



No.129/April 2006

Exchange Rates and External Adjustment:  
Does Financial Globalization Matter?

Philip R. Lane

Economics Department and IIS, Trinity College Dublin and  
CEPR

Gian Maria Milesi-Ferretti

International Monetary Fund and CEPR



**IIS Discussion Paper No. 129**

## **Exchange Rates and External Adjustment: Does Financial Globalization Matter?**

**Philip R. Lane**  
**Gian Maria Milesi-Ferretti**

### **Disclaimer**

Any opinions expressed here are those of the author(s) and not those of the IIS.  
All works posted here are owned and copyrighted by the author(s).  
Papers may only be downloaded for personal use only.

**Exchange Rates and External Adjustment:  
Does Financial Globalization Matter?**

**Philip R. Lane**  
IIS, Trinity College Dublin and CEPR

**Gian Maria Milesi-Ferretti**  
International Monetary Fund and CEPR

**Abstract**

This paper addresses the implications of financial globalization for exchange rate behavior. We highlight two dimensions: first, a wider dispersion in net foreign asset positions implies stronger long-term trends in real exchange rates; second, the impact of currency movements on net external wealth is an increasing function of the scale of international balance sheets.

JEL Classification Numbers: F31, F32

Keywords: Financial integration, exchange rates

Author's E-Mail Address: [plane@tcd.ie](mailto:plane@tcd.ie); [gmilesiferretti@imf.org](mailto:gmilesiferretti@imf.org)

\*A Spanish translation of this paper appears in *Revista de Economía* (No. 827, December 2005), published by the Spanish Ministry of Economy. Parts of this paper were written while Lane was a visiting scholar at the International Monetary Fund, Centre for Economic Performance (LSE) and Harvard-NBER. Lane also gratefully acknowledges the financial support of a Government of Ireland Research Fellowship, the Irish Research Council on Humanities and Social Sciences (IRCHSS) and the HEA-PRTL grant to the IIS. The views expressed here are the authors' only and do not represent those of the IMF.

## I. INTRODUCTION

Over the last several decades, a key trend in the world economy has been the growth in cross-border asset trade. Driven by a combination of capital account and trade liberalization, declining transaction costs, and a general improvement in the level of financial sophistication, investors have steadily increased the weight allocated to foreign assets in their portfolios. The growth in international financial trade, illustrated in Figure 1, has accelerated dramatically since the mid-1990s—for several financially open countries, total holdings of external assets and liabilities are now larger than GDP.

Do these financial globalization trends matter for the real economy? What is the link between external imbalances and real exchange rates? Should we concentrate our attention on a country's net external position as an indicator of external exposure, or do gross external assets and liabilities (and their composition) convey additional useful information on an economy's links with the rest of the world? The goal of this article is to illustrate the answers to these questions provided in the literature, and in particular to work out the implications of financial globalization for exchange rate behavior.

To preview our findings, we argue that financial globalization has important implications for exchange rate behavior, and for the adjustment of economies to external shocks. Countries with a positive stock of net foreign assets tend to have more appreciated real exchange rates, and countries with large external liabilities tend to have more depreciated exchange rates. We also highlight the importance of gross external holdings. For advanced economies, with liabilities primarily issued in domestic currency and assets denominated in foreign currency,

an exchange rate depreciation tends to improve the country's net external position by increasing the size of external assets relative to external liabilities—a reflection of the scope for more efficient risk-sharing provided by international portfolio diversification. Along similar lines, we emphasize the increasingly important role played by differences in rates of return on external assets and liabilities in shaping the dynamics of a country's external imbalances.

We divide the analysis into two parts. In Section II, we first consider how financial globalization may affect trends in the long-run value of exchange rates. Subsequently, we turn in Section III to how financial globalization has increased the importance of the valuation channel of exchange rate adjustment. Finally, Section IV offers some concluding remarks.

## **II. FINANCIAL GLOBALIZATION, NET EXTERNAL POSITIONS AND EXCHANGE RATES IN THE LONG RUN**

By definition, the current account balance (and hence the net external position) must be zero for a financially-autarkic country. International financial integration allows a country to run current account imbalances: if these are persistent, it may accumulate significant net external assets or liabilities. In addition, international financial integration allows a country's residents to diversify their portfolios—even with balanced trade and no need for net external

financing, a country's residents can purchase foreign assets—for example, in the form of direct investment—while foreign residents purchase domestic financial instruments.<sup>1</sup>

For most of the Bretton Woods period (and also in the period of financial integration at the end of the last century—see Obstfeld and Taylor, 2004) capital flows primarily reflected the financing of external imbalances, rather than international diversification, and took primarily the form of cross-border loans, as well as some foreign direct investment. In other words, the difference between gross and net capital flows was modest. In recent years instead, gross capital flows have increased much more rapidly than net flows, as countries have become financially more integrated. In particular, cross-border flows of portfolio equity and foreign direct investment have increased significantly, both among industrial countries and between industrial countries and emerging markets.

While gross external positions have therefore rapidly increased, net external positions have also become larger—indeed, Figure 2 shows a sharp increase in the dispersion of net foreign asset positions, particularly since the mid-1990s. We now look more closely at the main countries underlying this trend. Figure 3 shows the current account balances (scaled by world GDP) for major countries and regions for the period 1994-2004, highlighting the substantial deterioration in the U.S. current account balance starting around 1997 and the improvement

---

<sup>1</sup> In balance of payments statistics, external assets and liabilities are classified in several categories: foreign direct investment (direct ownership or control of a firm), portfolio equity investment (“small” equity participations), portfolio debt investment (debt and money-market securities) and other investment (including loans, trade credits, and other nonsecuritized debt categories). Foreign exchange reserves (central bank holdings of foreign currencies and bonds) are classified separately.

in the current account balance of emerging Asia, oil-producing Middle-Eastern countries (especially in recent years) and small industrial countries such as Switzerland, Norway, and Sweden. Figure 4 shows the dynamics of the net foreign asset position in the same countries/regions.<sup>2</sup> The deterioration in the U.S. net foreign asset position until 2002, in line with widening current account deficits, is matched by the increased creditor positions of Japan, some small industrial countries, emerging Asia, and Middle-Eastern countries.<sup>3</sup>

What factors account for the dynamics in net external positions? In Lane and Milesi-Ferretti (2002) we show that for both industrial and developing countries factors such as demographic structures, public debt levels and relative output per capita (all of which are persistent variables) are associated with long-run trends in net foreign asset positions. That study covers the period 1970-1998, and it would be interesting to explore how well the underlying fundamentals identified there can account for the further widening of external imbalances which occurred over the past 6 years, documented above.

