

Where have the Savings gone to? Assessing the Return on Switzerland's External Assets

Nicolas Stoffels*
Swiss National Bank

Cédric Tille*
*Graduate Institute for International and Development Studies
and CEPR*

PRELIMINARY AND INCOMPLETE

June 17, 2009

Abstract

While Switzerland holds a substantial net foreign asset position, this has remained stable over the last decade despite massive current account surpluses. We document how this puzzle reflects the interaction of movements in asset prices and exchange rates with different compositions of Switzerland's large gross assets and liabilities holdings. We document how the current crisis has adversely affected the earnings and overall returns on Switzerland's external assets, stressing the need to adjust the official FDI data for capital losses. We also show that the yield spread between assets and liabilities disappears once we consider overall returns, and find some evidence that the rates of return help hedge the Swiss business cycle.

JEL classification: F32, F33, F36.

Keywords: international leverage, valuation effect, external position, financial crisis.

* nicolas.stoffels@snb.ch and cedric.tille@graduateinstitute.ch. We thank Catherine Marrel of the Swiss National Bank Balance of Payments Group for her comments, as well as Nicolas Jacquier for excellent research assistance. The views expressed are those of the authors and do not represent the views of the Swiss National Bank.

1. Introduction

Switzerland is a standard example of a small open economy highly integrated with the rest of the world, both in terms of trade and financial flows.¹ In particular Switzerland stands out as a sizable creditor to other countries, with its net international investment position amounting to 117% of GDP at the end of 2008, a value well above that of other countries (Lane and Milesi-Ferretti 2006).²

Yet Switzerland's large creditor position is surprisingly low once we consider the large current account surpluses that the country runs, which amounted to 11 % of GDP on average over the 2000's. This aspect is at odds with the stability of the Swiss net investment position since 1999, where it amounted to 125 % of GDP (Figure 1). Cumulating net financial flows since the mid-1980's indicate that the Swiss net position should be nearly twice its actual value.³

This paper links the gap between cumulative financial flows and the actual net position to the exposure of Switzerland's large gross assets and liability positions to fluctuation in exchange rate and asset prices.⁴ Our analysis allows us to contrast the overall return of Swiss assets and liabilities until the end of 2008, including their response to the ongoing financial crisis. We first document the composition of Switzerland's external holdings, building on Stoffels and Tille (2007), and show how the exchange rate exposure has shifted away from the U.S. Dollar in the 2000's. We then construct estimates of the valuation effect of movements in exchange rates and asset prices. While our reliance of aggregate estimates does not allow us to finely match the dynamics of the data, we document sizable losses stemming from the appreciation of the Swiss Franc, as well as movements in asset prices. Focusing on the crisis period since the end of 2006, our estimates provide an accurate account of the evolution of Switzerland's holdings.

¹ In 2008 exports and imports added up to close to 100% of GDP.

² Among European countries only Luxembourg holds a larger net asset position.

³ Cumulating financial flows since the end of 1999 leads to a gap equivalent to 75 % of GDP in 2008.

⁴ The international relevance of valuation effects for the dynamics of a country net international position is documented in a growing body of literature (Gourinchas and Rey 2007, Lane and Milesi-Ferretti, 2006, Tille 2008, 2003).

Our approach highlights the limitation of the data, where FDI is measured at book value. By its nature as a financial center, Switzerland hosts many holdings companies that hold foreign assets and are largely held by foreign investors. While the assets fall under the FDI category, the claims of foreign investors fall under the equity portfolio category. The official data therefore potentially suffer from an inconsistent treatment of movements in the value of these firms. Consider a shock that reduces the value of the firm's asset, with this loss being fully reflected in a lower equity price. The data would not reflect the loss of value of FDI assets, but would capture the reduced value of foreign investors' stake, thereby leading to an improvement in the Swiss external position.

We address this shortcoming by computing estimates of FDI holdings at market value. Our figures show that the current crisis has led to a sharp drop in the value of FDI. With FDI holdings being more prominent among Swiss assets than liabilities, our estimates show a net external position at the end of 2008 of 79 % of GDP, well short of the official number of 117 %. While our estimates are to be taken with some caution, they illustrate the need for a more consistent treatment of the various components of foreign assets and liabilities.

Using our estimates of capital gains and losses, we show that the sizable Swiss surplus in income streams on assets disappears once these valuation effects are included, with the return of Swiss liabilities actually exceeding that on assets. Focusing on the current crisis, these capital losses compound the collapse of the Swiss income surplus, highlighting how Switzerland has been affected through many channels. We nonetheless find some evidence that the rates of returns on external holdings, including capital gains and losses, offer a hedge against the Swiss business cycle over the last decade, at least until the crisis.

The rest of the paper is organized as follows. Section 2 presents a brief description of Switzerland's external assets and liabilities and their composition. Our method for constructing estimates of different sources of capital gains and losses is presented in section 3. We add to the official data by constructing estimates of FDI at market value in section 4. Section 5 reviews the pattern of the valuations effect, with an emphasis on the recent crisis. The rates of returns on Swiss assets and liabilities are assessed in section 6, and section 7 concludes.

2. Patterns of the Swiss external position

This section presents the main features of Switzerland's external position. After briefly presenting the data, we review the composition of gross assets and liabilities across categories of assets, as well as currencies.⁵

2.1. The data

The data on international holdings and capital flows are computed by the Swiss National Bank.⁶ The value of assets and liabilities at the end of the year is available since 1983,⁷ and is split across foreign direct investment (hereinafter FDI), portfolio equity, portfolio debt, other (essentially banking positions) and official reserves. Data are at market value, with the exception of FDI which is at book value. Holdings are also broken down between Swiss francs and foreign currencies, with the later split further across major currencies.⁸

The data on the stocks of assets and liabilities are completed with the Balance of Payments for the corresponding financial flows and dividend and interest earnings. Our computations of capital gains and losses described below rely on exchange rate and asset prices values taken from Datastream.

2.2. Composition of holdings by categories

While Switzerland's net international position is sizable, it is dwarfed by substantial holdings of *gross* external assets and liabilities, which currently represent 536% and 419% of GDP, respectively (Figure 2). The value of these gross holdings has increased substantially since the mid-1990s, a pattern of financial globalization that is observed across most countries, particularly in the industrialized world, as documented by Lane and Milesi-Ferretti (2006).

⁵ A more thorough discussion is found in Stoffels and Tille (2007).

⁶ Appendix A describes the data in more details.

⁷ Quarterly data are also available starting from the end of 2001. See Stoffels and Tille (2008).

⁸ Until 1998 the foreign currency holdings are only split between the U.S. Dollar, the Deutsche Mark and other. Since then, the breakdown includes the euro, the Yen and the Pound. Holdings in the "other" and "reserves" categories include precious metals, from which we abstract.

The composition of gross assets and liabilities by categories shows substantial differences (Figures 3). FDI holdings are more prominent among assets than liabilities, with the opposite being the case for portfolio equity. This pattern likely reflects the presence of holding companies in Switzerland. The assets of these companies consist mostly of FDI stake in foreign operations, and they are held by foreign investors in the form of portfolio equity. While a large share of Swiss's assets are invested in foreign bonds, the holdings of Swiss bonds by foreign investors are limited. Finally, the "other" category occupies a prominent place on both sides, reflecting the fact that Switzerland is a highly integrated international banking center.

The relative importance of net and gross positions by asset categories is presented in Figure 4, which is built along the same lines as Figure 2 for the aggregate position. The leveraged nature of Switzerland between assets in FDI and liabilities in portfolio equity clearly appears. In terms of interest bearing assets, the pattern is very contrasted between bond holdings, with little offset between gross assets and liabilities, and other holdings, where the net position is limited as large gross holding cancel out.

Two aspects of the data are noteworthy. First, the crisis has led to reduction in portfolio equity and other holdings, a point that we review in more details below. Second, no such pattern is observed in FDI, simply reflecting it being measured at book value. This points to a problem in the Swiss data. Consider the case of a holding company held by foreign investors, and whose assets consist of FDI. A reduction in the market value of its assets can be expected to lower the market value of its share, with a limited impact on the difference between the two. The data would however only reflect the reduction in equity liabilities, but not the reduction in FDI assets, and would thus overestimate net assets. This aspect is addressed in the construction of estimates of FDI at market value below.

2.3. Composition of holdings by currencies

The currency composition of assets and liabilities differs substantially. While foreign currencies account for substantial shares of both assets and liabilities, their weight in assets (83 % in 2008) is well above their weight in liabilities (43 %). As a result, Switzerland is a net creditor in terms of foreign currencies to the tune of 269 % of GDP,

while being a debtor in Swiss Francs (Figure 5). The long positions in foreign currencies are predominantly driven by FDI, which account for half of them, with the residual split between portfolio debt and equity. While foreign currencies account for the bulk of other holdings,⁹ assets and liabilities are well hedged and the net foreign currency position is minimal.

The net foreign currency holdings are currently dominated by the Euro and the Dollar, which account for 39 % and 23 % of the total respectively. The Yen and the Pound together represent 16 % of holding, with other currencies accounting for the remaining fifth. This composition has evolved substantially over the last 10 years, as shown by Figure 6 which contrasts the shares in 1999 and 2008. Swiss foreign currency holdings have moved away from the U.S. dollar, which lost 10 percentage points, towards the Euro (+ 4 pp) and the Yen (+ 5 pp).

The value of foreign currency holdings reflects exchange rate movements. Between December 1999 and December 2008 the Swiss Franc broadly appreciated, thereby reducing the Swiss Franc value of holdings denominated in foreign currencies (Table 1, top panel). The movement was largest against the Pound (42 % appreciation) and the U.S. Dollar (32 %), with a more limited appreciation against the euro (4%). The timing of the various exchange rate movements also differ: while most of the appreciation against the dollar took place in earlier years, the movements against the Pound and the Euro were concentrated in the last two years.

As the Swiss Franc appreciated by more against the Dollar than the Euro, we would expect this to reduce the share of Dollar assets. While this mechanism operated, it only partially accounts for the move away from the Dollar. Focusing on the four major currencies, the Dollar is the only one for which the value of holdings decreased between 1999 and 2008 (Table 1, bottom panel). As a result, the share of the Dollar to holdings in the four currencies fell by 14 percentage points, while that of the Euro rose 5 percentage points. The direct impact of exchange rate movements is estimated by combining the appreciation of the Swiss Franc with the holdings in various currencies.¹⁰ This exercise

⁹ 85% and 71% of assets and liabilities, respectively.

¹⁰ Specifically, we combine the impact of the exchange rate between the end of year t and the end of year $t+1$ by multiplying the actual holdings in a currency at the end of year t by the percentage appreciation of the Swiss Franc between the end of year t and the end of year $t+1$. The overall impact in Table 2 is the sum

shows that the largest losses (SF 119 billion) were effectively against the dollar. Yet this effect alone would have lowered the share of the Dollar by only 6 percentage points, with a similar impact on the Pound, with the Euro gaining 10 percentage points. Other factors, such as financial flows and valuation changes due to asset prices in the local currency, were also at play. While these other factors increased the value of all holdings, they were relatively more prominent for the Pound and the Euro than for the Dollar. The shift of the composition of foreign currency holdings away from the Dollar in Figure 6 thus reflects both relatively large losses from the appreciation of the Swiss Franc against the Dollar, as well as relatively small increase in Dollar holdings from other sources.

Contrasting the composition of foreign currency assets with the geographical composition of trade shows a contrasted picture. Figure 7 shows the average share of the various currencies in foreign currency assets over 1999-2008 (horizontal axis) against the share of these countries in the Swiss National Bank trade-weighted exchange rate index (vertical axis, from Fluri and Müller 2001). The United States plays a larger role as a financial partner than as a trade partner, accounting for 29 % of foreign currency assets but only 15 % of trade. The pattern is opposite for the Euro area which accounts for 62 % of Switzerland's trade, but only 38 % of its foreign currency assets.

The larger weight of the Dollar in financial than in trade terms, combined with the relatively large appreciation of the Swiss Franc against that currency, implies that the effective appreciation of the Swiss Franc since 1999 has been larger from a financial than from a trade point of view (Table 1, top panel). We construct an exchange rate index weighted by the shares to foreign currency assets, along similar lines as the standard trade weighted index. The appreciation of the Swiss Franc since 1999 has been about one and a half time as large in financial terms as in trade terms.¹¹

of this exercise across all years. This explains why despite the overall appreciation against the Yen, we compute a gain on Yen assets, as the impact of the appreciation in early years where holdings were small is more than offset by the impact of the later depreciation on larger holdings.

¹¹ For more discussion of financially-weighted exchange rates see Lane and Shambaugh (2007) and Stoffels and Tille (2008).

3. Estimation method for valuation gains

This section presents a detailed estimate of the factors driving the value of Switzerland's external assets and liabilities. We start by documenting the gap between the actual holdings and cumulated financial flows. We then describe our approach of splitting this valuation gain between the impact of exchange rate movements, changes in asset prices in local currencies, and residual valuation changes.

3.1. The position-flows gap by asset categories

As pointed in Figure 1, the net international position of Switzerland shows a sizable gap from cumulated net financial flows, amounting to 88 % of GDP. A closer look at the various categories of assets and liabilities shows a contrasted picture. Figure 8 displays the actual positions (solid line) and the cumulative financial flows (dotted line) for the net holdings in the various categories.¹²

The gap between actual holdings and cumulated capital flows is relatively moderate for FDI (18 % of GDP), which is to be expected as it is evaluated at book value, and therefore do not reflect asset prices, a point to which we come back below. A gap of similar magnitude is also observed for portfolio debt holdings (16 % of GDP), while other holdings show essentially no gap.¹³ The bulk of the discrepancy can thus be traced to portfolio equity (54 % of GDP). With Switzerland being a net debtor in equity, we can expect rising asset prices to boost the value of its liabilities beyond what is implied by financial flows alone.

3.2. The decomposition of valuation changes: concepts and method

The value of international assets and liabilities is affected by several factors. The first is financial flows, with a current account surplus adding to a country's net foreign assets. The second reflects the valuation effect from exchange rate movements, with an appreciation of the Swiss franc reducing the value, in Swiss francs, of a given position in foreign currency. Fluctuations in asset prices are the third factor, with a contraction in

¹² A breakdown in terms of gross holdings is available on request.

¹³ While gaps are observed in terms of "other" gross assets and liabilities, these cancel out.

asset prices abroad reducing the value of Swiss residents' holdings of foreign securities. Similarly, an increase in asset prices in Switzerland boosts the value of foreign investors' claims, leading to a valuation loss for Switzerland. Finally, so-called other valuation effect captures the change in positions due to statistical adjustments, such as the broadening of the sample of firms covered in the FDI statistics in 2004.

We construct estimates of the various valuations effect by relying on exchange rates, stock prices, and bond prices.¹⁴ More details on our estimation method are given in Stoffels and Tille (2007).

The impact of exchange rate movements is estimated by combining the positions in the various currencies with the changes in the corresponding exchange rates. We only compute the estimates for positions where the currency is known, and our estimates thus do not encompass the valuation impact from exchange rate movements in the other currencies. We also assume that positions denominated in foreign currencies are not hedged for exchange rate risk through derivative instruments. The presence of any hedging between Swiss and foreign residents would dampen the exchange rate valuation effect, but the data do not allow for an assessment of this dimension.

The impact of asset prices is estimated using equity price indexes for portfolio equity holdings, and bond price indexes for portfolio debt holdings and reserves. No adjustment is undertaken for other (mostly banking) holdings. The indexes used reflect the currency composition of the positions, with portfolio equity assets in dollar adjusted using the US equity price index for instance. Our approach relies on market-wide indexes, and thus considers that the allocation of Swiss investors' equity holdings in the United States reflects the sectoral composition of the US stock market index. This can lead to estimation errors if Swiss investors are more or less exposed to outperforming sectors than the market as a whole.

We compute an exchange rate valuation effect for the FDI positions at book value, but no asset price valuation as these holdings are not estimated at market value. As discussed below, we therefore extend the data by computing estimates of FDI holdings at market value.

¹⁴ Our measures thus do not constitute official data from the Swiss National Bank.

Our method allows us to split the change in a particular position from one year to the next between financial flows, exchange rate valuation, asset price valuation, and other valuation. As the later is computed as a residual, it includes statistical adjustments, the exchange rate and asset valuation components for the positions in the “other” currencies, for which the exact currency is unknown, as well as estimation errors and statistical adjustments.

It is important to bear the limitations of our approach in mind, which reflects its aggregate nature.¹⁵ First, cross-border holdings could be more concentrated in some sectors than the overall market, making the use of market-wide indexes problematic. Second, the impact of asset prices and exchange rate movements on the positions in other foreign currencies is by construction included in the residual valuation category. With such positions representing one-fifth of the foreign currency holdings, such effects can be substantial. Third, the large size of gross assets and liabilities can lead moderate mistakes in gross terms to have a substantial impact in net terms. With gross assets representing 536 % of GDP, miss-measuring the change in asset prices by 1 percentage point translates into a sizable error of 5.4 % of GDP.

