Does ownership affect a firm's performance and default risk in Jordan?

Rami Zeitun
University of Western Sydney

Gary Gang Tian
University of Western Sydney, gtian@uow.edu.au

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Abstract

Purpose – This paper seeks to examine the impact of ownership structure on firm performance and the default risk of a sample of publicly listed firms.

Design/methodology/approach – This paper examines the impact of ownership structure on firm performance and the default risk of a sample of 59 publicly listed firms in Jordan from 1989 to 2002.

Findings – The main findings were: ownership structure has significant effects on the accounting measure of performance return on assets (ROE); government shares are significantly negatively related to the firm's performance ROE; defaulted firms have a high concentration ownership compared with non-defaulted firms and also high foreign ownership firms have a low incidence of default; government ownership is significantly negatively related to the firm's probability of default; both mix and concentration ownership structure data can be used to predict the probability of default as the largest five shareholders (C5) and government ownership fraction (FGO) are significantly negatively correlated with the probability of the default. These results further suggest that reducing government ownership can increase a firm's performance but will also cause some firms to go bankrupt, at least in the short term.

Originality/value – This paper provides useful information on the impact of ownership structure on firm performance and the default risk of a sample of publicly-listed firms.

Keywords
Does, ownership, affect, firm, performance, default, risk, Jordan

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Does ownership affect a firm's performance and default risk in Jordan?

Rami Zeitun and Gary Gang Tian[*]

School of Economics and Finance
University of Western Sydney

Abstract

This paper examines the impact of ownership structure on firm performance and the default risk of a sample of 59 publicly listed firms in Jordan from 1989 to 2002. The main findings were: (1) ownership structure has significant effects on the accounting measure of performance return on assets (*ROE*). (2) Government shares are significantly negatively related to the firm's performance *ROE*. (3) Defaulted firms have a high concentration ownership compared with non-defaulted firms. Also high foreign ownership firms have a low incidence of default. (4) Government ownership is significantly negatively related to the firm's probability of default. (5) Both mix and concentration ownership structure data can be used to predict the probability of default as the largest five shareholders (*C5*) and government ownership fraction (*FGO*) are significantly negatively correlated with the probability of the default. These results further suggest that reducing government ownership can increase a firm's performance and but will also cause some firms to go bankrupt, at least in the short term.

Key words: ownership structure, corporate governance, emerging markets, Jordan, default risk

JEL Classification: G32, G34

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1. Introduction

The effect of ownership structure and concentration on a firm's performance is an important issue in the literature of finance theory. Ownership concentration may improve performance by decreasing monitoring costs (Shleifer and Vishny 1986). However, it may also work in the opposite direction. There is a possibility that large shareholders use their control rights to achieve private benefits. Ownership structure and concentration are considered as important factors that affect a firm's health. If the ownership structure and concentration affects a firm's health, it is possible then to use the ownership concentration and structure to predict the probability of default (PD).

Empirical studies of the relationship between the firm's performance and ownership concentration and structure have produced mixed results. For example, Demestz and Lehn (1985) find no effect of ownership concentration on accounting profits, and McConnell and Servaes (1990) find no effect on the ratio of market value to replacement cost of assets (Tobin's Q), although they find a positive effect of ownership by both corporate insider and investors. On the other hand, Leech and Leahy (1991) find a negative and significant relationship between the ownership concentration and the firm's value and profitability. These studies and others listed in the literature review find conflicting results about the effect of ownership concentration on a firm's performance.

It is worth noting that most research on ownership structure and firm performance has been dominated by studies conducted in developed countries. However, there is an increasing awareness that theories originating from developed countries such as the USA and the UK may have limited applicability to emerging markets. Emerging markets have different characteristics such as different political, economic and institutional conditions, which limit the application of developed markets' empirical models. Recent studies of corporate governance suggest that geographical position, the tax system, industrial development and cultural characteristics along with other factors affect ownership structure which in turn have impacts on a firm's performance and its default risk (Pedersen and Thompson 1997). There is a significant lack of applied studies dealing with financial distress in Middle Eastern countries, especially in Jordan.

Jordan provides an excellent case to study the relation between ownership structure and firm performance. Jordanian share issue privatisation is an on going program. Managing state holdings in Jordanian listed companies has become a top government priority. There is evidence that the government supports the private sector to take over and participate more in economic growth. Privatisation was part of the overall economic package that the government has adopted since the early nineties, namely the economic adjustment program, and self-reliance in the aftermath of the economic crisis that befell the country. Thus the government went though privatisation, as Jordan needs to open up its market to the world, through partnership agreements with the European Union (EU) and accession to the World Trade Organization (WTO). The conclusions of some official surveys ("privatisation in Jordan" in Amman Stock

Exchange website) demonstrated "the prevalence in the public sector institutions and corporations of a large degree of inefficiency in the administrative and employment policies, squander of public funds, administrative archaism, substandard services and high indebtedness, while the private sector firms were yielding higher returns and results and generating better job opportunities, given the high level of efficiency in the administrative and employment policies." Therefore, it is expected that the privatisation in Jordan can affect a firm's performance and the probability of default in a positive way.

Unlike previous studies, this study will investigate the effect of ownership structure on a firm's performance and the probability of a firm's default in Jordan. We argue that if ownership structure and concentration affect a firm's performance, then it could be used to predict the probability of default (PD), as it could increase or decrease the firm's performance.

The remainder of this paper is organized as follows. Section 2 reviews the existing literature on the effects of ownership structure on firm performance. Section 3 describes data. The independent variables used in the study and the model specification are introduced in section 3.2. Section 4 introduces the empirical analysis and the hypothesis test. Section 5 concludes the paper.

2. Literature Review

The relation between ownership structure and firm performance has been an important research topic during the last three decades, and produced ongoing debate in the literature of corporate finance. Theoretical and empirical research on the relationship between ownership structure and firm performance was originally motivated by the separation of ownership and control identified by Berle and Means (1932). Berle and Means (1932) suggested that an inverse correlation could be observed between the diffuseness (concentration) of shareholdings, and firm performance, in which ownership structure affects firm performance. Central to this analysis is the agency theory that explains the conflict of interest between inside owners and outside shareholders (Jensen and Meckling, (1976): Fama and Jensen, (1983)).

Jensen and Meckling, (1976) argue that the relative amount of ownership held by insiders (management) and outsiders (investors with no direct role in the management of the firm) provide managers with the incentives to pursue activities to serve their own benefits. According to their hypothesis, both a firm's value and its performance increase with the level of insider ownership. The agency conflict between the owner-manager and outside shareholders is manifest from the manager's tendency to appropriate perquisites out of the firm's resources for his own consumption. This view was challenged by Demestz (1983), who argues that the ownership structure of a corporation should be thought of as an endogenous outcome of decisions that reflect the influence of shareholders. According to Demsetz (1983), there should be no systematic relation between variations in ownership structure and variations in firm performance.

