALH_L ;
ZERODIVIDE      (NONZERO_BY_ZERO) OFF ;

! Convenient abbreviations - used in the linearised equations !

COEFFICIENT      (ALL,T,ALLTIME) TTI(T)      # abbr DOE income tax calc'n #;

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FORMULA (ALL,T,ALLTIME) TTI(T) = 100.0/(1-TI_L(T));

COEFFICIENT (ALL,T,ALLTIME) TTS(T) # abbr for inv subsidy calc'n #;
FORMULA (ALL,T,ALLTIME) TTS(T) = 100.0/(1-TS_L(T)) ;

COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) TSG(i,T) # abbr for sale tax calc'n #;
FORMULA (ALL,I,SEC) (ALL,T,ALLTIME) TSG(i,T) = 100.0/(1+TSG_L(t)) ;

! EQUATIONS HOLDING IN ALL PERIODS !
! These are linearised versions of the equations in Appendix A5.2 !

! PRODUCTION SECTORS !
! Growth of technical progress = growth of wage rate due to human capital !
COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) S1_TECH_HC(I,T) # Share of h in wage #;
FORMULA (ALL,I,SEC) (ALL,T,ALLTIME)
  S1_TECH_HC(I,T) = 2*W_EDU2(I)*HI_L(I,T)/[W_EDU1(I)+2*W_EDU2(I)*HI_L(I,T)];

EQUATION TECH_HCAP (all,I,SEC) (all,T,alltime)
  a(I,T)=S1_TECH_HC(I,T)*hi(I,T) ;

EQUATION PROFIT ! linearisation of (5.1.7) ! (all,I,SEC) (all,T,alltime)
  beta(I,T)=[1/(1-EPSILON2(I))]*[a(I,T)+pe(T)-wie(I,T)-TSG(I,T)*dtsg(T)]+
    [EPSILON1(I)/(1-EPSILON2(I))]*reform(T)+ wie(I,T) ;

EQUATION VALUE ADDED ! linearisation of (5.1.9) ! (all,I,SEC) (all,t,alltime)
  x(I,T)=a(I,T)+EPSILON1(I)*reform(T)+EPSILON2(I)*lp(I,T)+ EPSILON3(I)*ki(I,T);

! Investment !

COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) S0_INV_K(I,T) ;
COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) S1_INV_K(I,T) ;
FORMULA (ALL,I,SEC) (ALL,T,ALLTIME)
  S0_INV_K(I,T) = [LAMBDAK_L(I,T)/{(1-TIE_L(T))*(1-TSE_L(T))}] ;
FORMULA (ALL,I,SEC) (ALL,T,ALLTIME)
  S1_INV_K(I,T) = S0_INV_K(I,T)/[S0_INV_K(I,T) - P_L(T)] ;

EQUATION INVESTMENT ! linearisation of (5.1.8) and 5.1.13 !
  (ALL,I,SEC) (ALL,T,ALLTIME)
  inv(I,T) + wie(I,T) = S1_INV_K(I,T)*[lambdak(I,T)+TTI(T)*dtie(T)+
    TTS(T)*dtse(T)] + [1-S1_INV_K(I,T)]*pe(T) ;

! Labour demand !

EQUATION LABOR_PROD ! linearisation of (5.1.10) ! (all,I,SEC) (all,t,alltime)
  lp(I,T) = [1/(1-EPSILON2(I))]*[a(I,T)+p(t)-wi(I,T)-TSG(I,T)*dtsg(T)]+
    [EPSILON1(I)/(1-EPSILON2(I))]*reform(T)+
    [EPSILON3(I)/(1-EPSILON2(I))]*ki(I,T) ;

EQUATION LABOR_INVNT ! linearisation of (5.1.11) ! (all,I,SEC) (all,t,alltime)
  li(I,T) = 2 * inv(I,T) ;

! Share of production employment in the total employment per sector !

COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) S_EMPL(I,T) #Share empl in sectors #;
FORMULA (ALL,I,SEC) (ALL,T,ALLTIME)
  S_EMPL(I,T) = LP_L(I,T)/[LP_L(I,T)+LI_L(I,T)] ;

! Dividends after value-added tax !
! Non-state sector's dividends=VA product-wage bills-investment-invt costs +
+invt subsidies + FDI + private savings - saving interests !

COEFFICIENT (ALL,T,ALLTIME) S1_DIVIDENT(T) # Total dividends #;
COEFFICIENT (ALL,T,ALLTIME) S2_DIVIDENT(T) # Total dividends #;
COEFFICIENT (ALL,T,ALLTIME) S3_DIVIDENT(T) # Total dividends #;
COEFFICIENT (ALL,T,ALLTIME) S4_DIVIDENT(T) # Total dividends #;
COEFFICIENT (ALL,T,ALLTIME) S5_DIVIDENT(T) # Total dividends #;
COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) S6_DIVIDENT(I,T) # Total dividends #;
COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) S7_DIVIDENT(I,T) # Total dividends #;
FORMULA (ALL,T,ALLTIME)
  S1_DIVIDENT(T)= (1-TSG_L(T))*P_L(T)*X_L("M",T)/DI_L("M",T) ;
FORMULA (ALL,T,ALLTIME)
  S2_DIVIDENT(T)= WI_L("M",T)*LP_L("M",T)/DI_L("M",T) ;
FORMULA (ALL,T,ALLTIME)
  S3_DIVIDENT(T)= P_L(T)*INV_L("M",T)*(1-TS_L(T))/DI_L("M",T) ;
FORMULA (ALL,T,ALLTIME)
  S4_DIVIDENT(T)= WI_L("M",T)*LI_L("M",T)*(1-TS_L(T))/DI_L("M",T) ;
FORMULA (ALL,T,ALLTIME)
  S5_DIVIDENT(T)= FDI_L(T)/DI_L("M",T) ;
FORMULA (ALL,I,SEC) (ALL,T,ALLTIME)
  S6_DIVIDENT(I,T)= GS_L(I,T)*[LP_L(I,T)+LI_L(I,T)]/DI_L("M",T) ;
FORMULA (ALL,I,SEC) (ALL,T,ALLTIME)
  S7_DIVIDENT(I,T)= R*WS_L(I,T)*[LP_L(I,T)+LI_L(I,T)]/DI_L("M",T) ;

