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Abstract

This paper is concerned with developing a simple two-country model with the objective of identifying the macroeconomic impact arising for a small open economy from shocks emanating from a large country. The latter can also be interpreted as representing a bloc of countries that exert an important influence upon the small country.

The approach adopted is to conduct some simple simulations focusing upon external shocks emanating from the large country and its economic impact upon the small country, identifying in the process under what circumstances a policy response by the small country would be optimal in the sense of reducing the volatility of key macroeconomic variables such as the domestic price level, the exchange rate, the domestic interest rate and domestic output. In doing so, this analysis can enable identification of the desirability, or otherwise, of a coordination of macroeconomic policy between the large and small country, and under what circumstances it would be desirable to conduct an autonomous macroeconomic policy.

The analysis is conducted by means of generating a calibrated solution and simulation of the model.

1. Introduction

This paper is concerned with developing a two country model, a large country and a small country, with the objective of identifying the circumstances under which, from the perspective of the small country, it would be conducive to conduct co-ordinated macroeconomic policy with the objective of minimizing volatility in terms of key macroeconomic variables such as domestic prices, the exchange rate, the domestic interest rate and domestic output. The analysis is conducted from the perspective of the small country throughout. The analysis is important in providing a starting point for analysing the circumstances under which it would be conducive for a small country to contemplate the coordination of monetary and fiscal policy and those circumstances under which autonomy in these areas would be preferable.

While the approach adopted is a simple one, it does provide a starting point for the development of a more sophisticated two-country model approach that is the ultimate objective of this line of study. Given the increased prevalence of closer regional economic integration in the global economy, the major advances made in terms of economic and monetary union achieved in the European Union, and prospective developments of this in East Asia and the global economy more generally, it would be useful to have a clearer understanding as to what are the key conditions conducive to such closer economic integration and policy coordination.

The remainder of this paper proceeds as follows. Section 2 presents the simple model to be adopted to explore the issues of external shocks and the desirability or otherwise of closer economic integration of macroeconomic policy between a small and large economy. Section 3 presents some calibrated solutions to the model for some simulation scenarios. Section 4 identifies some of the weaknesses of the modelling framework adopted, and the necessary extensions to it in future work. Finally, Section 5 presents a summary of the major conclusions.

2. Conceptual framework

The framework utilised is that of a simple Dornbusch (1976) type rational expectations model. Two versions of this model are adopted. The first of which is based on the assumption of a small open economy with a flexible exchange rate and perfect capital mobility. This is shown by equations (1)-(4) in Table 1. Equation (1) describes money (or asset) market equilibrium, where the demand and supply of real money balances are in equilibrium. Real money demand is positively related to real output but negatively related to the nominal interest rate. The money (asset) market is assumed to be in continual equilibrium arising from the instantaneous adjustment of financial variables (in this version of the model the nominal exchange rate and the interest rate). Equation (2) describes goods market equilibrium. The demand for real output is positively related to the real exchange rate (equivalent to the domestic price of the imported product to the domestic price of the product), negatively related to the domestic real interest rate (the nominal rate deflated by domestic inflation), positively related to real government expenditure, and positively related to the real output of the large country (or bloc of countries). Small country output is assumed to be identical to

Table 1 Conceptual framework

Small economy model

(1) $m - p = ky - \lambda r$

(2) $y = \delta_1(e + p^* - p) - \delta_2(r - Dp) + \delta_3 g + \delta_4 y^*$

(3) $Dp = \phi(y - y^f)$

(4) $De = r - r^*$

Large economy model

(5) $m^* - p^* = k^*y^* - \lambda^*r^*$

(6) $y^* = \delta^*_1(e^* - p^*) - \delta^*_2(r^* - Dp^*) + \delta^*_3 g^*$

(7) $Dp^* = \phi^*(y^* - y^{f*})$

(8) $De^* = r^* - r^{**}$

Definition of variables:

All the variables are in log form, with the exception of r, r* and r**

m – small country money supply
p- small country price level
y – small country real output
r – small country domestic interest rate
y^f – small country full employment output
e – small country nominal exchange rate (the domestic currency price of foreign exchange)
m* – large country money supply
p*- large country price level
y* – large country real output
r* – large country domestic interest rate
y^f *– large country full employment output
e* – large country nominal exchange rate (the domestic currency price of foreign exchange)
D – differential operator

that of the output of the large country. Equation (2), unlike Equation (1), does not remain in equilibrium continuously due to stickiness of adjustment of domestic prices. Hence a key characteristic of the model is that asset markets are in continual equilibrium while there is disequilibrium in non-financial markets during the adjustment process. Equation (3) describes the determination of inflation in the small country, which is based on a very simple (non inflation augmented) Phillips curve relationship, where the price level changes with variations in real output (demand) from its full employment level (y^f) (supply). Note, however, that prices are not perfectly flexible but adjust only gradually to their new equilibrium level, and hence result in disequilibrium in the goods market as previously alluded to. In this version of the model, output is restricted to its full employment level, and any variations in demand simply cause prices to rise or fall. This is a deficiency of the simple Dornbusch (1976) model, but can be amended as discussed below. Finally, Equation (4) describes the uncovered interest rate parity condition. Here, the expected nominal exchange rate appreciation/depreciation is fully offset by the small country interest rate being higher than or lower than that available elsewhere to ensure that expected returns on all financial assets are equalised. This is based on the assumption that financial assets in the small country, and elsewhere, including that of the large country, are perfect substitutes. Hence, not only is it assumed that there is perfect capital mobility but financial assets in the small and large economies are perceived to be of identical risk (indeed they are riskless).

Economic agents are assumed to possess rational (forward looking) expectations, implying that they do not make consistent errors. The solution to the model requires the derivation of a stable saddlepath. Any exogenous shock requires the economy to 'jump' on to its new stable saddlepath that will take the economy to its ultimate new equilibrium steady state. In this system there is one 'jump' variable, associated with an unstable eigenvalue (positive characteristic root) and one 'non jump' or predetermined variable associated with a stable eigenvalue (negative characteristic root). Stability can only be attained if this is so. For the small country the unstable root is associated with the nominal exchange rate, which must jump on impact onto the new stable saddlepath. The stable root is associated with domestic prices, which cannot jump on impact. Thereafter, the nominal exchange rate and price level will adjust gradually along the stable saddlepath to long run steady state.

The second version of the model is based on the assumption of a large open economy (or a bloc of countries) with a flexible exchange rate and perfect capital mobility. This is shown by equations (5)-(8) in Table 1. Equation (5) describes large country money (or asset) market equilibrium, where the demand and supply of real money balances are in equilibrium. Real money demand is positively related to real large country output but negatively related to the large country's nominal interest rate. The money (asset) market in the large country is assumed to be in continual equilibrium arising from the instantaneous adjustment of financial variables (the nominal exchange rate and the interest rate). Equation (6) describes goods market equilibrium in the large country. The demand for real output is positively related to the real exchange rate (equivalent to the domestic price of the imported product to the domestic price of the product), negatively related to the large country domestic real interest rate (the nominal rate deflated by domestic inflation), and positively related to large country real government expenditure. Notice that the small country is too small to exert any substantive influence on the demand for large country production. As for the case of

the small country Equation (6), unlike Equation (5), does not remain in equilibrium continuously due to stickiness of adjustment of large country domestic prices. As for the small country, a key characteristic of the model is that asset markets are in continual equilibrium while there is disequilibrium in non-financial markets during the adjustment process. Equation (7) describes the determination of inflation in the large country, which is based on a very simple (non inflation augmented) Phillips curve relationship, where the price level changes with variations in real output (demand) from its full employment level (y^{f*}) (supply). Note, however, that prices are not perfectly flexible but adjust only gradually to their new equilibrium level, and hence result in disequilibrium in the goods market as previously alluded to. In this version of the model output is restricted to its full employment level in the large country, and any variations in demand simply cause prices to rise or fall. Equation (5) describes the uncovered interest rate parity condition. Here, the expected nominal exchange rate appreciation/depreciation for the large country is fully offset by the large country interest rate being higher than or lower than that available elsewhere (globally) to ensure that expected returns on all financial assets are equalized. This is based on the assumption that financial assets, globally, are perfect substitutes.