Demestz and Lehn (1985) provide evidence of the endogeneity of a firm's ownership structure. They use a measure of the profit rate on a fraction of shares owned by the five largest shareholding interests, in which ownership structure is treated as an endogenous variable. They found no evidence of any relation between the profit rate and the ownership concentration. Shleifer and Vishny (1986) confirm the findings of Berle and Means (1932). They show the importance of the role played by large shareholders, and how the price of the firm's shares increases as the proportion of shares held by the large shareholders rises. They argue theoretically for a positive relationship between ownership concentration and firm value.

Following these studies, there have been other studies examining the effects of ownership concentration on performance. Hill and Snell (1988) show that ownership structure affects firm performance as measured by profitability through strategic structure. Later, Hill and Snell (1989) confirm this positive relation for US firms by taking productivity as a measure of performance. On the contrary, Mc Connell and Servaes (1990) do not find evidence supporting any direct effect of large shareholders on firm value. Nevertheless, the empirical evidence in Agrawal and Mandelker (1990) supports the hypothesis proposed by Shleifer and Vishny (1986) that the existence of large owners or a high concentration ownership leads to better management and also better performance, especially when ownership is concentrated in institutional investors rather than individual investors. Therefore, institutional ownership could increase a firm's performance and decrease the probability of default.

Leech and Leahy (1991) analyse the implications of the separation of ownership from control for a UK firm value. They describe ownership structure using several measures of concentration and control types. Therefore, ownership structure is expected to affect a firm's performance through the effects of ownership concentration. They found that there is a negative and significant relationship between ownership concentration and firm value and profitability. Another study of the British case, Mudambi and Niclosia (1998) confirms this negative relationship between ownership concentration and performance.

The conflicting results of the effect of ownership structure on a firm's health point to the possibility of a non linear relation between ownership concentration and the firm's health. Morck, Shleifer and Vishny (1988) ignore the endogeneity issue altogether and re-examine the relation between corporate ownership structure and performance. A cross-section of 371 Fortune 500 firms was taken in 1980. They measured performance by Tobin's Q[1], and managerial ownership as the combined shareholdings of all board members who have a minimum stake of 0.2%. They find no significant relation in the linear regressions using Tobin's Q and the accounting profit rate as alternative measures of performance. Holderness and Sheehan (1988) analyse 114 NYSE listed corporations in which a majority shareholder owns at least 50.1% of the common stock. They find that Tobin's Q is higher if the majority owners are corporations, while Tobin's Q as well as the accounting profit rate are significantly lower for firms with individual majority owners.

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[1] Tobin's Q is defined as the ratio of the market value to the replacement value of the firm, which can be measured as the market value of equity and debts over the replacement value of net fixed assets and inventory.

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Other works followed the Morck, Shleifer and Vishny (1988) study. Included among these studies are Cho (1998), Hermalin and Weisbach (1991), Himmelberg et al (1999), Holderness et al (1999), Loderer and Martin (1997), McConnell and Servaes (1990) and Wu and Cai (2002). Hermalin and Weisbach (1991) estimate the effect of managerial ownership and board composition on Q using panel data for five years. They find no relation between board composition and performance, but find a significant non-monotonic relation between managerial ownership and performance, a positive relation between 0% and 1%, a decreasing relation between 1% and 5%, an increasing relation between 5% and 20%, and decreasing beyond 20%.

Loderer and Martin (1997) used acquisition data to estimate a simultaneous equation model in which Q and insider owners are endogenous. Different variables are used to explain the insider owners, such as Q, log of sales, daily standard deviation of the firms stock returns, and daily variance of the firm's stock returns. In order to explain Q they used log of sales, insider ownership, and a dummy for whether the acquisition is financed with stock. Insider ownership fails to predict Q, but Q is a negative indicator of insider ownership.

Cho (1998), using cross-sectional data and ownership information from value line replicates the Morck, Shleifer and Vishny (1988) study and finds a similar non-monotonic relation between Q and management share holdings.

Himmelberg, Hubbard, and Palia (1999) extend the Demsetz and Lehn (1985) study by adding new variables to explain the variation in ownership structure. They used a fixed effects panel data model and instrumental variables to control various possible unobserved heterogeneities. Ownership structure is measured by the shareholdings of insiders. They find that insider ownership is negatively related to the capital-to sales ratio, but positively related to the advertising-to-sales ratio and operating income to sales ratio. After controlling these variables and fixed firm effects, they find that changes in ownership holdings have no significant impact on firm performance.

Holderness, Kroszner, and Sheehan (1999) replicate the central aspects of the Demestz and Lehn (1985) study and Morck, Shleifer and Vishny (1989) study. They find a significant positive relation between firm performance and managerial ownership with a 0% to 5% range of managerial shareholdings. On the other hand, they do not find a statistically significant relation beyond 5% managerial shareholdings which conflicts with Morck, Shleifer and Vishny(1989). Furthermore, they confirm the endogeneity of managerial shareholdings. The managerial shareholding found to depend negatively on firm size, performance volatility, volatility squared, regulation, and financial leverage.

Wu and Cui (2002) study the effect of ownership structure on a firm's health. They found that there is a positive relation between ownership concentration and accounting profits, indicated by ROA and ROE, but the relation is negative with respect to the market value measured by the share price-earning ratio (P/E) and market price to book value ratio (M/B). Also, the contribution of government (state) and institution ownership is significantly positive to company profit, while negative to the market value.

Corporate governance mechanisms vary around the world and can produce different ownership effects on firms' performance. Shleifer and Vishny (1997) defined at least three kinds of mechanisms in the world economies. In the United States of America and the United Kingdom, firms substantially rely on the legal protection of investors, and the ownership structure is dispersed. In Europe and Japan, there is less reliance on elaborate legal protections, and more reliance on large investors and banks. In the rest of the world, ownership is typically heavily concentrated in families, in which the legal protection is weaker than the other types of ownership.

Due to the differences between US corporate governance and other systems such as the German and Japanese, different relations between ownership and firm value could be expected. For example, in Japan, where firm ownership is highly concentrated, a positive and significant effect of ownership concentration on firm performance is produced. Despite this argument, Prowse (1992) examines the structure of corporate ownership in a sample of Japanese firms in the mid 1980s. His empirical work indicated that there is no relationship between ownership concentration and profitability. Opposing evidence is shown in Kaplan and Minton (1994) and Morck, Nakamura and Shivdasani (2000), whose results confirm the relation between ownership concentration and performance.

Chen, Cheung and Stouraiti (2000) found a negative relationship between concentrated ownership and firm value for a sample of 412 publicly listed firms in the Hong Kong stock exchange through 1995-1998. Xu and Wang (1997) investigated whether ownership structure has significant effects on the performance of publicly listed companies in China. They find that ownership structures, both the mix and concentration of ownership have a significant effect on the performance of stock companies. There is a significant and positive relationship between ownership concentration and firm's profitability. Also the effect of ownership concentration is stronger for companies dominated by shareholders than for those dominated by the state. Firms' profitability is negatively correlated with the fraction of state owned shares. They also find that labour productivity declines as the proportion of state ownership increases. The coefficient for the fraction of the state owned shares are negative and significant, indicating that state ownership does not help to improve firms' performance.

