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**Bretton Woods II and the Emerging Economies:
Lazarus, Phoenix, or Humpty Dumpty?**

by

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Abstract

Several studies have commented on the emergence of a new international monetary system in the post-Asian crisis years. The current international financial crisis has, however, put Bretton Woods II under considerable strain. This paper analyzes the sustainability of the pre-crisis order from an emerging country perspective. A simple framework in which agents have a choice between financial and real assets is constructed in order to explore possible consequences of the shocks that emerging economies are currently experiencing. Stock and flow implications are analyzed. Assuming that recent events would have reinforced monetary authorities' desire to maintain an adequate cushion of reserves while preventing exchange rate volatility, we find that the response to most shocks would involve running continuous current account surpluses, that is, a continuation of a crucial aspect of Bretton Woods II. Given political and economic constraints, is such a continuation feasible? A preliminary exploration raises serious doubts and skims alternatives.

JEL Codes: F02, F32, G01, F55

Keywords: Bretton Woods II, emerging economies, reserve accumulation, precautionary motives, mercantilism.

Bretton Woods II and the Emerging Economies: Lazarus, Phoenix, or Humpty Dumpty?

1 Introduction

The ongoing financial - and now increasingly, real - sector crisis that originated in the United States is presently the center of much academic and policy discussion. How and why did the crisis originate? Where is the world headed? Is it going to be a V-shaped, U-shaped, or L-shaped recession? Has the recession already turned into a depression? While these questions have mainly been explored from an industrialized country perspective, concerns are rising regarding the consequences for income growth, poverty reduction, and socio-political stability in developing countries. These concerns assume added importance in the light of a not-so-distant history of sudden stop episodes in these countries.

Capital flows to emerging economies are projected to decline from 928 billion dollars in 2007 to 165 billion dollars in 2009 (Institute of International Finance, 2009). This decline will either have to be reflected in declining currency values, greater current account surpluses, foreign exchange reserve losses or some combination thereof. Much recent analysis of developments in developing countries, however, tends to focus on the sharp decline in global trade and the consequences for the developing economies that have pursued export-led growth in recent years.[1] The focus on the short-run trade effects is understandable. However, changes in flows today translate into changes in stocks over time. Can developing countries continue to maintain stable external accounts? What are some of the likely consequences of various measures currently being undertaken to arrest the decline in emerging market output? Would countries resort to capital controls in the pursuit of recession-fighting monetary and exchange rate policies in a replay of the 1930s?[2] Would the international system that emerges after the dust has settled be able to maintain the pre-crises status quo with a number of developing countries pursuing export-led growth and current account surpluses? Does the world require a global lender of last resort to mitigate some of the destabilizing features of the pre-crisis years?

This study carries out a preliminary exploration of these issues. In doing so, we limit our analysis to the so-called emerging economies.[3] These economies

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[1] Indeed, insofar as capital accounts are concerned, there has been a much greater focus on the US in particular, and industrialized countries in general, China (and perhaps East Asia) being a major developing country exception. See, for example, Blanchard et al. (2005) and other papers in the special 2005 issue of *Brookings Papers on Economic Activity*.

[2] See Eichengreen and Sachs (1985) for a very interesting discusion of exchange rate policies and controls in the 1930s.

[3] The group, which we have defined following Obstfeld et al. (2008), includes Argentina, Brazil, Chile, China, Hong Kong, Colombia, the Czech Republic, Egypt, Estonia, Hungary, India, Indonesia, Israel, Korea, Latvia, Lithuania, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, the Russian Federation, Singapore, the Slovak Republic, South Africa, Thailand, Turkey, Venezuela. However, some of the stylized features of our model in Section 3 may fit one subset of these countries better than the other subset. For example, massive reserve

are, on average, higher on the income and industrialization ladder than the developing country group as a whole, and tend to have relatively advanced financial and economic institutions. Most of the global imbalances that have emerged in recent years have originated in interactions between these countries and the industrialized world.[4]

We contribute to the existing analysis of global economic developments by exploring these issues in a simple formal framework that focuses on emerging economies and incorporates both stock and flow considerations. The central bank, in this model, attempts to maintain both exchange rate and reserve stability while letting go of the third leg of the widely-cited impossible trilemma. After having concluded that continued pursuit of competitive exchange rates and insurance through foreign exchange reserves is likely to threaten the sustainability of the global financial system on economic and political grounds, we briefly discuss practical alternatives

The rest of the paper is organized as follows. Section 2 provides some statistics and discusses relevant aspects of the current global situation from an emerging economy perspective. Section 3 develops a simple stylized framework, inspired by Dornbusch (1975), to help carry out thought experiments and explore interesting interactions between the real and financial sides of the economy. Comparative static and dynamic exercises are carried out to analyze the possible impact of changes in the domestic and external environment. Section 4 discusses relevant implications in the current global context before concluding.

2   Background

Recent years have seen developing countries as a group run substantial current account surpluses with the industrialized country group for almost a decade.[5] The group of emerging economies has contributed significantly to these surpluses. Moreover, these economies have run overall balance of payments surpluses with the rest of the world. Figure 1 reflects these developments.[6] The current account recovered quickly following the Asian crisis of 1997-98 and the global recession in 2001. In recent years current account surpluses have been accompanied by capital account surpluses as foreign private capital has poured into these rapidly growing economies. The flip side of the overall balance of payment surpluses, of course, has been the increase in foreign exchange reserve

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accumulation and current account deficits have been associated more closely with the the Asian and Latin American countries in our sample than with the central and east European countries.

[4] Although oil exporters, of course, have been another major player in this regard. Our sample includes at least three large exporters of oil, Mexico, Russia and Venezuela.

[5] See International Monetary Fund (2008).

[6] The exchange rate, current account, capital account, foreign reserves (minus gold), and GDP data used in this study were obtained from the International Monetary Fund's *International Financial Statistics* database, with the exception of Mexico, Russia, and South Africa for which GDP data were not available from that source and had to be obtained from the World Bank's *World Development Indicators* instead.

holdings by central banks to historically unprecedented levels, both in absolute terms and in terms of gross domestic product (see Figure 2).[7]

Concurrent with the pursuit of a bigger foreign exchange cushion have been efforts by central banks to stabilize their currencies, often at levels that are consistent with current account surpluses. While several emerging economies have moved from fixed exchange rate regimes to managed floating, and have also become increasingly integrated into global financial markets, currency market intervention remains the norm rather than the exception, especially when it comes to avoiding large appreciations. Levi-Yeyati and Sturzeneggar (2007) term this the "fear of floating in reverse." Similarly, Aizenman et al. (2009) find that developing countries have recently been converging towards a "middle ground" with managed exchange rate flexibility backed by sizeable international reserves and medium levels of monetary independence and financial integration.