As for the small country model economic agents are assumed to possess rational (forward looking) expectations, implying that they do not make consistent errors. The solution to the model requires the derivation of a stable saddlepath. Any exogenous shock requires the economy to 'jump' on to its new stable saddlepath that will take the economy to its ultimate new equilibrium steady state. In this system there is one 'jump' variable, associated with an unstable eigenvalue (positive characteristic root) and one 'non jump' or predetermined variable associated with a stable eigenvalue (negative characteristic root). Stability can only be attained if this is so. For the small country the unstable root is associated with the nominal exchange rate, which must jump on impact onto the new stable saddlepath. The stable root is associated with domestic prices, which cannot jump on impact. Thereafter, the nominal exchange rate and price level will adjust gradually along the stable saddlepath to long run steady state.

3. Model simulations[1]

In this section a number of numerical simulations are conducted with the objective of identifying, from the perspective of the small country, policy responses in the wake of external disturbances/shocks that will minimize adverse developments in key domestic variables. In this context it will be possible to identify whether closer policy integration, primarily in the form of monetary policy, can dampen the effects from macroeconomic disturbances or will exacerbate such disturbances. In order to conduct this process requires knowledge of the parameter values of the model. The following analysis proceeds on the basis that the parameters of the model have the numerical

[1] The numerical algorithm utilised is known as 'Saddlepoint'. This was developed by Austin and Buiter (1982) for solving systems of linear differential equations with constant coefficients, and is based upon the solution provided by Blanchard and Khan (1980) for the case of systems of linear difference equations.

values as contained in Table 2[2]. These parameters are a reasonable approximation of reality and suitable for the purposes of this study. They ensure model stability and result in unambiguous numerical results.

Table 2 Assumed parameter values

k	1.0
λ	0.5
δ_1	0.5
δ_2	0.5
δ_3	0.1
ϕ	0.5
k^*	1.0
λ^*	0.5
δ^*_1	0.5
δ^*_2	0.5
δ^*_3	0.1
ϕ	0.5
r^{**}	0.05

3.1 Exogenous large country shocks and the implications for small country policy

The initial simulation results presented focus upon the impact on the small country from individual disturbances emanating from the large country, specifically relating to large country interest rate shocks, large country output shocks and large country domestic price shocks. For these simulations, the disturbance occurring is in the form of a single exogenous disturbance emanating from the large country. The relevant model simulated is that for the small country only.

Scenario 1 Large country interest rate shock (r)*

In this scenario it is assumed that the interest rate in the large country increases in a way to that identified in Table 3. That is, it increases by 1 per cent on impact (0 to 0'), by a further 1 per cent in period 1 (to be 2 per cent above its baseline or starting value), and by a further 1 per cent in period 2. In period 3 it falls by 1 per cent (to be 2 per cent above its baseline value again), falling a further 1 per cent in period 4, and finally returns to its baseline value in period 5. Hence the rise in the large country's interest rate is temporary with no lasting change. Three possible responses, from a number of possible choices, by the small country are focused upon. The first is where there is no response, and the small economy retains its existing macroeconomic policies. The second is where the small country adjusts its monetary policy settings, and conducts an independent policy response, by increasing the money supply with

[2] A sensitivity analysis can be conducted to identify which of these parameter values are important for model stability and for long run steady state, and for the adjustment process to steady state. Such a procedure is not conducted in this study.

Table 3 Simulation scenarios
(values are percentage (%) deviations from baseline)

Time period	0	0'	1	2	3	4	5
Scenario 1 Large country interest rate shock (r*)	0	1	2	3	2	1	0
No response	-	-	-	-	-	-	-
Response Money supply increase	0	1	2	3	2	1	0
Response Money supply decrease	0	-1	-2	-3	-2	-1	0
Scenario 2 Large country real output shock (y*)	0	1	2	3	2	1	0
No response	-	-	-	-	-	-	-
Response Money supply increase	0	1	2	3	2	1	0
Response Money supply decrease	0	-1	-2	-3	-2	-1	0
Scenario 3 Large country price level shock (p*)	0	1	2	3	2	1	0
No response	-	-	-	-	-	-	-
Response Money supply	0	1	2	3	2	1	0
Response Money supply	0	-1	-2	-3	-2	-1	0

the objective of offsetting the adverse interest rate effect coming from the large economy. This could be described as an anti-cyclical adjustment policy, attempting to avoid any deflationary impact upon the domestic economy. The third is where the small country adjusts its monetary policy settings, conducts an independent policy response, by this time decreasing the money supply with the objective of tightening monetary policy in line with the rise in the large economy interest rate. This could be described as a pro-cyclical adjustment policy, exacerbating any deflationary impact upon the domestic economy from the external interest rate shock. Implications for the adjustment of key macroeconomic variables for the small country, for all of these cases, are shown in Figures 1 to 4.

The no response option appears to produce the most stable outcomes for two of the four variables focused upon. The price level and output variables are less volatile where there is no monetary policy response, while the volatility of the small country interest rate is marginally improved if the interest rate shock is met by an increase in