4. Estimates of Foreign Direct Investment at market value

A limitation of the available data is that FDI holdings are not evaluated at market value, unlike the other categories. As discussed above, this can lead to a misleading picture as the data could miss the reduction of FDI assets of a holding company, while capturing the associated reduction in the value of the equity in that company held by foreign investors.

We complete the existing data by constructing estimates of FDI positions at market values. We rely on the geographical breakdown of the FDI holdings and financial flows, with the method detailed in Appendix B. We start from the positions at the end of 1985 at book value. The exchange rate valuation effect is computed by applying the percentage change in the relevant exchange rates between December 1985 and December

¹⁵ Building estimates based on detailed benchmark surveys of holdings, as done by the Bureau of Economic Analysis for the United States, would offer a more accurate picture. Such an exercise however requires considerable resources.

1986 to this position. Similarly, we compute an asset price valuation effect using equity price indices.

A well-recognized issue in constructing such estimates is the treatment of reinvested earnings (Gourinchas and Rey 2006). These earnings are included in financial flows for FDI, but are also reflected in asset prices, leading to a problem of double-counting. We address this by removing them from the asset price valuation component.

The positions for the various countries at the end of 1986 are computed by adding the exchange rate and asset price valuation effects and the financial flows (including reinvested earnings). The procedure is then iterated year-by-year until 2005. Notice that we only use the FDI positions at book value as our starting point.

While our estimates of FDI holdings at market values are a useful complement to the official positions at book value, it is important to bear in mind that they are computed based on broad assumptions about the currency composition of holdings. They should therefore be treated with more caution than official data.

Our estimates of FDI holdings at market value are presented in Figure 9 both in terms of the net position (top panel), and in terms of gross assets and liabilities (bottom panels). Each panel shows our estimate at market value (thick line), the official position at book value (thin line) and the cumulated financial flows (dotted line). Several points emerge. First, the stock market booms of the late 1990's lead to larger positions at market value, followed by a substantial decrease during the crash of the early 2000's. Second, the net holdings are broadly similar prior to the current crisis, even though holdings at book value exceed those at market value in gross terms. Third, the collapse of asset prices in 2008 leads to a sharp reduction in holdings, with the net position falling by more than half from 79 % of GDP to 31 % between 2007 and 2008.

The difference between our market value estimates and the official data have a direct impact on the overall net investment position. Figure 10 shows the actual data, with FDI at book value, and our estimates using FDI at market value. Allowing volatile asset prices to impact the value of FDI leads to larger swings in the net value of Swiss external assets. For instance, the surge in asset market pushed our estimate of the net position to 161 % of GDP in 1999 (compared to 125 % in the official data). Similarly, the collapse of asset prices in the last year has brought our estimate down to 78 %, compared to 117

% in the data. By our estimate, the Swiss net international position, relative to GDP, now stands at its lowest level since 1995.

5. What drives Swiss external assets?

In this section we use the method described above to estimate the driving forces behind Switzerland's external assets and liabilities. Our discussion emphasizes the situation of the last two years, which have seen the sharpest financial and economic crisis since the end of World War II. We start by briefly presenting the evolution of the Balance of Payments in the last two years, before turning to our estimates of valuation gains.

5.1. Switzerland in the crisis

The ongoing financial crisis has had a substantial impact on the Swiss balance of payments. Figure 11 shows several components, in percent of GDP. While the crisis has not (yet) led to a reduction in the trade balance (top left panel, dotted line),¹⁶ it has led to a dramatic collapse in the surplus on asset income – the net value of interest and dividend that Switzerland gets on its foreign holding (solid line). While the net income exceeded the trade balance before the crisis, reaching 10.9 % of GDP in 2006, it has since dropped to a mere 1.9 % of GDP in 2008. The drop in net asset income can be squarely linked to earnings on Switzerland's FDI assets abroad (top right panel), while the surplus on other sources of net income has remained stable.¹⁷

The crisis has also led to large movements in capital flows (bottom left panel). While net capital outflows have remained stable (solid line), the sum of gross outflows and inflows surged in 2007, before turning negative in 2008 as both Swiss and foreign investors liquidated some of their foreign holdings. This retrenchment was predominantly driven by the banking sector (bottom right panel), with financial institutions worldwide focused on reducing the degree of leverage of their balance sheets.

¹⁶ The quarterly data show a stabilization of the trade surplus in late 2008 after years of sustained increases.

¹⁷ Movements in the net asset income are playing a growing role in the balance of payments, even in the United States where the net asset income is much smaller than in Switzerland (Hellerstein and Tille 2008).

The retrenchment by banks is reflected in the reduction of gross assets and liabilities in the “other” holding category (Figure 4). Holdings of portfolio equity have also experienced a substantial contraction, both for assets and liabilities.

5.2. Overall capital gains and losses on Switzerland’s external position

In addition to the reduction in asset income documented above, the crisis has also seen large movements in exchange rate and asset prices, which directly affected the value of existing assets and liabilities.

Our estimates of the various sources of valuation changes are summarized in Table 2. The left panel shows our results using the estimates of FDI at market value. We present the results for the overall sample, as well as for the pre-crisis period (end 1999 – end 2006) and the crisis period (end 2006 – end 2007). All values are expressed relative to GDP in 2008.

Over the entire sample, the gap between financial flows and the change in holdings is well accounted for by exchange rate and asset price movements. The value of gross assets increased by only 49 % of GDP, even though capital outflows were five times as large. One-third of the gap reflected capital losses from the appreciation of the Swiss Franc, with the residual accounted for by decreases in asset prices. A similar picture is apparent for liabilities, the gap between capital flows and the change in holdings being however smaller.

In net terms, we find that the value of Swiss holdings fell by 42 % of GDP, despite purchases of foreign assets that amounted to 97 % of GDP. The appreciation of the Swiss Franc account for a third of the gap, with movements in asset prices accounting for another third, and the residual being unallocated.

Focusing on the pre-crisis period, the increase in holdings of gross assets still falls short of capital flows, mostly because of the strengthening of the Swiss Franc. By contrast, the value of liabilities exceeded capital inflows, although most of the gap remains unallocated. In net terms, the reduction of the position from its 1999 peak primarily reflected weaker asset prices, with the exchange rate also playing a substantial role.

Turning to the crisis years, we observe sharp decreases in the value of both assets and liabilities, primarily as a result of falling asset prices. In net terms, the Swiss external position fell by 8.4 % of GDP despite net capital outflows that were nearly twice as large. Most of this reflects the appreciation of the Swiss Franc against European currencies, with a relative moderate role for asset prices as the contractions of assets and liabilities largely offset each other.

While our estimates of FDI at market value show a large loss, this reflects the fact that our sample starts with the net position at a peak in 2009 and ends with it as a trough (Figure 10). The gap between changes in positions and capital flows for FDI assets and liabilities can only reflect exchange rate and asset price movements by construction, which automatically minimizes the role of the residual valuation effects.

We therefore also present the results with FDI at book value (right panel of Table 2). While we are still able to account for the valuation changes of gross assets and liabilities to a fair extent, the fit is less good in net terms. Over the entire period, the value of both assets and liabilities increased when FDI is measured at book value, in contrast to the results at market value. The increase in gross assets still falls short of capital outflow, while the gap for gross liabilities is smaller. The gap for gross assets primarily reflects the appreciation of the Swiss Franc, with a smaller role for asset prices. In net terms, our estimates account for a third of the gap between the change in holdings and capital flows, mostly because of exchange rate movements.

Splitting the sample shows that our method falls short over the pre-crisis years. The value of assets increased in line with capital flows, despite substantial losses from the appreciation of the Swiss Franc. By contrast, we observe a gap for liabilities that cannot be attributed to exchange rates or asset prices. As a result, our estimates can only allocate a third of the gap in net terms to the stronger Swiss Franc and asset prices.

By contrast, our estimates perform better during the crisis years. The value of both assets and liabilities decreased, despite additional purchases through capital flows. We allocate the bulk of this gap to fall in asset prices, with the appreciation of the Swiss Franc also reducing the value of external assets. In net terms the external position increased by more than net capital flows. This is because falling asset prices generated larger losses on foreign investors' holdings of Swiss assets than on Swiss investors'

holdings of foreign assets. This translated into a net capital gain that was strong enough to offset the losses from exchange rate movements. It is important however to bear in mind that the net capital gains from movements in asset prices is likely to be somewhat spurious, as the data do not reflect the impact of lower asset prices on the sizable assets in FDI.

Overall, our method is reasonably able to allocate the changes in valuation across exchange rate and asset price movements. While it is far from offering a close match to the data, this likely reflects the lack of disaggregation in our estimates. Our analysis also delivers a closer match to the data during the crisis than in earlier years (when FDI is measured at book value). This is an unexpected feature, as accounting for crisis situations is usually harder. A possible explanation is that investors hedged their holdings prior to the crisis, thus insulated them from exchange rate and asset price movements, but were less able to do so during the crisis.

5.3. Valuation effects across time and categories

We now take a finer look at the results, starting with our estimates of the valuation effects for specific years. The patterns are presented in Figure 12 (with FDI at market value) and Figure 13 (with FDI at book value).¹⁸ Each figure presents our estimates for the net investment position (top panel), as well as for gross assets and liabilities (bottom panels). Each panel depicts the overall changes in the position (line), and decomposes them between financial flows (grey bars), valuation effects from exchange rate movements (black bars), valuation effects from asset price fluctuations (white bars) and other valuation effects (stripped bars), all numbers being expressed as percentage of GDP for the year in question. For brevity, we focus our discussion on the evolution through the 2000's.

Four main aspects emerge from the patterns with FDI at market value. First, capital flows have consistently added to the value of both assets and liabilities, until 2008 where these flows turned around, mostly reflecting the de-leveraging efforts of banks. Second, falling asset prices reduced the value of both asset and liability holdings in 2001-

¹⁸ The corresponding figures by categories are provided in the Appendix figures A.1 (FDI at book value), A.2 (FDI at market value), A.3 (portfolio equity), A.4 (portfolio debt), A.5 (other holdings) and A.6 (reserves).

2002. This was followed by several years of capital gains, which were wiped out by the large losses in the current crises. In net terms, movements in asset prices tend to lead to losses, as in 2000, 2005, and especially 2008. Third, the steady appreciation of the Swiss Franc over the decade has led to regular capital losses, with the exception of 2005 as the U.S. Dollar appreciated in that year. Fourth, the unallocated valuation effects are systematically associated with capital losses, indicating that movements in exchange rates and asset prices (at least at our level of estimation) fall short in accounting for the gap between the dynamics of net holdings and financial flows.

Considering the estimates with FDI at book value alter the picture in one dimension. Specifically, asset prices have a smaller impact on the value of gross assets than liabilities, which simply reflects the larger role of FDI in assets. As a result, asset prices tend to boost Switzerland's net assets. This is especially the case in 2008, as the impact of falling asset prices on liabilities is not offset on the asset side. The accuracy of this pattern is of course disputable, which highlights the need to correct FDI holdings for asset prices.

We next disaggregate the pattern across the various categories of assets, focusing on net terms for brevity. The results are presented in Table 3, both since 1999 and focusing on the crisis years. Overall, our estimates are able to allocate most of the gap between capital flows and changes in holdings for FDI, but are much less successful for portfolio equity, debt and the "other" category. For portfolio equity, the unallocated valuation effects are concentrated on a handful of years (2000, 2005, 2006), while they are more even for portfolio debt holdings.¹⁹ The limited ability of our broad bush estimates to closely account for the pattern of valuation gains highlights the need for a finer disaggregated approach, similar to the one undertaken by the Bureau of Economic Analysis in the United States.

Turning to the crisis years, our estimates provide a better fit with the data. The gap for FDI is well accounted for by exchange rate and asset price movements. The sharp decrease in asset prices also account for the bulk of the gap for portfolio equity, while exchange rate movements explain the small gap for "other" holdings. Portfolio debt holdings are well accounted by capital flows.

¹⁹ See Stoffels and Tille (2007) for a more detailed discussion.

Overall, our estimates shed some light on the discrepancy between financial flows and the changes in holdings of the various assets and liabilities. Interestingly, the fit is closer for the crisis years than over the previous period. Our ability to account for the discrepancy remains however limited, leaving substantial “other” valuation effects. This reflects the lack of detailed information on the composition of holdings across sectors, which potentially makes our use of aggregate price indexes inaccurate.²⁰

6. The return on Switzerland’s external position

This section uses the data on cross-border earnings and our estimates of valuation effects to construct rates of returns on the various categories and asset and liabilities. We start with a brief outline of the concepts, before discussing the evidence.

6.1. Methodology and concepts

While Switzerland has received a sizable surplus on its international asset income, until the current crisis, this only offers a limited view of the situation. First, such a pattern is hardly surprising given the position of Switzerland as a large international creditor, and a more detailed assessment should consider whether the surplus is in line with the net holdings. Specifically, small differentials in the rates of return, combined with the large value of gross external assets and liabilities, can substantially impact the income balance.²¹ Second, assessing the overall return that Switzerland gets should take account of capital gains and losses, which can be substantial as we documented above. Assessing whether a country gets a higher return on its assets than it pays on its liabilities matters for its ability to sustain an unbalanced current account or a net external debt. Gourinchas and Rey (2006) argue that the United States benefits from such a favorable differential, which explains its ability to sustain a sizable current account deficit. Curcuru and al. (2008) however argue that once limitations in the data are addressed, the estimated differential is negligible.

²⁰ Lane and Milesi-Ferretti (2009) present a decomposition of similar unallocated valuation effects in the case of the United States.

²¹ Higgins and al. (2007) discuss this aspect for the case of the United States.

Our analysis encompasses both yields and total rates of return. The yield is defined as the stream of dividend and interest payments in a year, as a percentage of the corresponding position at the beginning of the year.²² The total rate of return is computed in a similar way and includes the valuation gains and losses. We first consider a *broad* rate of return that includes the overall valuation changes (i.e. the change in positions net of financial flows). As the overall valuation includes a large unallocated component, we also consider a *narrow* rate of return which only uses our estimates of the valuation stemming from changes in exchange rates and asset prices. As the “other” valuation effect can include a broadening of the sample of firms used in computing FDI positions, this should not be treated as a capital gain.

We also split the net asset income (and net broad and narrow returns) across three different components. Specifically, the net asset income, *NetInc*, can be written as:

$$NetInc = \sum_i [Asset_i \cdot r_{A,i} - Liab_i \cdot r_{L,i}]$$

where $Asset_i$ is the gross asset position in category i , $r_{A,i}$ is the yield on this position. Similarly $Liab_i$ is the gross liability position in category i , and $r_{L,i}$ is the yield on this position. The net income can be decomposed as follows:

$$NetInc = \frac{r_A + r_L}{2} [Asset - Liab] + \frac{1}{2} \sum_i (\varpi_{A,i} - \varpi_{L,i})(r_{A,i} + r_{L,i}) \frac{Asset + Liab}{2} + \frac{1}{2} \sum_i (\varpi_{A,i} + \varpi_{L,i})(r_{A,i} - r_{L,i}) \frac{Asset + Liab}{2} \quad (1)$$

where $Asset$ and $Liab$ are the values of total assets and liabilities, r_A and r_L are the yields on total assets and liabilities, and $\varpi_{A,i}$ and $\varpi_{L,i}$ are the shares of category i in total assets and liabilities, with the detailed expression given in Appendix C.

The first row in (1) is the *net position* component. It captures the fact that Switzerland is a net creditor to the rest of the world, and shows the net income that it would receive if all assets and liabilities earned the same average yield. The second row in (1) is the *composition* component, which reflects the different composition between assets and liabilities. Being a net creditor in categories of assets with high yields, and a debtor in categories with low yields, generates a positive net asset income even if the

²² We focus on the measure of FDI at market value, as the measure at book value leads to unrealistically large fluctuations in yields.

overall net position is balanced. The last row in (1) is the *intra-category spread* component, which captures the yield differential between assets and liabilities in a given category. A country that has a balanced position in all categories of assets can still earn a positive income if it gets a higher yield on its assets than it pays on its liabilities in a specific category of assets.

6.2. Net asset income and net returns

The drop in the net asset income during the current crisis is magnified once we take account of capital losses. Figure 14 shows the net asset income (thick solid line), as well as the total impact once narrow and broad returns are included (thin solid line and dotted line).²³ Two main features emerge. First, the net asset income during the pre-crisis years has been substantially offset by capital losses stemming from exchange rate and asset price fluctuations, with the net narrow fluctuating around zero. While the surplus on the net asset income averaged 9 % of GDP between 2000 and 2006, the net narrow return was on average negative at -3 % of GDP, with the net broad return averaging - 11 % of GDP. Second, the turnaround in the recent crisis is much sharper once capital losses are included. In 2008, the net narrow return represented a striking -40 % of GDP, compared to a surplus in asset income of 2 % of GDP.