Even countries that have *de jure* floats do not necessarily leave the exchange rate (and by extension, official reserve transactions) unmanaged. For example, in a famous study known for coining the term "fear of floating," Calvo and Reinhart (2002) found that countries that claim to adhere to a floating regime often in practice do not. Many countries are not able or willing to fix or float completely due to shallow financial markets and because exchange rate changes can have a major impact on inflation, balance sheets, and economic growth. Rose (2007), in a study that describes the pre-2008 global system as Bretton Woods reversed, finds that reserve accumulation in countries that target inflation as a monetary anchor (and hence typically have more exchange rate flexibility) does not look different from other countries. A recent comprehensive analysis of the issue by Frankel and Wei (2008) finds that the fear of floating is well and alive, and that declared floaters often intervene heavily to stabilize exchange rates.

In accordance with this evidence, Table 1 shows that the accumulation of huge war chests of reserves has not been limited to the countries that fix or peg their exchange rates. In the interest of brevity, we have collapsed distinctions between the various sub-categories within managed floating and pegs. The regimes are reported in ascending order of flexibility. *A priori*, one would expect the average reserve-GDP ratio to decline as we move down the column. However, a quick glance at the Table makes it obvious that while this expectation is justified at the polar extremes, the relationship between the nature of the exchange rate regime and the level of reserves as a proportion of GDP is not monotonic. Thus, economies with pegged exchange rates maintained, as an average proportion of GDP, a smaller holding of reserves in comparison with managed floats.[8] These nuances aside, most countries continued to com-

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[7]The relative weights of two possible underlying motives, i.e., insurance against sudden stops and currency mismatches versus the maintenance of undervalued exchange rates with export-led growth as the objective, is a matter of much debate. See, for example, Aizenman and Lee (2007) and Dooley P. et al. (2003) for opposing perspectives. We avoid this controversy for now, assuming instead that both motives have mattered. See Section 4 for more discussion.

[8]This is partly a function of the fact that many countries switch back and forth between

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bine some genre of managed floating with relatively high reserve holdings. A lower degree of exchange rate fixing does not seem to preclude official reserve transactions to accumulate a fire wall of reserves.

Current global circumstances create an added incentive for managing exchange rates since access to international credit is shrinking just when this credit is required to dampen large uncontrolled devaluations. Figure 3 illustrates recent exchange rate volatility for a subset of emerging economies. The exchange rate here is defined in the standard way as the domestic currency price of foreign currency and the shaded portion highlights the post-December 2007 period. Increasing global turmoil has affected emerging economy currencies in a major way. For example, the Korean Won experienced a depreciation of 50 percent between December 2007 and November 2008, most of it occurring after September 2008 when global markets went into "flight to safety" mode following the Lehman Brothers debacle. While the Korean case is the most dramatic one, other countries such as South Africa, Turkey, Chile, and Pakistan experienced sharp declines in the value of their currency. However, some countries have since managed to somewhat stabilize their currencies, partially through official intervention by the monetary authorities.[9]

As mentioned earlier, some attention has been paid recently among media and policy circles to the rapid shrinkage of emerging market exports and capital inflows. One of the interesting questions that arises in this context is whether building up huge reserve cushions for the rainy day has helped countries so far, now that that day seems to have arrived? While it is too early to speculate, preliminary evidence in this regard is interesting. If reserve accumulation was at least partly motivated by the need to insure against a free fall in the currency following a sudden stop, then the strategy seems to have had some success. Figure 4 displays the scatter plot of the reserves-to-GDP ratio for each country in 2007 plotted against the percent change in the currency values between December 2007 and November 2008. The dates were chosen so as to avoid the issue of reverse causality from exchange rate changes to reserve accumulation. For example, nominal and real devaluation may lead to current account surpluses, which may, in turn, lead to reserve accumulation. Since our aim is to explore the efficacy of reserve accumulation as a fire wall against sudden collapses in exchange rates, we want to focus exclusively on the links running from reserve levels to exchange rate changes. The fitted line has a negative slope, the unconditional correlation coefficient being -0.49. Countries that had higher reserves entering the crisis period suffered lower declines in their exchange rates.

Recently, Obstfeld et al. (2008) have argued that countries accumulate re-

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regimes. The more important consideration from our perspective, however, is the number of countries that have switched between independent floating on the one hand and some kind of managed floating, pegging, or fixed exchange rates on the other. This number appears to be low.

[9] Of the 25 countries for which data are available for Dec. 2008, 22 depreciated between December 2007 and November 2008, while only 8 depreciated between November and December 2008. The average unweighted depreciation for these countries was about 16 percent over the former period. During the latter period, on the other hand, these currencies *appreciated* by one percent, on average.

serves in order to forestall a double drain; the drain that results from sudden stops of external inflows *and* the drain that results as domestic residents withdraw domestic currency deposits and convert them into foreign currency holdings. This suggests that the larger the size of a central bank's liabilities (crudely proxied by M2), the greater the reserve cushion required. By accumulating reserves, the monetary authority seeks to insure against the threat of a bank run combining with a currency run. Looking at things from this perspective, a better measure of the degree of insurance achieved by a country would be the ratio of M2 to foreign exchange reserves.[10] Figure 5 presents a scatter plot of the value of this variable for each country in 2007 against the percentage change in that country's exchange rate between December 2007 and November 2008. Consistent with the conclusion derived from Figure 4, the fitted line has a positive slope, the unconditional correlation coefficient between the two series being 0.37. More detailed econometric analysis by Obstfeld et al. (2009) concludes that a country's reserve holdings just before the current crisis relative to the level of holdings predicted by these financial motives (i.e., a dual run on the financial sector) predict both advanced and emerging country exchange rate movements in 2008, with the countries that had large reserves relative to M2 successfully avoiding dramatic depreciations, and some even appreciating.

So far we have looked at the relationship between stock measures and exchange rate changes. Flow measures have the added virtue that these allow us to distinguish between developments on the current and capital accounts. Figure 6, which plots the average current account as a proportion of GDP over the period 2003-07 against the percentage change in exchange rates between December 2007 and November 2008,[11] provides a picture similar to our earlier stock measures. Countries that had current account surpluses tended, on average, to experience less depreciation (or more appreciation) in the crisis period (with the correlation coefficient being -0.30). This suggests that current account surpluses may have facilitated the maintenance of exchange rate stability. Figure 7, which plots the average capital account as a proportion of GDP over the period 2003-07 against the percentage change in exchange rates between December 2007 and November 2008, however, presents an interesting contrast. Countries that had been running capital account surpluses, on average, in the pre-crisis period tended to experience *greater* depreciations in the aftermath of the crisis (the correlation coefficient being 0.22). This preliminary finding supports the view that current account surpluses provide a cushion that capital account surpluses do not, perhaps owing to the volatile nature of the latter.