Figure 1 Price level

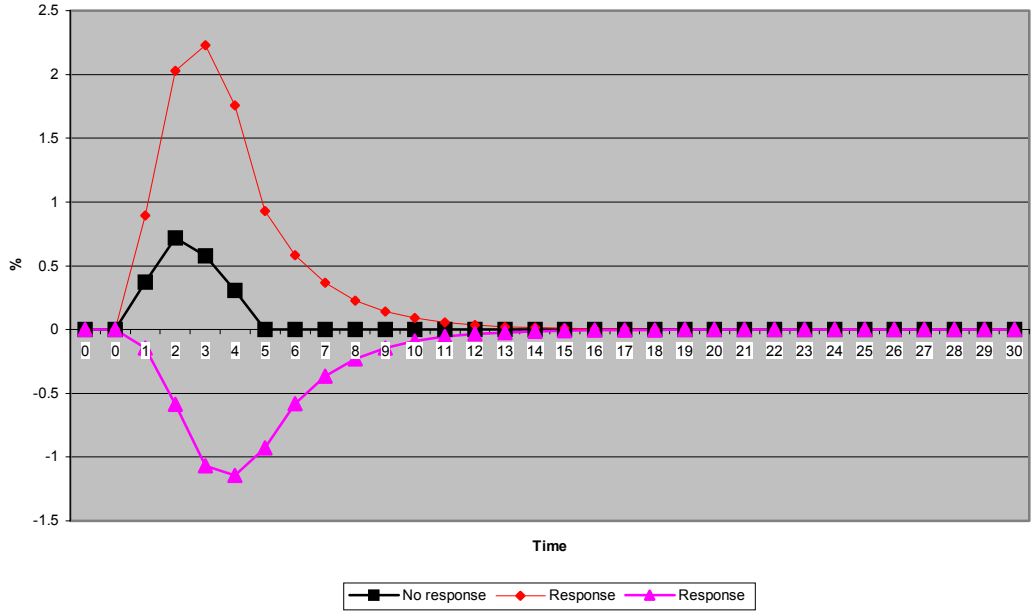


Figure 2 Exchange rate

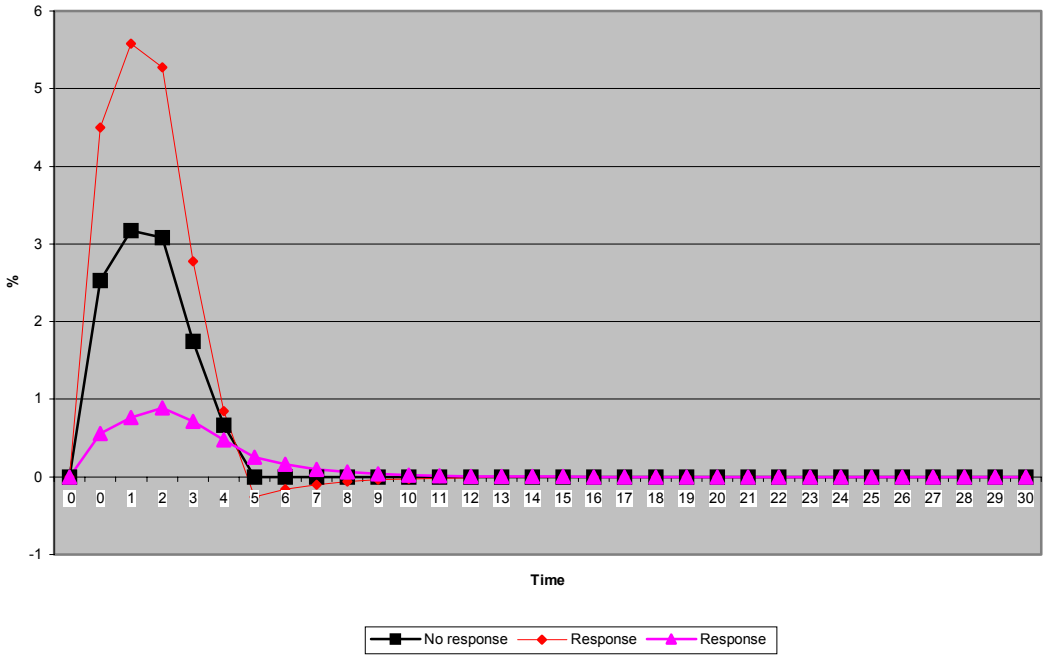


Figure 3 Interest rate

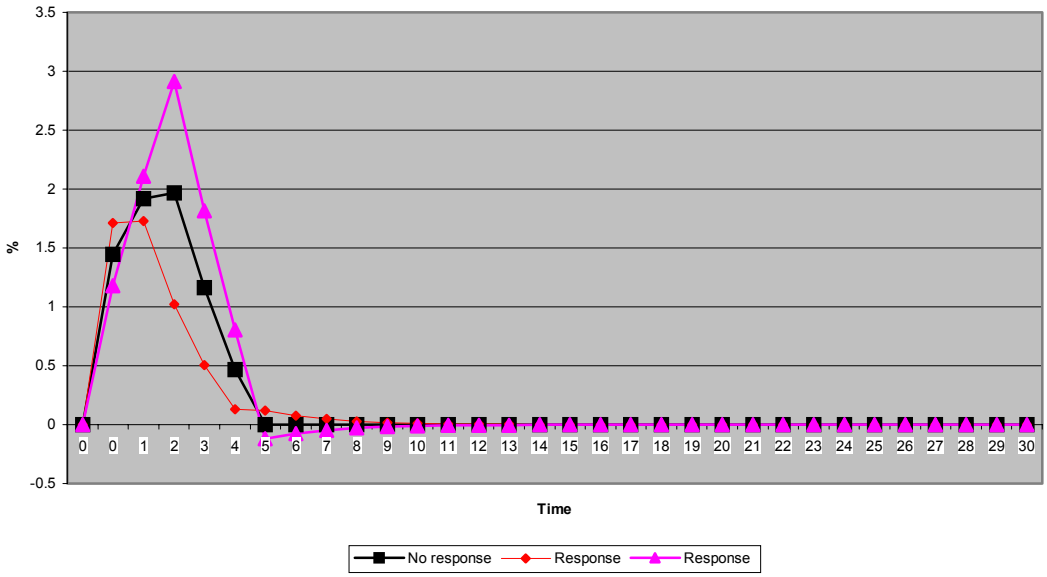
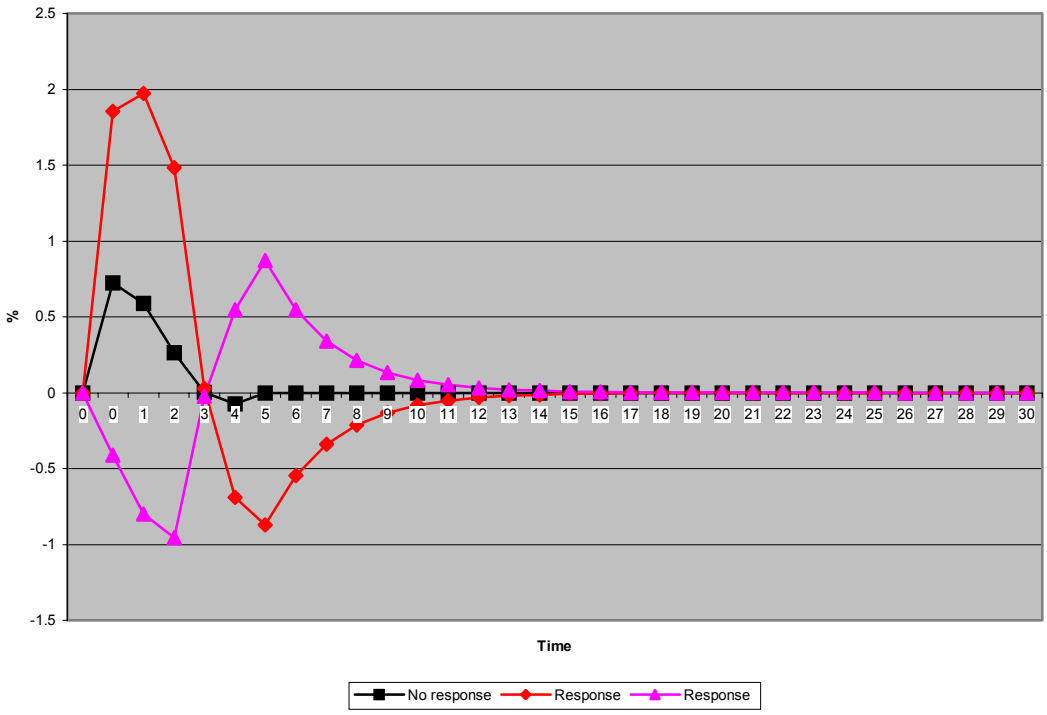


Figure 4 Output



the small country money supply. In the output case, this becomes more volatile if the money supply is expanded or contracted, and this is particularly so in the case of a monetary expansion. The volatility of the interest rate is increased if it is met by a

monetary contraction. The volatility of the exchange rate is reduced where the money supply is contracted. It is particularly noticeable that the volatility of the small country price level, exchange rate and real output is increased if the money supply is expanded.

As indicated in Table 4, if the volatility of each macroeconomic variable is given equal weighting, then the optimal response to the interest rate shock is for no change in domestic small country monetary policy. If the rise in the large country interest rate was induced by a tightening of large country monetary policy, then macroeconomic outcomes would appear to be better in this case if an independent monetary policy was pursued rather than to conduct a similar tightening of monetary policy. A coordination of monetary policy with the large country, a reduction in the money supply, would produce a second best outcome overall. However, it would be the best policy to pursue if exchange rate stability was a key objective, but would be the worst policy to pursue if interest stability was the key objective. Operating a small country monetary policy against global trends, by expanding the money supply, would produce the worst outcomes in terms of price, exchange rate and output stability.