EQUATION DIVIDENT_M ! linearisation of (5.1.12) ! (all,t,alltime)
  di("M",T)=S1_DIVIDENT(T)*[p(T)+x("M",T)-TSG("M",T)*dtsg(T)] -
    S2_DIVIDENT(T)*[wi("M",T)+lp("M",T)] -

```

```

S3_DIVIDENT(T)*[p(T)+inv("M",T)- TTS(T)*dts(T)]-
S4_DIVIDENT(T)*[wi("M",T)+li("M",T) - TTS(T)*dts(T)] +
S5_DIVIDENT(T)*fdi(T) +
SUM(I,SEC,S6_DIVIDENT(I,T)*[gs(I,T)+S_EMPL(I,T)*lp(I,T)+
(1-S_EMPL(I,T))*li(I,T)]]-
SUM(I,SEC,S7_DIVIDENT(I,T)*[ws(I,T) +
S_EMPL(I,T)*lp(I,T)+(1-S_EMPL(I,T))*li(I,T)]];

```

! State sector's dividends=VA product-wage bills-investment-invt costs +
+invt subsidies !

EQUATION DIVIDENTS ! linearisation of (5.1.12) ! (all,t,alltime)

```

DI_L("S",T)* di("S",T) =
(1-TSG_L(T))*P_L(T)*X_L("S",T)*[p(T)+x("S",T)-TSG("S",T)*dts(T)] -
WI_L("S",T)*LP_L("S",T)*[wi("S",T)+lp("S",T)] -
P_L(T)*INV_L("S",T)*(1-TS_L(T))*[p(T)+inv("S",T)- TTS(T)*dts(T)] -
WI_L("S",T)*LI_L("S",T)*(1-TS_L(T))*[wi("S",T)+li("S",T)- TTS(T)*dts(T)] ;

```

! LABOUR MARKET !

! State-led sector's wage rate set by the Govt !

```

COEFFICIENT      (all,t,alltime) S10_WAGE_S(T) # Shares in denominator #;
                  (all,t,alltime) S11_WAGE_S(T) ;
                  (all,t,alltime) S12_WAGE_S(T) ;

```

```

FORMULA          (all,t,alltime)
S10_WAGE_S(T) = UNEMPL_L(T)+TOTLAB_L(T)+LAYOUTS*(LP_L("S",T)+LI_L("S",T)) ;
FORMULA          (all,t,alltime)
S11_WAGE_S(T) = UNEMPL_L(T)/S10_WAGE_S(T) ;
FORMULA          (all,t,alltime)
S12_WAGE_S(T) = TOTLAB_L(T)/S10_WAGE_S(T) ;

```

```

COEFFICIENT      (all,T,alltime) S0_WAGE_S(T) # Unempl eqm SOE wage rate#;
FORMULA          (all,T,alltime)

```

```

S0_WAGE_S(T) = 1-LAYOUTS+LAYOUTS*UNEMPLPAY_L(T)+
LAYOUTS*EMPL_DIF*(LP_L("M",T)+LI_L("M",T))/S10_WAGE_S(T) ;

```

EQUATION STATE_WAGE ! linearisation ! (all,t,alltime)

```

S0_WAGE_S(T)*wi("S",T) = wi("M",T)+
LAYOUTS*UNEMPLPAY_L(T)*unemplpay(T)+
LAYOUTS*EMPL_DIF*[S_EMPL("M",T)*lp("M",T)+(1-S_EMPL("M",T))*li("M",T)] -
[S11_WAGE_S(T)*unempl(T)+S12_WAGE_S(T)*totlab(T)+(1-S11_WAGE_S(T)-
S12_WAGE_S(T))*LAYOUTS*(S_EMPL("S",T)*lp("S",T)+
(1-S_EMPL("S",T))*li("S",T))];

```

! Labour market equilibrium !

EQUATION LAB_EQ ! linearisation of (5.1.20) ! (all,t,alltime)

```

TOTLAB_L(T)*totlab(t) = SUM(I,SEC,LP_L(I,T)*lp(I,T))+
SUM(I,SEC,LI_L(I,T)*li(I,T))+ UNEMPL_L(T)*unempl(T);

```

! PUBLIC CONSUMPTION !

EQUATION GOV_SPEND ! linearisation of (5.1.23) ! (all,t,alltime)