In sum, while the evidence presented is preliminary and sketchy, it does provide some basis for understanding the behavior of monetary authorities that have attempted to target a minimal reserve level for precautionary reasons while simultaneously targeting the exchange rate for mercantilist ends or to protect the domestic financial sector against balance sheet mismatches.

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[10] M2 here is defined as the sum of outstanding currency, and demand, time, savings, and foreign currency deposits of resident sectors other than the central government.

[11] The beginning of the period was chosen to avoid the noise emanating from the global downturn in 2001.

3   A Stylized Emerging Economy

Consider an emerging economy bloc that has a relatively open capital account. Our economy, which is *small* in international markets, produces two goods, a labor-intensive, internationally traded consumption good and a capital intensive good that is only traded within the bloc. Investors choose from a menu of three assets: currency, internationally traded bonds, and equity, i.e., claims on real capital. Equilibria conditions in the markets for real money balances, bonds, and equity can be summarized, respectively, as

$$m = m^d(r, r^* - \mu, w) \tag{1}$$

$$b = b^d(r, r^* - \mu, w) \tag{2}$$

$$k = k^d(r, r^* - \mu, w) \tag{3}$$

where the left hand side of each equation reflects the supply of an asset while the right hand side reflects demand (as captured by the superscript d). All small case variables are expressed in terms of the consumption good. w denotes the stock of real wealth, r denotes the domestic returns on capital (which equals the opportunity cost of capital or the real interest rate), and μ is an inverse measure of the degree of capital controls.[12] The presence of capital controls implies that domestic and foreign assets are imperfect (gross) substitutes. Moreover, domestic assets too are gross substitutes.

The real exchange rate q is defined as the price of the consumption good relative to that of the capital good. The total stock of financial assets is the sum of real money balances and bonds, to which we need to add the stock of real assets to get the total stock of domestic wealth.

$$k = qK \tag{4}$$

$$f = m + b \tag{5}$$

$$w = k + f \tag{6}$$

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[12] The use of capital controls as a short-run policy measure has been seen in action in recent years (e.g., China throughout this decade, Argentina in 2005, Thailand in 2006, Colombia in 2007), and in recent months (e.g., Eastern Europe). See Buiter (2009) for a discussion of ongoing Central and Eastern European measures. One would expect to see more policy action on this front as the current crisis develops and international capital and trade flows become more unpredictable.

Assuming full employment and flexible prices,[13] general equilibrium Stolper-Samuelson reasoning implies that the real exchange rate (that is, the relative price of the capital-intensive good) is a function of the real return on equity.

$$q = q(r); \ q' > 0 \tag{7}$$

In developing countries with skill and capital shortages and factor market rigidities, the elasticity of factor substitution is likely to be low, at least in the short run. This implies that q' is likely to be low. We maintain this assumption throughout the remainder of our analysis.

Finally, the monetary authority or central bank is assumed to target both the nominal exchange rate and the level of international reserves. The pursuit of both a monetary policy and a pegged exchange rate requires the presence of some degree of capital controls.

$$m = R \tag{8}$$

where R represents foreign exchange reserves with the central bank. Thus, money supply endogenously responds to the level of reserves that the central bank aims at maintaining, with official reserve transactions playing the role of determining the availability of real cash balances.[14]

Equations (1)-(8) can be reduced after substitutions to three excess demand equations in three unknowns.[15]

$$M(b, \mu, r; \chi) = f - b - R = 0 \tag{9}$$

$$B(b, \mu, r; \chi) = b^d(r, r^* - \mu, q(r)K + f) - b = 0 \tag{10}$$

$$L(b, \mu, r; \chi) = k^d(r, r^* - \mu, q(r)K + f) - q(r)K = 0 \tag{11}$$

where χ is a vector of exogenous variables and/or parameters. The structure of our simple model can be explained as follows. The stocks of financial and real assets, and hence of domestic wealth are state variables. Given the exchange rate and reserve targets, equation (9) determines the supply of internationally traded bonds available to the private sector. Equations (10) and (11) then determine the degree of capital controls and the return on domestic real assets required to clear the bond and equity markets. We assume throughout our analysis that own price elasticities dominate cross-price elasticities.

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[13] Full employment may seem to be a strong assumption but, considering the main objective of this exercise, it does help simplify matters if we abstract away from issues pertaining to employment and wage determination. Moreover, near full employment becomes a more plausible assumption in the context of an emerging economy with few social security benefits or unemployment insurance programs if we think of employment as including both the formal and informal sectors.

[14] In other words, the central bank sells and purchases foreign assets in exchange for currency in order to maintain it's targets.

[15] Notice that since f is a predetermined variable, only 7 of the eight equations (1)-(8) are independent.

Capital accumulation equals new investment net of depreciation .

$$\dot{K} = \gamma(q, K) - \delta K = \varphi(r, K); \ \varphi_i > 0 \tag{12}$$

where the sign of φ_r makes use of equation (7), while that of φ_K assumes that the general equilibrium Rybczynski effect dominates the effect of capital depreciation. The behavioral specification for investment can be directly derived from equation (12), and expressed as follows:

$$I = \dot{K} + \delta K = \psi(r, K); \ \psi_i > 0 \tag{13}$$

Saving is assumed to be a function of the real interest rate and wealth, the latter through the Metzler wealth effect. Thus,

$$S = \sigma(r, K, f); \ \sigma_r > 0, \ \sigma_K, \ \sigma_f < 0 \tag{14}$$

where the direct effect of the real interest rate on savings is assumed to dominate the Metzler channel. Furthermore, due to these offsetting effects, our analysis also assumes that the interest rate elasticity of savings is relatively low (i.e., $\sigma_r < \psi_r$). This assumption appears to be consistent with stylized facts. Precautionary motives tend to play an important role in savings in East and South East Asian economies. In other words, households appear to target a certain level of wealth. Moreover, a significant proportion of investment tends to originate from retained earnings out of profits (returns on capital). These characteristics may help explain why investment was relatively low and saving high in spite of low interest rates in the earlier years of this decade.

Turning to the dynamic behavior of the economy, the national stocks of financial and real assets adjust over the longer run as a result of savings and investment. The current account surplus is the excess of savings over investment. By another identity, it also equals in magnitude the sum of capital account deficits and official reserve transactions. Thus,

$$\dot{f} = S - I = \lambda(r, K, f); \ \lambda_i < 0 \tag{15}$$

where $r = r(K, f)$. Comparative statics exercises lead us to conclude that $r_K > 0$, while, again assuming that own-price effects dominate, the sign of r_f is ambiguous. The rise in wealth resulting from an increase in the financial stock creates excess demand for money, bonds, and equity. The former two put upward pressure on the rate of return on real assets while the latter has the opposite effect. We assume that the former effect dominates for two reasons. Firstly, due to offsetting effects, making the opposite assumption would require that the demand for bonds be very sensitive to capital controls. Secondly, making the latter assumption renders the system unconditionally unstable.