Table 4 Policy rankings – large country interest rate shock (r*)
(a lower number represents a higher ranking)

Volatility	No response	Contract money supply	Expand money supply
Price level	1	2	3
Exchange rate	2	1	3
Interest rate	2	3	1
Output	1	2	3
Total	6	8	10

Scenario 2 Large country real output shock (y)*

In this scenario it is assumed that real output in the large country increases in a way to that identified in Table 3. That is, it increases by 1 per cent on impact (0 to 0'), by a further 1 per cent in period 1 (to be 2 per cent above its baseline or starting value), and by a further 1 per cent in period 2. In period 3 it falls by 1 per cent (to be 2 per cent above its baseline value again), falling a further 1 per cent in period 4, and finally returns to its baseline value in period 5. Hence the rise in the large country's real output is temporary with no lasting change. As with the first scenario three possible responses, from a number of possible choices, by the small country are given particular focus. The first is where there is no response, and the small economy retains its existing macroeconomic policy settings. The second, is where the small country adjusts its monetary policies settings, conducts an independent policy response, by increasing the money supply with the objective of further enhancing the potential expansionary effects from the increased large country income. This could be described as a pro-cyclical adjustment policy, since it would attempt to further expand the expansionary impact upon the domestic economy. The third is where the small country adjusts its monetary policies settings, conducts an independent policy response, by this time decreasing the money supply with the objective of conducting a tightening of monetary policy to offset the expansionary effects from the higher income of the large country. This could be described as an anti-cyclical adjustment

policy, since it would attempt to dampen any expansionary effect of the higher income from the large country upon the domestic economy. The implications for the adjustment of key macroeconomic variables for the small country, for all of these cases, are shown in Figures 5 to 8.

This scenario produces the most clear-cut outcomes. The no response policy option produces the most stable outcomes for all of the four macroeconomic variables. Exchange rate and interest rate stability is worse in the money contraction case, while output volatility is worse in the case where there is an expansion in the money supply. As indicated in Table 5, if the volatility of each macroeconomic variable is given equal weighting, then the optimal response, by far, to the large country income shock is for no change in domestic small country monetary policy. If the rise in large country income originated, say, from an expansionary monetary policy in the large country, then, again, macroeconomic outcomes would appear to be better in the case where an independent monetary policy was pursued rather than to conduct a similar expansion of monetary policy in the small country. A coordination of monetary policy with the large country, through an increase in small country money supply, would produce a second best outcome overall.

Table 5 Policy rankings – large country output shock (y*)
(a lower number represents a higher ranking)

Volatility	No response	Contract money supply	Expand money supply
Price level	1	2	2
Exchange rate	1	3	2
Interest rate	1	3	2
Output	1	2	3
Total	4	10	9

Scenario 3 Large country price level shock (p)*

In this scenario it is assumed that the price level in the large country increases in a way to that identified in Table 3. That is it increases by 1 per cent on impact (0 to 0'), by a further 1 per cent in period 1 (to be 2 per cent above its baseline or starting value), and by a further 1 per cent in period 2. In period 3 it falls by 1 per cent (to be 2 per cent above its baseline value again), falling a further 1 per cent in period 4, and finally returns to its baseline value in period 5. Hence the rise in the large country's price level is temporary with no lasting change.

As with the first two scenarios three possible responses, from a number of possible choices, by the small country are focused upon. The first of which is that where there is no response, and the small economy retains its existing macroeconomic policies. The second, is that where the small country adjusts its monetary policies settings, conducts an independent policy response, by increasing the money supply with the objective of enhancing the potential expansionary effects in the small country from the increase in the price level of the large country. This could be described as a pro-