The lines in Figure 14 can in turn be decomposed using equation (1). Focusing on the 2000's for brevity, the drop in the net asset income was driven by the intra-category spread component (Figure 15), which primarily reflected the drop in the yield on Swiss FDI assets. The drop in the net narrow return (Figure 16) reflect both the net position component, as the average rate of return on assets and liabilities became negative, and the intra-category spread, primarily reflecting lower rates of return on FDI and portfolio equity assets. By contrast the composition component remained positive. The contraction in the net broad return (Figure 17) is evenly spread across the three components.

²³ The net narrow return for year t is computed by multiplying the narrow rate of return on assets in year t by the asset position at the end of year $t-1$, subtracting the corresponding measure for liabilities, and expressing the difference in percentage of GDP.

6.3. Disaggregated yields and returns

In addition to being a net creditor, Switzerland has benefited from a yield advantage, paying a relatively low yield on its liabilities. Kugler and Weder (2007) look at the interest rates on short term deposits in Swiss francs and other currencies, and attribute the gap to a reverse peso problem with Swiss franc holdings offering an insurance against low probability events, such as wars. Kugler and Weder (2004) show that the yield gap in portfolio holdings is concentrated in fixed income holdings, with little gap for equity positions. Looking at disaggregated data for the holdings of Swiss investors, they point that the yield gap reflects the diversification benefits of assets denominated in Swiss franc.

Our analysis takes a broader view by considering other categories of assets, as well as rates of returns including capital gains and losses. Table 4 presents the average and standard deviations of the yields and both rates of returns since 1990 (the first year for which we can split yields between portfolio equity and debt).²⁴

In addition to being a net creditor, Switzerland benefits from a higher yield on its overall assets than on its liabilities, the gap averaging 0.9 percentage points (top panel). A detailed look shows that portfolio debt is the only category for which such a spread is observed. By contrast, while yields are larger on FDI than on other categories, there is little spread between assets and liabilities.

Including valuation gains from asset prices and exchange rates leads to a substantially different picture (middle panel). Switzerland is then faced with a negative spread averaging 1.2 percentage points. While little spread is observed for portfolio debt and other position, a substantial negative spread characterizes the rates of return on FDI and portfolio equity. The rates of returns on these two categories are also the most volatile. A similar picture emerges from the broad rates of return (bottom panel), with the spread rising to -1.6 percentage points.

A finer reading of our results is provided in Table 5, which presents the spread across various periods. We first split the sample in 1999. Until then, the data only allow for a limited computation of the narrow rates of return as the currency composition of

²⁴ The spread between the yield on overall assets and liabilities is not an average of the spreads in each category, as the composition of assets and liabilities differs substantially.

holdings only distinguishes between the Swiss Franc, the U.S. Dollar, and the Deutsche Mark. A finer assessment is made possible in subsequent years as the data also identify holdings in Yen and Pound. We also isolate the crisis period of the last two years.

In terms of yields (top panel), the favorable spread on portfolio debt is concentrated in the early years of the sample, which also shows a spread in FDI. The emergence of a favorable spread in equity before the crisis kept the overall spread stable from 1990 to 2006. The crisis has since pushed the spread in negative territory, primarily reflecting the low yield on FDI assets.

Including valuation effects from exchange rates and asset prices (middle panel) shows that the negative overall spread narrowed during the crisis. Looking at specific categories, the spread became more favorable for portfolio equity, but worsened for FDI. A similar pattern emerges for the broad rate of return (bottom panel), although the large spread for portfolio debt in recent years reflects an unallocated valuation gain that is hard to interpret.

Overall our analysis shows that the favorable differential between the yield on Swiss assets and liabilities is not robust. It disappeared during the current crisis, and taking valuation gains into account leads to an opposite spread in rates of returns.

6.4. Do foreign assets hedge the business cycle?

We complete our analysis by assessing whether the adverse spreads in the rates of return documented above are offset by favorable hedging properties. If the rate of returns on assets exceed that on liabilities in years where Swiss growth is weak, this hedging benefit could offset an average negative spread between the rates of return.

We find some evidence that the narrow rates of returns helped hedge business cycle risk in the 2000's. Figure 18 shows the spread between the yield on assets and liabilities (horizontal axis) against the growth rate of GDP (vertical axis). We distinguish between three subsamples. The first cover the years until 1999, for which we can only compute the valuation effect from exchange rate movements on a handful of currencies, the second covers the pre-crisis years (2000-2006), with the last covering the crisis years. We also indicate the correlation between the spread and GDP growth for the overall period and the various subsamples, with a negative correlation denoting a hedging benefit.

While the yield differential offered a moderate hedge over the entire sample, this was driven by the early years, with little hedge over the 2000's.

Taking account of capital gains and losses improves the hedging properties in recent years, as shown in Figure 19 which portrays the spread between the narrow rates of return and growth. While there is no evidence of a hedging benefit overall, this reflects the early years of the sample for which our measure of the narrow rate of return is most limited. Focusing on the 2000's shows some hedging benefits, especially in the years prior to the current crisis. While our finding is to be taken with caution given the limited length of the sample, it suggests that international financial integration entailed some hedging benefits, that however did not extend to the current crisis. This finding is consistent with Stoffels and Tille (2008) who focus on quarterly returns since end 2001.

7. Conclusion

The large values of Switzerland's foreign assets and liabilities leaves it highly exposed to gyrations in international exchange rates and asset prices. In this paper, we document the exposure of the Swiss international investment position, and assess the various driving forces. We find that capital losses due to exchange rate and asset price movements have substantially offset the accumulation of assets through high current account surpluses, leaving the Swiss net external position essentially unchanged over the last ten years.

We use our estimates of capital gains and losses on foreign assets to re-assess the rates of returns on Swiss external assets and liabilities, focusing on developments in the current crisis. While Switzerland has long benefited from a surplus in international earning streams, this is no longer the case in the current crisis because of the adverse performance of Swiss multinationals abroad. In addition, including capital losses leads to a less favorable picture even prior to the crisis. While the average spread in rates of returns between assets and liabilities is not favorable, we find some evidence that the co-movements of these returns with the Swiss business cycle offers some hedging benefits.

Our analysis also points to limitations in the data. First, the inclusion of FDI at book value in the official data can paint a misleading picture by ignoring the changes in

the value of assets held by Swiss-based multinational companies, while capturing the associated change in the value of equity in these companies held by foreign investors. A broad reduction in asset prices, such as the one observed in the current crisis, could thus lead to official data to overestimate the net asset position. Second, the limited degree of details for the various holdings makes an accurate assessment of the impact of exchange rate and asset prices hard to undertake, as applying market-wide price index can lead to an inaccurate picture of cross-border holdings are concentrated in some sectors. Given the large value of overall assets and liabilities, even moderate errors in gross terms can lead to substantial inaccuracies in net terms.

References:

- Fluri, Robert, and Robert Müller, 2001, “La révision des indices du cours du franc suisse, nominaux et réels, pondérés par les exportations”, Swiss National Bank *Quarterly Bulletin* 3/2001, pp. 42-47.
- Curcucu, Stephanie, Tomas Dvorak, and Francis Warnock, 2008, “Cross-Border Returns Differentials”, *Quarterly Journal of Economics* 123, pp. 1495-1530.
- Gourinchas, Pierre-Olivier, and Hélène Rey, 2006, “From World Banker to World Venture Capitalist: US External Adjustment and the Exorbitant Privilege”, in: Clarida, R.H. (Ed.), *G-7 Current Account Imbalances: Sustainability and Adjustment*, University of Chicago Press, Chicago.
- Hellerstein, Rebecca, and Cédric Tille (2008), “The Changing Nature of the U.S. Balance of Payments”, Federal Reserve Bank of New York *Current Issues in Economics and Finance* 14, no. 4.
- Higgins, Matthew, Thomas Klitgaard, and Cédric Tille, 2007, “Borrowing without Debt? Interpreting the U.S. International Investment Position”, *Business Economics* 42, pp.17-27.
- Kugler, Peter, and Beatrice Weder, 2007, “Why are Returns on Swiss Franc Assets so Low? Rare Events may solve the Puzzle”, *Applied Economics Quarterly*, forthcoming.
- Kugler, Peter, and Beatrice Weder, 2004, “International Portfolio Holdings and Swiss franc Returns”, mimeo, University of Mainz.
- Lane, Philip, and Gian-Maria Milesi-Ferretti, 2009, “Where did all the Borrowing go? A Forensic Analysis of the U.S. External Position”, *Journal of the Japanese and International Economies*, forthcoming.
- Lane, Philip, and Gian-Maria Milesi-Ferretti, 2006, “A Global Perspective on External Positions”, in: Clarida, R.H. (Ed.), *G-7 Current Account Imbalances: Sustainability and Adjustment*, University of Chicago Press, Chicago.
- Lane, Philip, and Jay Shambaugh, 2007, “Financial Exchange Rates and International Currency Exposure”, National Bureau of Economic Research Working Paper 13433.

- Obstfeld, Maurice, 2004, "External Adjustment", *Review of World Economics* 140, pp. 41-568.
- Schmidt, Caroline, 2006, "Bewertung des Nettoauslandsvermögens der Schweiz", KOF, *Konjunkturbericht* 1/2006, Analysen A3-A23.
- Stoffels, Nicolas, and Cédric Tille, 2008, "The Swiss External Financial Exposure : Benefit or Burden ?", mimeo, Graduate Institute of International and Development Studies.
- Stoffels, Nicolas, and Cédric Tille, 2007, "Why are Switzerland's Foreign Assets so Low ? The Growing Financial Exposure of a Small Open Economy", Federal Reserve Bank of New York Staff Report 226.
- Swiss National Bank, 2008, "Position extérieure nette de la Suisse en 2007", Zürich, December 2008.
- Tille, Cédric, 2008, "Financial Integration and the Wealth Effect of Exchange Rate Fluctuations", *Journal of International Economics* 75, pp. 283-294.
- Tille, Cédric, 2003, "The Impact of Exchange Rate Movements on US Foreign", Federal Reserve Bank of New York *Current Issues in Economics and Finance* 9, no. 1.

Appendix A: Data sources

Capital flows and asset income streams are taken from the Balance of Payment Statistics of the Swiss National Bank. The end-of-year value of external assets and liabilities is from the Swiss National Bank (SNB 2008). The data cover the year from 1993 to 2008. The published aggregate data are completed with a breakdown of holdings between Swiss francs and foreign currencies, the later split across the major currencies (U.S. dollar, Deutsche Mark (until 1998), Euro (since 1999), Pound (since 1999) and Yen (since 1999)). We remove holdings and flows of precious metals from the data.

The exchange rate, stock prices, and bond prices series used in decomposing the valuation effects are taken from Datastream. The computations use the December values of exchange rates and asset prices. For instance, the exchange rate valuation effect in a year t is the product of the value (in Swiss franc) of the foreign currency denominated position at the end of year $t-1$ and the percentage change of the exchange rate between the Swiss franc and the relevant currency between December $t-1$ and December t .

Appendix B: Estimates of FDI holdings at market value

The assets are estimated using a detailed geographical breakdown. The first column of Table A.1 lists the various countries considered. The second column indicates the currency in which we assume that holdings in a particular country are denominated (for instance, FDI assets in Africa are assumed to be in rand). The last two columns show the geographical breakdown of FDI assets at book value in 1985, 1995, and 2008.

Comparing the geographical breakdown of FDI assets in table A.1 with the currency composition of positions in the international position data shows that US dollar holdings closely match the holdings in the United States. Assets denominated in pounds track the United Kingdom and offshore financial centers in “other Europe”, which are reported separately since 2000. We therefore add the holdings in these offshore centers to the United Kingdom positions. Assets in euro are close to the holdings in the European Union, without the United Kingdom and Sweden. The holdings in yen broadly (but not exactly) match the assets in Japan.

Due to data limitations, we assume that holdings in non-EU Europe are in euro, and use the euro area equity price index for this region. Offshore financial centers account for a large fraction (40%) of FDI holdings in Latin America. Given the historical stability of the exchange rate between the US dollar and financial centers in the Caribbean, we take FDI holdings in Latin America to be in US dollars. We also consider that assets in Asian countries outside Japan are in dollar as several of these economies kept the value of their currency stable against the dollar. All holdings in Africa are taken to be in Rand, as South Africa holdings dominate them, and evaluated using the South African equity price index. No adjustment for exchange rate and asset prices is done to the residual other position, which simply consists of cumulative financial flows.

On the liability side, all positions are taken to be in Swiss francs. While liabilities at book value show some holdings in foreign currency, these are negligible and we omit them for simplicity.

The FDI positions at market value are computed following an iterative procedure. The positions at the end of 1985 are taken at book value. We first compute the asset price valuation for a given country by applying the percentage change in the corresponding equity price index in the local currency, to the initial position. The reinvested earnings are then subtracted from this asset price valuation to avoid double-counting. As the data do not include a geographical breakdown of reinvested earnings, we take the share of reinvested earnings in financial flows for aggregate assets, and apply this share to the financial flows by regions to obtain an estimate of reinvested earnings by regions. Similarly, we compute the exchange rate valuation for a given country by applying the percentage changes in the relevant exchange rate to the initial position.

Our adjustment method for reinvested earnings is applied at the level of the individual regions. It differs from the approach by Gourinchas and Rey (2006) who use the geographical shares from the holdings at book value to construct weighted percentage changes in asset prices and exchange rate. The weighted changes are then applied to the total positions, and aggregate reinvested earnings are taken out of the asset price valuation effect. Applying this approach to our data leads to virtually identical results.

Appendix C: Decomposition of net capital income

The net capital income is the sum of the positions in asset and liabilities and the associated yields. Indexing the categories of assets by i we write:

$$NetInc = \sum_i [Asset_i \cdot r_{A,i} - Liab_i \cdot r_{L,i}]$$

where $NetInc$ is the aggregate net capital income, $Asset_i$ is the gross asset position in category i , $r_{A,i}$ is the yield on this position. Similarly $Liab_i$ is the gross liability position in category i , and $r_{L,i}$ is the yield on this position.

The net income can be decomposed between a component reflecting the net investment position, a component capturing the different composition of assets and liabilities, and a component reflecting the yield differentials between assets and liabilities within asset categories:

$$NetInc = \frac{r_A + r_L}{2} [Asset - Liab] + \frac{1}{2} \sum_i (\varpi_{A,i} - \varpi_{L,i})(r_{A,i} + r_{L,i}) \frac{Asset + Liab}{2} \\ + \frac{1}{2} \sum_i (\varpi_{A,i} + \varpi_{L,i})(r_{A,i} - r_{L,i}) \frac{Asset + Liab}{2}$$

where:

$$r_A = \sum_i \varpi_{A,i} \cdot r_{A,i} \quad r_L = \sum_i \varpi_{L,i} \cdot r_{L,i} \\ Asset = \sum_i Asset_i \quad Liab = \sum_i Liab_i \\ \varpi_{A,i} = \frac{Asset_i}{Asset} \quad \varpi_{L,i} = \frac{Liab_i}{Liab}$$

Similar steps can be applied to the net overall return, where the r 's then including capital gains in addition to yields.