We can now study the dynamic behavior of our system as the stocks of assets adjust to their long-run values. Our dynamic system can be summarized by two equations in two state variables, f and k.

$$\dot{K} = \Phi(K, f); \ \Phi_i > 0 \tag{12'}$$

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$$\dot{f} = \Lambda(K, f);\ \Lambda_i < 0 \qquad (15')$$

Equations (12') and (15') yield two cases, one stable and the other saddle path stable. We call these Case 1 and Case 2, respectively. Figures 8 and 9 illustrate these cases graphically. The negatively sloped dotted line in Figure 9 represents the saddle path. In the interest of brevity, our analysis mostly focuses on Case 1, although, where interesting, we will also highlight aspects of the other scenario.

3.1 Comparative Statics and Adjustment to Equilibrium in the Long Run

In this section, we carry out four short-run comparative static exercises assuming the stocks of financial and real assets to be predetermined variables: (1) open market operations to maintain a higher level of reserves, (2) a policy induced change in savings, (3) a shift in preference towards internationally traded bonds, and (4) an increase in the risk-adjusted yield on international bonds. These experiments attempt to capture either recent economic developments or possible future economic shocks. Table 2 summarizes the results. We then analyze the evolution of the current account balance and the capital stock as the economy adjusts to its long-run steady state in each case.

3.1.1 An increase in the targeted holdings of central bank reserves

Aizenman and Marion (2002) and Aizenman and Lee (2007) have argued that precautionary savings rather than mercantilism should be seen as the driving force behind the massive build up of foreign exchange reserves by Asian nations in the years following 1998.[16] Now that global uncertainty has increased, might emerging countries feel a renewed need to build up precautionary reserves? In our framework, an increase in the targeted level of foreign exchange reserves is akin to an expansionary monetary policy. At a given level of wealth, the decline in bonds available to the public requires stricter capital controls in order to reduce the incentive to hold bonds in private portfolios. Furthermore, a lower return to claims on real capital now suffices to induce investors to hold equity.

Put differently, the central bank emits money in exchange for its purchase of reserves. Capital controls must be tightened and the return on equity must decline in order to induce agents to hold the extra available cash. The current account experiences a greater surplus (or a lower deficit) because while savings and investment both decline, the former falls more.

Turning to the dynamic adjustment of stocks over time, the decline in the returns to capital following a rise in the targeted level of reserves leads to capital decumulation (equation (12)) and accumulation of financial assets, that is, a current account surplus (equation (15)). As capital decumulation proceeds, the stock of capital falls, which magnifies the initial decumulation (equation (12'))

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[16] See also Durdu et al. (ming).

and current account surpluses (equation (15')). Notice that the condition for the determinant of the system to be positive is that $\frac{\Phi_K}{\Phi_f} < \frac{\Lambda_K}{\Lambda_f}$. Thus, the higher Φ_f is, and the lower Φ_K is, the greater the likelihood that the system is stable. Intuitively, the greater the dampening effect of a rise in the level of financial assets on the initial decumulation of capital, and the lower the sensitivity of accumulation to the level of the capital stock (i.e., the Rybczynski effect), the more likely it is that the economy reaches a new steady state equilibrium with a positive level of capital stock. In the alternative case where a saddle path equilibrium exists, the initial capital accumulation gets magnified through the dominant Rybczynski effect and the capital stock vanishes unless something guides the system to the new saddle path. Possible candidates are evolving expectations or policy action. Graphically, both the $\dot{f} = 0$ and $\dot{K} = 0$ isoclines shift to the right as a result of the decision to target higher reserves. Notice that, since a decline in the real rate of return on capital has offsetting effects on saving and investment, the former isocline shifts less in both the horizontal and vertical directions.

In the stable case shown in Figure 10, the financial stock is higher and the capital stock lower at the new steady state. Capital decumulation is continuous along the asymptotic adjustment path, while the current account experiences continuous surpluses. A slower speed of adjustment of the current account may lead to overshooting with current account surpluses and capital decumulation followed by deficits and capital accumulation.

In the knife-edge case, assuming that the economy jumps to the new saddle path, the capital stock is higher while the financial stock is lower at the new steady state.

3.1.2   A policy-induced decline in private savings

A few Asian governments have introduced measures to boost private consumption.[17] A decline in savings can be modeled in our framework by a fall in an autonomous component of savings. Since the equilibrium values of r, μ, and b are determined independently of the level of current savings and investment, these are unchanged. On the external front, a current account deficit arises.

The dynamics of the adjustment to the new steady state are more involved. The initial negative shock to savings results in financial asset decumulation through current account deficits. The effect of financial asset decumulation on capital accumulation is negative ($\Phi_f > 0$ in equation (12')). The decline in financial and real asset stocks dampens the financial decumulation (both due to the Metzler effect on savings and the increase in net savings following the decline in real returns on capital). The current account deficit shrinks as a result until it turns into a surplus. As the stock of financial assets rises beyond this point, capital accumulation turns less negative ($r_f > 0$) until the new steady state is reached. Along the most direct path, the adjustment involves continuous decumulation of real capital. The capital stock is lower and the financial stock

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[17]These measures have taken the form of handing out consumption coupons in some cases including Korea and Taiwan.

higher at the new steady state. In terms of Figure 11, the $\dot{f} = 0$ isocline shifts to the left.[18]

3.1.3 A shift in preferences towards bonds

As international investors rush towards secure and liquid assets, mainly industrialized country treasury bonds, a number of economists and policy makers have in recent months expressed concern over the potential loss of developing country access to international credit markets. Another interesting policy experiment would, therefore, be the crowding out of emerging market investors in international portfolio markets. Since we assume a constant level of central bank reserve holdings with an endogenously adjusting supply of international bonds to the private sector at a point in time, our framework does not allow for analyzing supply constraints in the bond market unless we modify it. We can, however, explore the problem from another angle. Suppose an excess demand for bonds is created, not due to constrained supply, but rather due to a shift in preferences toward international bonds. The immediate impact of the excess demand for bonds created forces the monetary authority to tighten capital controls. A lower return to real capital is now consistent with equity market equilibrium, thanks to the capital controls. The dynamic adjustment to and the qualitative nature of the new steady state will, therefore, be similar to the case of increased reserve accumulation, and need not be discussed in any detail here. Readers are instead directed to Section 3.1.1 for an analysis of the dynamics involved. In the stable case, the composition of domestic portfolios shifts towards financial assets as the economy runs continuous current account surpluses to satisfy the greater demand for foreign bonds.