In spite of all these efforts to investigate the effect of ownership structure on firms' performance until now there are few studies of the effect of ownership structure on firms' health especially in the Middle East. Furthermore, there is no serious work that used ownership structure to predict the probability of default.

3. **Data and estimation framework**

3.1 Data

The data used in this study included 59 publicly listed companies on the Amman Stock Exchange (ASE), over the period 1989-2002. These companies belong to different industrial sectors: manufacturing, trade, steel and mining, utility, and real estate. The banking and insurance sectors are not included in this study as the

characteristics of these firms are different from the firms in the other industrial sectors in terms of financial statement, profitability measures and liquidity assessment.

The data set contains detailed information about each enterprise. The major items of interest are: balance sheets, income statements, ownership structure, and the percentage holdings of all direct shareholders (defined as any owner possessing more than 5 and 10% of the company's shares). The full balance sheets and income statements are usually available from firms as the law requires disclosure.

For data collection a clear and consistent definition of failure or default is required. While default is usually defined as a corporate condition in which a corporation has not been able to meet its obligations on a due date, different researchers have used different criteria to define default. For example, Beaver (1968) used a wider definition of default, which includes default on loan, over drawn bank account and nonpayment of a preferred stock dividend. Alternatively, default may be defined in a stricter legal sense as in Deakin (1972), where default includes only those firms which experienced bankruptcy or liquidation, and the firm faces legal action.

In the case of Jordan, we define default as a firm that had a receiver or liquidator appointed, or a firm that was delisted from the Amman Stock Exchange (ASE) in the period 1989 to 2002[2]. Furthermore, firms that stop issuing their financial statements for two years or more are also considered to be failed firms. By law, firms are obligated to submit their annual financial statements so firms that are unable to submit their financial statements on the required date are considered as failures. The date of failure is either the date the liquidator was appointed, or the date of delisting from the formal market. The actual number of defaulted firms is twenty-nine according to our definition compared to forty-four as officially claimed. Therefore, within 59 firms in our sample 29 are failed and 30 are non-failed firms. The non-failed sample was matched to the failed sample from the same industry and the same year of data collection.

3.2 Variables Selection

Using pooled data for the listed companies in the Amman Stock Exchange (ASE), we calculate four ratios to measure the firm's performance, return on equity (ROE), return on assets (ROA), Tobin's Q, and MBR. In this study Tobin's Q and MBR are used to measure the market performance of firms, while the ROE and ROA are employed as measures representing accounting performance measures. These performance variables represent the dependent variables and are used separately. The explanatory variables are ownership fractions, concentration ratios and other control variables.

To determine the ownership structure and its concentration, various measures of ownership concentration are constructed to measure the effect of ownership on a firm's health. Our measures of concentration are the percentage of shares held by the largest shareholders (C1), the percentage of the two largest shareholders (C2), the percentage of the first three largest shareholders (C3) and the percentage of the first five largest shareholders (C5). We also used the Herfindahl index of ownership

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[2] This definition is very similar to the one by Izan (1984).

concentration, the sum of squared percentage of shares controlled by each top 5 shareholders. Table 1 and Table 2 present basic statistics for these concentration measures for defaulted and non-defaulted firms sample in the Amman Stock Exchange (ASE).

Insert Table 1 Here

Insert Table 2 Here

At the median, the largest shareholder C1 owns 22.39 per cent in the defaulted firms, a figure which is larger than 19.56 per cent in the non-defaulted firms. The largest two shareholders (C2) own 36 per cent in the defaulted firms, a figure which is larger than 27.7 per cent in the non-defaulted firms. The other measures of concentration C3, C4, C5, and HERF are all larger in defaulted risk compared with non-defaulted firms. The median largest shareholder C1 in Jordan is large by the Anglo-American standards and but within the range of those in France and Spain which is 20 and 34 per cent respectively (Becht and RÖell 1999). The data also reveals that there is a substantial variation across firms in ownership concentration: Despite the high average, the largest owner's value varies between 0 and 100 per cent. In this study we used C5 and HERF index as an indictor of ownership concentration to investigate whether ownership concentration increased firm's performance and contribute to firm's default.

Most of the studies about the relation between ownership structure and firm performance used managerial (insider) ownership as the measure of ownership structure. Jordan has created different classes of shares, namely government (state), institutional, Arab, foreign, and individual (citizen). The government shares (state) are either share owned by government directly or by government agency. In firms with high government ownership, the insider gain control either through direct government appointments or through direct political power influence which could affect firm's performance negatively. These shareholders are different in their interests in the firm and their incentives and ability to monitor the firm. An important question to be addressed in this paper is whether ownership structure is consistent with the firm's value and performance maximization.

The ownership mix is divided into the fraction owned by government (FGO), by the foreigner (FFO), by companies (FIN), and by individuals (citizen). The government participates in about 62% of the 165 industrial and services firms. On the other hand, companies participate in about 95% of the 165 firms where the percentage varies between 6% and 99%. Foreigners participate in just 28% of the total number of firms, whereas the percentage varies between 0.006% and 87% (see Table 3).

Insert Table 3 Here

Controlling for both effects, ownership and performance, we might be able to distinguish which of these factors are more significant in poorly performing enterprises. This approach can, as a by-product of our study, serve as indicative evidence in the recent discussion, whether the ownership structure determines the

performance or whether the performance attracts various types of ownership. It also will help to answer the question of whether the ownership structure affects firms' health and resources utilization via productivity.

Insert Table 4 Here

Table 4 presents the basic statistics of the ownership structure fraction of defaulted and non defaulted firms. At the median, the individual (citizen) owns 48.11 per cent of defaulted firms, a figure which is larger than 46.34 per cent in non defaulted firms. The fractions of foreigner ownership have the lowest median in the defaulted firms compared with 4.46 per cent in non defaulted firms.

There are several notable differences. First of all, the defaulted firms do have a lower median of government ownership compared with non-defaulted firms. Also, the median of institutional ownership is lower in the defaulted firms compared with the non defaulted firms. Furthermore, foreigner ownership median in the defaulted firms are lower than the non-defaulted firms' median. These initial results suggest that institutional, Arab, and foreigner ownership reduce the firms' probability of default. In this analysis, we will concentrate on the joint factor of Arab and foreigner ownership rather than taking each one separately as both of them are considered foreign owners. Definitions of the performance variables, ownership fractions, and concentration ratios are given in Table 5.