Figure 5 Price level

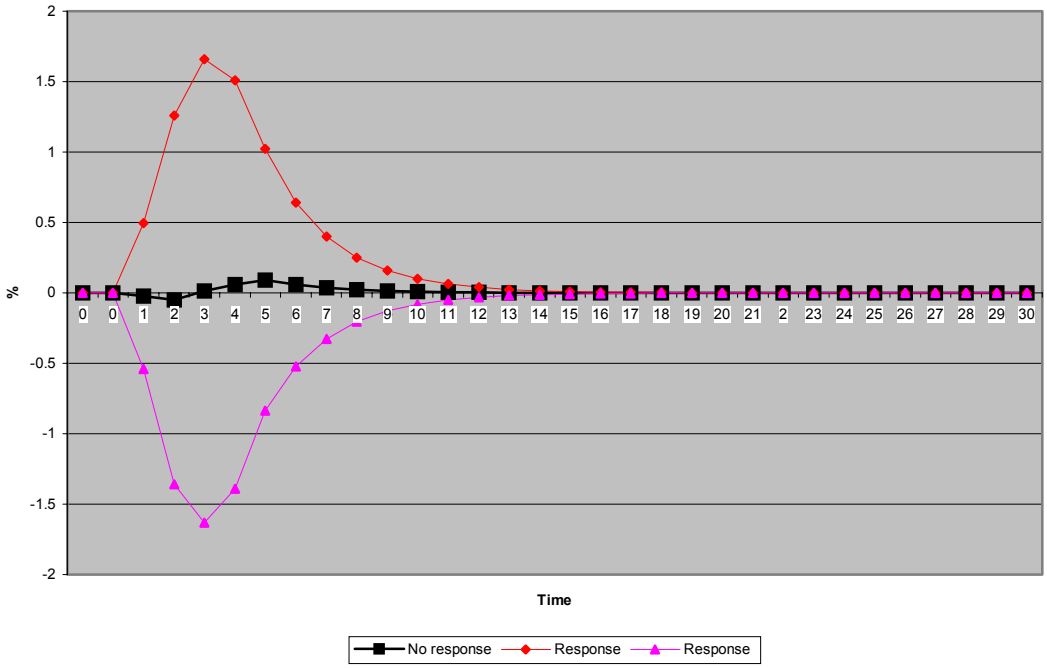


Figure 6 Exchange rate

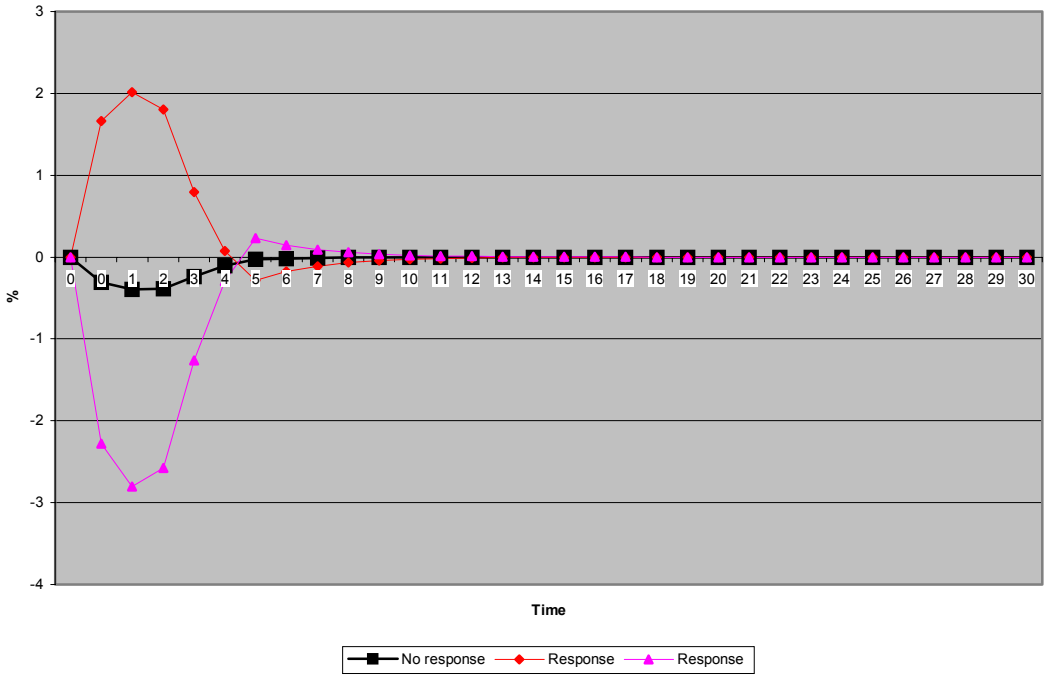


Figure 7 Interest rate

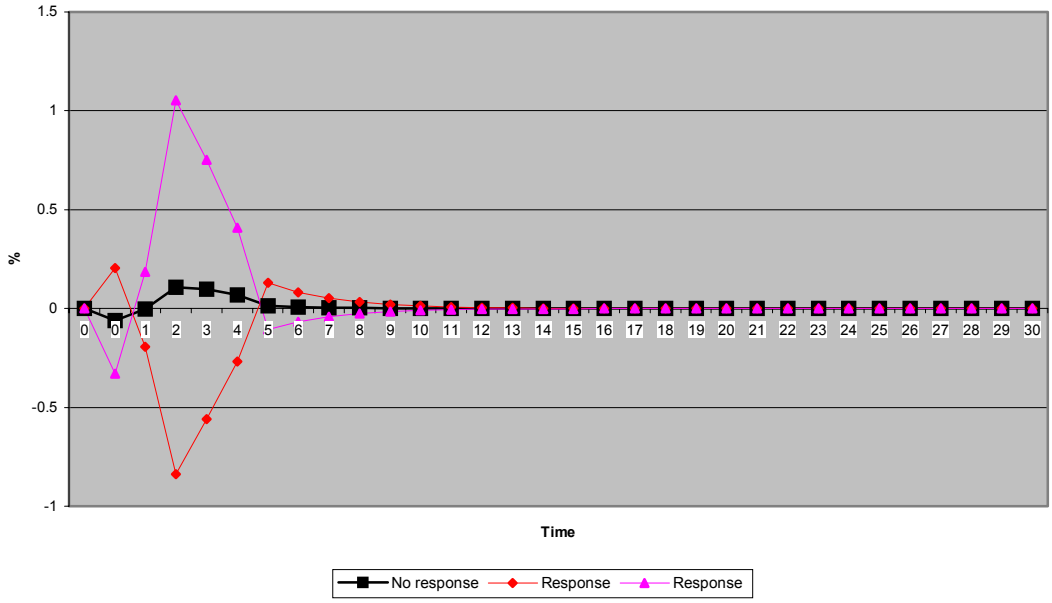
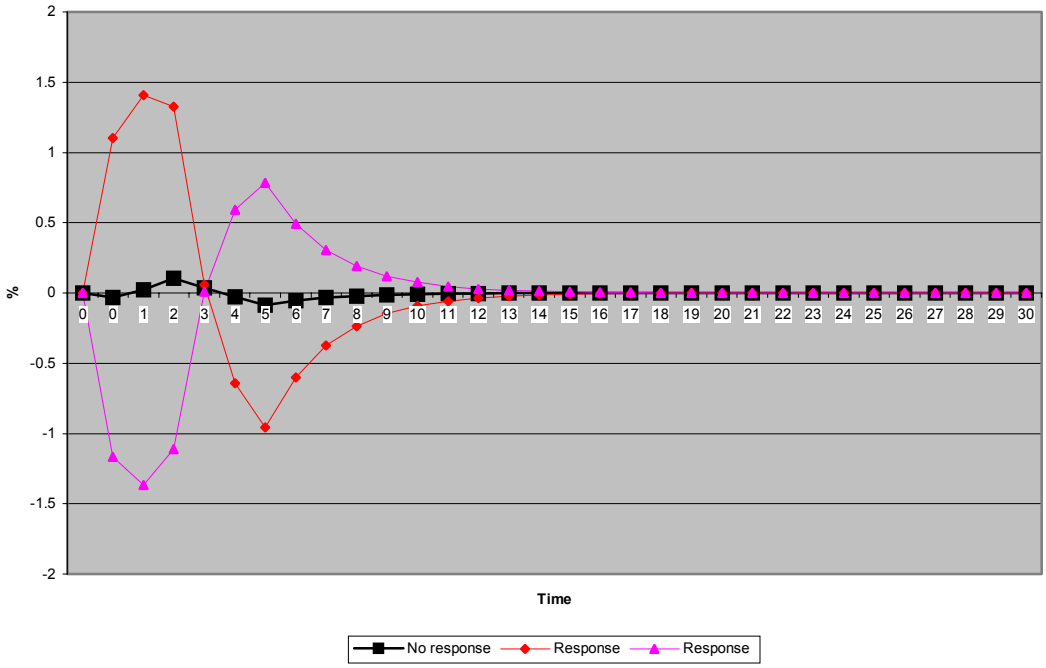


Figure 8 Output



cyclical adjustment policy, since it would attempt to further expand the expansionary impact upon the domestic economy. The third is where the small country adjusts its monetary policies settings, conducts an independent policy response, by this time decreasing the money supply with the objective of conducting a tightening of monetary policy to offset the expansionary effects from the higher price level in the large country. This could be described as an anti-cyclical adjustment policy, since it would attempt to dampen any expansionary effect of the higher price level in the large country upon the domestic economy. Implications for the adjustment of key macroeconomic variables for the small country for either of these cases are shown in Figures 9 to 12.

The no response option appears to produce the most stable outcomes for two of the four variables. The price level and output variables are much less volatile where there is no monetary policy response, while the volatility of the small country exchange rate and interest rate is improved if the price level shock is met by an increase in the small country money supply. The opposite is the case if there is a contraction in the small country money supply. An expansion in the money supply results in more volatility in the small country price level and output than is the case for the other two policy responses.

As indicated in Table 6, if the volatility of each macroeconomic variable is given equal weighting, then the optimal response to the large country price shock is for no change in domestic small country monetary policy. If the rise in the large country price level originated, say, from an expansionary monetary policy in the large country, then, again, macroeconomic outcomes would appear to be better in the case where an independent monetary policy was pursued rather than to conduct a similar expansion of monetary policy in the small country. A coordination of monetary policy with the large country, through an increase in small country money supply, would produce, once again, a second best outcome overall.

Table 6 Policy rankings – large country price shock (y*)
(a lower number represents a higher ranking)

Volatility	No response	Contract money supply	Expand money supply
Price level	1	2	3
Exchange rate	2	3	1
Interest rate	2	3	1
Output	1	2	3
Total	6	10	8

3.2 Exogenous large country monetary expansion and the implications for small country policy

In this section a simulation analysis is conducted on the basis that there is an expansion in the large country money supply. Such a monetary expansion contributes to developments in large country output (y*), prices (p*) and interest rate (r*). These

changes are then utilised as exogenous changes for the small country model version. The simulation conducted is summarised in Table 7.