What is the link between net external positions and exchange rates? As is extensively discussed by Lane and Milesi-Ferretti (2002, 2004), a country that is a long-run net creditor or debtor faces a concomitant ‘transfer problem’.<sup>4</sup> Under standard regularity conditions, a long-run creditor will on average run trade deficits (financed by positive net returns on its net

---

<sup>2</sup> Lane and Milesi-Ferretti (2005c) describe the construction of the net foreign asset position data.

<sup>3</sup> The U.S. net external position was virtually stable as a ratio of world GDP during 2003-2004, because the large current account deficits were offset by favorable valuation effects induced by the dollar depreciation. See the discussion below.

<sup>4</sup> Discussions on the transfer problem date back to the debate between Keynes and Ohlin on the effect of German war reparations. See Keynes (1929) and Ohlin (1929).

external position) and, conversely, a long-run debtor will run trade surpluses. In general, this requires the real exchange rates of creditors to undergo trend appreciation vis-à-vis debtors.

Lane and Milesi-Ferretti (2004) provide cross-sectional and time-series evidence for a large panel of advanced and developing countries over the period 1970-1998 that there is indeed a significant long-run association between the net external position and the real exchange rate (controlling for other factors such as relative output per capita and the terms of trade). An important finding is that the magnitude of this transfer effect is increasing in relative country size: the required exchange rate adjustment for continental-sized economies is 7-10 times larger than for the prototypical small open economy. This is in line with expectations, in view of the much smaller relative share of the tradables sector in larger economies. Another interesting finding is that a significant part of the comovement between net foreign assets and CPI-based real exchange rates is accounted for by a comovement between net foreign assets and the relative price of traded to nontraded goods at home (relative to the ratio of traded to nontraded goods' prices abroad), rather than through the relative price of traded goods across countries.

In Lane and Milesi-Ferretti (2002) we focus on the connection between the trade balance and the real exchange rate for a smaller set of high-income countries and confirm that long-run trade surpluses are associated with real depreciation and trade deficits with real appreciation. Moreover, the paper provides direct evidence that the trade balance influences the long-run relative price of nontradables. In a calibrated demand-based model, Obstfeld and Rogoff (2004, 2005) also highlight a quantitatively important relation between the trade balance and



the relative price of nontradables, arguing that a reduction of the large U.S. current account deficit will have to entail a significant equilibrium reduction in the relative price of nontraded goods in the U.S. (relative to the rest of the world), and hence a large real depreciation.

However, it is important to note that the long-run link between the net international investment position and the trade balance can vary over time and across countries, for a number of reasons. First, for given returns on external assets and liabilities faster-growing debtor countries can stabilize their net external position with a smaller trade surplus than slow-growing countries. Second, the rates of return earned on foreign assets and paid out on foreign liabilities can (and do) differ across countries—they depend on the composition of the international balance sheet (e.g. the split between debt and equity instruments) and the investment skills of national investors.

For instance, the United States has managed to maintain a positive net investment income balance despite being a debtor nation since 1986: more generally, taking into account capital gains, it enjoys a positive differential between the return it earns on its foreign asset holdings relative to the return international investors obtain on its foreign liabilities, as clearly shown in Figure 5.<sup>5</sup> This dilutes the exchange rate impact of running persistent current account deficits for two reasons. First, for a given sequence of current account deficits, the net foreign liability position grows more slowly if the return on foreign assets exceeds the return on foreign liabilities. Second, the scale of the long-run trade surplus that a debtor nation must

---

<sup>5</sup> See also Lane and Milesi-Ferretti (2002, 2003, 2005b) on this point. Gourinchas and Rey (2005a) provide further evidence on the sources of the return differential.

run is also smaller, the higher is the return on foreign assets and the lower the return on foreign liabilities.<sup>6</sup>

Have exchange rates in recent years moved in line with the predictions of a long-run link between net foreign assets and real exchange rates? Figure 8 shows that over the past 2 ½ years the U.S. dollar has depreciated in real effective terms, as the increasing stock of U.S. external liabilities would lead to predict. However, if one takes a slightly longer perspective it becomes apparent that the link between net foreign assets and real exchange rates in the data has weakened. Figure 9 shows that the percentage change in the real effective exchange rate between 1998 and 2003 is negatively correlated with the change in net foreign assets in industrial countries.

A more rigorous analysis (see Milesi-Ferretti, Ricci, and Lee, 2005) shows that for the industrial countries' group the link between net foreign assets and real exchange rates has weakened even after controlling for the behavior of other economic fundamentals, such as productivity differentials and the terms of trade. While valuation effects (which are becoming more important with the increase in international financial integration, as discussed below) have clearly have played a role. One possible conjecture is that the increased scope for international financial integration allows countries to run larger net debtor and creditor positions. During the transition to this new steady state, countries with growing external liabilities (assets) may well run trade deficits (surpluses) and have appreciated (depreciated)

---

<sup>6</sup> Indeed, if the long-run return differential is high enough, a debtor country may not have to run trade surpluses at all.

exchange rates. Therefore the long-run link between net foreign assets and real exchange rates captured in the regressions may be weakened by these (protracted) transitional dynamics, but would be re-established over time. Be that as it may, this is an area for future research.

### **III. SHORT-RUN DYNAMICS: THE VALUATION CHANNEL**

In the previous section, we highlighted the long-run sensitivity of the exchange rate to the net external position. However, shifts in exchange rates directly influence the dynamics of the external position through two mechanisms. First, for conventional reasons, exchange rate depreciation is expected to improve the trade balance over some interval. Second, unexpected exchange rate changes also shift the external position through a “valuation channel” to the extent that the asset and liability sides of the international balance sheet are asymmetrically affected by currency movements.<sup>7</sup>

For advanced economies, the valuation channel tends to operate in the same direction as the traditional trade-balance channel. Since, for these countries, liabilities to foreign investors are mostly tied to the domestic currency and foreign assets are more heavily weighted towards foreign-currency instruments, a depreciation raises the value of foreign assets relative to foreign liabilities, improving the net foreign asset position. Figure 6 shows the close

---

<sup>7</sup> Following interest rate parity, anticipated exchange rate changes should map into return differentials such that the valuation channel is rendered inoperative. For this reason, the trade balance channel should dominate in the long-run steady state.

connection for the U.S. between exchange rate movements and net capital gains on its external portfolio, and Figure 7 shows that the same correlation holds for Japan.