Factors other than ownership structure may also affect firm's performance and health. To take them into account, we introduce a set of control variables. These control variables include ASS[3], AGE, TD/TE, LTD/TA, NI/CAP, and TD/TA in this study. Dummy variables for industrial sectors are used to control the difference between sectors, DUM_i, i= 1, 2,...,5, for manufacturing, trade, steel and mining, utility, and real estate. Definitions of these variables are given in Table 5. Furthermore, to control the effect of years on firms' health and the probability of default, dummy variables for years are also included in this study, DUM_j, j=1, 2,…, 11, for the years 1991 until 2002[4].

- 4. Empirical work
- 4.1 Ownership Structure and Firm's Performance

We employ three accounting ratios as well as Tobin's Q to measure the firm's performance, the market-to-book value ratio (MBR), ROE, and ROA. Let Y and CR represent performance and concentration ratio variables respectively. If ownership structure does not affect firm's performance, we would find there is no correlation between Y and CR. Our first null hypothesis is that ownership concentration does affect the firm's performance positively.

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[3] In the previous work, the value of total assets is used to control size effect, e.g. see Morck et al (1988) and McConnell and Servaes (1990). Other studies is used sales to control for size , e.g., see Xu and Wang (1997). The value of total sales is tried in this paper. It has a lower explanatory power than assets, and its inclusion in regressions of ROA and ROE makes the results not significant.

[4] The first two years data (both 1989 and 1990) are only used for determining whether the firm is default and non-default.

We estimate equation (1) to test the hypothesis for our sample.

$$Y = \beta_0 + \beta_1 Log(Assets) + \beta_2(AGE) + \beta_3(TD/TE) +$$
$$\beta_4(LTD/TA) + \beta_5 Grow + \beta_6 CR + \beta_7 F + e$$

(1)

where Y is alternatively ROA, ROE, Q, and MBR for firm *i* as a measure of performance. The independent variables are represented by concentration ratio *(CR)*, ownership fraction (F), *log assets*, *age*, *TD/TE*, *LTD/TA*, and *Grow*. Only C5 and the HERF are used as concentration ratios in the estimation to investigate the effect ownership concentrations on firm's performance. F is alternatively FGO, FFO and FIN. *e* is a error term. The results of the pooled regression are reported in Table 6 where C5 is used for the ownership concentration indicator in Table 7 where the HERF is used for the indictor.

Insert Table 6 and Table 7 Here

The C5 variables were found to have a positive and significant impact on both ROE and ROA at least at a 5% level of significance for various equations in Table 6. The estimated coefficient of the HERF was only significant at a 10% level of significance in some of ROE and ROA equations. Neither the HERF nor the C5 have any explanatory power for both Q and MBR, although the sign of the coefficient was positive in both equations. In all of the regression, five industrial dummy variables were included as control variables and their coefficient were not significant at any level of significance.

The significant impact of concentration ratios on ROE and ROA is in support of the Shleifer and Vishny hypothesis (1986) that large shareholders may reduce the problem of small investors, and hence increase the firm's performance. These results are consistent with Abdel Shahid (2003); that ROA and ROE are the most important factor used by investors rather than the market measure of performance. This finding is also consistent with the result of Wu and Cui (2002) that there is a positive relationship between ownership concentration and accounting profits, indicated by ROA. The insignificant results of concentration variables in both Q and MBR equations could suggest that the Jordanian equity market is inefficient, or there could be other factors that affect the market performance measure, which were missed in our models.

In summary, we find empirical evidence for the positive effects of ownership concentration on a firm's performance using a sample of both defaulted and non-defaulted firms. The positive effect of ownership concentration has a stronger effect on the accounting measure of performance ROE and ROA than on the market measure of performance Q and MBR ratios.

Now, we address the issue of the effects of ownership mix on the performance of the firms. The relevant hypothesis is that if ownership mix is irrelevant to firm performance, then the ownership fractions will be expected to be insignificant in Eq. 1. Otherwise, if this null hypothesis is rejected, the government ownership *FGO* is hypothesized to be negatively related to a firm's performance as its main focus is on

social benefit rather than the firm's profit. It is hypothesized that firms with both foreign and institutional ownership will have higher performance.

The results in Table 6 indicate that the FGO, the fraction of equity owned by government, has a negative coefficient in ROE performance equations, and it is statistically significant at a 10% level of significance. The FFO also, has a negative coefficient in both ROE and ROA measure of performance, but none of these coefficients are significant at any level of significance. The FIN, the fraction of equity owned by institution shareholders, does not seem to have any significant impact on the profitability of firms as measured by ROE, ROA, Q, and MBR.

There are some conflicting results of the sign of coefficients between the one estimated from both ROE and ROA equations and the one from the Q-equations. The FFO, the fraction of equity owned by foreigner, has a negative coefficient in Q, and it is significant at a 5% level of significance. On the other hand, the government ownership fraction has positive coefficients and they are significant in the Q regressions in both Table 6 and Table 7. However, we would argue that the explanatory power for both ROE and ROA regressions is fairly high with adjusted R-squared ranging from 50 to 73 percent, while the adjusted R-squared is merely 5 to 15 percent for both MBR and Q equations. Furthermore, the F statistics are significant and very high for the two measures of performance ROE and ROA, but very low though it is still significant, for the Q measure of performance.

The significance of ownership characteristics in the equations for ROA and ROE could be explained by the fact that the fundamental evaluation of companies, measured by its financial indicator ROA and ROE are the most important factors used by investors in Jordan to assess a firm's performance rather than other measures of performance such as MBR, and Q. This result is consistent with the result of Abdel Shahid (2003) that ROA is the most important factor used by investors. The research finding is consistent with the result of Wu and Cui (2002) that there is a positive relationship between ownership concentration and accounting profits, indicated by ROA. Thus, investors depend heavily in evaluating their investment on the accounting performance measure, ROA. The results of empirical investigation are consistent with Abdel Shahid (2003), and support the theory that there is a relationship between ownership structure and a firm's health, according to Jensen and Meckling, (1976).

In all regressions, both the controlling variable firm's size, ASS, and firm's growth, NI/CAP, have a positive impact on the firm's performance measures ROE and ROA, and they are significant at least at a 5% level of significance. While TD/TE, and LTD/TA are found to have a negative impact on both the ROE and ROA, and they are mostly significant at a 5% level of significance. Firm's age, AGE, is found to have a positive but not significant effect on the firm performance measures: ROE, ROA, and MBR. In general, the sign of the coefficients for those control variables are in consistent with previous findings. Five industry dummy variables are included as control variables and their coefficients are not significant at any level of significance. We also found that none of the coefficients for the dummy variables for years had any level of significance. Therefore, our results were robust between different years and across different industrial sectors.

4.2 Ownership Structure and Default Risk

As discussed above, both ownership structure and mix have a significant impact on the accounting measure of performance ROE. Also, ownership concentration has a significant impact on the accounting measure of performance ROA. Therefore, we might use ownership structure and mix as indicators of a firm's health to predict the probability of default (PD). Table 8 summarizes government, citizen, institutional, and foreigner participation in both defaulted and non-defaulted firms. It is expected that government ownership reduces the probability of default, 61% of the non-defaulted firms have government participation compared with 54% of the defaulted firms. Foreign ownership also expected to have a significant impact on the probability of default, as 90% of the non defaulted firms have foreign participation compared with 39% of the defaulted firms. Institutional ownership is expected to have a positive impact on a firm's performance, the institution choose there investment to maximize its profit so it choose the successful projects.