Table 1: Exchange rate and foreign currency assets

Percentage appreciation of the Swiss Franc

	Euro	Dollar	Pound	Yen	Other	Trade weighted	Asset weighted
1999-2008	4.4	32.4	42.1	18.3	34.5	15.5	22.3
1999-2006	0.8	27.2	9.1	38.1	22.3	9.8	15.4
2006-2008	3.6	5.2	32.9	-19.8	12.2	5.7	6.9

Impact of holdings of foreign currency assets

		Euro	Dollar	Pound	Yen	Total
Positions (mias CHF)	End 1999	356	341	71	29	796
	End 2008	557	326	110	119	1'112
Change (mias CHF)	Actual	201	-15	39	90	316
	Due to FX	-26	-119	-52	10	-188
	Other	227	104	91	81	504
Share of total (%)	End 1999	45	43	9	4	
	End 2008	50	29	10	11	
Change (%)	Actual	5	-14	1	7	
	Due to FX	10	-6	-6	3	

Tables 2: Drivers of Switzerland's international assets and liabilities (percent of 2008 GDP)

	<u>FDI measured at market value</u>			<u>FDI measured at book value</u>		
	End 1999 – End 2008			End 1999 – End 2008		
	Assets	Liabilities	Net	Assets	Liabilities	Net
Change in holdings	49.3	90.9	-41.6	169.4	144.5	24.9
Financial flows	252.1	154.9	97.2	252.1	154.9	97.2
Valuation gap	-202.8	-64.0	-138.8	-82.7	-10.4	-72.3
- Exchange rate	-75.2	-29.5	-45.7	-66.1	-29.7	-36.4
- Asset prices	-144.4	-92.0	-52.4	-43.6	-53.5	9.8
- Other	16.7	57.5	-40.7	27.0	72.7	-45.8

	End 1999 – End 2006			End 1999 – End 2006		
	Assets	Liabilities	Net	Assets	Liabilities	Net
	Change in holdings	133.2	166.4	-33.2	182.3	183.5
Financial flows	199.5	117.9	81.6	199.5	117.9	81.6
Valuation gap	-66.3	48.5	-114.7	-17.2	65.6	-82.8
- Exchange rate	-49.5	-22.5	-27.0	-43.3	-22.5	-20.8
- Asset prices	-26.6	15.9	-42.6	2.8	17.3	-14.5
- Other	9.8	55.0	-45.2	23.2	70.7	-47.5

	End 2006 – End 2008			End 2006 – End 2008		
	Assets	Liabilities	Net	Assets	Liabilities	Net
	Change in holdings	-84.0	-75.6	-8.4	-13.0	-39.1
Financial flows	52.6	36.9	15.7	52.6	36.9	15.7
Valuation gap	-136.6	-112.5	-24.1	-65.5	-76.0	10.4
- Exchange rate	-25.7	-7.1	-18.6	-22.8	-7.2	-15.6
- Asset prices	-117.8	-107.9	-9.9	-46.5	-70.8	24.3
- Other	6.9	2.5	4.4	3.7	2.0	1.7

Tables 3: Drivers of Switzerland's net holdings by categories (percent of 2008 GDP)

	End 1999 – End 2008					
	FDI (book value)	FDI (market value)	Portfolio equity	Portfolio debt	Other (banks)	Reserves
Change in holdings	34.4	-32.1	-25.6	36.5	-22.0	1.6
Financial flows	54.2	54.2	16.4	57.3	-28.7	-1.9
Valuation gap	-19.7	-86.2	-42.0	-20.8	6.7	3.5
- Exchange rate	-14.7	-24.0	-10.4	-6.1	-1.1	-1.5
- Asset prices		-62.3	0.5	5.1	0.0	1.1
- Other	-5.0		-32.1	-20.4	7.8	3.9

	End 2006 – End 2008					
	FDI (book value)	FDI (market value)	Portfolio equity	Portfolio debt	Other (banks)	Reserves
Change in holdings	2.4	-32.1	18.3	14.0	-8.7	0.0
Financial flows	14.1	14.1	-3.2	14.2	-10.9	1.4
Valuation gap	-11.7	-46.2	21.6	-0.3	2.2	-1.4
- Exchange rate	-9.0	-12.0	-3.5	-4.1	1.6	-0.5
- Asset prices		-34.2	18.4	5.3	0.0	0.6
- Other	-2.7		6.7	-1.4	0.6	-1.4

Table 4: Yields and rates of return
1999 - 2008, percent

	Average			Standard deviation	
	Assets	Liabilities	Gap	Assets	Liabilities
	Yields				
FDI (market value)	8.3	8.5	-0.2	4.5	5.9
Portfolio equity	2.3	2.2	0.1	0.4	0.5
Portfolio debt	4.2	2.7	1.5	0.8	1.4
Other	3.2	3.2	0.1	1.2	1.1
Reserves	4.7			1.0	
Total	4.3	3.4	0.9	0.7	0.9
	Narrow rates of return				
FDI (market value)	7.0	10.5	-3.5	25.0	23.2
Portfolio equity	3.1	8.3	-5.3	19.7	23.0
Portfolio debt	4.4	4.1	0.3	3.7	4.5
Other	2.4	2.4	0.0	4.1	3.8
Reserves	4.4			8.1	
Total	3.5	4.7	-1.2	9.2	10.1
	Broad rates of return				
FDI (market value)	7.0	10.5	-3.5	25.0	23.2
Portfolio equity	6.9	10.6	-3.7	20.4	21.9
Portfolio debt	3.3	3.9	-0.6	7.6	12.4
Other	3.2	3.0	0.2	6.1	5.4
Reserves	6.4			13.2	
Total	4.3	5.8	-1.6	10.5	10.6

Table 5: Average spread in yields (rates of return) between assets and liabilities
Percentage points

	1990 - 2008	1990 - 1999	2000 - 2006	2007 - 2008
	Yields			
FDI (market value)	-0.2	1.2	0.4	-9.3
Portfolio equity	0.1	-0.2	0.4	0.7
Portfolio debt	1.5	1.7	-0.8	0.3
Other	0.1	0.2	-0.1	0.0
Total	0.9	1.0	1.1	-0.3
	Narrow rates of return			
FDI (market value)	-3.5	-3.5	-5.4	-7.1
Portfolio equity	-5.3	-5.3	-3.3	-2.1
Portfolio debt	0.3	0.3	-0.9	0.5
Other	0.0	0.0	-0.4	0.1
Total	-1.2	-1.2	-1.3	-0.1
	Broad rates of return			
FDI (market value)	-3.5	-3.5	-5.4	-7.1
Portfolio equity	-3.7	-3.7	-8.3	3.5
Portfolio debt	-0.6	-0.6	-9.6	21.6
Other	0.2	0.2	0.3	0.2
Total	-1.6	-1.6	-3.4	0.5

Table A.1: Geographical breakdown of FDI assets

Country	Currency of denomination	Share of assets at book value (%)		
		1985	1995	2007
European Union (non-U.K.)	Euro	40.1	39.1	29.6
United Kingdom	Pound	5.3	8.8	12.5
Other Europe	Euro	3.7	1.9	4.4
United States	US dollar	30.3	24.7	15.4
Canada	Canadian dollar	2.3	2.1	4.6
Latin America	US dollar	8.9	14.5	22.2
Japan	Yen	2.7	2.2	1.8
Other Asia	US dollar	2.3	3.8	6.3
Africa	Rand	2.1	1.3	1.5
Australia	Australian dollar	2.1	1.5	1.6
Other	n/a	0.2	0.1	0.1

Figure 1: Net international investment position
Percent of GDP

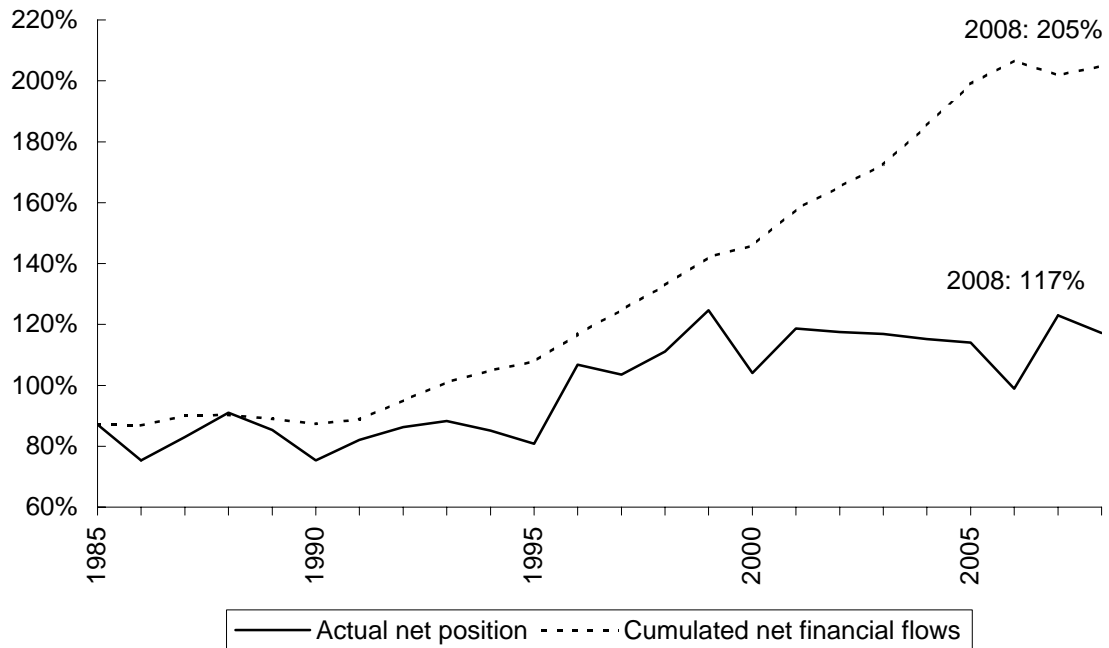


Figure 2: Gross assets and liabilities
Percent of GDP, without metals

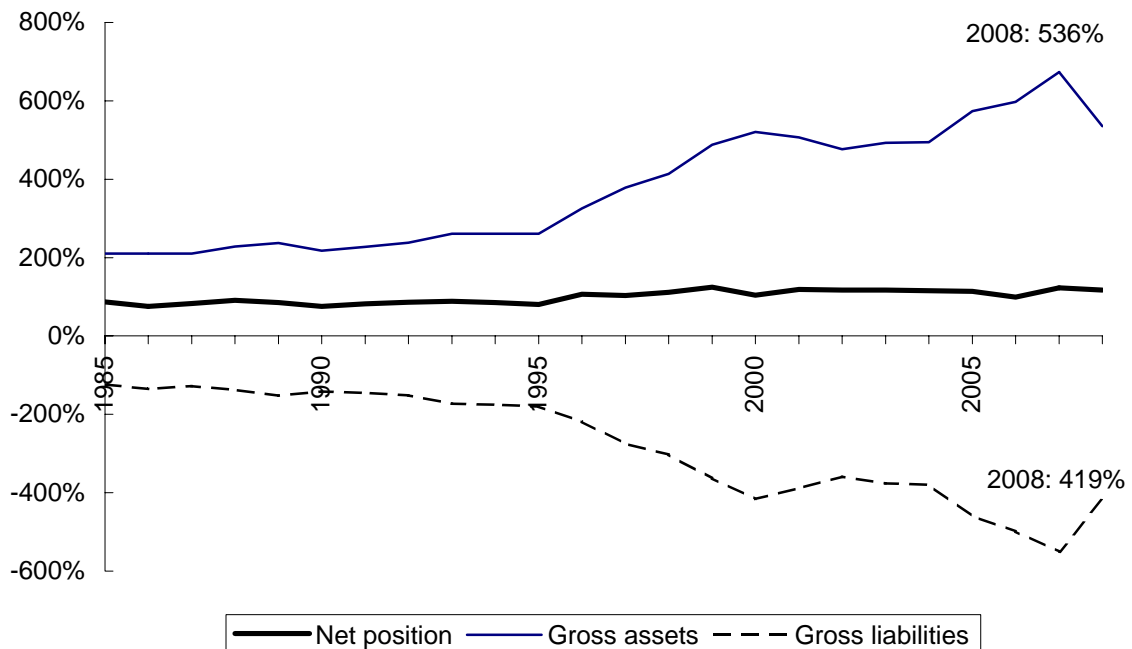


Figure 3: Gross assets and liabilities by categories
Percent of total

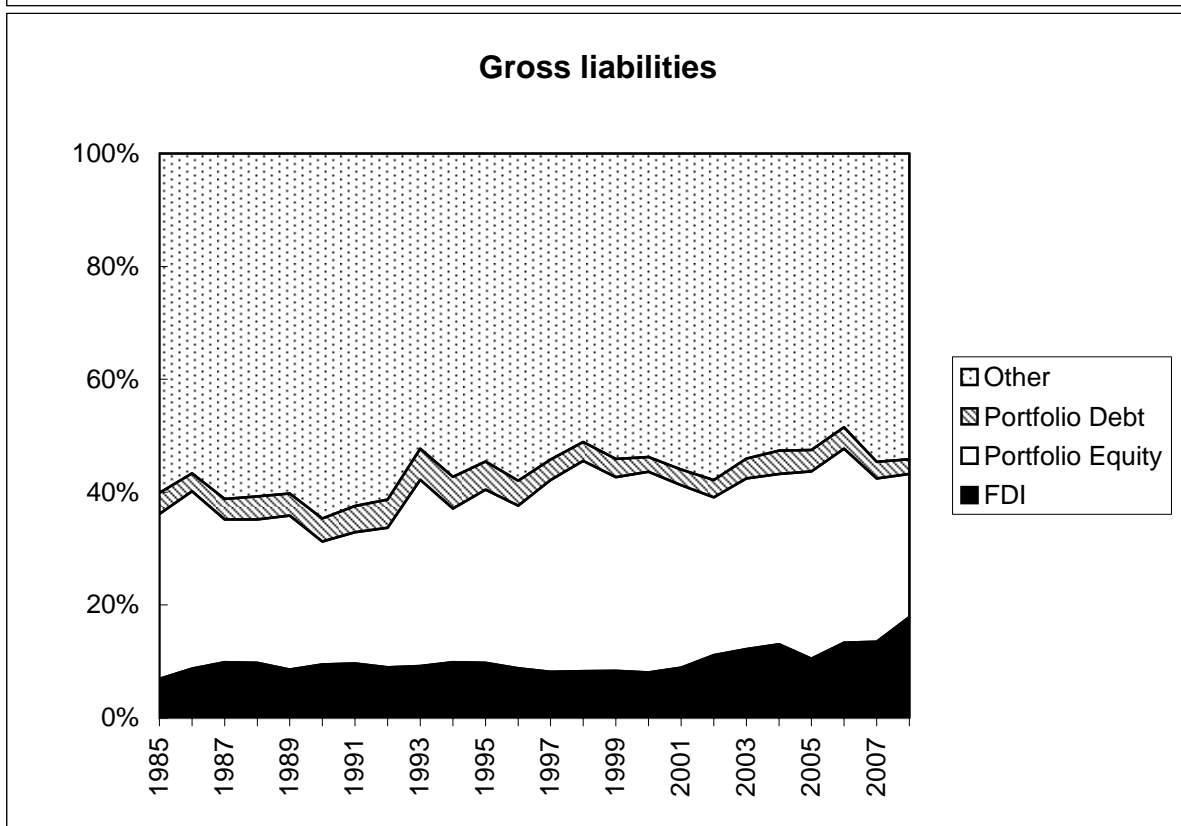
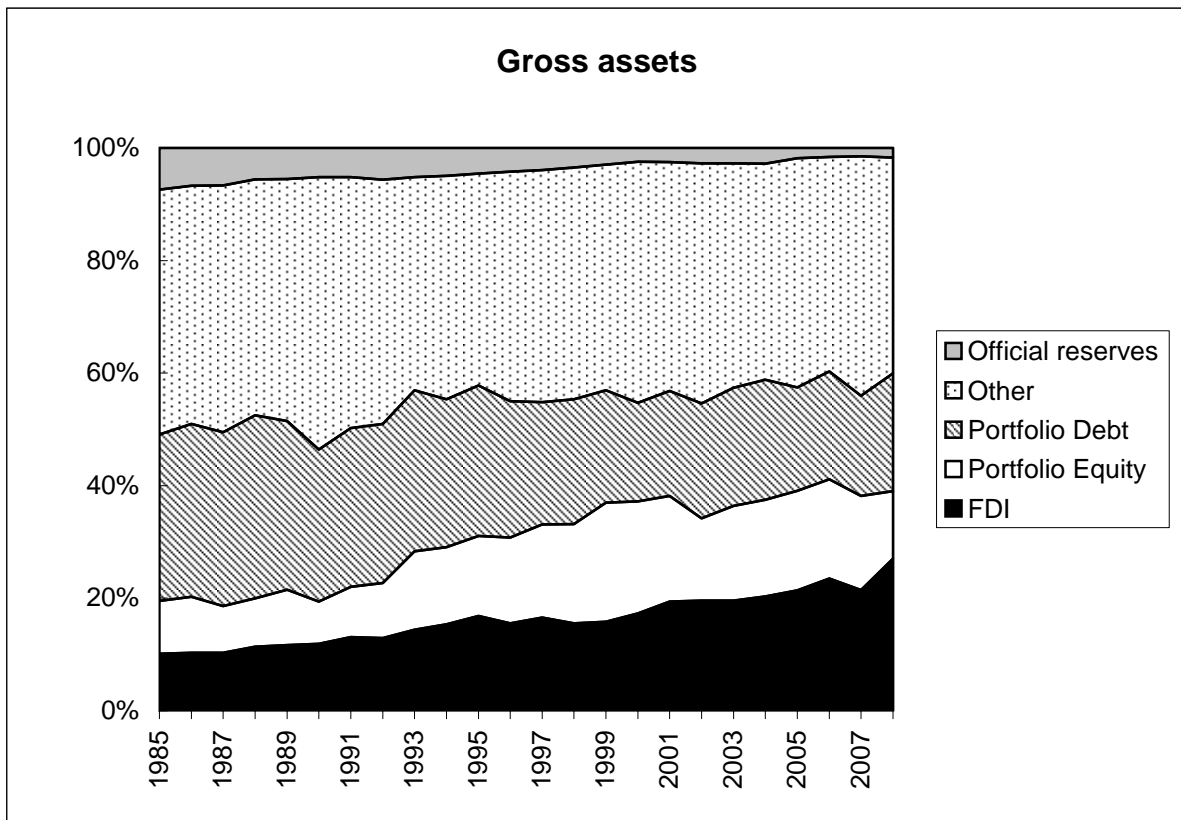
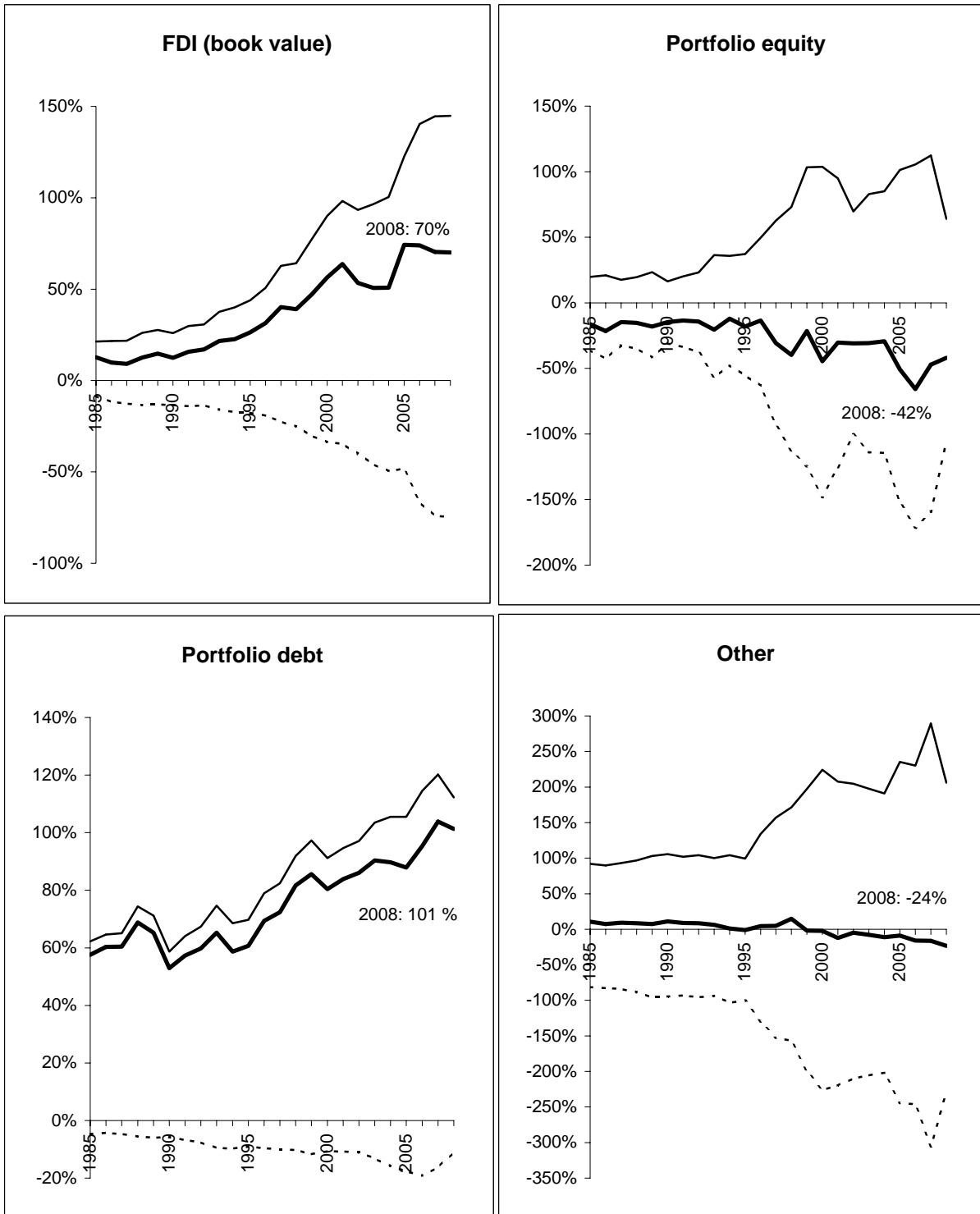