Most recently, the U.S. current account deficits in 2002-2004 have been largely offset by the substantial net capital gains generated by the weakening of the dollar during this period (see Figures 4 and 6). Since Europe is a favored destination for American investors, the depreciation of the dollar against the euro and other European currencies has been especially important. A corollary has been that European countries have suffered significant capital losses on their dollar-denominated holdings—indeed, we can see from Figure 4 that the euro area's net external position has deteriorated in recent years despite the fact that the euro area has run on average current account surpluses (Figure 3).<sup>8</sup>

It is straightforward to demonstrate that the importance of such valuation effects is directly increasing in the scale of cross-border asset holdings.<sup>9</sup> For simplicity, let us suppose that a country's foreign assets are entirely denominated in foreign currency and all of its foreign liabilities are in domestic currency. If foreign assets and liabilities are both equal to 20 percent of GDP (the scale of external assets and liabilities in the United States at end-1980), an unexpected 10 percent devaluation generates a capital gain equal to 2 percent of GDP; if both sides of the balance sheet are scaled up to 100 percent of GDP (the scale of U.S.

---

<sup>8</sup> Much debate has centered on the role of emerging Asia (and China in particular) in global imbalances. While emerging Asia has increased in prominence in trade and in the financing of the US deficit, Europe and Japan remain the dominant financial counter-party to the US in terms of the accumulated stocks of foreign assets and liabilities.

<sup>9</sup> See also Tille (2003) and Lane and Milesi-Ferretti (2005a).

external liabilities at end-2004), the capital gain amounts to 10 percent of GDP. This example vividly illustrates how financial globalization is increasing the prominence of the valuation channel of exchange rate movements, with an impact effect now much larger than the traditional trade balance channel.

Gourinchas and Rey (2005b), Lane and Milesi-Ferretti (2005b), and International Monetary Fund (2005) find that the valuation channel is helpful in stabilizing the U.S. external position: a deterioration in the net external position is associated with subsequent depreciation, which improves the external position both through the valuation channel and the trade balance channel.<sup>10</sup> Despite this helpful contribution, it is important to understand that the valuation channel cannot be the sole source of adjustment in the face of persistent current account imbalances. First, a country could not undergo a multi-year sequence of annual exchange rate depreciation without experiencing significantly inflationary pressures. Second, investors would come to factor in anticipated depreciations into required interest rates, thus offsetting the valuation channel. For these reasons, excessive current account deficits cannot indefinitely persist: trade balance adjustment must eventually take place.<sup>11</sup>

In contrast to the situation for the industrial countries, the valuation channel may work in the opposite direction for emerging-market economies: with liabilities to foreigners issued in foreign currencies, devaluation exerts a negative balance-sheet effect. As was dramatically

---

<sup>10</sup> That said, the valuation gain from exchange rate depreciation may boost domestic expenditure through the associated positive wealth effect, such the trade balance deteriorates and the improvement in the net external position is correspondingly less than proportional. See also Lane and Milesi-Ferretti (2002).

<sup>11</sup> See also Obstfeld and Rogoff (2005).

highlighted by the various currency crises during 1994-2001, the net result is that adjustment dynamics for these countries are greatly amplified: a sudden stop in capital inflows entails a magnified initial devaluation, on account of the negative wealth effect associated with the deterioration in the external balance sheet.<sup>12</sup>

The increase in portfolio equity and foreign direct investment flows to emerging markets has gone some way towards reducing the currency exposure of their net external position, since portfolio equity and FDI liabilities are denominated in domestic currency. An improvement in the attractiveness of local-currency debt issues to foreign investors would significantly reduce the riskiness of the external debt profile of this group of countries.

#### IV. CONCLUSIONS

Financial globalization is stimulating researchers to take a fresh look at exchange rate economics. At one level, it has re-awakened interest in a classic question in international economics – the transfer problem. At another, it has focused attention on the valuation channel of exchange rate adjustment: given the large (and increasing) stocks of external assets and liabilities denominated in different currencies, exchange rate changes imply not only expenditure-switching, but also significant capital gains and losses that influence the dynamics of the external position.

---

<sup>12</sup> See Devereux, Lane and Xu (2006) for a quantitative model of this phenomenon. In the subsequent recovery, the improvement in the net external position is accelerated since the exchange rate appreciates in the wake of the initial overshooting devaluation. For emerging market economies, exchange rate appreciation has a positive valuation impact by reducing the volume of local currency required to finance a given level of foreign-currency debt.

Looking forward, the unprecedented scale of the current United States imbalance provides an extremely interesting case study. Will adjustment be gradual or sharp? How will the dollar behave over the short- and long-term? By how much will the valuation effect ease the pressure on the trade balance? How will the rest of the world adjust to a decline in net import demand from the United States and currency appreciation vis-à-vis the dollar? These questions form an exciting research agenda for international macroeconomists.