3.1.4 An increase in risk-adjusted returns on international assets

Recent months have seen a rise in risk perceptions, and a resulting flight to quality. An increase in the given yield on bonds, in our framework, has no direct effect on the money market. However, it does create excess demand for bonds. Given it's exchange rate and reserve targets, the monetary authority is forced to tighten capital controls in order to offset the increased attractiveness of foreign assets. More specifically, the monetary authority will be forced to raise the cost of foreign borrowing sufficiently to exactly offset the increased attractiveness of international assets. The yield on domestic equity, and hence it's relative price, remains unchanged, which in turn means that savings and accumulation remain unaffected. No adjustment is required over time as long as the reserve and exchange rate targets do not change.

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[18]In Case 2, where there is saddle path stability, Φ_f is relatively low and Φ_K relatively large, so that capital decumulation continues even after the stock of financial capital begins to rise. Unless something guides the system to the new saddle path, the economy loses its entire capital stock.

4 Implications and Concluding Remarks

Before we expand on the implications of the thought experiments carried out in the previous section, it is important to revisit some of the limitations of our framework. Agents in our economy have access to only three assets: money, bonds denominated in the international currency, and claims on real capital. In particular, there are no domestic currency denominated bonds. Some analysts such as Burger et al. (2009) attribute the absence, so far, of an Asian crisis-like financial collapse and currency run in emerging economies partly to the development of such markets. The fact that bond prices are determined internationally may be a good assumption for individual countries but perhaps less so for the emerging country bloc as a whole. Our dynamics do not explicitly consider the time variance of risk premia. Thus, we abstract away from some important portfolio balance considerations. Central banks are assumed to target monetary aggregates. In actual practice, many central banks target short-term interest rates instead.[19] Finally, the assumption regarding the non-tradable nature of capital goods is questionable. This assumption is made mainly for analytical convenience,[20] but also because we define capital to include buildings, infrastructure, and other kinds of capital that is not easily traded across borders. Emerging economies are major exporters of consumer goods, but do also trade significantly in capital goods. In so far as these economies mostly target consumer goods markets in industrial countries while purchasing a major proportion of capital goods from each other, however, the assumption may still be a good working hypothesis for the these countries *as a bloc*.

In spite of these limitations, our framework does allow us to explore some interesting questions in a simple set-up where the central bank targets both the exchange rate and the level of reserves. This set-up reflects the widespread belief that Central Banks in major emerging economies have, in recent years, attempted to both maintain a competitive exchange rate and build a cushion of foreign exchange reserves. The motives behind this behavior have been a subject of much debate, with opinion split between those attributing it mainly to precautionary versus mercantilist motives. From a broader perspective, however, these two motives should be seen as complementary targets. Mercantilist objectives would require that the exchange rate be targeted at a competitive or even undervalued level, while precautionary motives would require that foreign exchange reserves provide an insurance against external and internal drains. The exchange rate target facilitates achieving the reserve target. Achieving the reserve target, on the other hand, makes it easier to stabilize the exchange rate at a desired level, and to reduce problems arising from currency mismatches on domestic balance sheets that often follow a sudden collapse of the exchange rate in an economy with heavy liability dollarization. Put differently, a massive war chest of reserves may mitigate the "fear of floating" by ensuring that the

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[19] Although in the largest emerging economy in our sample, i.e., China, monetary authorities do targer monetary aggregates.

[20] It enables us to determine investment without having to make further constraining assumptions.

floating remains within a desirable range.

One way for central banks to respond to reigning international volatility and uncertainty is to reinforce the fire walls that they have so painstakingly built up over the years. The monetary expansion resulting from an increase in the reserve target of central banks requires tightening capital account restrictions and a decline in equity returns in order to induce domestic residents to hold the bigger stocks of real money balances. The rise in net savings generates a current account surplus which is accompanied by offsetting official reserve transactions. Since the return on real capital affects both saving and investment, the composition of domestic wealth shifts towards financial assets during the adjustment to the new steady state in the stable case. The economy experiences continuous current account surpluses along the asymptotic adjustment path.

A flight to quality towards international bonds would have a similar impact in terms of how the economy adjusts to the new steady state. Both an increase in the reserves target and an increase in private preference for international bonds will have to be accompanied by tighter capital controls given the constraints imposed by the policy targets.

Finally, lowering the domestic saving rate has a similar effect in terms of shifting the composition of domestic assets toward the financial sector over time. However, a key difference lies in the fact that the initial current account deficit generated as a result of lower net savings helps avoid protectionist retaliation, at least during the initial period of adjustment. Since the central bank maintains its holdings of bonds, the private sector finances the additional spending and current account deficits by selling bonds. It is only the latter part of the adjustment period that involves current account surpluses.

Thus, in almost all the cases formally considered, shocks in the presence of exchange rate and reserve targeting translate into a shift in the structure of the economy towards financial assets. This financialization could be seen as the implicit counterpart to the de-financialization that is likely required in industrialized countries, especially the ones that are responsible for the excess demand side of global imbalances. However, the reserve and bond-related shocks also involve continuous emerging country current account surpluses. This raises broader questions about sustainability that we now briefly turn to.

One way to pose the larger question is to recall that recovery in Asia from the crisis in 1997-98 involved sustained current account surpluses and investment- and export-led growth. The accompanying capital account surpluses meant that central banks had to step in a major way to complement export acceleration with reserve accumulation. Considering that foreign exchange reserves may now be under pressure following an international flight to safety, and assuming that recent events would bolster central banks' desire to maintain a reserve cushion, would a repeat of the last decade be feasible? In our simple framework, emerging economies can only continue to target exchange rates and reserves in most cases if they tighten capital controls while running continuous current account surpluses accompanied by financialization over time. With global trade and capital flows unwinding, can this process be sustained?

The answer, as of now, seems to be no. Looming signs of rising unemploy-

14

ment and political instability in several emerging economies put policy makers under pressure to pursue the old path with renewed vigor. As unemployment rises in the rest of the world, however, and governments come under increasing pressures to protect the real sector, huge current account surpluses in emerging economies - with exports and imports both growing, albeit at different speeds - may be a relic of the past. As protectionist measures gain currency worldwide, industrialized country markets are unlikely to provide the traction required for emerging economy recovery in the near future. Thus, while it may be advantageous for an emerging economy to simultaneously target reserve and exchange rate levels with the help of capital controls, the world that is shaping around us is unlikely to allow for a replay of the post-Asian crisis decade with huge global imbalances emanating mainly from continuous current account surpluses on the developing country side and deficits on the US side. Moreover, capital controls typically grow harder to maneuver with time, given technological and political considerations, although arguably the economic case for these is quite strong.