Insert Table 8 Here

To further examine the issue of a firm's default risk, we conduct a test to estimate the probability of default. Many studies used the probit model in default studies such as Zmijewski (1984), Acharya, Chatterjee and Pal (2003) and Ginoglou, Agorastos and Hatzigagios (2002). The Probit and logit models are formulated for the Jordanian companies' conditions and contain two state dependent variables stat 1= default and stat 0= non-default.

To investigate whether ownership concentration and mix contributes to a firm's default, let Y^* represent firm's status with Y_i^* as the latent factor. $Yi = 1$ if Y^* is less than or equal zero if the firm is in default. CR represents ownership concentration ratios, C5 and HERF. Ownership fraction (F); F= *FGO*, *FFO*, and *FIN*. ε is the stochastic disturbance term corresponding to the ith (estimated error), ε is N(0,1). If ownership structure is irrelevant to default probability, the ownership concentration and fraction will be insignificant. We also would find there is no correlation between Y^* and CR and F. Our basic estimating equation is the following;

$$Y_i^* = \beta_0 + \beta_1 Log(Assets) + \beta_2 AGE + \beta_3(TD/TA) +$$
$$\beta_4(NI/CAP) + \beta_5 CR + \beta_6 F + \varepsilon \tag{2}$$

Government ownership, *FGO,* is hypothesized to be negatively related to the firm's default, as their main focus is on social benefit rather than profit. Priorities of government do not necessarily coincide with firm's performance maximization. For instance, the government may care more about unemployment or control over certain strategic industries than the value of state assets. The government will support the distress firms even until the last moment. Government ownership could affect the firm's performance negatively but it will definitely decrease the probability of default. Institutional shareholders (FIN) are more profit oriented and may have more incentive to monitor the firm. It is hypothesized that firms with institutional ownership *FIN* will

have a lower probability of default as they monitor the firm more and their goal is profit maximization.

Foreign shareholders (FFO) are also more profit oriented than government and may also have more incentive to monitor the firm. It is hypothesized that firms with foreign ownership *FFO* will have a lower probability of default. Furthermore, ownership concentration C5 is expected to have a negative effect on the probability of default. Four control variables are used in this study: the firm's size, the firm's age, TD/TA, and the growth ratio NI/CAP. These variables are expected to contribute to a firm's default. It is expected that firms with a high debt ratio will have a high PD and firms with a high profit ratio will have a low PD. Furthermore it is argued that firm's with big size and age will have a low probability of default.

The models were estimated by using the Stata.8 software package. The software uses a procedure that estimates the binary model via maximum likelihood for the probit model. Estimation results of equation (2) using both logit and probit models are given in Table 9 and Table 10.

Insert Table 9 Here

Insert Table 10 Here

The *FGO*, the fraction of equity owned by government, is found to have a negative coefficient in default risk equation, and it is statistically significant at a 5% level of significance using the logit model in Table 9. The *FGO* is statistically significant at a 1% level of significance using the Probit model in Table 10. This indicates that government ownership decreases the probability of default (PD) as the government has other objectives rather than that of profit. This result is consistent with other studies such as Lizal (2002) who finds that government ownership reduces the probability of default (PD). The *FFO*, the fraction of equity owned by foreigner, has a positive coefficient and it is insignificant at any level of significances. The FIN, the fraction of equity owned by institution shareholders does not seem to have any significant impact on the probability of default, while the coefficient of the institutional ownership is negative.

From the results of the estimation of the logit models in Table 9, we find that the ownership concentration measure C5 has a positive and significant impact on the probability of default, and the effect is statistically significant at a 5% level of significance in model 1 and model 3. In model 4 we find that the ownership concentration C5 is not significant in combination with the fraction of foreign owners, but it still has a negative effect on default risk. Our finding also supports the findings in the previous section that ownership concentration increases a firm's performance which reflects a firm's health nut it also increase the PD. The estimated coefficient of the HERF is not significant at any level of significance. The impact of ownership mix with ownership concentration measure HERF does not affect the significance of government ownership FGO. Government ownership is still significant at a 5% level of significance. Neither FFO nor FIN has any explanatory power in predicting the probability of default. Controlling variables such as the firm's size, ASS, and the firm's age, AGE, do not have any explanatory power in predicting the default risk. In

contrast, a firm's growth, NI/CAP, has a significant effect on the probability of default. This result is not consistent with theory that firms with high growth have a low probability of default.

We obtain similar results using the probit estimation models in Table 10, but the results were better than using the logit model. For the logit models the Pseudo R^2 is ranging from 47 to 60 percent, while the LR ranging from 38 to 49 percent and it is statistically significant in the corresponding asymptotic Chi-squared distribution at a high level of significance. On the other hand, for the probit models, the Pseudo R^2 ranging from 48 to 60 percent, while the LR ranging from 39 to 59 percent, and it is statistically significant in the corresponding asymptotic Chi-squared distribution. The results of the probit models are better compared with the logit models.

Similar to the results in the performance regressions, we also found that none of the coefficients for the dummy variables for years and for industrial sectors are significant at any level of significance. Therefore, our results are robust between different years and across different industrial sectors.

5 Conclusions

The possible impact of ownership structure on a firm's performance has been a central question in research on corporate governance, but evidence on the nature of this relationship has been decidedly mixed. While some theories and empirical investigations suggest that ownership structure affects firm performance, some others suggest the irrelevance of the relationship between ownership structure and firm performance.

This paper investigates the relationship between ownership structure and concentration and firm performance in Jordanian publicly traded firms for a sample of 59 firms from 1989-2002. This paper not only studies the relationship between ownership structure, mix and firm's performance, more importantly this study investigates the ownership structures and mix of defaulted firms compared with non defaulted firms.

The paper produces significant and consistent results. First, we find that there is a significant relation between ownership concentration C5 and the accounting performance measure ROE and ROA. Secondly, the HERF is not significant at any level of significance in any measure of performance. The insignificance of the HERF shows that there could be a nonlinear relationship between ownership concentration and a firm's performance. Thirdly, we also found that there is a negative significant relation between government ownership and a firm's accounting performance, while the other ownership structure mixes have significant coefficients only in Tobin's Q performance measure.

This paper also used the ownership structure to predict the probability of default. Our results suggested that individual shareholders have no incentive and no capability to monitor and influence the behavior of management. Furthermore, a certain degree of

ownership concentration is needed to increase the firm's performance and to decrease firm's chance of default. We also found that government ownership is negatively related to the probability of default, and the result is significant at a 5% level. Government ownership was found to decrease the probability of default, but it has a negative on a firm's performance. Our results suggest that increasing a firm's performance by reducing government participation in a firm's ownership will cause some firms to go bankrupt, at least in the short term. Therefore, we suggest a privatization reform should go gradually and government should provide all necessary social securities to reduce the negative social impact of a firms' liquidation. Further research is needed by increasing a larger sample in the study.