Figure 4: Gross assets and liabilities by categories
Percent of GDP



— Gross assets - - - - - Gross liabilities — Net position

Figure 5: Gross positions by currencies
Percent of GDP

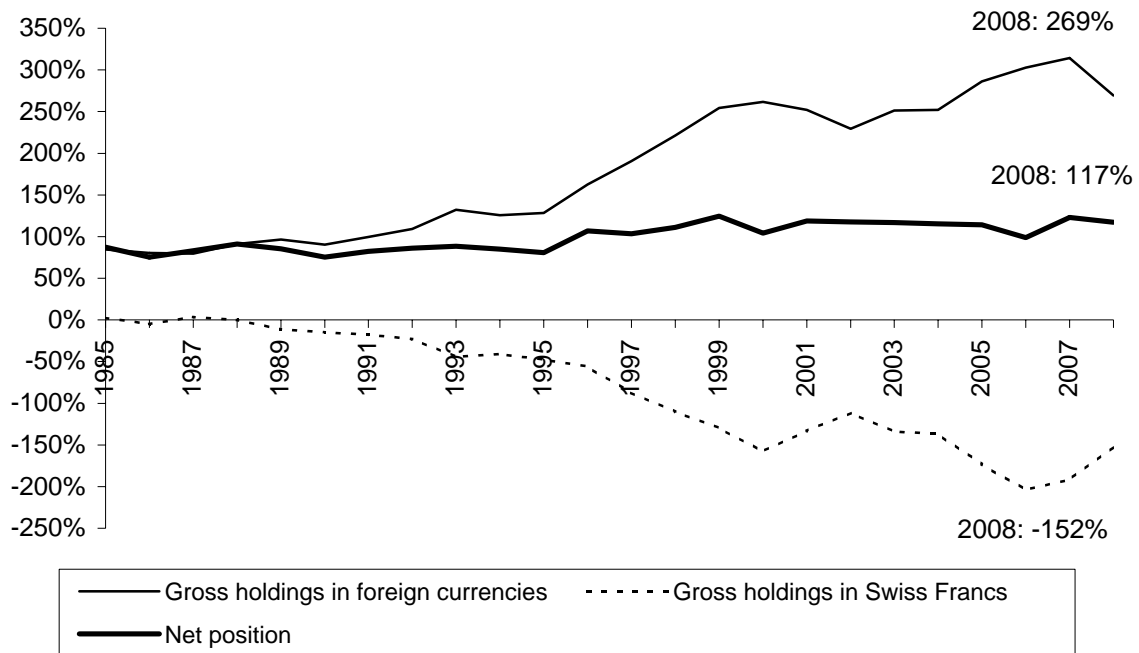


Figure 6: Composition of foreign currency holdings

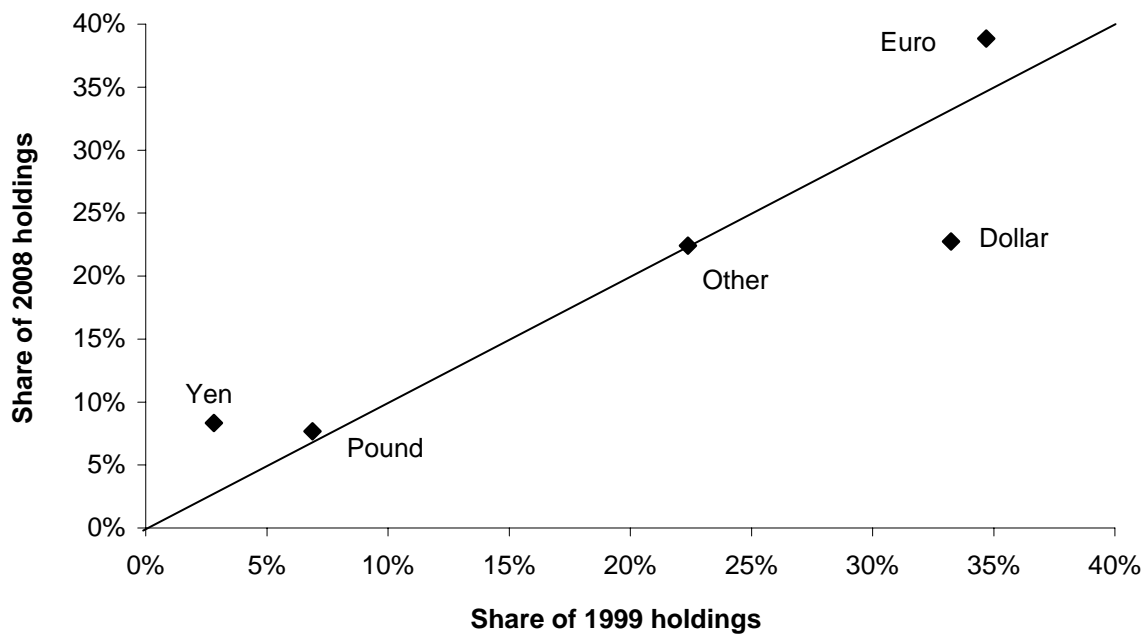


Figure 7: Geographical composition of trade and foreign currency holdings

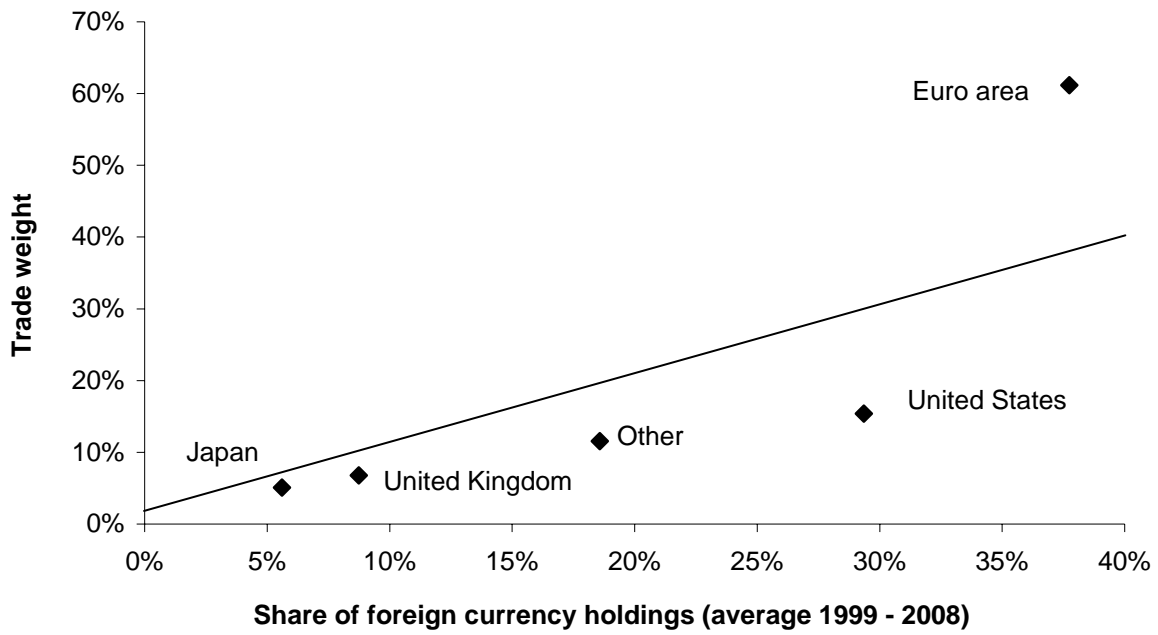
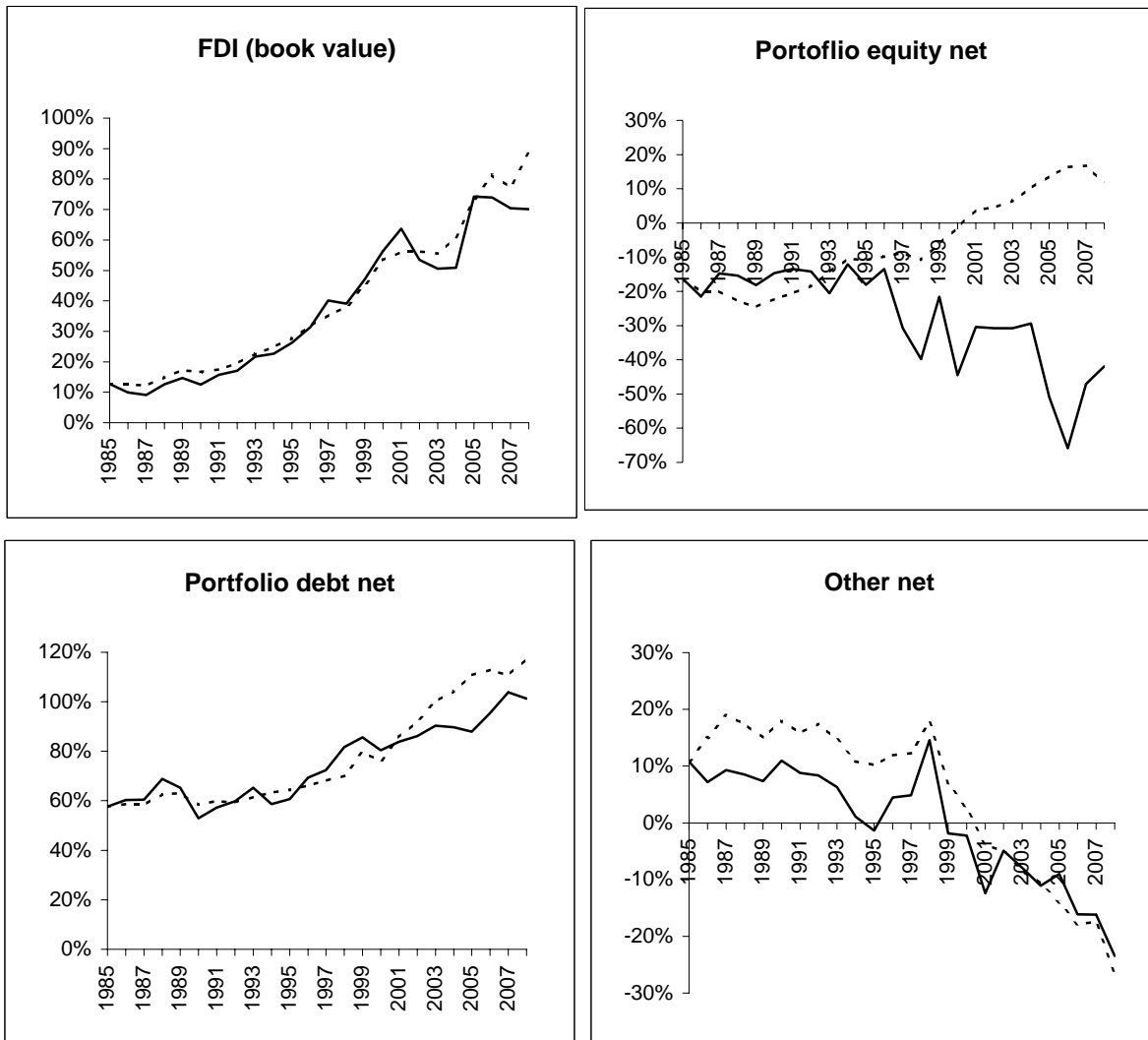