```

G_L(T)*g(t) = SUM(I,SEC, TSG_L(T)*P_L(T)*X_L(I,T)*[p(T)+x(I,T)]+
SUM(I,SEC, P_L(T)*X_L(I,T)*100.0*dts(T))+
SUM(I,SEC, TI_L(T)*DI_L(I,T)*di(I,T))+
SUM(I,SEC, DI_L(I,T)*100.0*dti(T)) +
DI_L("S",T)*di("S",T)+
SUM(I,SEC, TI_L(T)*WI_L(I,T)*[LP_L(I,T)+LI_L(I,T)]*
[wi(I,T)+S_EMPL(I,T)*lp(I,T)+(1-S_EMPL(I,T))*li(I,T)]+
SUM(I,SEC, WI_L(I,T)*[LP_L(I,T)+LI_L(I,T)]*100.0*dti(T)) +
100*tbal(T)-
SUM(I,SEC, TS_L(T)*P_L(T)*INV_L(I,T)*[p(T)+inv(I,T)]-
SUM(I,SEC, TS_L(T)*WI_L(I,T)*THETA(I)*INV_L(I,T)^2*[wi(I,T)+2*inv(I,T)]-
SUM(I,SEC, [P_L(T)*INV_L(I,T)+WI_L(I,T)*THETA(I)*INV_L(I,T)^2]*100.0*dts(T))-
SUM(I,SEC, WI_L("M",T)*LS_L(T)*LP_L(I,T)*[wi("M",T)+ls(T)+lp(I,T)]-
SUM(I,SEC, WI_L("M",T)*LS_L(T)*LI_L(I,T)*[wi("M",T)+ls(T)+li(I,T)]-
WI_L("M",T)*UNEMPLPAY_L(T)*UNEMPL_L(T)*[wi("M",T)+unemplpay(T)+unempl(T)]);

```

! PRIVATE CONSUMPTION AND WELFARE !

! WORKERS !

! Workers' disposal income as the sum of the total wage funds
and public transfers net income tax !

EQUATION INCOME_W ! linearisation of (5.1.22) ! (ALL,I,SEC)(all,t,alltime)

```

INW_L(I,T)*inw(I,T) = (1-TI_L(T))*WI_L(I,T)*[wi(I,T) - TTI(T)*dti(t)] +
(1-TI_L(T))*R*WS_L(I,T)*[ws(I,T) - TTI(T)*dti(t)] +
LS_L(T)*WI_L("M",T)*[ls(T)+wi("M",T)] ;

```

! Worker's consumption !

EQUATION CONS_W ! linearisation ! (ALL,I,SEC)(ALL,T,ALLTIME)

```

ci(I,T) = -lambdas(I,T) ;

```

```

! Worker's investment in human capital !

EQUATION INV_HD_W ! linearisation ! (ALL,I,SEC) (ALL,T,ALLTIME)
  chi(I,T) = lambdas(I,T) - lambdah(I,T);

! Worker's saving !

EQUATION SAVING_W (ALL,I,SEC) (ALL,T,ALLTIME)
  GS_L(I,T)*gs(I,T)=INW_L(I,T)*inw(I,T)-CI_L(I,T)*ci(I,T)-CHI_L(I,T)*chi(I,T) ;

! Capitalist's after-income-tax income =
  market-led sector's dividends - income tax. No public transfers !

EQUATION INCOME_C (ALL,T,ALLTIME)
  inc(T) = [di("M",T)-TTI(T)*dti(T)];

! Capitalists' consumption !

EQUATION CONS_C ! linearisation ! (ALL,T,ALLTIME)
  ccc(T) = inc(T) ;

! Good market equilibrium !

COEFFICIENT (ALL,T,ALLTIME) S0_CONS_PR(T) # tot private consump #;
              (ALL,I,SEC) (ALL,T,ALLTIME) S1_CONS_PR(I,T) # % in tot priv consp #;
              (ALL,T,ALLTIME) S2_CONS_PR(T) # % in tot priv consp #;
              (ALL,T,ALLTIME) S3_CONS_PR(T) # % in tot priv consp #;
FORMULA (ALL,T,ALLTIME)
  S0_CONS_PR(T)=SUM(I,SEC,CI_L(I,T)*[LP_L(I,T)+LI_L(I,T)])+
              CCC_L(T) + WI_L("M",T)*UNEMPLPAY_L(T)*UNEMPL_L(T) ;
FORMULA (ALL,I,SEC) (ALL,T,ALLTIME)
  S1_CONS_PR(I,T) = CI_L(I,T)*[LP_L(I,T)+LI_L(I,T)]/S0_CONS_PR(T) ;
FORMULA (ALL,T,ALLTIME)
  S2_CONS_PR(T) = CCC_L(T)/S0_CONS_PR(T) ;
FORMULA (ALL,T,ALLTIME)
  S3_CONS_PR(T) = WI_L("M",T)*UNEMPLPAY_L(T)*UNEMPL_L(T)/S0_CONS_PR(T) ;

COEFFICIENT (ALL,T,ALLTIME) S0_CONS_INV(T) # total investment #;
COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) S1_CONS_INV(I,T) # % in tot investment #;
COEFFICIENT (ALL,T,ALLTIME) S2_CONS_INV(T) # % in tot investment #;
FORMULA (ALL,T,ALLTIME)
  S0_CONS_INV(T) = SUM(I,SEC,INV_L(I,T)) - FDI_L(T) ;
FORMULA (ALL,I,SEC) (ALL,T,ALLTIME)
  S1_CONS_INV(I,T)= INV_L(I,T)/S0_CONS_INV(T) ;
FORMULA (ALL,T,ALLTIME)
  S2_CONS_INV(T)= FDI_L(T)/S0_CONS_INV(T) ;

COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) S0_CNS_GOOD(I,T) #tot val-added I used #;
COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) S1_CNS_GOOD(I,T) #%good I in pri consum#;
COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) S2_CNS_GOOD(I,T) #%good I in gov consum#;
FORMULA (ALL,I,SEC) (ALL,T,ALLTIME)
  S0_CNS_GOOD(I,T)= ALPHAC(I)*S0_CONS_PR(T) + ALPHAG(I)*G_L(T) +
                  ALPHAI(I)*S0_CONS_INV(T) ;
FORMULA (ALL,I,SEC) (ALL,T,ALLTIME)
  S1_CNS_GOOD(I,T)=ALPHAC(I)*S0_CONS_PR(T)/S0_CNS_GOOD(I,T);
FORMULA (ALL,I,SEC) (ALL,T,ALLTIME)
  S2_CNS_GOOD(I,T)=ALPHAG(I)*G_L(T)/S0_CNS_GOOD(I,T);

EQUATION EQUIL_GOODS ! linearisation of (5.1.24)! (ALL,I,SEC) (all,T,alltime)
  TSG(I,T)*dtsg(T)+p(T)+ x(I,T)=
  S1_CNS_GOOD(I,T)*[S1_CONS_PR("M",T)*(inw("M",T)+S_EMPL("M",T)*lp("M",T)+
  (1-S_EMPL("M",T))*li("M",T))+S1_CONS_PR("S",T)*(inw("S",T)+S_EMPL("S",T)*
  lp("S",T)+(1-S_EMPL("S",T))*li("S",T))+
  S2_CONS_PR(T)*ccc(T)+S3_CONS_PR(T)*(wi("M",T)+unemplpay(T)+unempl(T))]+
  S2_CNS_GOOD(I,T)*g(T) +
  [1-S1_CNS_GOOD(I,T)-S2_CNS_GOOD(I,T)]*[S1_CONS_INV("M",T)*inv("M",T)+
  S1_CONS_INV("S",T)*inv("S",T)-S2_CONS_INV(T)*fdi(T)] ;

! Capital market equilibrium
No need for implicit equations due to Walras's law !

! Aggregated welfare indicators !

! Average income !

COEFFICIENT (ALL,T,ALLTIME) IN_TOT_L(T) # tot income #;
COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) S1_INCOME_A(I,T) # sec % in tot income #;
COEFFICIENT (ALL,T,ALLTIME) S2_INCOME_A(T) # sec % in tot income #;
COEFFICIENT (ALL,T,ALLTIME) S3_INCOME_A(T) # sec % in tot income #;
FORMULA (ALL,T,ALLTIME)
  IN_TOT_L(T) = SUM(I,SEC,INW_L(I,T)*(LP_L(I,T)+LI_L(I,T)))+
              CCC_L(T)+UNEMPL_L(T)*WI_L("M",T)*UNEMPLPAY_L(T) ;
FORMULA (ALL,I,SEC) (ALL,T,ALLTIME)
  S1_INCOME_A(I,T)= INW_L(I,T)*(LP_L(I,T)+LI_L(I,T))/IN_TOT_L(T);

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FORMULA (ALL,T,ALLTIME)
S2_INCOME_A(T)= CCC_L(T) / IN_TOT_L(T) ;
FORMULA (ALL,T,ALLTIME)
S3_INCOME_A(T)= UNEMPL_L(T)*WI_L("M",T)*UNEMPLPAY_L(T) / IN_TOT_L(T) ;

EQUATION INCOME_AV ! linearisation of (5.1.24) ! (all,T,alltime)
in_av(T) = SUM(I,SEC,S1_INCOME_A(I,T)*inw(I,T)+S_EMPL(I,T)*lp(I,T)+
(1-S_EMPL(I,T))*li(I,T))+
S2_INCOME_A(T)*ccc(T)+
S3_INCOME_A(T)*[unempl(T)+wi("M",T)+unemplpay(T)] ;

! GINI: Income inequality !

ZERODIVIDE (NONZERO_BY_ZERO) DEFAULT 0.0 ;
COEFFICIENT (ALL,T,ALLTIME) CCCA_L(T) #Capt's ave consumption#;
FORMULA (ALL,T,ALLTIME)
CCCA_L(T)=CCC_L(T)/([LP_L("M",T)+LI_L("M",T)]*0.05) ;

EQUATION INCOMEC_AV (all,T,alltime)
ccca(T) = ccc(T) - [S_EMPL("M",T)*lp("M",T)+(1-S_EMPL("M",T))*li("M",T)] ;

COEFFICIENT (ALL,T,ALLTIME) S0_GINI(T) # tot GINI #;
COEFFICIENT (ALL,T,ALLTIME) S1_GINI(T) # % in tot GINI #;
COEFFICIENT (ALL,T,ALLTIME) S2_GINI(T) # % in tot GINI #;
COEFFICIENT (ALL,T,ALLTIME) S3_GINI(T) # % in tot GINI #;
COEFFICIENT (ALL,T,ALLTIME) S4_GINI(T) # % in tot GINI #;
COEFFICIENT (ALL,T,ALLTIME) S5_GINI(T) # % in tot GINI #;
COEFFICIENT (ALL,T,ALLTIME) S6_GINI(T) # % in tot GINI #;