References

Abdel Shahid, S. (2003), Does Ownership Structure Affect Firm Value? Evidence from the Egyptian Stock Market, Cairo & Alexandria Stock Exchange (CASE), Working paper.

Acharya, A., I. Chatterjee, P. Rupayan (2003), Estimating Default Probability of Firms: An Indian Perspective, Indira Gandhi Institute of Development Research Working Paper.

Agrawal, A. and G. Mandelker (1990), "Large Shareholders and the Monitoring of Managers: The Case of Antitakeover Charter Amendments", *Journal of Financial Quantitative Analysis,* Vol. 25, pp. 143-161.

Beaver, W. (1968), "Alternative Financial Ratios as Predictors of Failure", *Accounting Review,* Vol. XLIII, No. 1, pp. 113-122.

Becht, M. and A. RÖell (1999), "Blockholding in Europe: An International Comparison", *European Economic Review,* Vol. 43, pp. 1049-1056.

Berle, A. and G. Means (1932), *The Modern Corporation and Private Property*, Harcourt, Brace, & World, New York.

Chen, Z., Y. L. Cheung (2000), Corporate Governance, Firm Performance and agency Conflicts in Closely-held Firms: Evidence from Hong Kong, working paper.

Cho, M. H. (1998), "Ownership Structure, Investment, and the corporate Value: An Empirical Analysis", *Journal of Financial Economics,* Vol. 47, pp. 103-121.

Deakin, E. B. (1972), "A Discriminate Analysis of Predictors of Business Failure", *Journal of Accounting Research*, Vol. 10, No. 1, pp. 167-79.

Demestz, H. (1983), "The Structure of Corporate Ownership and the Theory of the Firm", *Journal of Law and Economics,* Vol. 26, pp. 375-390.

Demestz, H. and K. Lehn (1985), "The Structure of Corporate Ownership: Causes and Consequences", *Journal of Political Economy,* Vol. 93, pp. 1155-77.

Fama, E. F. and M. C. Jensen (1983), "Separation of Ownership and Control", *Journal of Law and Economics,* Vol. 26, pp. 301-25.

Ginoglou, D., K. Agorastos, et al. (2002), "Predicting Corporate Failure of Problematic Firms in Greece with LPM Logit Probit and Discriminant Analysis Models", *Journal of Financial Management and Analysis,* Vol. 15, No. 1, pp. 1-15.

Hermalin, B. and M. Weisbach (1991), "The Effects of Broad Composition and Direct Incentives on Firm Performance", *Financial Management,* Vol. 20, pp. 101-12.

Hill, C. and S. Snell (1988), "External control, Corporate Strategy, and Firm performance in Research-Intensive Industries", *Strategic Management Journal,* Vol. 9, pp. 577-90.

Hill, C. and S. Snell (1989), "Effects of ownership structure and Control on Corporate Productivity", *Academy of Management Journal*, Vol. 32, pp. 25-46.

Himmelberg, C., R. G. Hubbard, et al. (1999), "Understanding the Determinants of Managerial Ownership and the link between ownership and performance", *Journal of Financial Economics,* Vol. 53, pp. 353-84.

Holderness, C., R. Kroszner, et al. (1999), "Where the good old days that good? Evolution of managerial stock ownership and corporate governance since the great depression", *Journal of Finance,* Vol. 54, pp. 435-69.

Holderness, C. and D. Sheehan (1988), "The Pole of Majority Shareholders in Publicly Held Corporations: An Exploratory Analysis", *Journal of Financial Economics*, Vol. 20, pp. 317-46.

Jensen, M. and W. Meckling (1976), "Theory of the firm: Managerial Behavior, Agency costs and Ownership Structure", *Journal of Financial Economics,* Vol. 3, pp. 305-60.

Kaplan, S. and B. Minton (1994), "Appointments of Outsiders to Japanese Broads. Determinants and Implications for Managers", *Journal of Financial Economics,* Vol. 23, pp. 225-58.

Leech, D. and J. Leahy (1991), "Ownership Structure, Control Type Classifications and the Performance of Large British Companies", *The Economic Journal,* Vol. 101, pp. 1418-37.

Lizal, L. (2002), Determinants of Financial Distress: What Drive Bankruptcy in a Transition Economy? The Czech Republic Case, Working paper.

Loderer, C. and K. Martin (1997), "Executive Stock Ownership and Performance: Tracking faint Traces", *Journal of Financial Economics,* Vol. 45, pp. 223-55.

McConnell, J. and H. Servaes (1990), "Additional Evidence on Equity Ownership and Corporate Value", *Journal of Financial Economics,* Vol. 27, pp. 595-612.

McConnell, J. J. and Sevaes.H. (1990), "Additional Evidence on Equity Ownership and Corporate Value", *Journal of Financial Economics,* Vol. 38, pp. 163-84.

Morck, R., M. Nakamura, et al. (2000), "Banks, Ownership Structure, and Firm Value in Japan", *Journal of Business,* Vol. 73, pp. 539-67.

Morck, R., A. Shleifer, et al. (1988), "Management Ownership and Market Valuation: An Empirical Analysis", Journal *of Financial Economics,* Vol. 20, pp. 293-315.

Morck, R., A. Shleifer, et al. (1989), "Management Ownership and Market Valuation: An Empirical Analysis", *Journal of Financial Economics,* Vol. 20, pp. 293-315.

Mudambi, R. and C. Niclosia (1998), "Ownership Structure and Firm Performance: Evidence from the UK Financial Services Industry", *Applied Financial Economics,* Vol. 8, pp. 175-80.

Pedersen, T. and T. Thompson (1997), "European Patterns of Corporate Ownership: A twelve Country Study", *Journal of International Business Studies,* Vol. 28, No. 4, pp. 759-78.

Prowse, S. (1992), "The Structure of Corporate Ownership in Japan", *The Journal of Finance,* Vol. 47, No. 3, pp. 1121-41.

Shleifer, A. and R. Vishny (1986), "Large shareholders and Corporate Control", *Journal of Political Economy,* Vol. 94, pp. 461-88.

Shleifer, A. and R. Vishny (1997), "A survey of Corporate Governance", *The Journal of Finance,* Vol. 52, pp. 737-83.

Wu, S. and H. Cui (2002), Consequences of the Concentrated Ownership Structure in Mainland China - Evidence of Year 2000, working paper.

Xu, X. and Y. Wang (1997), Ownership structure, Corporate Governance, and
Corporate Performance: The case of Chinese Stock Companies, Working
Paper.