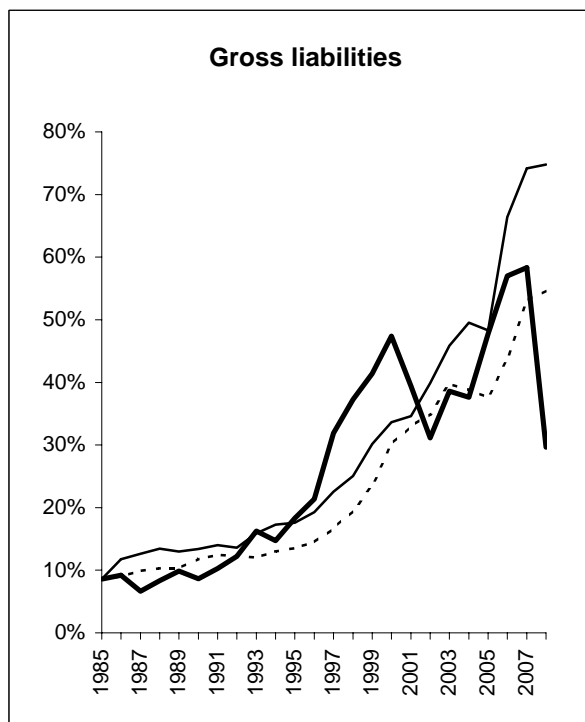
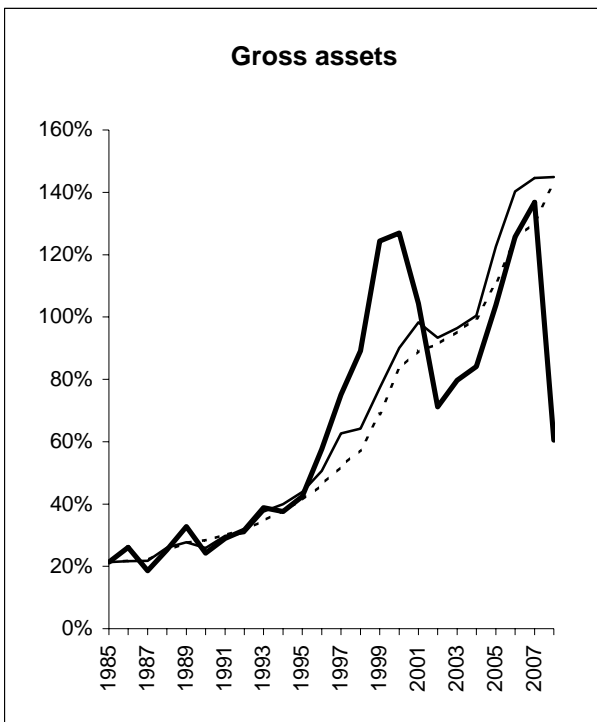
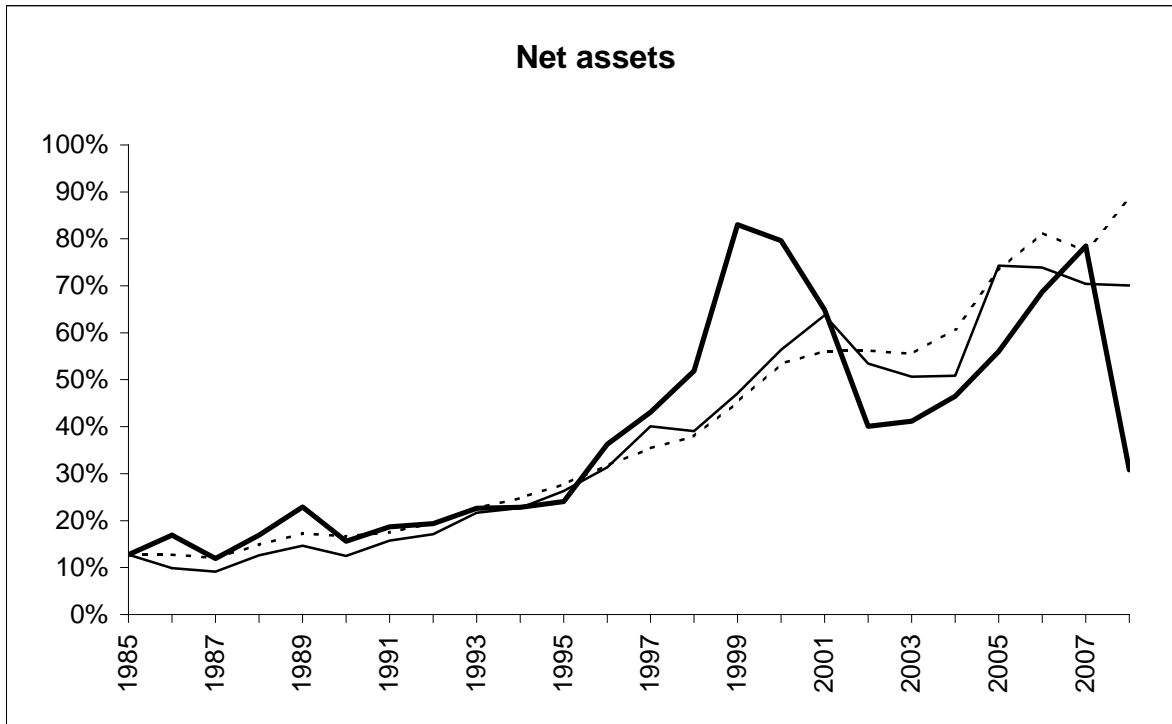
Figure 8: Net international position and cumulative financial flows
Percent of GDP



———— Net international position

----- Cumulative net financial flows

Figure 9: FDI positions at book and market value
Percent of GDP



— Position at book value
- - - Cumulated financial flows

— Position at market value

Figure 10: Net international position
Percent of GDP

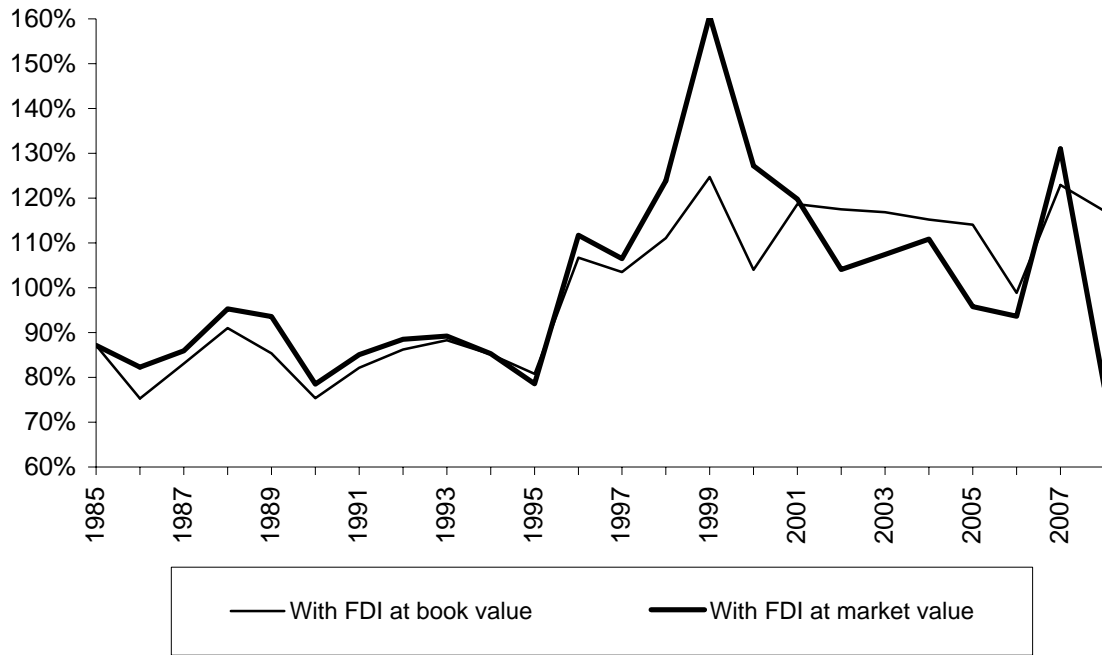


Figure 11: Balance of Payments in the crisis
Percent of GDP

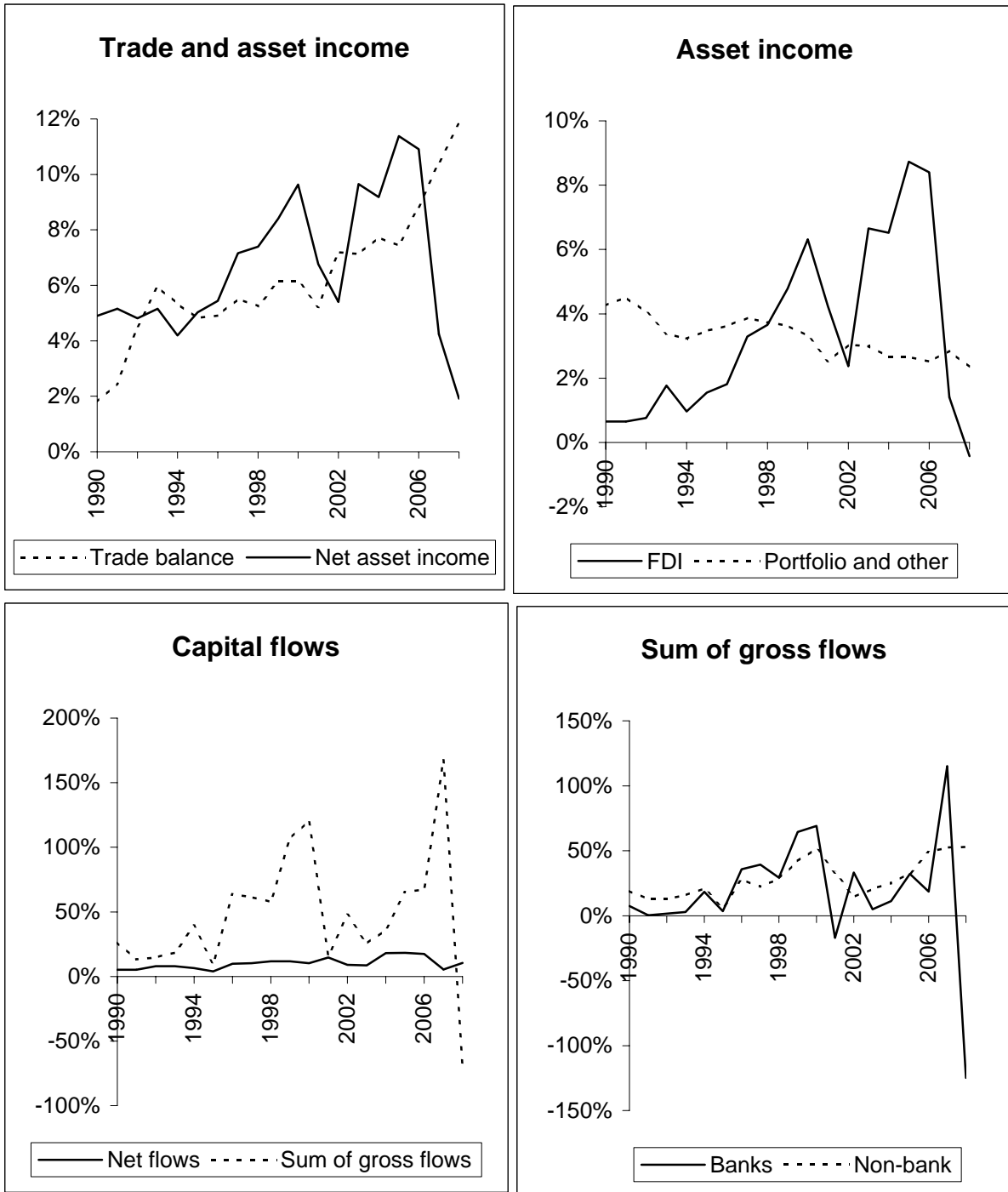
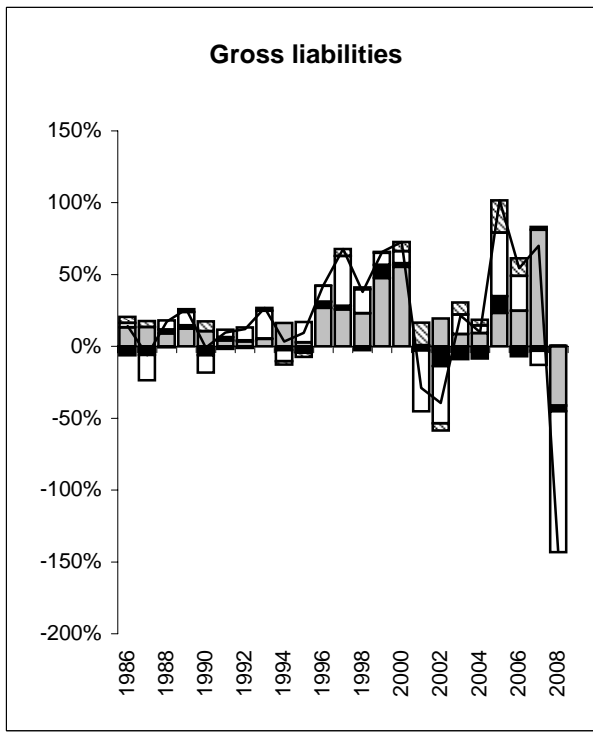
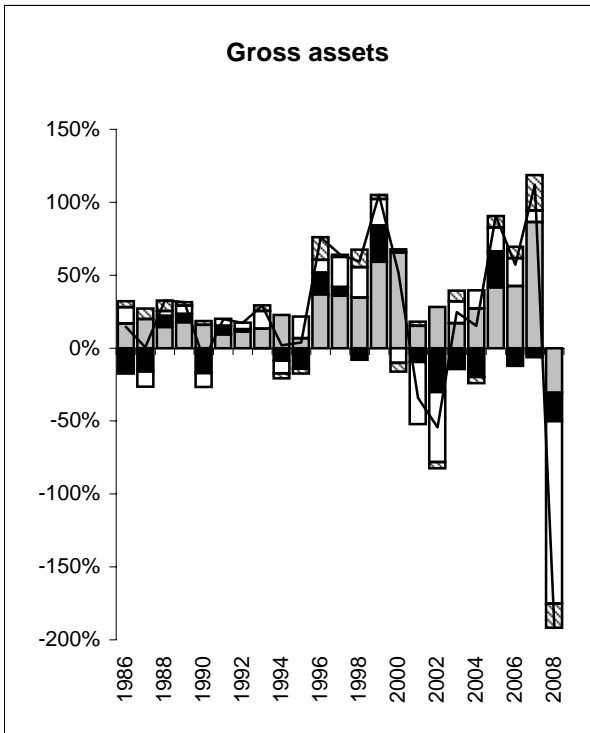
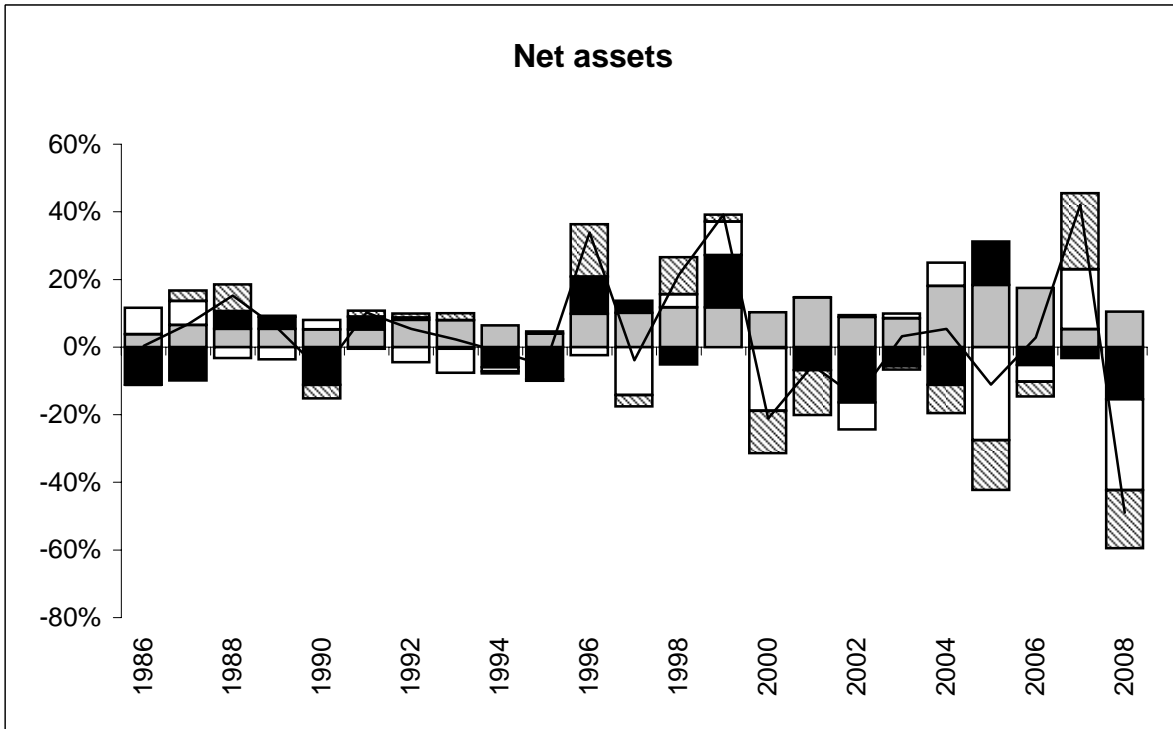