Figure 9 Price level

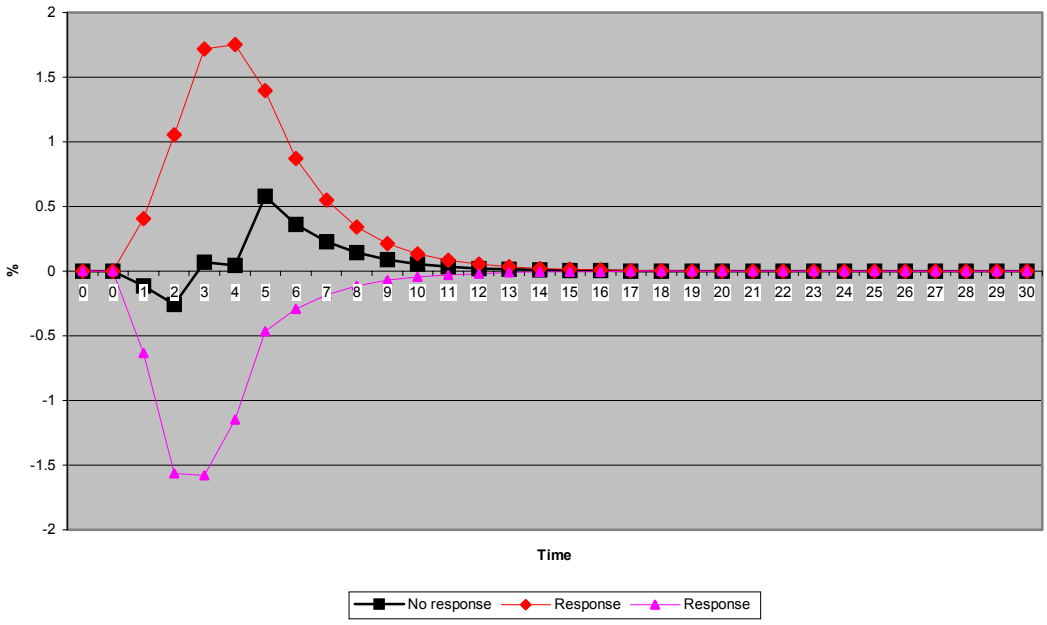


Figure 10 Exchange rate

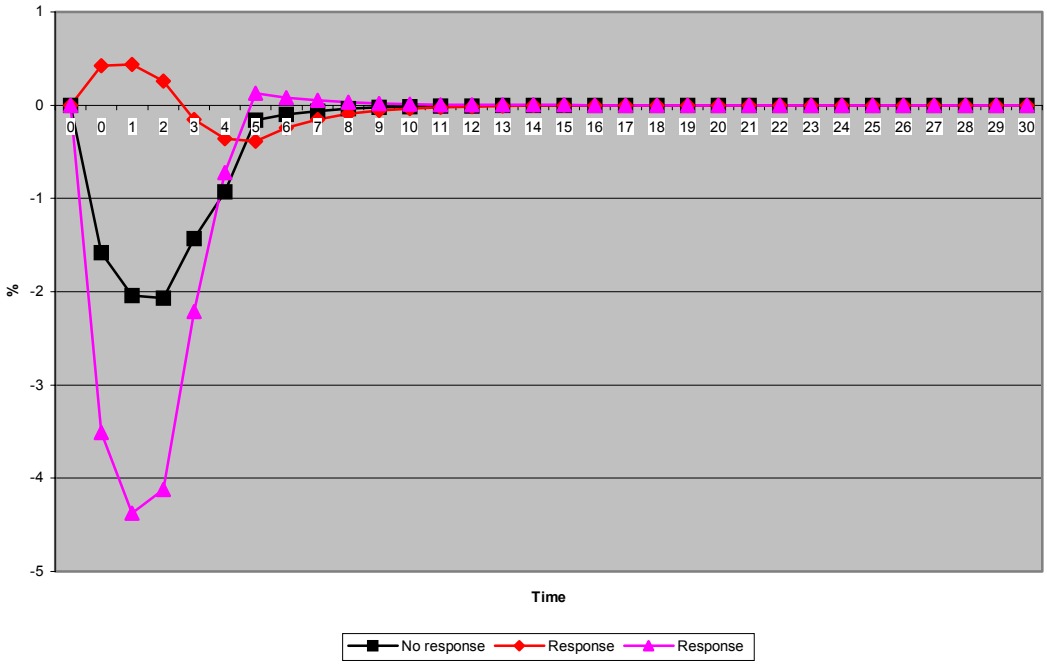


Figure 11 Interest rate

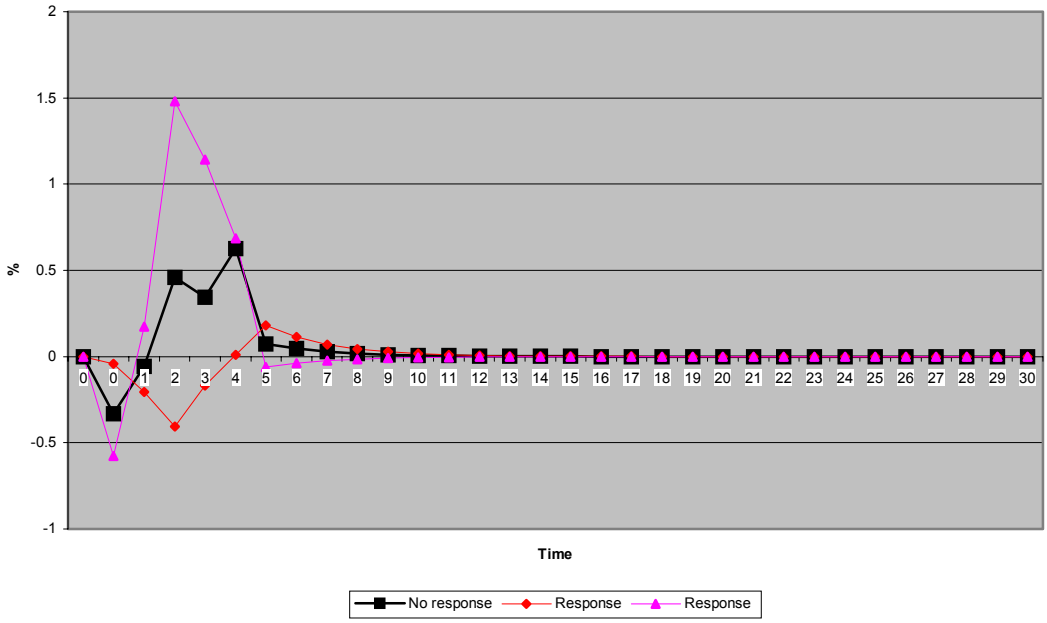


Figure 12 Output

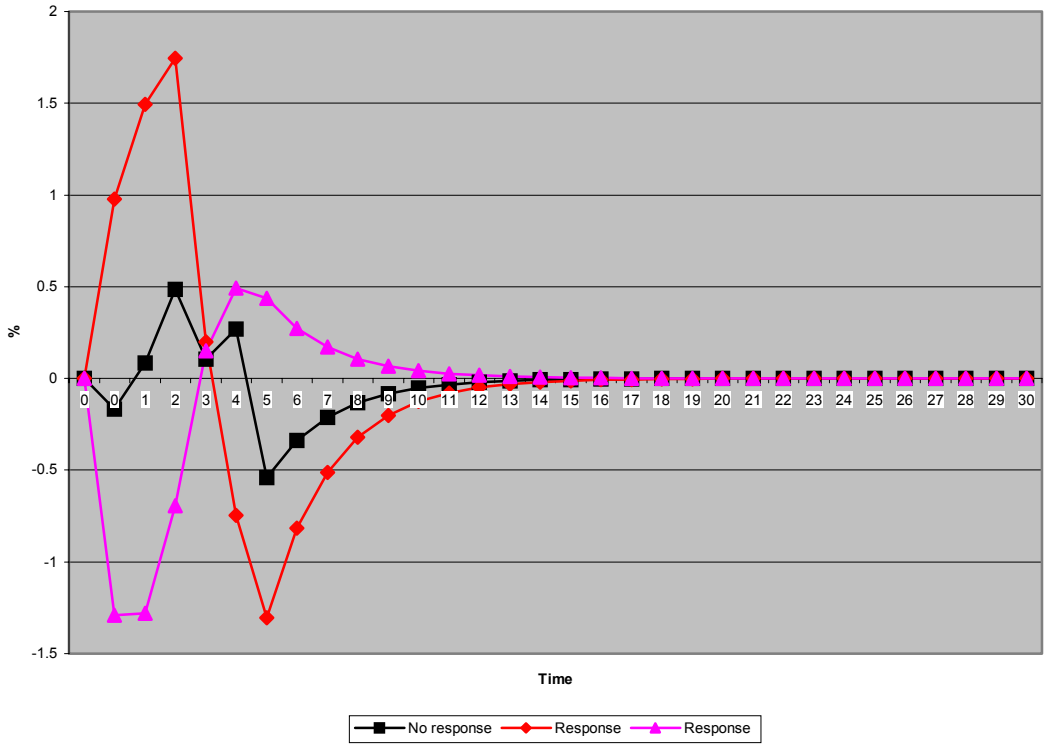


Table 7 Simulation scenarios – monetary expansion in the large country
(values are percentage (%) deviations from baseline)