What other options are left on the table? Given international monetary conditions, monetary policy is not likely to play a significant role in *driving* long-term recovery, although given that major economies appear to be in a situation approximating a liquidity trap, it may *facilitate* the path of fiscal policy. Furthermore, in our simple framework, monetary policy tends to create continuous current account surpluses, which may be interpreted as a beggar-thy-neighbor practice. Fiscal stimulus and a turn toward domestic demand-led growth may be the most effective option given the circumstances. Such a stimulus helps to shift resources towards the non-tradable sector in developing countries, and if globally coordinated, reduces the risk of beggar-thy-neighbor policies in a traditional two-country Keynesian framework. In our simple model, where the Central Bank puts a premium on exchange rate and reserve stability, a fiscal stimulus in the form of consumption subsidies helps unwind global imbalances by generating emerging country current account deficits in the short run. Finally, if the Central Bank targets the exchange rate, *globally coordinated* fiscal policy becomes even more effective in a Mundell-Fleming kind of framework. It mitigates the need for competitive devaluations, generates employment while dampening external imbalances, and, to the extent that shifting resources towards the non-tradable sector is incompatible with promoting industrialization based on consumer goods industries,[21] it limits negative long-term consequences.[22] Moreover, to the extent that their primary fiscal balances are better than on the eve of the Asian crisis, emerging countries are in a much better position to sustain an expansionary fiscal stance.

Over the longer horizon, a complementary approach would be the development of international institutional arrangements that can mitigate the insurance motive for reserve accumulation. The swap lines arranged between the US Federal Reserve, the European Central Bank, and the monetary authorities of several emerging countries for the first time during the current crisis have been

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[21] Although in our simple framework, this implies greater production of capital goods, which may not be an undesirable development.

[22] Since a coordinated stimulus limits relative price movements.

a healthy development in this regard. In addition to increasing global dollar liquidity, these have the added effect of mitigating emerging economy central bank concerns. The short-term liquidity facilities introduced by the International Monetary Fund also help, albeit in a limited way, considering the gap between the resources potentially required and those actually available. New issuance of a globally acceptable non-dollar unit of account such as the IMF's Special Drawing Rights (SDRs) is a step in the right direction.

In conclusion, Bretton Woods II is unlikely to rise from the ashes. If we assume that, (a) emerging economies, having concluded from recent global developments that policies adopted over the last decade have paid off, would want to manage the level of their reserve holdings and exchange rates, and (b) the industrialized world, that is the region with large current account deficits, is now less willing or able to generate excess demand, two broad policy actions would make sense. First, mitigating the mercantilist motive for targeting exchange rates recommends the pursuit of globally coordinated fiscal stimuli. Second, mitigating the precautionary motive for reserve accumulation strengthens the case for international insurance in the form of (global or regional) currency swap agreements, easier access to multilateral lending facilities, and greater regulation of international capital flows. In the present circumstances, emerging economies have a strong incentive to hold on to their reserves, since spending them may lead to a crisis of confidence. If the goal eventually is to put together a stable international order that avoids the major pitfalls of Bretton Woods II, large implicit guarantees in the form of a global lender of last resort (GLLR) may, therefore, also be needed. In emerging economies, a GLLR has the added salutary effect, in addition to maintaining liquidity, of addressing currency-related balance sheet mismatch problems. The devil, however, is in the details that are beyond the scope of this preliminary exploration.

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Table 1: De Facto Exchange Rate Regimes as Classified by the International
Monetary Fund (July 31, 2006)

Regime	No. of countries	Ave. Res./GDP	Countries
Currency board	3	36.25	Hong Kong, Estonia, Lithuania
Pegging	7	21.57	China, Egypt, Hungary, Latvia, Pakistan, Slovak Rep., Venezuela
Managed floating	9	39.53	Argentina, Colombia, Czech Rep., India, Malaysia,Peru, Russian Fed., Singapore, Thailand
Independently floating	10	14.83	Brazil, Chile, Indonesia, Israel, Korea, Rep., Mexico, the Philippines, Poland, South Africa, Turkey

Table 2: Short-Run Comparative Statics

	b	μ	r
Rise in R	$-$	$+$	$-$
Decline in σ	0	0	0
Rise in b^d	0	$+$	$-$
Rise in r^*	0	$+$	0
Rise in k	0	$+/-$	$+$
Rise in f	$+$	$-$	$+$
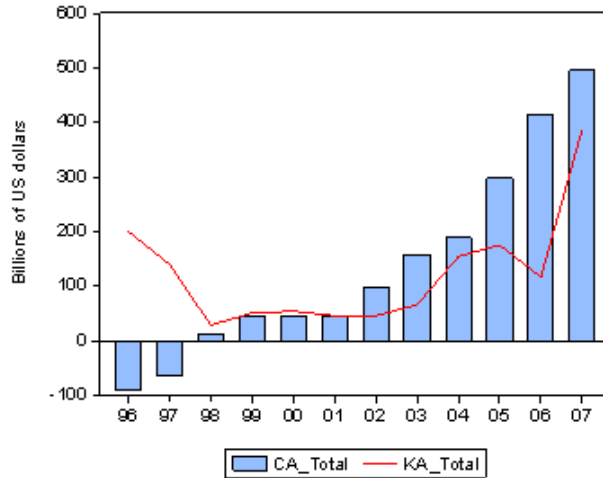
Figure 1: Total current account (CA) and capital account (KA) balances of emerging economies, 1996-2007.
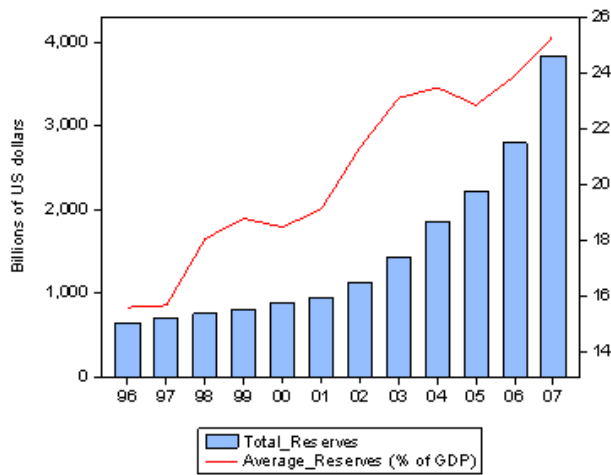
Figure 2: Total reserves (left hand scale) and (unweighted) average reserve to GDP (right hand scale) ratios of selected emerging economies, 1996-2007