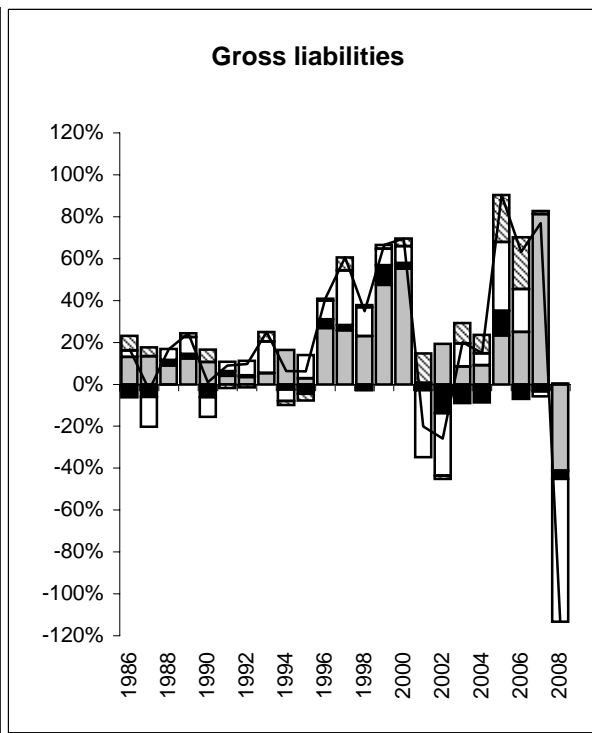
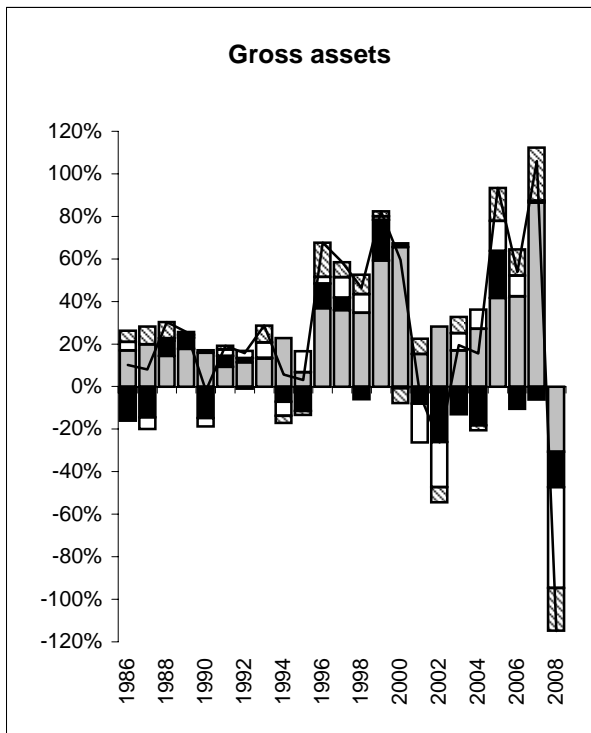
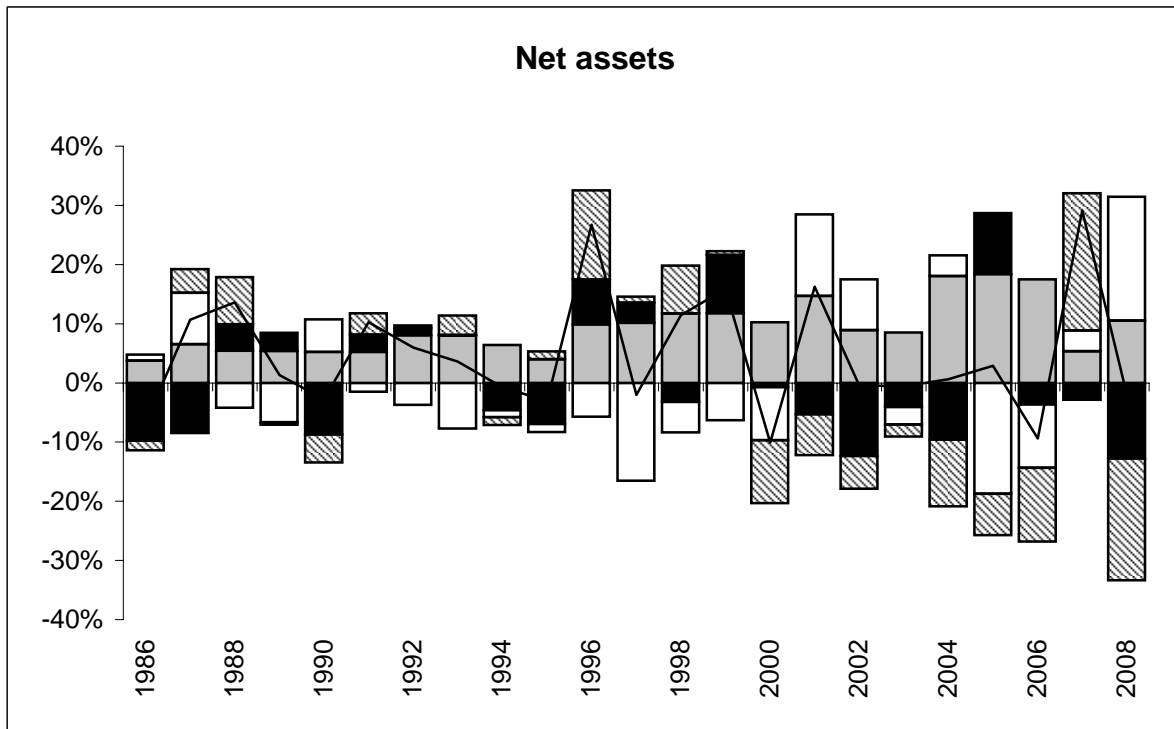
Figure 12: Dynamics of overall positions (FDI at market value)
Percent of GDP



Change in position
 Financial flows
 Exchange rate val.

Asset price val.
 Other val.

Figure 13: Dynamics of overall positions (FDI at book value)
Percent of GDP



Change in position
 Financial flows
 Exchange rate val.

Asset price val.
 Other val.