FORMULA (ALL,T,ALLTIME)
S0_GINI(T)=(INW_L("M",T)-INW_L("S",T))^2*S1_INCOME_A("M",T)*
S1_INCOME_A("S",T)+
(INW_L("M",T)-CCCA_L(T))*S1_INCOME_A("M",T)^2*S2_INCOME_A(T)+
(INW_L("M",T)-WI_L("M",T)*UNEMPLPAY_L(T))*S1_INCOME_A("M",T)*
S3_INCOME_A(T)+
(INW_L("S",T)-CCCA_L(T))*S1_INCOME_A("S",T)^2*S2_INCOME_A(T)+
(INW_L("S",T)-WI_L("M",T)*UNEMPLPAY_L(T))*S1_INCOME_A("S",T)*
S3_INCOME_A(T)+
(CCCA_L(T)-WI_L("M",T)*UNEMPLPAY_L(T))^2*S2_INCOME_A(T)*S3_INCOME_A(T) ;
FORMULA (ALL,T,ALLTIME)
S1_GINI(T)=(INW_L("M",T)-INW_L("S",T))^2*S1_INCOME_A("M",T)*
S1_INCOME_A("S",T)/S0_GINI(T);
FORMULA (ALL,T,ALLTIME)
S2_GINI(T)=(INW_L("M",T)-CCCA_L(T))^2*S1_INCOME_A("M",T)*S2_INCOME_A(T)/
S0_GINI(T);
FORMULA (ALL,T,ALLTIME)
S3_GINI(T)=(INW_L("M",T)-WI_L("M",T)*UNEMPLPAY_L(T))*S1_INCOME_A("M",T)*
S3_INCOME_A(T)/S0_GINI(T);
FORMULA (ALL,T,ALLTIME)
S4_GINI(T)=(INW_L("S",T)-CCCA_L(T))^2*S1_INCOME_A("S",T)*S2_INCOME_A(T)/
S0_GINI(T);
FORMULA (ALL,T,ALLTIME)
S5_GINI(T)=(INW_L("S",T)-WI_L("M",T)*UNEMPLPAY_L(T))*S1_INCOME_A("S",T)*
S3_INCOME_A(T)/S0_GINI(T);
FORMULA (ALL,T,ALLTIME)
S6_GINI(T)=(CCCA_L(T)-WI_L("M",T)*UNEMPLPAY_L(T))^2*S2_INCOME_A(T)*
S3_INCOME_A(T) / S0_GINI(T);

COEFFICIENT (ALL,T,ALLTIME) S01_GINI(T) # % in income diff #;
COEFFICIENT (ALL,T,ALLTIME) S02_GINI(T) ;
COEFFICIENT (ALL,T,ALLTIME) S03_GINI(T) ;
COEFFICIENT (ALL,T,ALLTIME) S04_GINI(T) ;
COEFFICIENT (ALL,T,ALLTIME) S05_GINI(T) ;
COEFFICIENT (ALL,T,ALLTIME) S06_GINI(T) ;
FORMULA (ALL,T,ALLTIME)
S01_GINI(T)=INW_L("M",T)/[INW_L("M",T)-INW_L("S",T)] ;
FORMULA (ALL,T,ALLTIME)
S02_GINI(T)=INW_L("M",T)/[INW_L("M",T)-CCCA_L(T)] ;
FORMULA (ALL,T,ALLTIME)
S03_GINI(T)=INW_L("M",T)/[INW_L("M",T)-WI_L("M",T)*UNEMPLPAY_L(T)] ;
FORMULA (ALL,T,ALLTIME)
S04_GINI(T)=INW_L("S",T)/[INW_L("S",T)-CCCA_L(T)] ;
FORMULA (ALL,T,ALLTIME)
S05_GINI(T)=INW_L("S",T)/[INW_L("S",T)-WI_L("M",T)*UNEMPLPAY_L(T)] ;
FORMULA (ALL,T,ALLTIME)
S06_GINI(T)=CCCA_L(T)/[CCCA_L(T)-WI_L("M",T)*UNEMPLPAY_L(T)] ;

EQUATION INCOME_GINI (all,T,alltime)
gini(T)= S1_GINI(T)*2*(S01_GINI(T)*inw("M",T)+(1-S01_GINI(T))*inw("S",T))+
S2_GINI(T)*2*(S02_GINI(T)*inw("M",T)+(1-S02_GINI(T))*ccca(T))+
S3_GINI(T)*2*(S03_GINI(T)*inw("M",T)+(1-S03_GINI(T))*
(wi("M",T)+unemplpay(T)))+
S4_GINI(T)*2*(S04_GINI(T)*inw("S",T)+(1-S04_GINI(T))*ccca(T))+
S5_GINI(T)*2*(S05_GINI(T)*inw("S",T)+(1-S05_GINI(T))*
(wi("M",T)+unemplpay(T)))+
S6_GINI(T)*2*(S06_GINI(T)*ccca(T)+(1-S06_GINI(T))*

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(wi("M",T)+unemplpay(T))) ;
ZERODIVIDE      (NONZERO_BY_ZERO) OFF ;

! Price deflator !