Zmijewski, M. E. (1984), "Methodological Issues Related to the Estimation of
Financial Distress Prediction Models", *Journal of Accounting Research,* Vol.
22 (Supplement), pp. 59-82.

Tables

Table 1 Ownership Concentration of Defaulted Firms

Ownership Concentration of defaulted firms

Variable	Definition	Mean	SD	Minimum	Median	Maximum
C1	Largest shareholder	28.29786	25.58	0.00	22.39	99.00
C2	Largest two shareholders	36.2275	27.47839	0	36	99
C3	Largest three shareholders	39.10179	29.2407	0	38.555	99
C5	Largest five shareholders	40.39821	30.22506	0	38.555	99
HERF	Herfindahl index of ownership	1609.41	2416.03	0	810.19	9801

Table 2 Ownership Concentration of non-defaulted Firms

Ownership Concentration of non-defaulted firm's

Variable	Definition	Mean	SD	Minimum	Median	Maximum
C1	Largest shareholder	24.13226	19.23575	0	19.56	87.7
C2	Largest two shareholders	31.9071	23.7396	0	27.4	87.7
C3	Largest three shareholders	33.80968	24.76374	0	27.7	87.7
C5	Largest five shareholders	34.61677	26.02797	0	27.7	87.7
HERF	Herfindahl index of ownership	1109.995	1561.081	0	470.89	7691.29

Table 3 Owners participation in industrial and services firms

	number of firms block holders participate in	Percentage in firms participation
Individual participants	161	0.975758
Arab	122	0.739394
Foreigners	47	0.284849
Companies	157	0.951515
Government	103	0.624242
Arab and Foreigner	131	0.793939
Total firms	165	

Table 4 Characteristics of Ownership Structure

	Defaulted Firms			Non-defaulted Firms		
Variable	mean	SD	Median	mean	SD	Median

Government ownership	13.079	25.176	0.982	17.798	25.401	3.856
Individual Ownership	48.109	32.755	52.323	45.151	25.116	46.346
Companies ownership	24.847	26.449	13.514	25.442	23.004	15.353
Foreigner owners	5.838	15.716	0.000	11.015	13.663	4.463

Table 5 Description of Variables

ROA	Net income/ total assets
ROE	Net income/ total equity
Tobin's Q	(Market value of equity+ book value of debt)/book value of assets
MBR	Market value of equity/ Book value of equity
Government	Percentage of share held by government
Arab	Percentage of shares held by Arab
Foreign	Percentage of shares held by Foreigner
Individual	Percentage of shares held by individual
Companies (Institution)	Percentage of shares held by institution
Firm Size	Logarithm of the total assets
Firm's age	log of years
TD/TE	Total debt/ total equity
LTD/TA	Long term debt/total assets
NI/CAP	Net income/ Capitalization
TD/TA	Total debt/ total assets
C5	Larges five shareholders
Herf index	the sum of squared percentage of shares controlled by each top five shareholders
Dummy 1	Manufacture
Dummy 2	Steel and mining
Dummy 3	Trade
Dummy 4	Utility
Dummy 5	Real estate

Table 6 Ownerships Concentration (C5) and Mix and Firm's performance

	Constant	ASS	AGE	TD/TE	LTD/TA	NI/CAP	C5	FGO	FFO	FIN	Adj. R^2	F-Stat
ROE	-1.86	0.27	0.039	-0.14	-0.54	0.24	0.28	-2.44			0.73	23.66
	(-5.18)a	(4.80)a	(0.40)	(-8.08)a	(-1.76)C	(2.65)a	(2.44)b	(-1.79)c				
ROE	-1.90	0.28	- 0.006	-0.14	-0.77	0.22	0.18		-0.10		0.72	21.99
	(-5.14)a	(5.01)a	(-0.07)	(-7.80)a	(-2.65)b	(2.41)b	(1.78)c		(-0.53)			
ROE	-1.87	0.27	- 0.0006	-0.14	-0.70	0.23	0.14			0.18	0.73	23.16
	(-5.17)a	(4.86)a	(-0.01)	(-7.96)a	(-2.44)a	(2.64)c	(1.41)			(1.53)		
ROA	-1.32	0.18	0.02	0.02	-0.30	0.26	0.15	-0.05			0.53	10.20
	(-5.74) a	(5.09)a	(0.24)	(1.68)c	(-1.52)	(4.65)a	(2.07)b	(-0.59)				
ROA	-1.33	0.18	0.005	0.02	-0.35	0.26	0.13		-0.013		0.52	10.08
	(-5.75)a	(5.22a	(0.08)	(1.69)c	(-1.90)c	(4.58)a	(2.05)b		(-0.10)			
ROA	-1.32	0.18	0.008	0.019	-0.33	0.26	0.12			0.052	0.50	10.85
	(-5.75)a	(5.12)a	(0.13)	(1.70)c	(-1.80)c	(4.67)a	(1.87)c			(0.70)		
Q	2.55	-0.31	0.50	-0.09	0.79	-0.10	-0.18	0.90			0.14	2.38
	(2.23) b	(-1.79)c	(1.64)	(-1.63)	(0.81)	(-0.35)	(-0.49)	(2.08)a				
Q	2.60	-0.36	0.77	-0.09	1.38	0.06	0.28		-1.26		0.14	2.39
	(2.28)b	(-2.08)b	(2.64)b	(-1.69)c	(1.54)	(0.2)	(0.87		(-2.09)b			
Q	2.71	-0.39	0.72	-0.10	1.71	0.05	0.13			0.39	0.09	1.81
	(2.30)b	(-2.18)b	(2.39)b	(-1.65)	(1.84)c	(0.16)	(0.40)			(1.02)		
MBR	2.45	-0.30	0.11	0.19	1.46	0.76	1.00	-0.15			-0.06	0.54
	(0.86)	(-0.68)	(0.14)	(1.43)	(0.60)	(1.09)	(1.09)	(-0.41)				
MBR	2.35	-0.28	0.23	0.15	1.04	0.70	1.04		-1.62		- 0.04	0.72
	(0.83)	(-0.64)	(0.25)	(1.46)	(0.48)	(1.20)	(1.32)		(-1.09)			
MBR	2.50	-0.31	0.10	0.19	1.44	0.79	0.88			0.33	-0.06	0.55
	(0.87)	(-0.71)	(0.13)	(1.43)	(0.64)	(1.13)	(1.09			(0.36)		

Note: t statistics are in the parentheses.
a, b, c: indicate significant at 1%, 5%, and 10% level, respectively.