Time period	0	0'	1	2	3	4	5	10	15	20
External shock Money supply expansion (m*)	0	1	2	3	4	5	5	5	5	5
r*	0	0.7	0.5	0.4	0.2	-0.2	-0.1	0	0	0
y*	0	1.3	1.7	1.9	1.8	1.7	1	0.1	0	0
p*	0	0	0.5	1.3	2.2	3.2	3.9	4.8	5	5
Scenario 1 No response	-	-	-	-	-	-	-	-	-	-
Scenario 2 Money supply expansion (m)	0	1	2	3	4	5	5	5	5	5
Scenario 3 Money supply (m) expansion and fiscal expansion (g)	0 0	1 1	2 2	3 3	4 4	5 5	5 5	5 5	5 5	5 5

Three possible policy responses to this external disturbance emanating from the large country are then considered. First, where there is no policy response to the external shock. Second, there is a policy response where the small country conducts a co-ordinated monetary policy involving an equivalent expansion of the money supply to that of the large country. The third involves both a monetary and fiscal policy response to the external shock emanating from the large country. The results from these three scenarios are shown in Figures 13-16. The results suggest some interesting outcomes. In terms of the small country price level (Figure 13), a no response to the external shock coming from the large country produces some mild instability, but the price level quickly settles back at its initial level. A coordinated policy response in the form of an expansion in the small country money supply, as well as an increase in government spending, results in an equi-proportional increase in the small country price level to that of the proportional increase in the money supply. Hence the adoption of a coordinated monetary policy by the small country will produce instability and a permanently higher price level. Pursuing a no response policy will stabilise prices at their original level. An expansionary fiscal policy makes no difference to the price level outcome.

In terms of stability of the small country exchange rate (Figure 14), a no response policy results in a fairly rapid appreciation of the nominal exchange rate and this appreciation is permanent. A coordinated small country monetary expansion results in a depreciation of the nominal exchange rate initially, before it appreciates back to its original level. If the monetary policy is supplemented by an expansionary fiscal

expenditure policy the nominal exchange rate also initially depreciates, but by less that for the monetary policy alone case. It then appreciates to a level below its starting