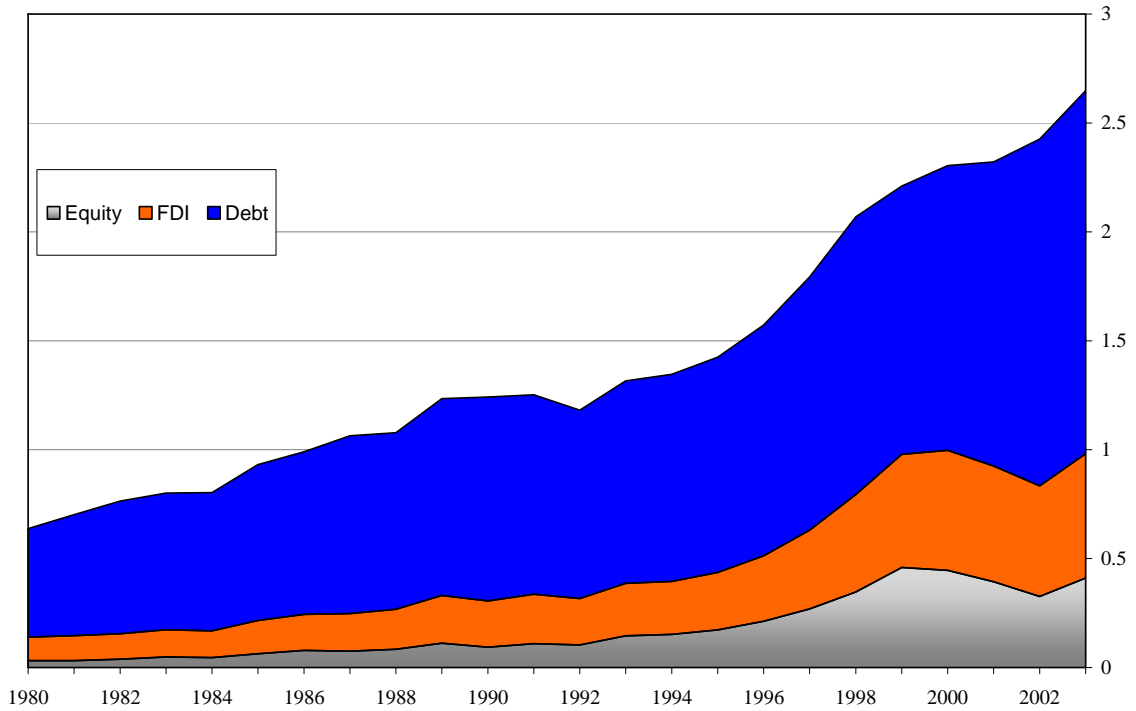
### References

- Devereux, Michael B., Philip R. Lane and Juanyi Xu (2006), "Exchange Rates and Monetary Policy in Emerging Market Economies," *The Economic Journal*, forthcoming.
- Gourinchas, Pierre-Olivier, and Helene Rey, (2005a), "From World Banker to World Venture Capitalist: The US External Adjustment and The Exorbitant Privilege," mimeo, UC-Berkeley and Princeton.
- Gourinchas, Pierre-Olivier, and Helene Rey, (2005b), "International Financial Adjustment," NBER Working Paper No. 11155.
- International Monetary Fund, (2005), "Globalization and External Imbalances," *World Economic Outlook*, Chapter III, April (Washington, DC: International Monetary Fund).
- Keynes, John Maynard (1929), "The German Transfer Problem"; "The Reparation Problem: A Discussion. II. A Rejoinder"; "Views on The Transfer Problem. III. A Reply," *Economic Journal* 39, March, 1-7; June, 172-8; September, 404-8.
- Kindleberger, Charles P. (1965), Balance of Payments Deficits and the International Market for Liquidity, Princeton Essays in International Finance No. 46, International Finance Section Department of Economics, Princeton University.
- Lane, Philip.R. and Gian Maria Milesi-Ferretti (2001a), "The External Wealth of Nations: Measures of Foreign Assets and Liabilities for Industrial and Developing Countries," *Journal of International Economics* 55, 263-294.
- Lane, Philip.R. and Gian Maria Milesi-Ferretti (2001b), "External Capital Structure: Theory and Evidence," in (H. Siebert, ed.) *The World's New Financial Landscape: Challenges for Economic Policy*, Kiel Institute of World Economics Symposia and Conference Proceedings. Heidelberg and New York: Springer, 247-284.
- Lane, Philip.R. and Gian Maria Milesi-Ferretti (2002a), "Long-Term Capital Movements," in (M. Gertler and K. Rogoff, eds) *NBER Macroeconomics Annual* 16, 73-116. Cambridge, MA: The MIT Press.
- Lane, Philip.R. and Gian Maria Milesi-Ferretti (2002b), "External Wealth, the Trade Balance and the Real Exchange Rate," *European Economic Review* 46 (June), 1049-1071.
- Lane, Philip.R. and Gian Maria Milesi-Ferretti, (2003), "International Financial Integration," *IMF Staff Papers*, Vol. 50 Special Issue, pp. 82-113 (Washington: International Monetary Fund).



- Lane, Philip.R. and Gian Maria Milesi-Ferretti (2004), "The Transfer Problem Revisited: Net Foreign Assets and Real Exchange Rates," *Review of Economics and Statistics*, Vol. 58, No. 4, pp. 841–57.
- Lane, Philip.R. and Gian Maria Milesi-Ferretti 2005a. Financial Globalization and Exchange Rates. International Monetary Fund Working Paper No. 05/03.
- Lane, Philip.R. and Gian Maria Milesi-Ferretti (2005b), "A Global Perspective on External Positions," Mimeo, Trinity College Dublin and International Monetary Fund.
- Lane, Philip.R. and Gian Maria Milesi-Ferretti (2005c), "The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970–2003," in progress.. Mimeo, Trinity College Dublin and International Monetary Fund.
- Milesi-Ferretti, Gian Maria, Luca Ricci, and Jaewoo Lee (2005), "Equilibrium Exchange Rates: Estimates for Industrial Countries and Emerging Markets," mimeo, International Monetary Fund.
- Obstfeld, Maurice (2004), "External Adjustment," *Review of World Economics*, 140 (4), 541-568.
- Obstfeld, Maurice and Kenneth Rogoff (2004), "The Unsustainable US Current Position Revisited," NBER Working Paper 10869, November.
- Obstfeld, Maurice and Kenneth Rogoff (2005), "Global Current Account Imbalances and Exchange Rate Adjustments," *Brookings Papers on Economic Activity*, forthcoming.
- Obstfeld, M. and A. Taylor (2004), *Global Capital Markets: Integration, Crisis, and Growth*. London and New York: Cambridge University Press.
- Ohlin, Bertil (1929), "The Reparation Problem: A Discussion. I. Transfer Difficulties, Real and Imagined"; "Mr. Keynes' views on the Transfer Problem. II. A Rejoinder," *Economic Journal* 39 (June) 172-82; September, 400-404.
- Tille, Cédric (2003), "The Impact of Exchange Rate Movements on US Foreign Debt," *Current Issues in Economics and Finance* 9(1), Federal Reserve Bank of New York.

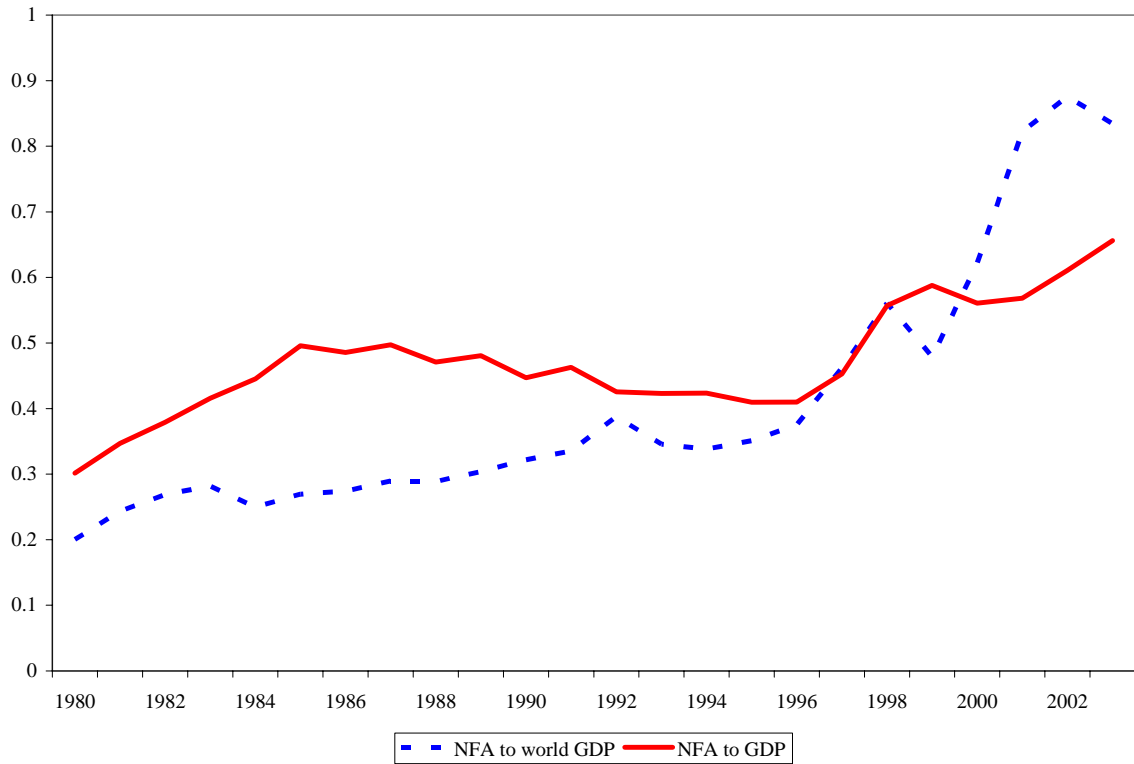
Figure 1. Composition of international portfolio, industrial countries  
(sum of assets and liabilities as a ratio of GDP, 1980–2003)