COEFFICIENT (ALL,I,SEC) (ALL,T,ALLTIME) S1_PRICE(I,T) ;
COEFFICIENT      (ALL,T,ALLTIME) S2_PRICE(T) ;
FORMULA (ALL,I,SEC) (ALL,T,ALLTIME)
  S1_PRICE(I,T) = X_L(I,T)*P_L(T)*(1+TSG_L(T))/(CI_L(I,T)+CCC_L(T)+G_L(T)) ;
FORMULA      (ALL,T,ALLTIME)
  S2_PRICE(T) = CCC_L(T)/[SUM(I,SEC,CI_L(I,T))+CCC_L(T)+G_L(T)] ;
EQUATION PRICE_DEFLATOR ! linearisation of (5.1.25) ! (all,t,alltime)
  zeta(t) = SUM(I,SEC,S1_PRICE(I,T)*[p(T)+TSG(I,T)*dtsg(T)]+
    S2_PRICE(T)*ccc(T) + [1-SUM(I,SEC,S1_PRICE(I,T))-S2_PRICE(T)]*g(T);

! DYNAMICS      !

! Expectations !

EQUATION WAGES ! linearisation of (5.1.26) ! (all,I,SEC) (all,T,alltime)
  wie(I,T) = LAMBDA_n*wi(I,T) + (1-LAMBDA_n)*wix(I,T) ;

EQUATION PRICE_OUTPUT ! linearisation of (5.1.27) ! (all,T,alltime)
  pe(T) = LAMBDA_n*p(T) + (1-LAMBDA_n)*px(T) ;

! The linearisations of the next two expectations are different because
! the variables in them are CHANGES, not percentage changes.      !

EQUATION DIVIDEND_TAX ! not numbered in DPPW ! (all,T,alltime)
  TI_L(T)*TIX_L(T)*dtie(T) = LAMBDA_x*TIE_L(T)*TIX_L(T)*dti(T) +
    (1-LAMBDA_x)*TIE_L(T)*TI_L(T)*dtix(T) ;
EQUATION INV_SUBSIDY ! not numbered in DPPW ! (all,t,alltime)
  TS_L(T)*TSX_L(T)*dtse(t) = LAMBDA_x*TSE_L(T)*TSX_L(T)*dts(t) +
    (1-LAMBDA_x)*TSE_L(T)*TS_L(T)*dtsx(T) ;

! TERMINAL CONDITIONS !

! End condition for accumulation of physical capital:
! Capital in end period NINTERVAL is equal to that in the previous period !

VARIABLE      (All,I,SEC) ki_pre(I) ;
              (All,I,SEC) ki_end(I) ;
EQUATION E_ki_pre ! PERIOD ! (All,I,SEC)
  ki_pre(I) = SUM(t,ALLTIME:$POS(t)=NINTERVAL,ki(I,t)) ;
EQUATION E_ki_end ! PERIOD ! (All,I,SEC)
  ki_end(I) = SUM(t,ALLTIME:$POS(t)=NINTERVAL+1,ki(I,t)) ;
EQUATION E_ki_term      (All,I,SEC)
  ki_end(I) = ki_pre(I);

! End condition for workers' savings:
! Worker wealth in period _end is equal to that in the previous period !

VARIABLE      (All,I,SEC) ws_pre(I) ;
              (All,I,SEC) ws_end(I) ;
EQUATION E_ws_pre ! PERIOD ! (All,I,SEC)
  ws_pre(I) = SUM(t,ALLTIME:$POS(t)=NINTERVAL,ws(I,t)) ;
EQUATION E_ws_end ! PERIOD ! (All,I,SEC)
  ws_end(I) = SUM(t,ALLTIME:$POS(t)=NINTERVAL+1,ws(I,t)) ;
EQUATION E_ws_term      (All,I,SEC)
  ws_end(I) = ws_pre(I);

! End condition for workers' human capital accumulation
! Worker human capital in period 10 is equal to that in the previous period !

VARIABLE      (All,I,SEC) hi_pre(I) ;
              (All,I,SEC) hi_end(I) ;
EQUATION E_hi_pre ! PERIOD ! (All,I,SEC)
  hi_pre(I) = SUM(T,ALLTIME:$POS(T)=NINTERVAL,hi(I,T)) ;
EQUATION E_hi_end ! PERIOD ! (All,I,SEC)
  hi_end(I) = SUM(t,ALLTIME:$POS(T)=NINTERVAL+1,hi(I,T)) ;
EQUATION E_hi_term      (All,I,SEC)
  hi_end(I) = hi_pre(I);

! Time !

COEFFICIENT (all,t,alltime) YEAR(t) ;
READ      YEAR      FROM FILE time ; ! HEADER "YEAR" ; !

COEFFICIENT (all,t,fwdtime) Dyr_F(t) ;
FORMULA ! PERIOD ! (all,t,fwdtime) Dyr_F(t) = YEAR(t+1) - YEAR(t) ;

! For an even 10-period grid spanning years 0 to 100,
  YEAR("p0")=0, YEAR("p1")=10,...,YEAR("p10")=100.
! For the uneven 10-period grid G in Table 5.9.3 spanning years 0 to 100,
  YEAR("p0")=0, YEAR("p1")=5, YEAR("p2")=7,...,YEAR("p10")=100.

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DYR_F(t) plays the role of "h" in the finite difference equations.
This "h" can vary in size if the grid is uneven. In such as case,
DYR_F(t) varies as t varies. !

! INTERTEMPORAL EQUATIONS !

! Dynamics of capital in production sectors !

! Marginal value of capital !