Figure 13 Price level

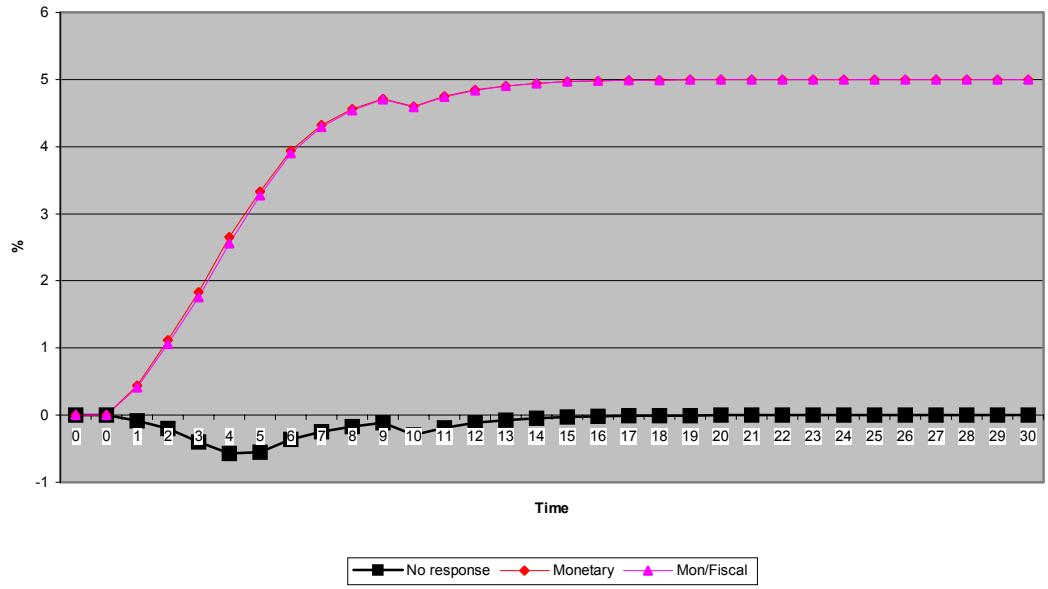


Figure 14 Exchange rate

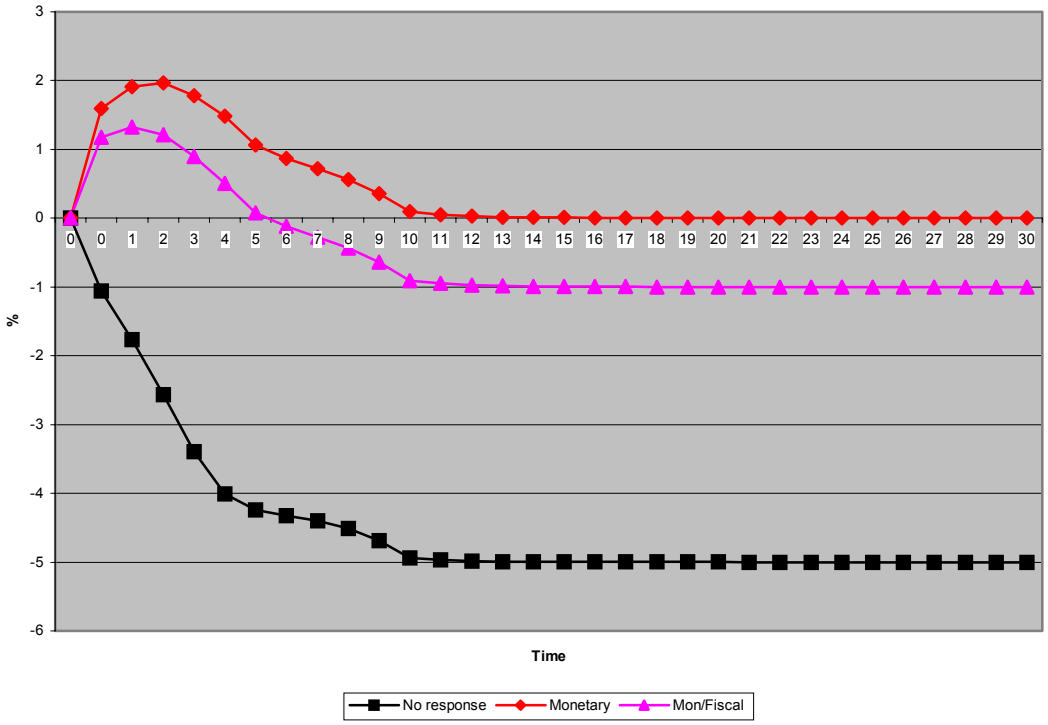


Figure 15 Interest rate

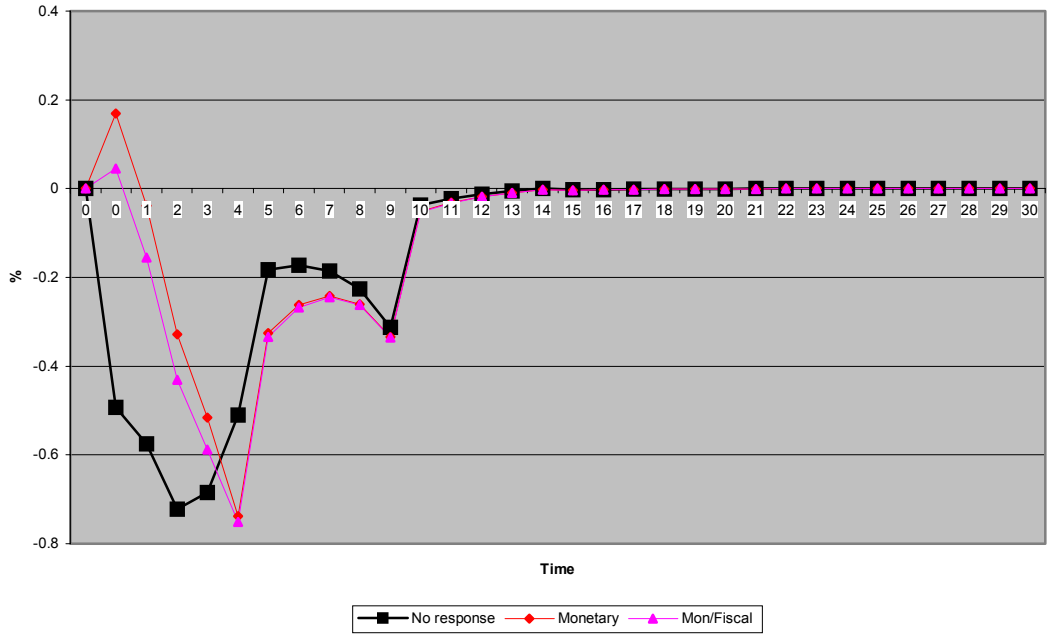
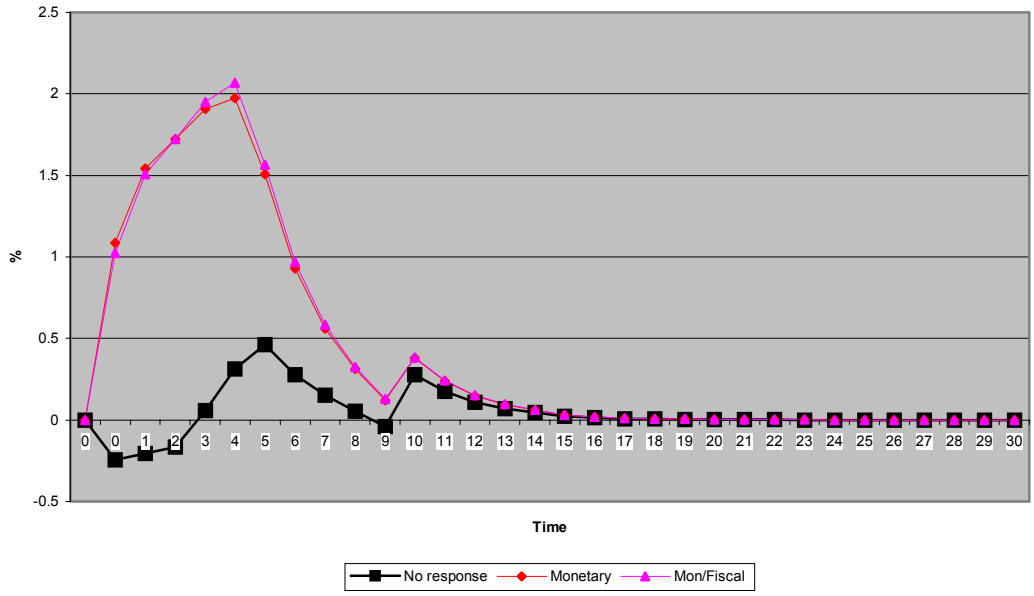


Figure 16 Output



level. Hence, in this latter case, an appreciation of the nominal exchange rate occurs and the exchange rate is mildly volatile.

In terms of stability of the small country interest rate (Figure 15), the no policy response option results, initially, in a sharp decline in the small country interest rate. In the other two scenarios the nominal interest rate rises on impact, and more so for the case of a monetary expansion alone policy. Thereafter the interest rate declines, and for all three scenarios there is noticeable volatility of the interest rate. The policy responses appear to produce less volatility, at least initially.

Finally, for the case of stability of small country output, the clearly preferred option is to adopt a no policy response approach. In this case the swings of output around its full employment level is noticeably more dampened. The swings in output are larger for the case of an increase in the money supply alone scenario, and intermediate for the case of a monetary and fiscal policy response scenario.

As indicated in Table 8, if the volatility of each macroeconomic variable is given equal weighting, then the optimal response to the large country money supply shock is for a coordination of monetary policy, in particular, with that of the large country. On the other hand if the objective of policy is price level and output stability in the small country, an optimal policy response would be to maintain an independent monetary policy (hence no policy response) in the face of an external monetary shock from the large country. On the other hand, if the objective of policy is to maintain financial market stability, specifically in regard to the domestic interest rate and the exchange rate, the adoption of a coordinated monetary policy with that of the large country would appear to be the best option.

Table 8 Policy rankings – large country money supply increase (m*)
(a lower number represents a higher ranking)

Volatility	No response	Expand money supply	Expand money supply and fiscal spending
Price level	1	2	2
Exchange rate	3	1	2
Interest rate	3	1	2
Output	1	3	2
Total	8	7	8

4. Weaknesses and extensions of the model

The model adopted in this paper to analyse the issue of policy analysis in the wake of external shocks for a small open economy, is subject to a number of weaknesses. Hence this study should be properly viewed in the context of ongoing research. In particular, the simple Dornbusch model, as presented here, ignores a number of factors that should be incorporated into the macro models for the small and large country. First, the model should incorporate supply side aspects. The model, as it currently stands, only focuses upon the demand side of the economy. The model does not explicitly model the trade and current accounts, nor wealth effects arising from

foreign asset stock accumulation and decumulation. Hence stock-flow interactions are ignored in the model. The model assumes a flexible exchange rate for both the small and large countries. It would be useful to develop the model for the case of a fixed exchange rate, where domestic money supplies are endogenously determined, and where the small country can fix its exchange rate to that of the large country currency, and take a further important step towards macroeconomic policy coordination. At this stage it would also be possible to analyse the advantages and disadvantages, for a small country, of moving towards economic and monetary integration with a large country, or bloc of countries.

Also not considered in this chapter is the significance of the parameter values of the models for the determination of the optimal policy response. It would be useful to conduct a sensitivity analysis of the impact of external shocks emanating from the large country on the small country on the basis of different parameter values. It could well be the case that the optimal policy response will be influenced by the size and nature of relevant parameter values.

A three country model may also be useful to analyse, particularly if the small country has a choice of which country, or bloc of countries, to conduct a harmonisation of macroeconomic policy with or with which to engage in economic and monetary union. This is a highly pertinent issue in the context of the East Asian economies.

The issue of trade integration, as well as the harmonisation of macroeconomic policy, can be developed within the context of the model discussed. In doing so an optimal path towards economic and monetary integration can be considered, starting with trade liberalisation, capital account liberalisation, macroeconomic policy harmonisation, fixing exchange rates, and finally moving towards a single currency. These issues are clearly of profound importance in the global economy arising from the development of regional trading blocs, some of which may have the potential, as with the European Union, to move towards economic and monetary union. What conditions are most essential to make this happen, optimal sequencing of the process, and what countries should these include are important issues and no less so in East Asia.

5. Summary and conclusions

This paper has presented a simple model for analysing the policy coordination benefits and costs for a small country whose macroeconomy is strongly influenced by a large country, or bloc of countries. A simple Dornbusch type model was developed for both the small and large countries. The impact of external shocks, emanating from the large country, and their impact upon the small country was analysed by means of a numerical algorithm. Depending upon the type of shock, it was possible to identify in this framework its impact on key macroeconomic variables in the small country – price level, exchange rate, interest rate and output. Three exogenous shocks were focused upon – large country interest rate, output and price level. In analysing these individually, Tables 4, 5 and 6 tended to suggest that the adoption of an independent policy stance (involving a no policy response) produced more desirable macroeconomic outcomes for the small economy. However, in a simulation scenario involving external shock to all of these variables arising from a large country money

supply increase, the results were less clear-cut. Indeed, taking these shocks as a group, a coordinated monetary response by the small country could be the best. However, if the aim of the small country is to attain price and output stability, the no response option would still be preferable. Consequently, this chapter raises more questions than it has answered. Further analysis is required regarding the importance of the model itself for the results generated, the need to make the model more general, the need to identify the importance of the parameters of the model, for both the small and large countries, for policy selection, and the need to extend the model to the case where the small country can fix its exchange rate relative to the large country.

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