Note: Chart plots the sum of aggregate equity, FDI, and debt assets and liabilities as a share of aggregate GDP for a sample of industrial countries including: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Italy, Japan, Netherlands, Norway, Spain, Sweden, Switzerland, United Kingdom, United States. The sample choice is dictated by data availability.

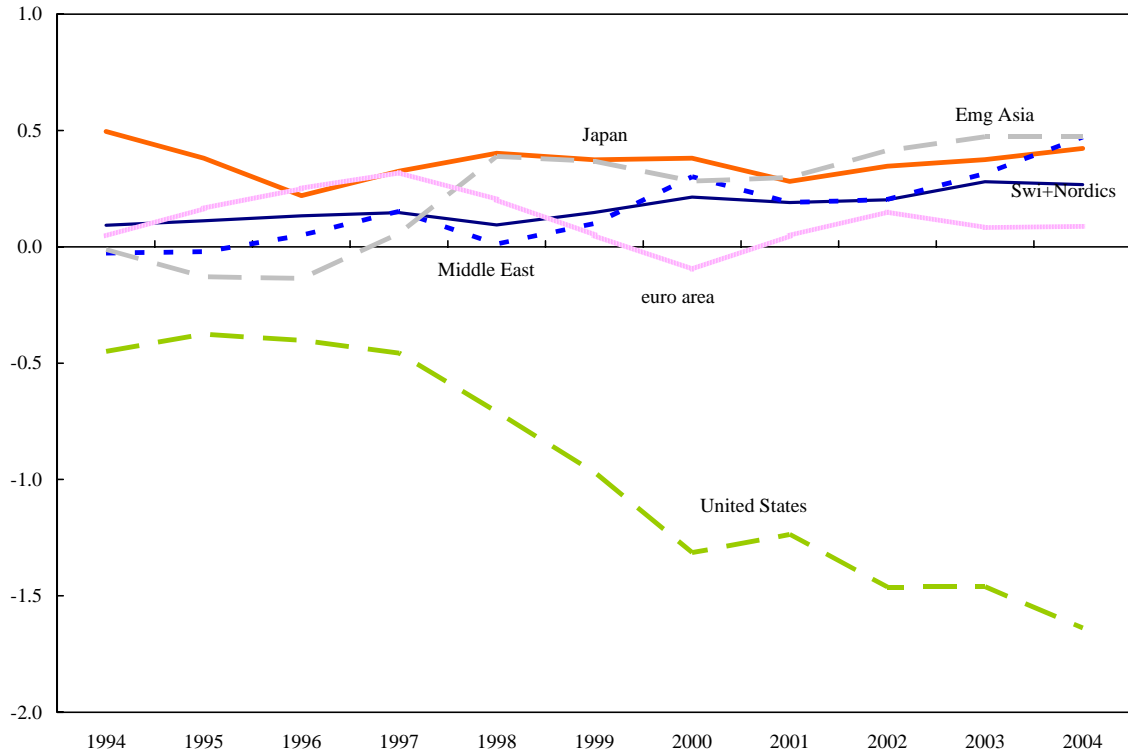
Source: Lane and Milesi-Ferretti (2005a).

Figure 2. Standard deviation of net foreign assets across countries



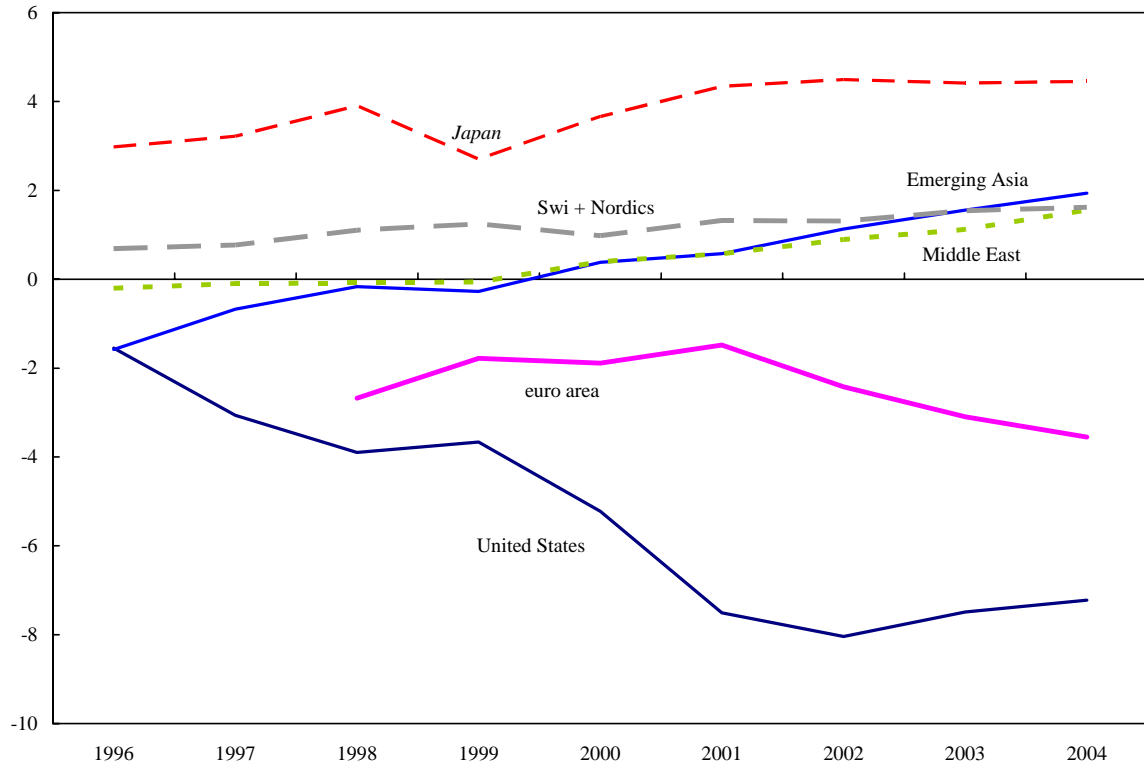
Note: the dashed line plots the standard deviation in the ratio of net foreign assets to world GDP and the solid line the standard deviation in the ratio of net foreign assets to domestic GDP for a large set of industrial countries and emerging markets. The sample for the ratio of NFA to domestic GDP excludes extreme outliers such as small financial centers, with net financial positions equal to multiples of GDP. Source: Lane and Milesi-Ferretti (2005b).