COEFFICIENT (ALL,I,SEC) S_LAMBK_EQ(I) #For cal of lambdak here and later#;
FORMULA (ALL,I,SEC)
S_LAMBK_EQ(I) = [EPSILON3(I)+EPSILON2(I)-1]/(1-EPSILON2(I)) ;

COEFFICIENT (all,I,SEC)(all,T,fwdtime) S1_MOTK_1(I,T);
FORMULA (all,I,SEC)(all,T,fwdtime)
S1_MOTK_1(I,T) = LAMBDAL(I,T+1)/[LAMBDAL(I,T)*(1+DYR_F(T)*(R+DELTA))] ;

EQUATION ! PERIOD ! EQ_MOTK_1 ! linearisation of (5.1.1) and 5.1.3 !
first equation of motion # (all,I,SEC)(all,T,fwdtime)

lambdak(I,T) = IF(\$POS(T)<NINTERVAL,1)*{S1_MOTK_1(I,T)*lambdak(I,T+1) +
(1-S1_MOTK_1(I,T))*[beta(I,T)-TTI(T)*dtie(T)+S_LAMBK_EQ(I)*ki(I,T)]}+
IF(\$POS(T)=NINTERVAL,1)*lambdak(I,T+1) ;

! Volume of capital accumulated !

COEFFICIENT (all,I,SEC)(all,T,fwdtime) S1_MOTK_2(I,T);
COEFFICIENT (all,I,SEC)(all,T,fwdtime) S2_MOTK_2(I,T);
FORMULA (all,I,SEC)(all,T,fwdtime)
S1_MOTK_2(I,T) = K_L(I,T)*(1 - DELTA*DYR_F(T))/K_L(I,T+1) ;

FORMULA (all,i,SEC)(all,t,fwdtime)
S2_MOTK_2(I,T) = INV_L(I,T)*DYR_F(T)/K_L(I,T+1) ;

EQUATION ! PERIOD ! EQ_MOTK_2 ! linearisation of (5.1.2) and 5.1.4 !
second equation of motion # (all,I,SEC)(all,T,fwdtime)
ki(I,T+1) = S1_MOTK_2(I,T)*ki(I,T) + S2_MOTK_2(I,T)*inv(I,T) ;

! Worker's saving !

! Marginal value of workers' saving !

COEFFICIENT (all,I,SEC)(all,T,fwdtime) S1_MOTS_1(I,T);
FORMULA (all,I,SEC)(all,T,fwdtime)
S1_MOTS_1(I,T) = IF(\$POS(T)<NINTERVAL,1)*LAMBDAS_L(I,T+1)/[LAMBDAS_L(I,T)*
(1+DYR_F(T)*(RHO - (1-TIE_L(T))*(R-DELTA)))]+IF(\$POS(T)=NINTERVAL,1) ;

EQUATION ! PERIOD ! EQ_MOTS_1 ! linearisation of (5.1.1) and 5.1.3 !
first equation of motion # (all,I,SEC)(all,T,fwdtime)
lambdas(I,T) = S1_MOTS_1(I,T)*lambdas(I,T+1) ;

! Volume of worker's physical wealth accumulated !

COEFFICIENT (all,I,SEC)(all,T,fwdtime) S1_MOTS_2(I,T);
COEFFICIENT (all,I,SEC)(all,T,fwdtime) S2_MOTS_2(I,T);
FORMULA (all,I,SEC)(all,T,fwdtime)
S1_MOTS_2(I,T) = WS_L(I,T)*(1 - DELTA*DYR_F(T))/WS_L(I,T+1) ;

FORMULA (all,i,SEC)(all,t,fwdtime)
S2_MOTS_2(I,T) = GS_L(I,T)*DYR_F(T)/WS_L(I,T+1) ;

EQUATION ! PERIOD ! EQ_MOTS_2 (all,I,SEC)(all,T,fwdtime)
ws(I,T+1) = S1_MOTS_2(I,T)*ws(I,T) + S2_MOTS_2(I,T)*gs(I,T) ;

! Worker's human capital accumulation !

! Marginal value of human capital !

COEFFICIENT (all,I,SEC)(all,T,fwdtime) S1_MOTH_1(I,T) # Share in 1st RHS term#;
FORMULA (all,I,SEC)(all,T,fwdtime)
S1_MOTH_1(I,T) = IF(\$POS(T)<NINTERVAL,1)*LAMBDALH_L(I,T+1)/[LAMBDALH_L(I,T)*
(1+DYR_F(T))*(RHO+(1-TIE_L(T))*(H_EDU1+2*H_EDU2*HI_L(I,T)))+
(H_EXP1+2*H_EXP2*CHI_L(I,T)))]+IF(\$POS(T)=NINTERVAL,1);

EQUATION ! PERIOD ! EQ_MOTH_1 # first equation of motion #
(all,I,SEC)(all,T,fwdtime)
lambdah(I,T) = S1_MOTH_1(I,T)*lambdah(I,T+1) ;

! Level of accumulated human capital !