Table 7 Ownerships Concentration (HERF) and Mix and Firm's performance

	Constant	ASS	AGE	TD/TE	LTD/TA	NI/CAP	HERF	FGO	FFO	FIN	Adj. R^2	F-Stat
ROE	-1.86	0.28	0.03	-0.14	-0.67	0.22	0.19	-0.15			0.71	21.08
	(-4.94)a	(4.81)a	(0.31)	(-7.71)a	(-2.14)b	(2.35)b	(1.11)	(-1.08)				
ROE	-1.88	0.29	0.007	-0.14	-0.79	0.20	0.10		-0.06		0.71	20.50
	(-4.97)a	(4.97)a	(0.01)	(-7.65)a	(-2.65)a	(2.20)b	(1.64)c		(0.31)			
ROE	-1.86	0.27	0.01	-0.14	-0.70	0.23	0.03			0.21	0.72	22.04
	(-5.04)a	(4.83)a	(0.10)	(-7.91)a	(-2..39)b	(2.49)c	(0.21)			(1.71)c		
ROA	-1.32	0.19	0.012	0.017	-0.37	0.25	0.12	-0.008			0.50	9.20
	(-5.55)a	(5.11)a	(0.19)	(1.51)	(-1.86)C	(4..34)a	(1.07)	(-0.09)				
ROA	-1.32	0.19	0.009	0.018	-0.37	0.25	0.11		0.02		0.50	9.21
	(-5.56)a	(5.17)a	(0.15)	(1.52)	(-1.98)b	(4.36)a	(1.19)c		(0.15)			
ROA	-1.32	0.18	0.014	0.017	-0.35	0.26	0.09			0.06	0.50	9.41
	(-5.57)a	(5.06)a	(0.24)	(1.49)	(-1.86)c	(4..49)a	(0.35)			(0.42)		
Q	2.52	-0.31	0.48	-0.09	0.84	-0.11	-0.38	0.95			0.15	2.43
	(2.21) b	(-1.78)c	(1.59)	(-1.70)c	(0.88)	(-0.40)	(-0.73)	(2.20)b				
Q	2.62	-0.35	0.78	-0.10	1.34	0.04	0.17		-1.19		0.13	2.28
	(2.28)b	(-2.03)b	(2.66)a	(-1.73)c	(1.47)	(0.13)	(0.38)		(-1.98)b			
Q	2.72	-0.39	0.73	-0.10	1.69	0.04	0.07			0.40	0.09	1.78
	(2.31)b	(-2.17)b	(2.42)a	(-1.67)b	(1.81)c	(0.13)	(0.14)			(1.05)		
MBR	2.43	-0.24	0.04	0.17	0.92	0.64	0.20	0.37			-0.09	0.36
	(0.84)	(-0.54)	(0.77)	(1.23)	(0.38)	(0.90)	(0.16)	(0.34)				
MBR	2.43	-0.25	0.22	0.17	0.96	0.74	0.40		-1.40		- 0.07	0.47
	(0.85)	(-0.56)	(0.30)	(1.21)	(0.42)	(1.05)	(0.36)		(-0.93)			
MBR	2.55	-0.29	0.16	0.17	1.38	0.74	0.27			0.48	-0.09	0.38
	(0.88)	(-0.66)	(0.22)	(1.21)	(0.60)	(1.04)	(0.23)			(0.52)		

Note: t statistics are in the parentheses.
a, b, c: indicate significant at a 1%, 5%, and 10% level, respectively.

Table 8 Ownership participation in both default and non-default

	Default	Non-Defaulted Firms
Government ownership	0.5357143	0.612903
Individual ownership	0.9642857	1
Companies ownership	0.8928571	0.935484
Foreign ownership	0.3928571	0.903226

Table 9 Ownerships Concentration and Mix and Firm's Default Risk using Logit Model

	Constant	ASS	AGE	TD/TA	NI/CAP	C5	HERF	FGO	FFO	FIN	Pseudo R^2	LR Chi 2	Prob>chi2
Model 1	5.02	-1.23	-0.58	5.26	-14.96	5.00		-7.76			0.60	49.20	0.00
	(0.70)	(-1.08)	(-0.37)	(1.70)c	(-2.28)b	(2.34)b		(-2.43)b					
Model 2	9.12	-1.55	-1.65	3.71	-8.43	2.43		0.58			0.49	40.32	0.00
	(131)	(-1.46)	(-1.20)	(1.53)	(-1.94)b	(1.59)		(0.24)					
Model 3	9.72	-1.61	-1.62	3.65	- 8.26	2.57			-0.58		0.49	40.41	0.00
	(1.36)	(-1.49)	(-1.20)	(1.50)	(-1.93)b	(1.64)c			(-0.38)				
Model 4	7.43	-1.40	-0.54	5.11	-9.99		5.38	-5.93			0.56	45.47	0.00
	(1.04)	(1.26)	(-0.36)	(1.71)c	(-2.07)b		(1.49)	(-2.27)b					
Model 5	9.79	- 1.56	-1.52	3.70	- 7.16		1.96	0.86			0.47	38.74	0.00
	(141)	(-1.50)	(-1.14)	(1.57)	(-1.83)c		(1.07)	(0.36)					
Model 6	10.69	-1.66	- 1.50	3.67	- 6.85		2.32		-0.77		0.48	38.83	0.00
	(1.48)	(-1.55)	(-1.16)	(1.56)	(-1.80)c		(1.14)		(-0.47)				

Note: t statistics are in the parentheses.
a, b, c: indicate significant at a 1%, 5%, and 10% level, respectively.

Table 10 Ownerships Concentration and Mix and Firm's Default Risk using Probit Model

	Constant	ASS	AGE	TD/TA	NI/CAP	C5	HERF	FGO	FFO	FIN	Pseudo R^2	LR Chi 2	Prob>chi2
Model 1	3.05	-0.75	-0.25	2.92	-8.33	2.94		-4.22			0.60	49.33	0.00
	(0.73)	(-1.13)	(-0.27)	(1.65)c	(-2.31)b	(2.38)b		-(2.49)a					
Model 2	5.27	-0.90	- 0.94	2.19	-4.77	1.34		0.30			0.50	40.44	0.00
	(136)	(-1.53)	(-1.14)	(1.55)	(-1.97)b	(1.54)		(0.20)					
Model 3	5.42	- 0.91	-0.92	2.17	-4.66	1.39			-0.20		0.50	40.45	0.00
	(1.39)	(-1.55)	(-1.14)	(1.53)	-(1.96)b	(1.57)			(-0.22)				
Model 4	4.53	-0.86	- 0.27	2.92	-5.69		3.27	-3.27			0.56	45.66	0.00
	(1.09)	(-1.33)	(-0.32)	(1.71)c	(-2.12)b		(1.57)	(-232)b					
Model 5	5.67	-0.92	-0.89	2.28	- 4.20		1.22	0.44			0.48	39.12	0.00
	(147)	(-1.58)	(-1.11)	(1.63)	(-1.86)c		(1.07)	(0.31)					
Model 6	5.94	-0.94	-0.87	2.52	-4.04		1.36		-0.32		0.48	39.14	0.00
	(1.52)	(-1.62)	(-1.11)	(1.62)	(-1.83)c		(1.09)		(-0.34)				

Note: t statistics are in the parentheses.
a, b, c: indicate significant at a 1%, 5%, and 10% level, respectively.