Figure 3. Current account balances (percent of world GDP)



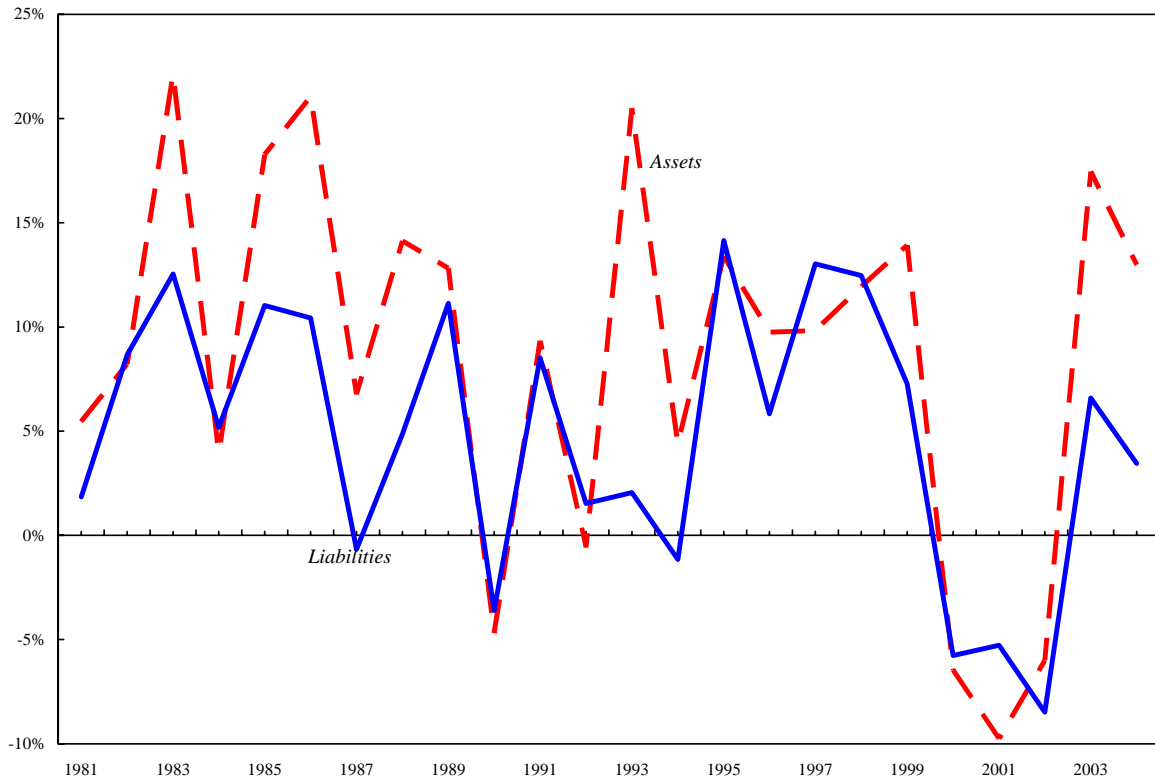
Note: the emerging Asia group includes China, Hong Kong SAR, Taiwan prov. of China, Korea, Malaysia, Singapore, and Thailand. The Swi + Nordics group includes Norway, Sweden, and Switzerland. The Middle East group includes Algeria, Bahrain, Egypt, Iran, Jordan, Kuwait, Libya, Saudi Arabia, Syria, United Arab Emirates, and Yemen. Source: Lane and Milesi-Ferretti (2005b).

Figure 4. Net foreign assets (percent of world GDP)



Note: the emerging Asia group includes China, Hong Kong SAR, Taiwan prov. of China, Korea, Malaysia, Singapore, and Thailand. The Swi + Nordics group includes Norway, Sweden, and Switzerland. The Middle East group includes Algeria, Bahrain, Egypt, Iran, Jordan, Kuwait, Libya, Saudi Arabia, Syria, United Arab Emirates, and Yemen. Source: Lane and Milesi-Ferretti (2005b).

Figure 5. United States: Real rates of return on external assets and liabilities, 1981-2004



Note: rates of return for year  $t$  are constructed as the sum of investment income earnings (payments) and the corresponding capital gains in year  $t$ , divided by the outstanding stock of assets (liabilities) at the end of year  $t-1$ . In turn, capital gains are constructed as the difference between the change in the stock of assets (liabilities) between year  $t$  and  $t-1$  and total capital outflows (inflows) during year  $t$ . The rates of return are deflated by the changes in the U.S. CPI index. Source: Lane and Milesi-Ferretti (2005b).