COEFFICIENT (all,I,SEC)(all,T,fwdtime) S1_MOTH_2(I,T);
COEFFICIENT (all,I,SEC)(all,T,fwdtime) S2_MOTH_2(I,T);
FORMULA (all,I,SEC)(all,T,fwdtime)
S1_MOTH_2(I,T) = HI_L(I,T)*[1 - DELTA/2*DYR_F(T)]/HI_L(I,T+1) ;


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FORMULA      (all,i,SEC)(all,t,fwdtime)
S2_MOTH_2(I,T)=(H1+H_EXP1*CHI_L(I,T)+H_EXP2*CHI_L(I,T)^2+H_EDU1*HI_L(I,T)+
              H_EDU2*HI_L(I,T)^2)*DYR_F(T)/HI_L(I,T+1) ;

COEFFICIENT  (all,I,SEC)(all,T,fwdtime) S21_MOTH_2(I,T)   # Share in growth HC #;
              (all,I,SEC)(all,T,fwdtime) S22_MOTH_2(I,T);
              (all,I,SEC)(all,T,fwdtime) S23_MOTH_2(I,T);
              (all,I,SEC)(all,T,fwdtime) S24_MOTH_2(I,T);
FORMULA      (all,I,SEC)(all,T,fwdtime)
S21_MOTH_2(I,T) = DYR_F(T)*H_EXP1*CHI_L(I,T)/HI_L(I,T+1) ;
FORMULA      (all,I,SEC)(all,T,fwdtime)
S22_MOTH_2(I,T) = DYR_F(T)*H_EXP2*CHI_L(I,T)^2/HI_L(I,T+1) ;
FORMULA      (all,I,SEC)(all,T,fwdtime)
S23_MOTH_2(I,T) = DYR_F(T)*H_EDU1*HI_L(I,T)/HI_L(I,T+1) ;
FORMULA      (all,I,SEC)(all,T,fwdtime)
S24_MOTH_2(I,T) = DYR_F(T)*H_EDU2*HI_L(I,T)^2/HI_L(I,T+1) ;

EQUATION ! PERIOD ! EQ_MOTH_2 # second equation of motion #
          (all,I,SEC)(all,T,fwdtime)
          hi(I,T+1)=S1_MOTH_2(I,T)*hi(I,T) + S2_MOTH_2(I,T)*
          [S21_MOTH_2(I,T)*chi(I,T)+2*S22_MOTH_2(I,T)*chi(I,T)+
          S23_MOTH_2(I,T)* hi(I,T)+2*S24_MOTH_2(I,T)*hi(I,T)];

! End of 2s_VN.TAB File !

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B. GEMPACK command file for simulation of social welfare impacts of the transition

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! Beginning of Command file !
!-----
! GEMPACK Command file for 2s_VN.TAB (Version 1)
! 2 sector Intertemporal General Equilibrium Model of Social Welfare Condition
! in a developing transition economy (Vietnam)
!-----
! This command file carries out a multi-step simulation using GEMSIM or the
! TABLO-generated program produced from 2s_VN.TAB

! Requires following data files
! 2sec_pf.DAT for the perfect expectation model or
! 2sec_fe.DAT for fixed expectation.
! 2sgrid80.dat: grid distribution

auxiliary files = 2s_VN ;

! data in file "expect" used to alternate from perfect foresight (pf)
! to fixed expectations (fe) and vice versa

file expect = 2sec_pf.dat ;
! or
! file expect = 2sec_fe.dat ;

file data = 2s_VN.dat ;
file time = 2sgrid80.dat ;
updated file data = <cmf>.upd ;

! Method and steps
method = gragg ;
steps = 2 4 6 ;
extrapolation accuracy file = yes ;
log file = yes ;

! Closure
exogenous ki 1 2;
exogenous ws 1 2;
exogenous hi 1 2;
exogenous reform totlab g fdi dti dtsg dts ls unemployay
          wix px dtix dtx ;
rest endogenous ;

! Shocks
!shock dti = 2*0 9*0.0005 ;
!shock dtsg = 2*0 9*0.015 ;
!shock dtsg = 2*0 9*0.0075 ;
!shock dts = 2*0 9*0.001 ;
!shock ls = 2*0 9*5.0 ;

!shock dtsg = 2*0 9*0.0013 ;
!shock unemployay = 2*0 9*99999.0 ;

```

```

shock totlab 1 2 3 4 5 6 7 8 9 10 11 =
! annual growth of 1%
!0 1 2.01 3.0301 4.060401 5.10100501 6.15201506 7.213535211 8.285670563
!9.368527268 10.46221254;
! annual growth of 2%
0 2 4.04 6.1208 8.243216 10.40808032 12.61624193 14.86856676 17.1659381
19.50925686 21.899442 ;
! annual growth of 3%
!0 3 6.09 9.2727 12.550881 15.92740743 19.40522965 22.98738654 26.67700814
!30.47731838 34.39163793 ;

! shock reform = 2*0 9*3 ;
! annual growth of 0.5%
shock reform 1 2 3 4 5 6 7 8 9 10 11 =
0 0.5 1.0025 1.5075125 2.015050062 2.525125313 3.037750939 3.552939694
4.070704393 4.591057915 5.114013204;
! annual growth of 1%
!0 1 2.01 3.0301 4.060401 5.10100501 6.15201506 7.213535211 8.285670563
!9.368527268 10.46221254;
!shock fdi 1 2 3 4 5 6 7 8 9 10 11 =
!33.3333 23.9484 234.7734 358.4955 349.4493 209.5158 -22.6554 364.7727
!-393.7402 -317.8132 106.04402 ;
!shock g 1 2 3 4 5 6 7 8 9 10 11 =
!-2.9208 -25.4194 -15.6932 19.5683 13.7654 7.8750 9.1590 -3.4561 12.5458 12 11.5;
!shock ki 1 2 = 11.42 -10.0 ;

verbal description =
Model 2s_VN, perfect foresight
10 grid intervals, grid H 80 years,
Transition's Impacts on Social Welfare Condition ;

! Produce an equation file, which can use for SAGEM
!equation file = 2s_VN ;
!model = 2s_VN ;
!version = 1 ;
!identifier = Stylized Johasen. Standard data. ;

! End of Command File

```

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