19
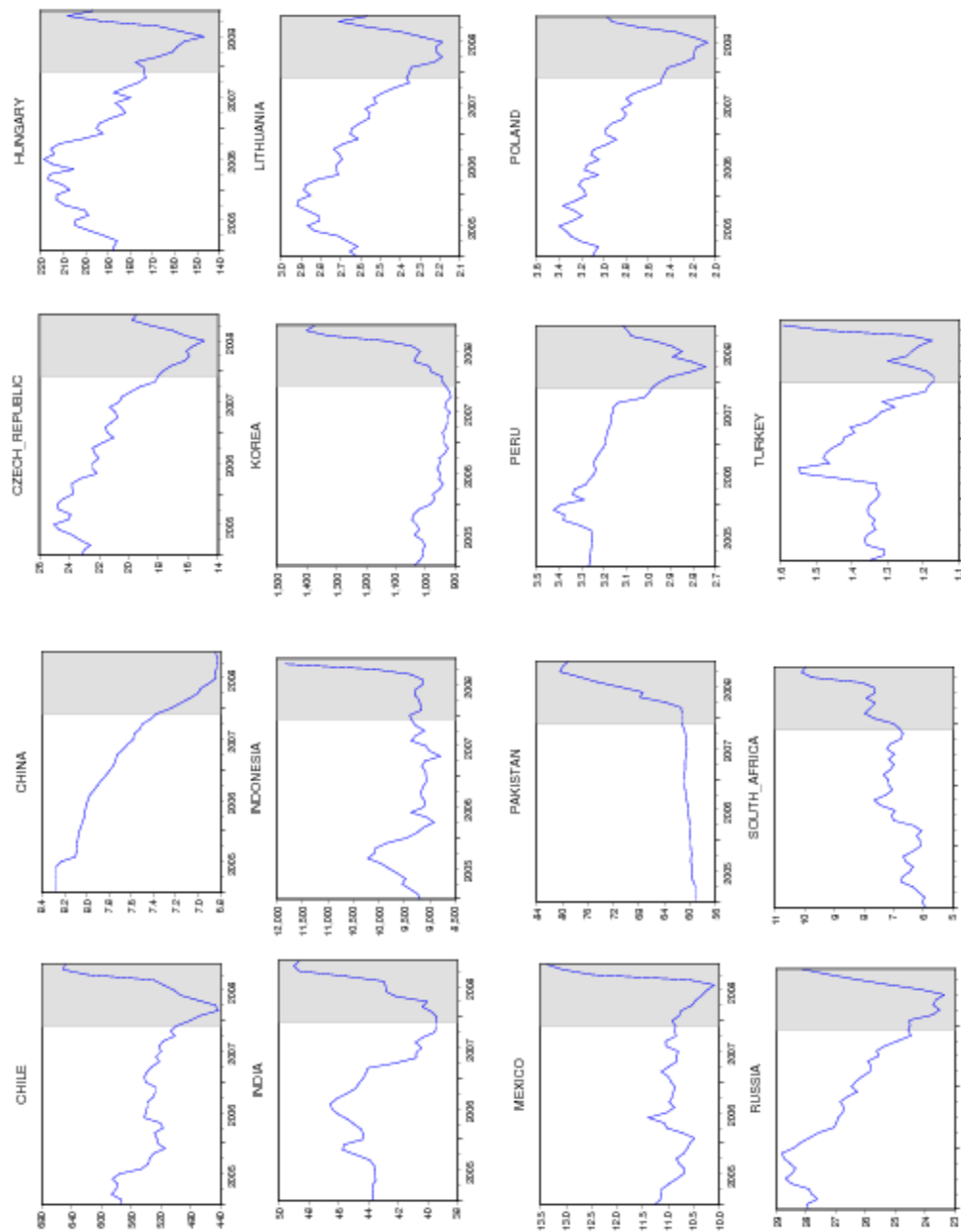
Figure 3: Monthly nominal exchange rates relative to the US dollar for a select group of emerging economies, 2005-2008.
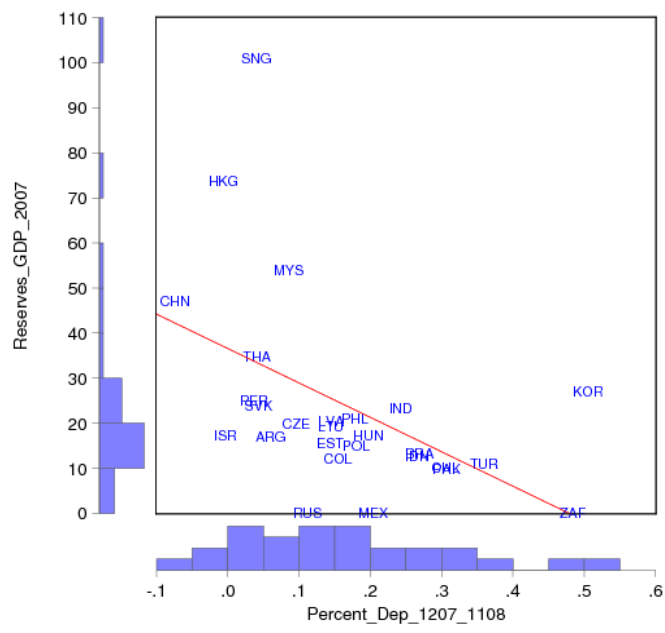
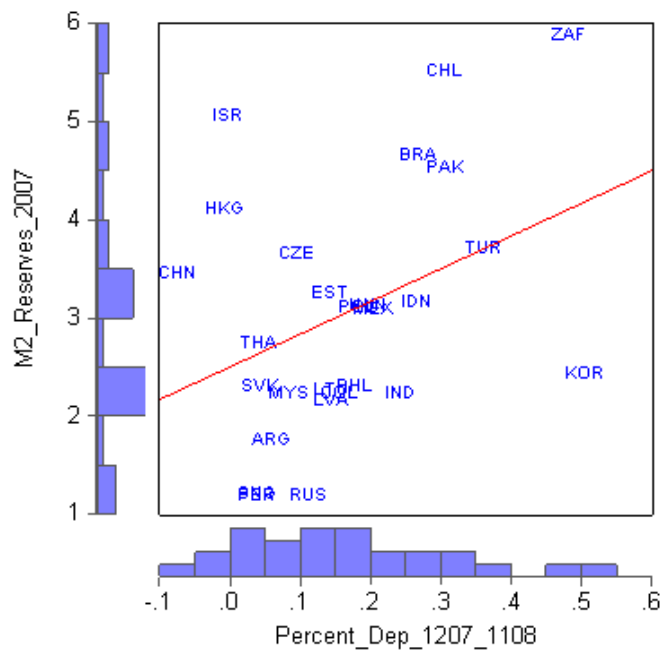Figure 4: The Reserves-GDP ratio in 2007 versus the percentage nominal exchange rate change between December 2007 and November 2008