Figure 6. United States: capital gains and the real exchange rate, 1980-2004

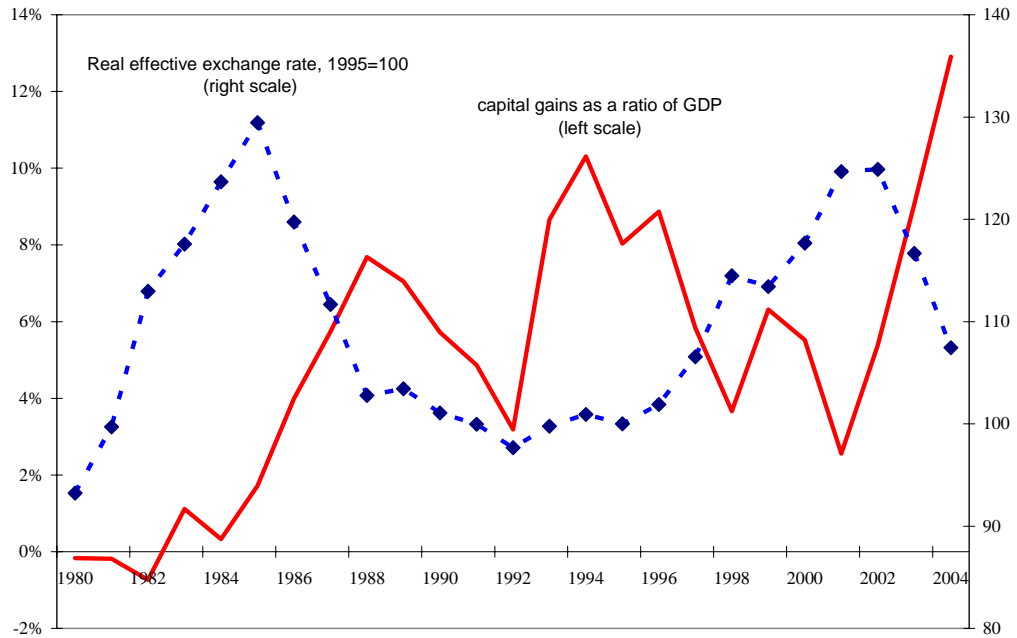
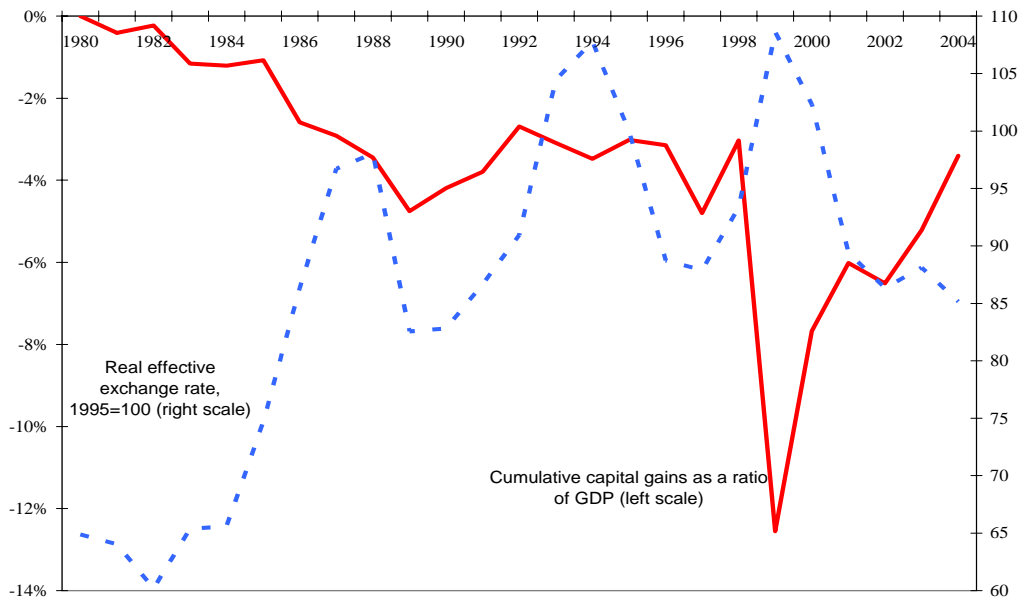
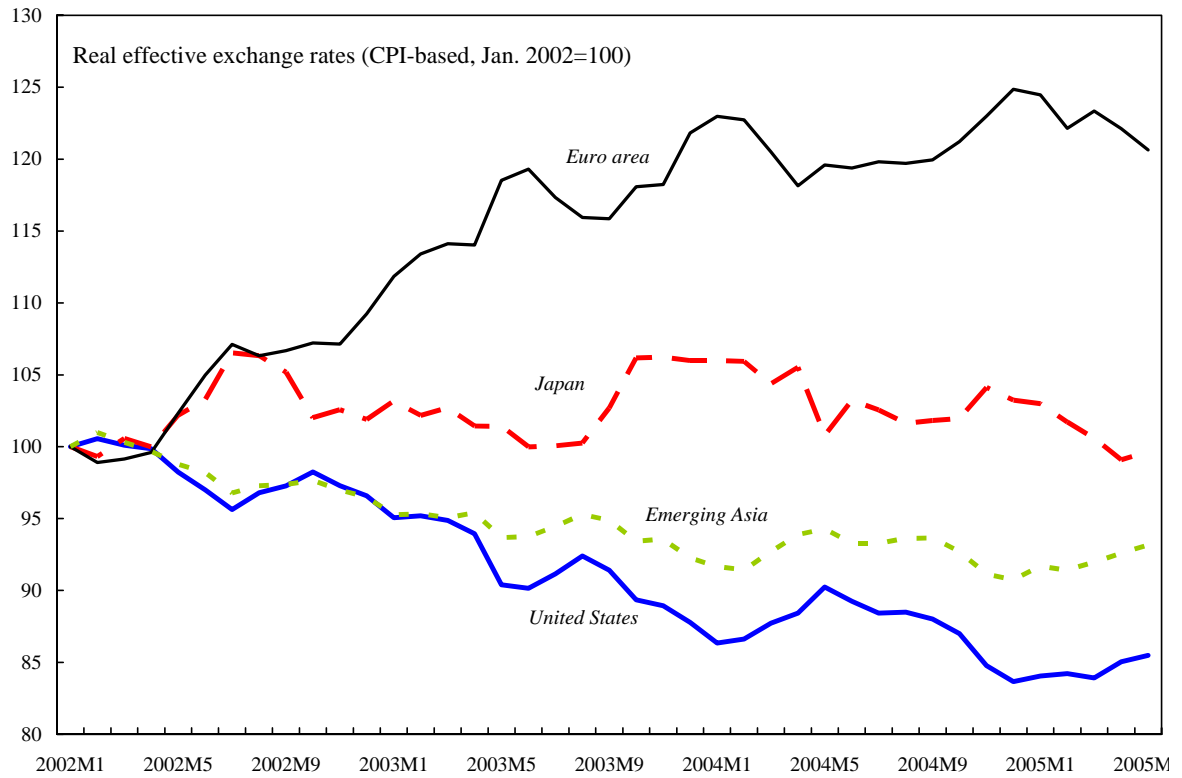


Figure 7. Japan: capital gains and the real exchange rate, 1980-2004



Note: capital gains are the difference between the net foreign asset position and cumulative capital flows (both scaled by GDP), with an arbitrary starting value of zero in 1980. Source: Lane and Milesi-Ferretti (2005b).