Figure 5: The M2-Reserves ratio in 2007 versus the percentage nominal exchange rate change between December 2007 and November 2008
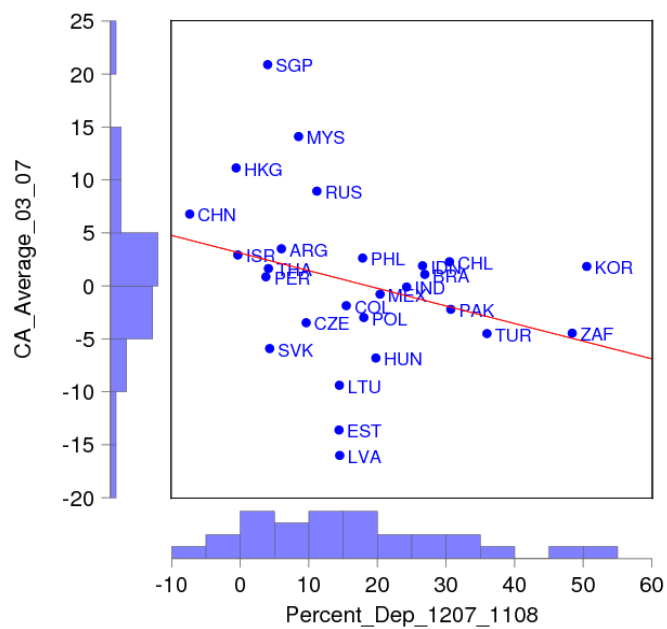
Figure 6: The average current account-GDP ratio over 2003-2007 versus the percentage nominal exchange rate change between December 2007 and November 2008
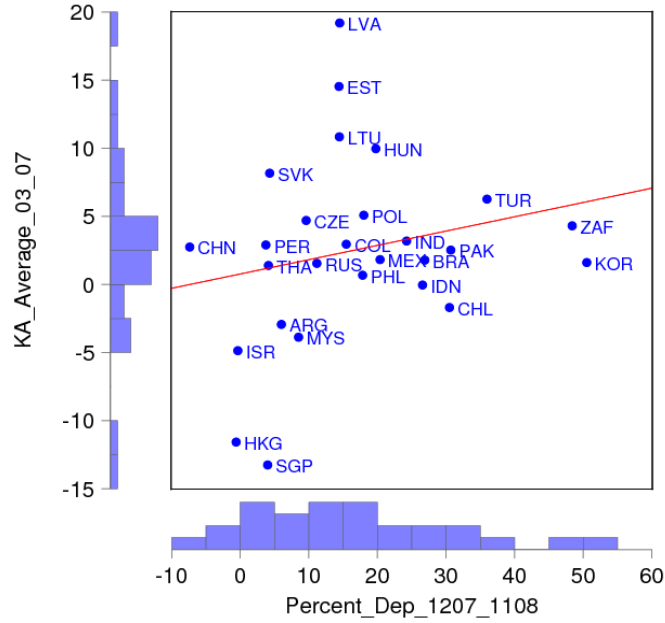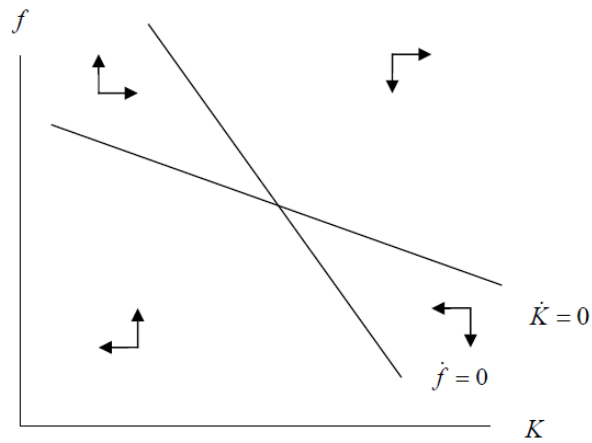
Figure 7: The average capital account-GDP ratio over 2003-2007 versus the percentage nominal exchange rate change between December 2007 and November 2008

Figure 8: Case 1: Weak Rybczynski and Metzler effects, respectively, on accumulation and savings.
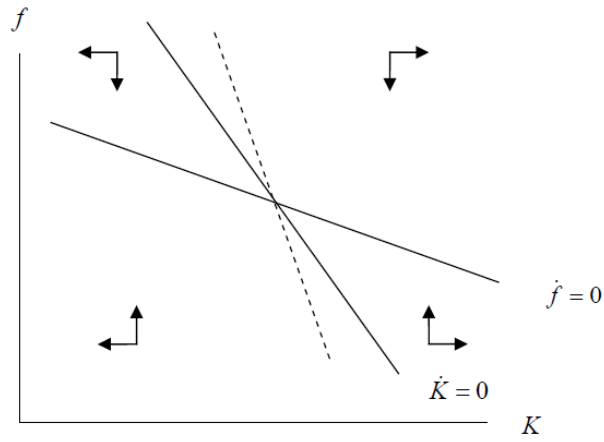
Figure 9: Case 2: Strong Rybczynski and Metzler effects, respectively, on accumulation and savings.
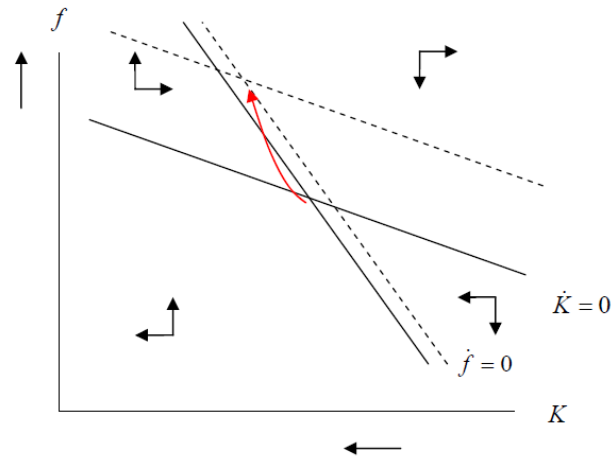

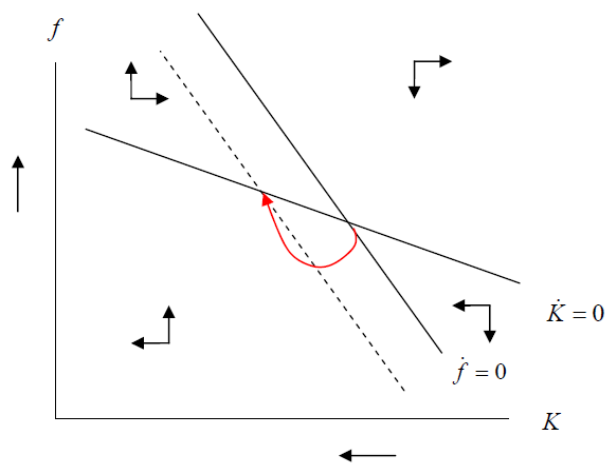Figure 10: An increase in the foreign exchange reserve target in Case 1

Figure 11: A decline in private savings: Case 1