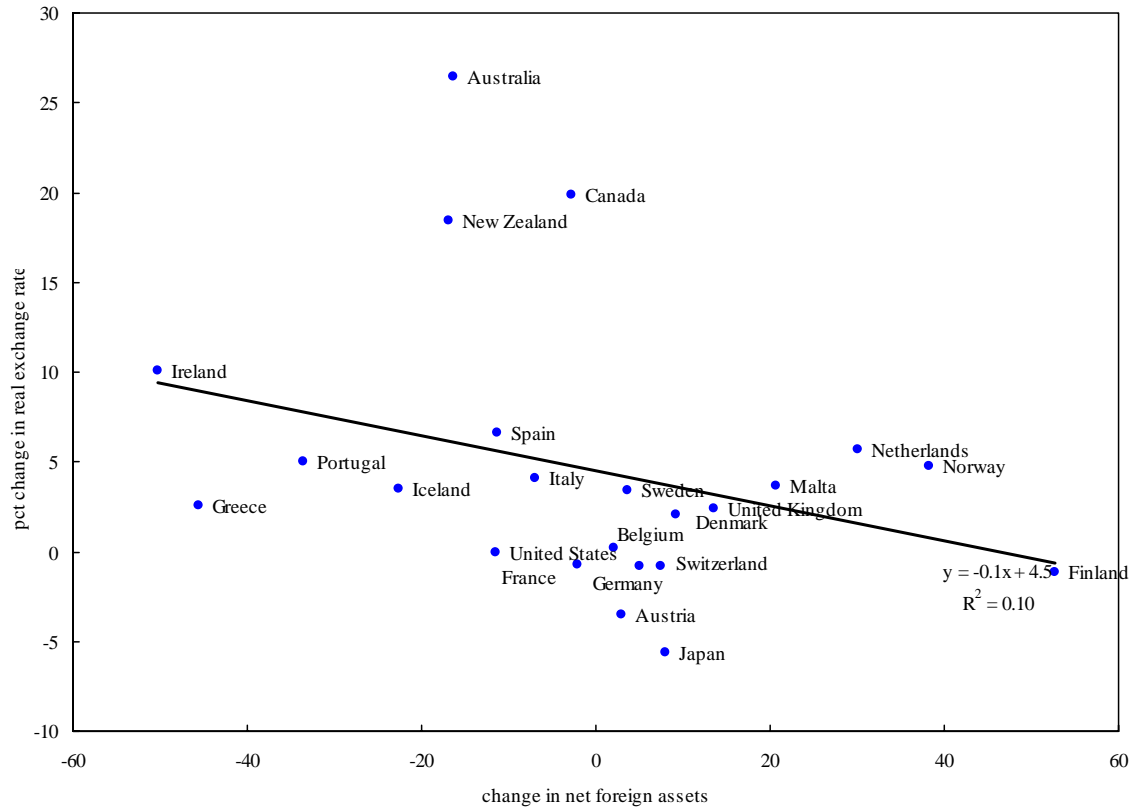
Figure 8. Real effective exchange rates, 2002-2005



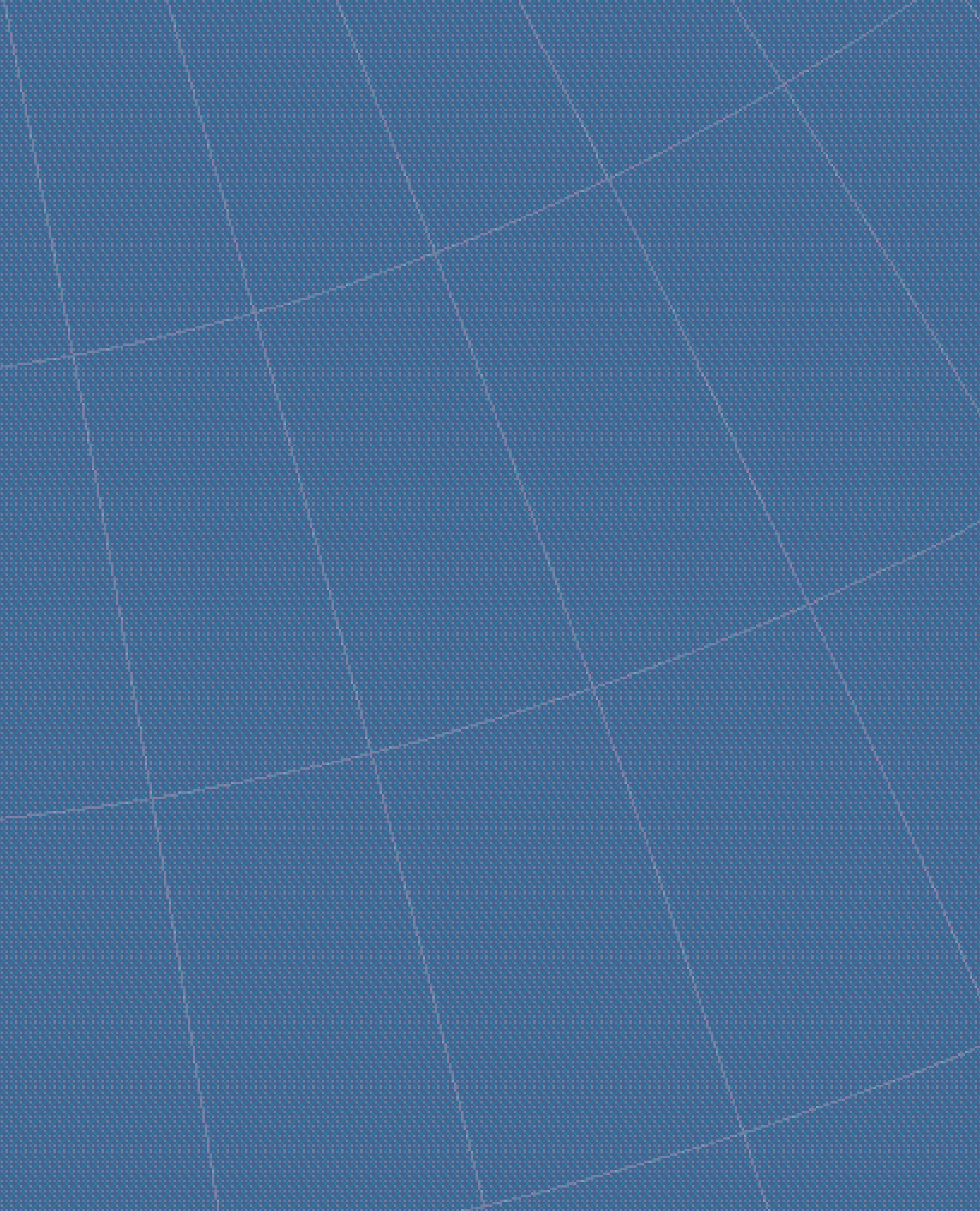
Note: CPI-based real effective exchange rates (with trade weights). Emerging Asia comprises China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand. Source: International Monetary Fund.



Figure 9. Changes in net foreign assets and real exchange rates (1998-2003)



Note: the horizontal axis measures the change in the ratio of net foreign assets to GDP between end-2003 and end-1998. The vertical axis measures the percentage change in the real effective exchange rate between 2003 and 1998. Source: Lane and Milesi-Ferretti (2003) and International Monetary Fund.



**Institute for International Integration Studies**

The Sutherland Centre, Trinity College Dublin, Dublin 2, Ireland