Figure 14: Net capital income and returns
Percent of GDP

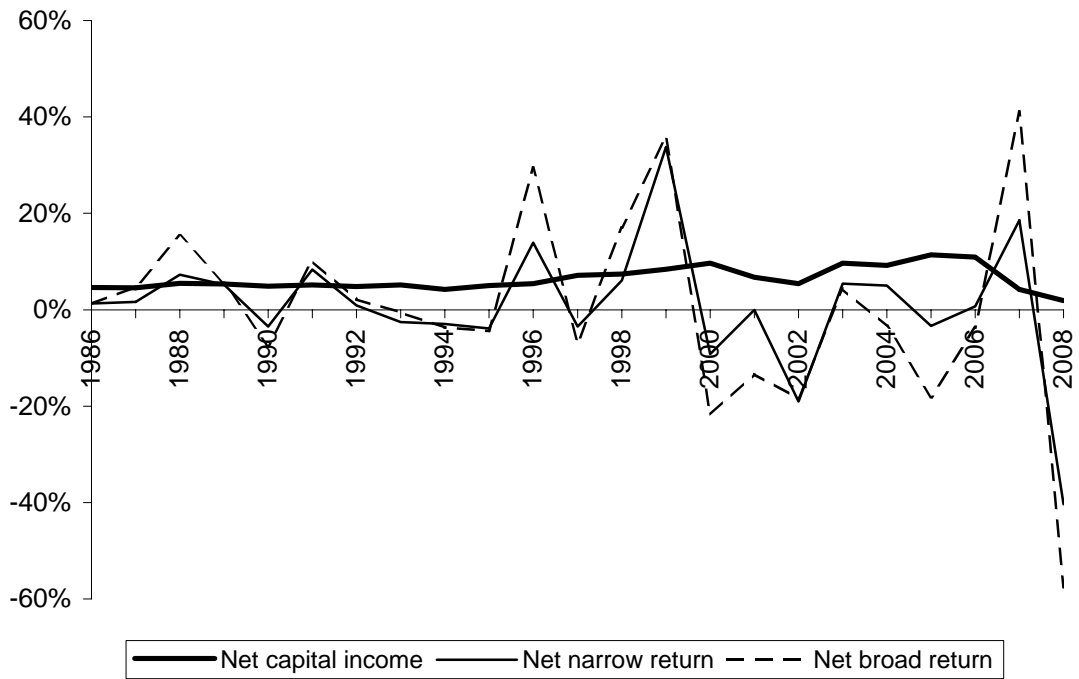


Figure 15: Components on net capital income
Percent of GDP

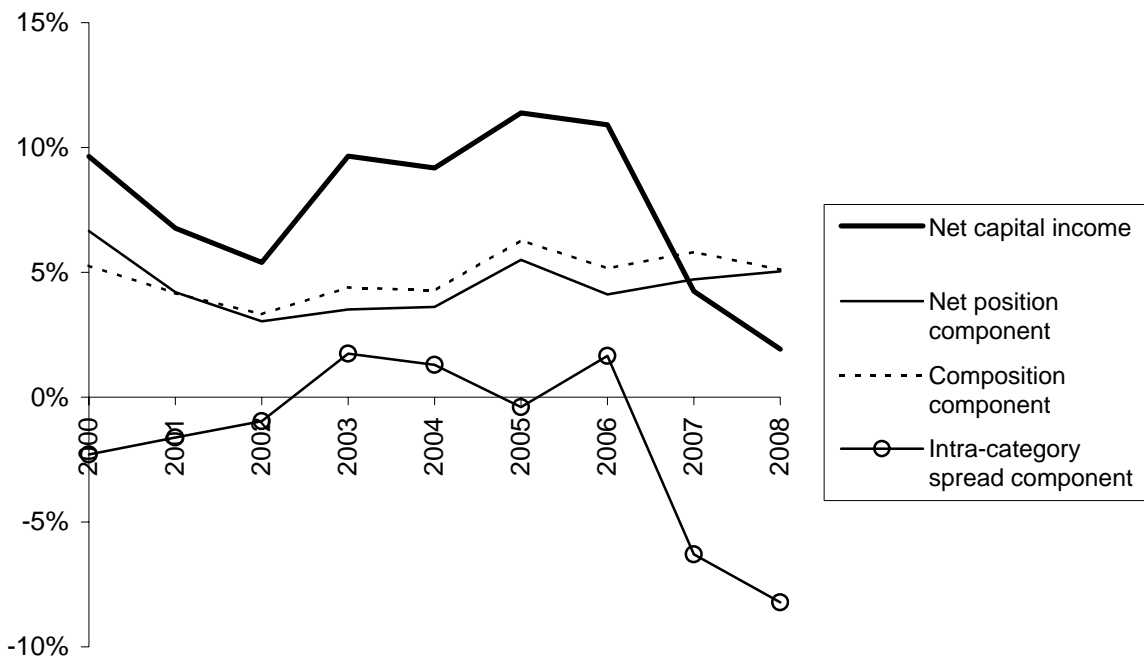


Figure 16: Components on net narrow return
Percent of GDP

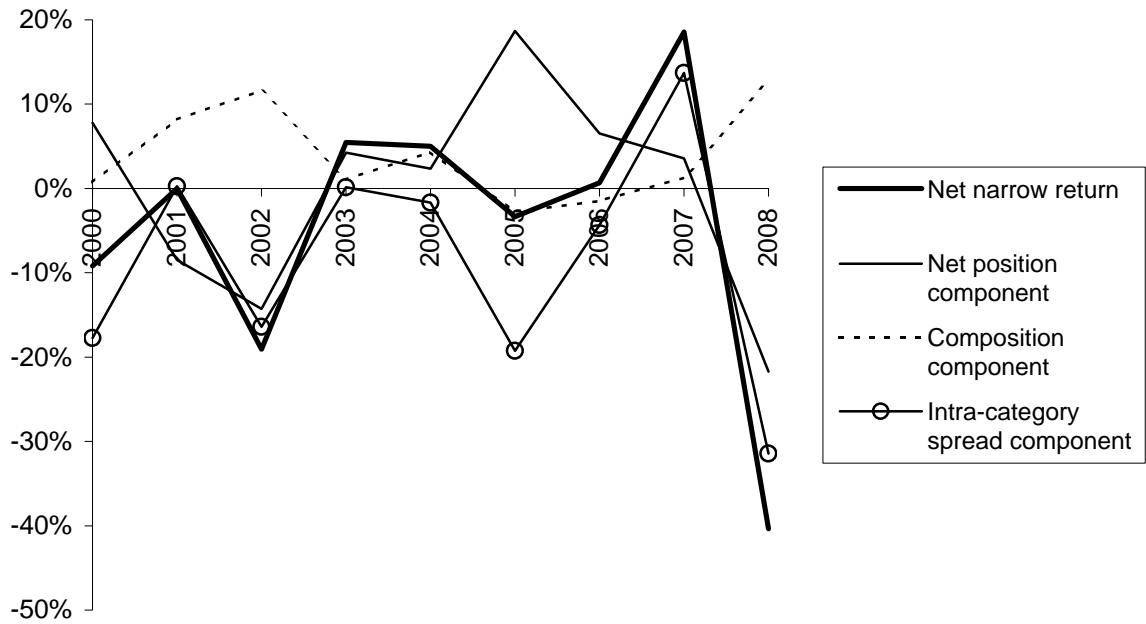


Figure 17: Components on net broad return
Percent of GDP

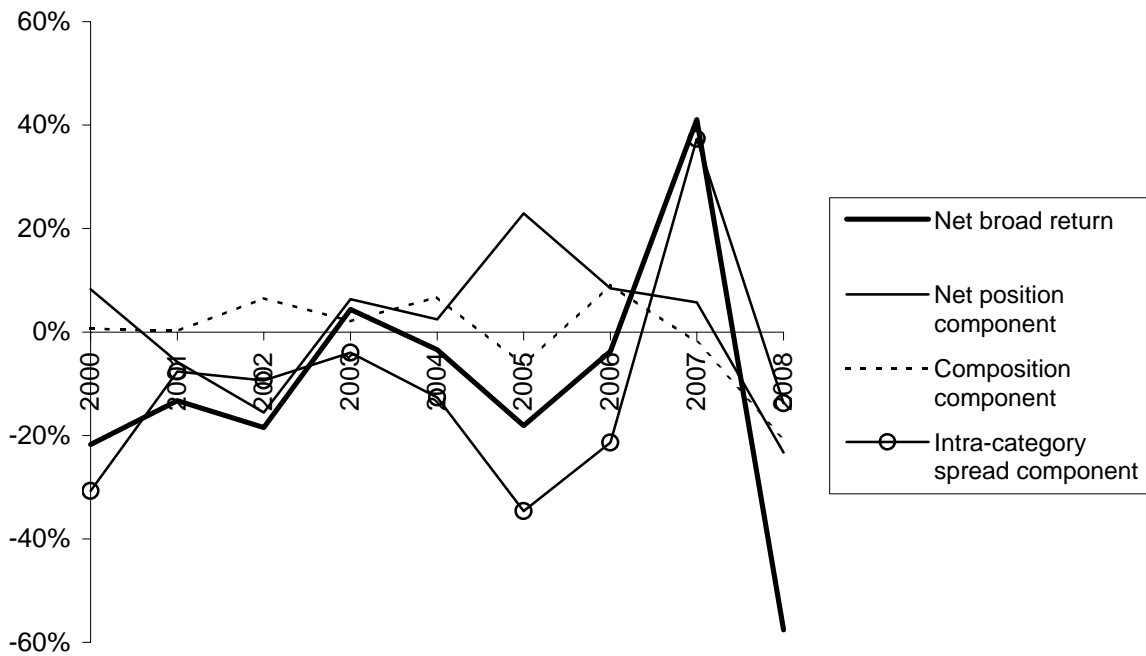


Figure 18: Spread in yields and GDP growth

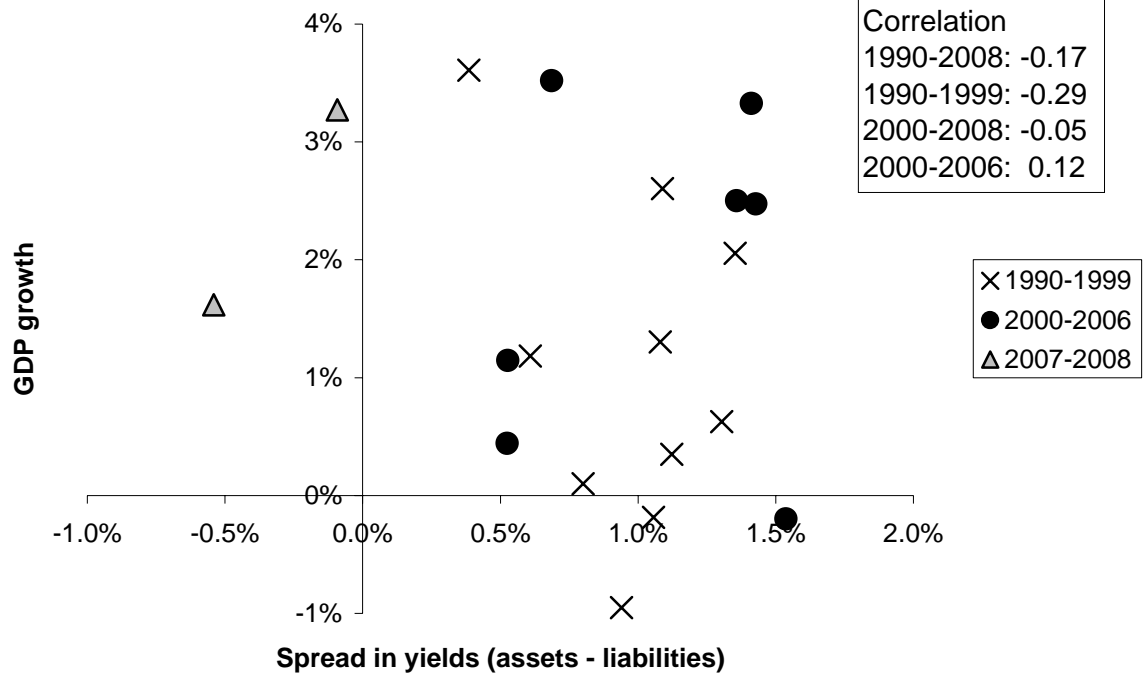


Figure 19: Spread in narrow returns and GDP growth

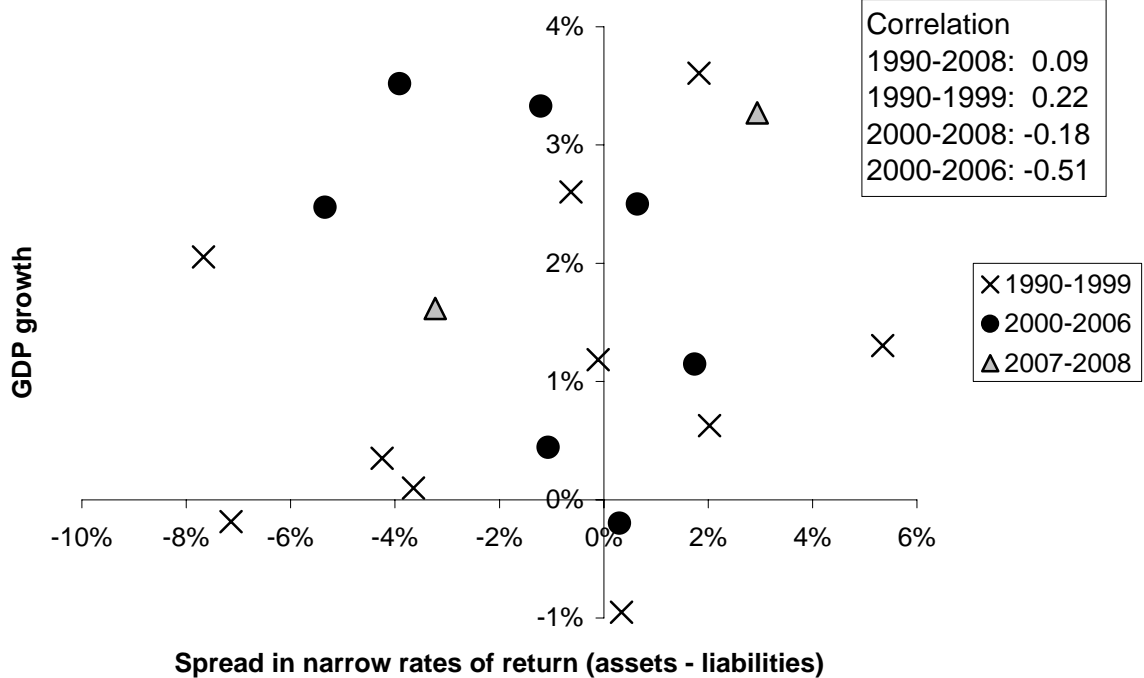
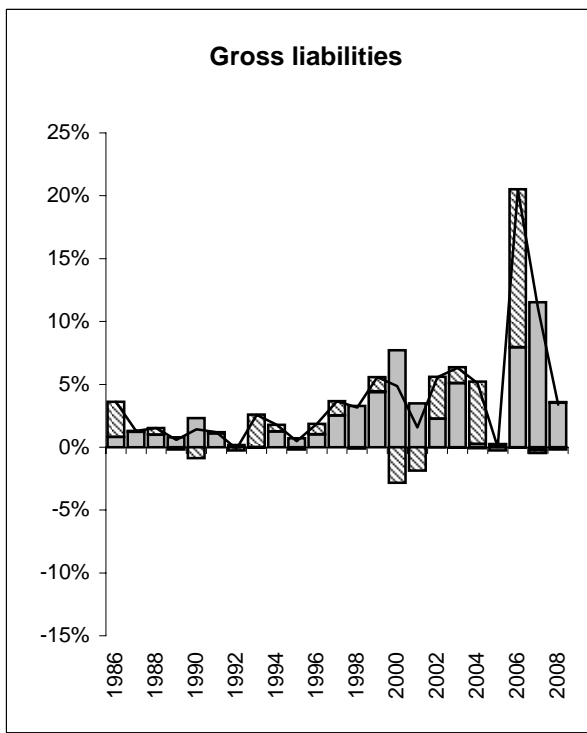
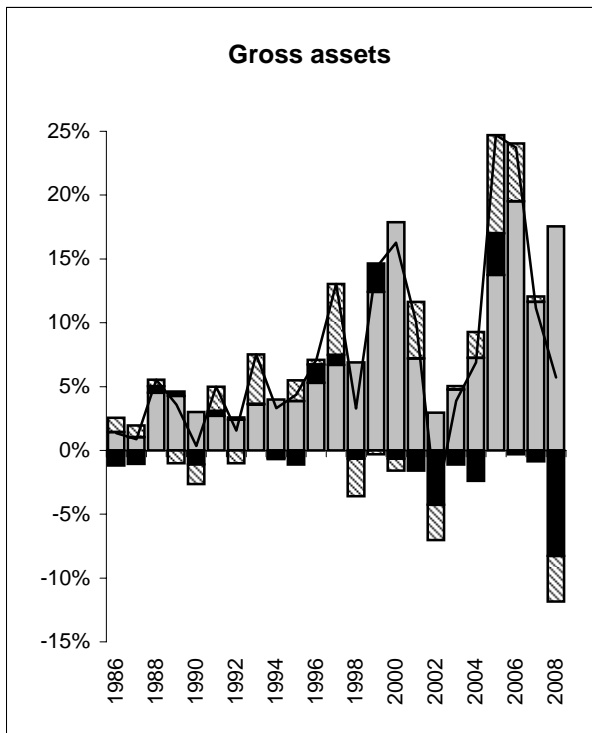
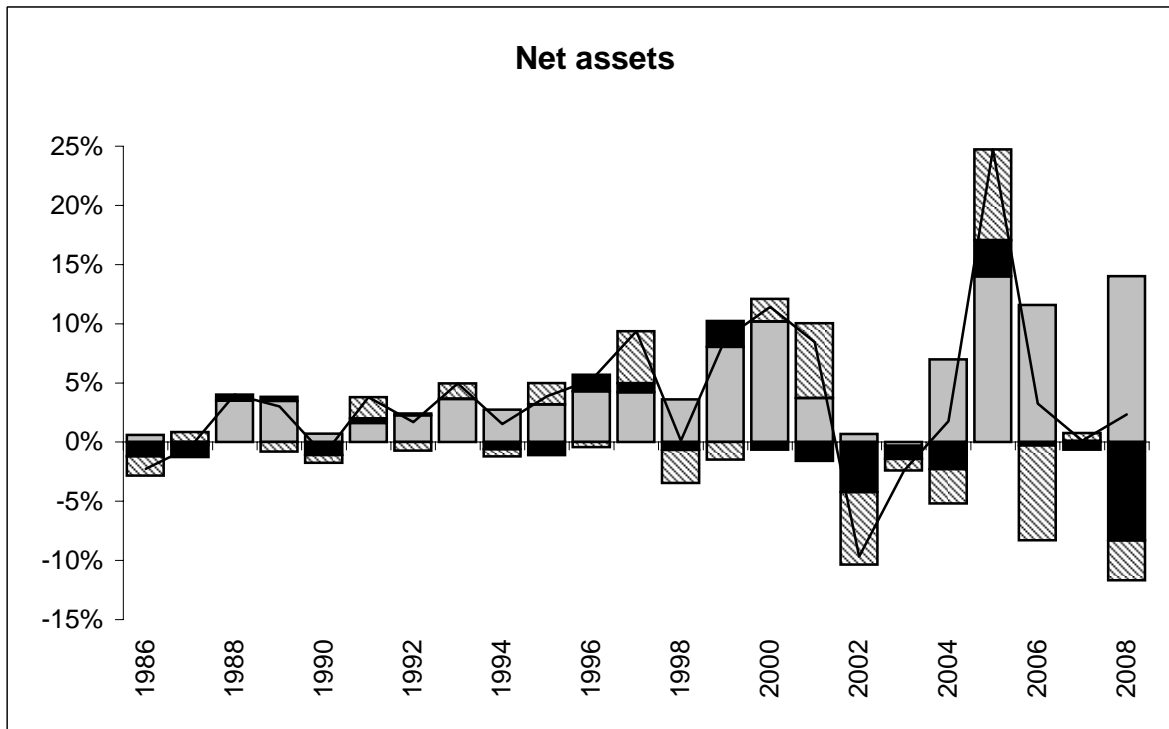


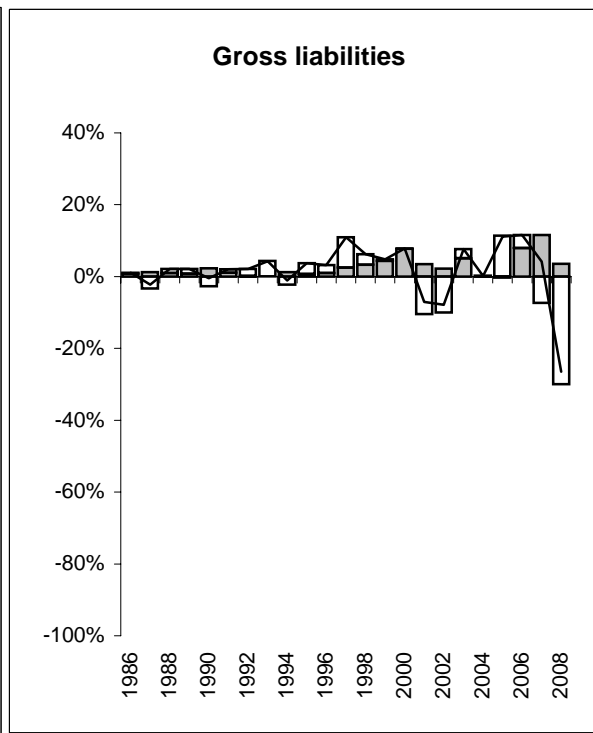
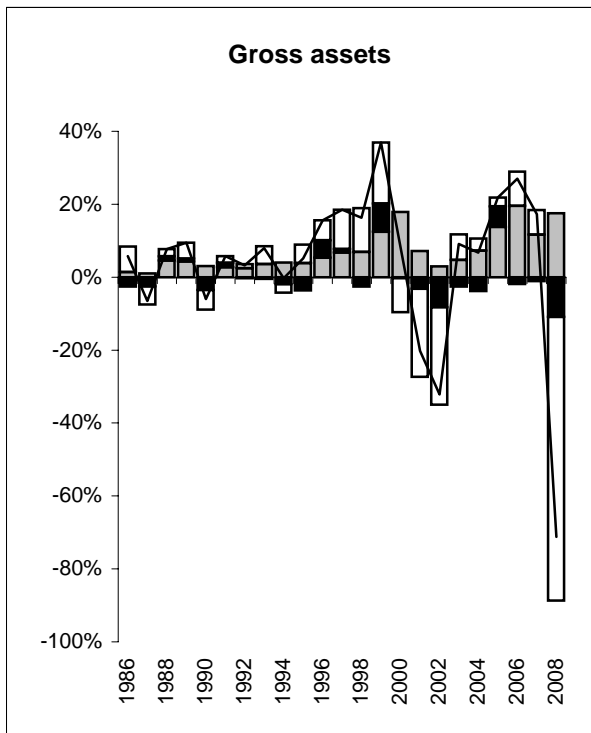
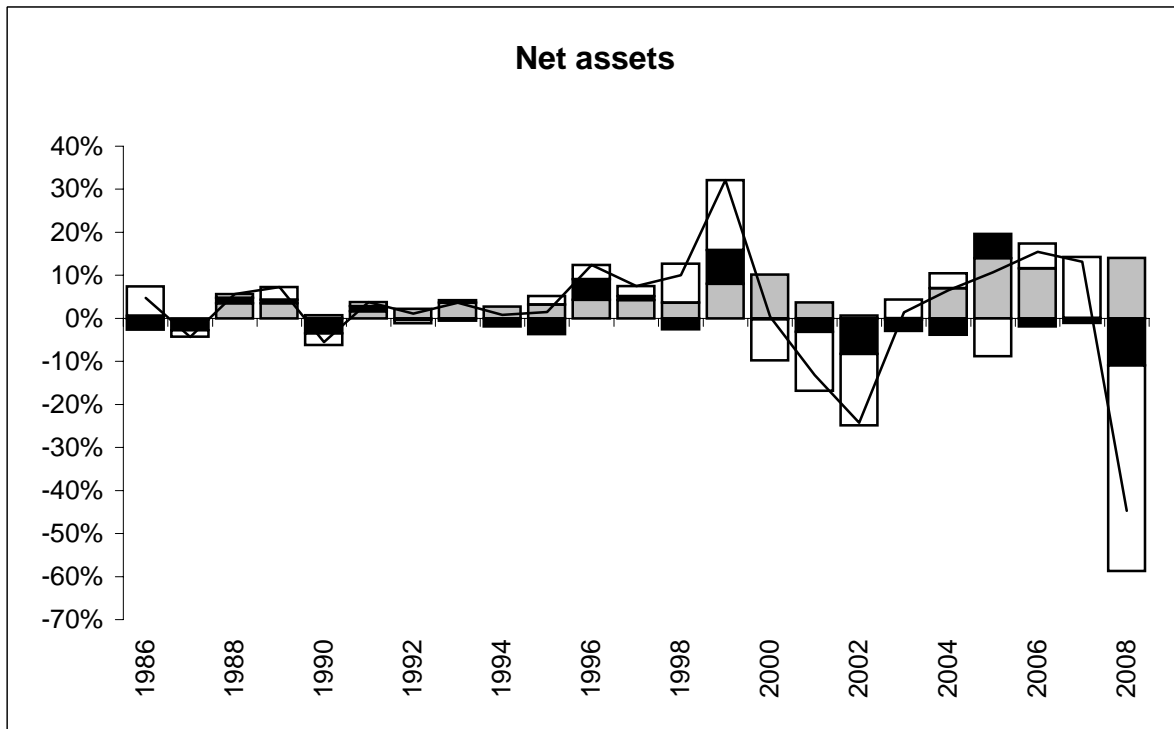
Figure A.1: Dynamics of FDI at book value
Percent of GDP



Change in position
 Financial flows
 Exchange rate val.

Asset price val.
 Other val.

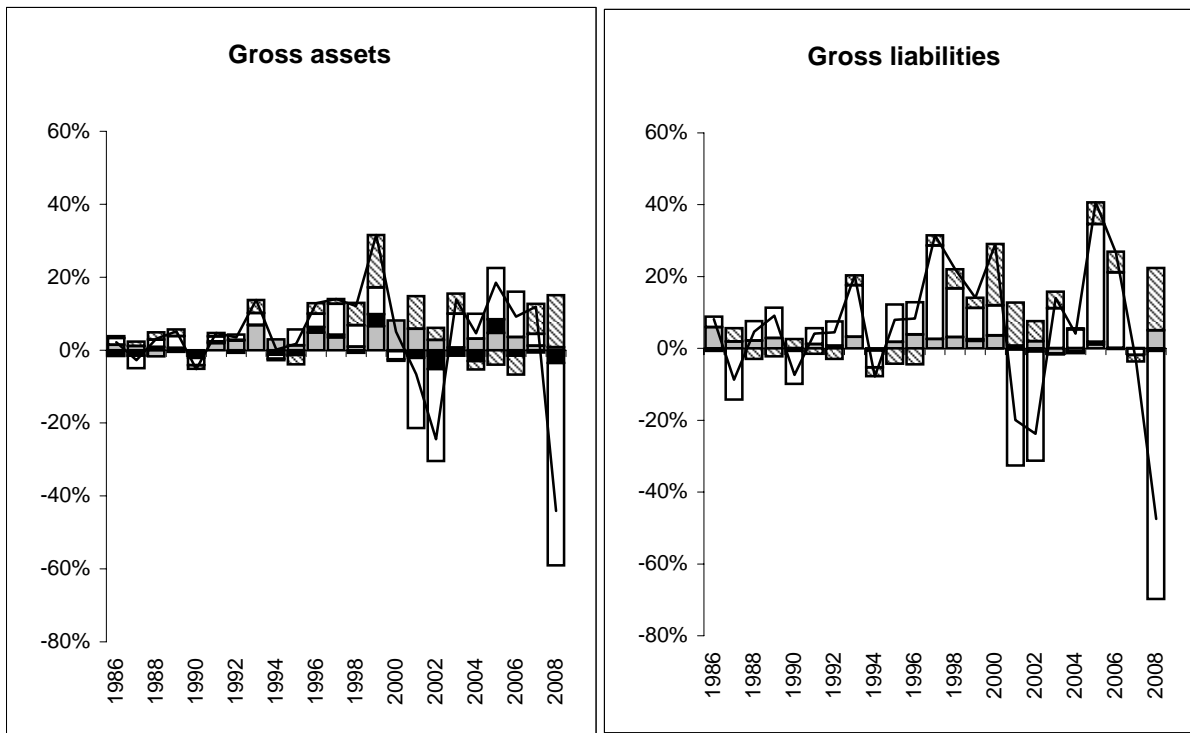
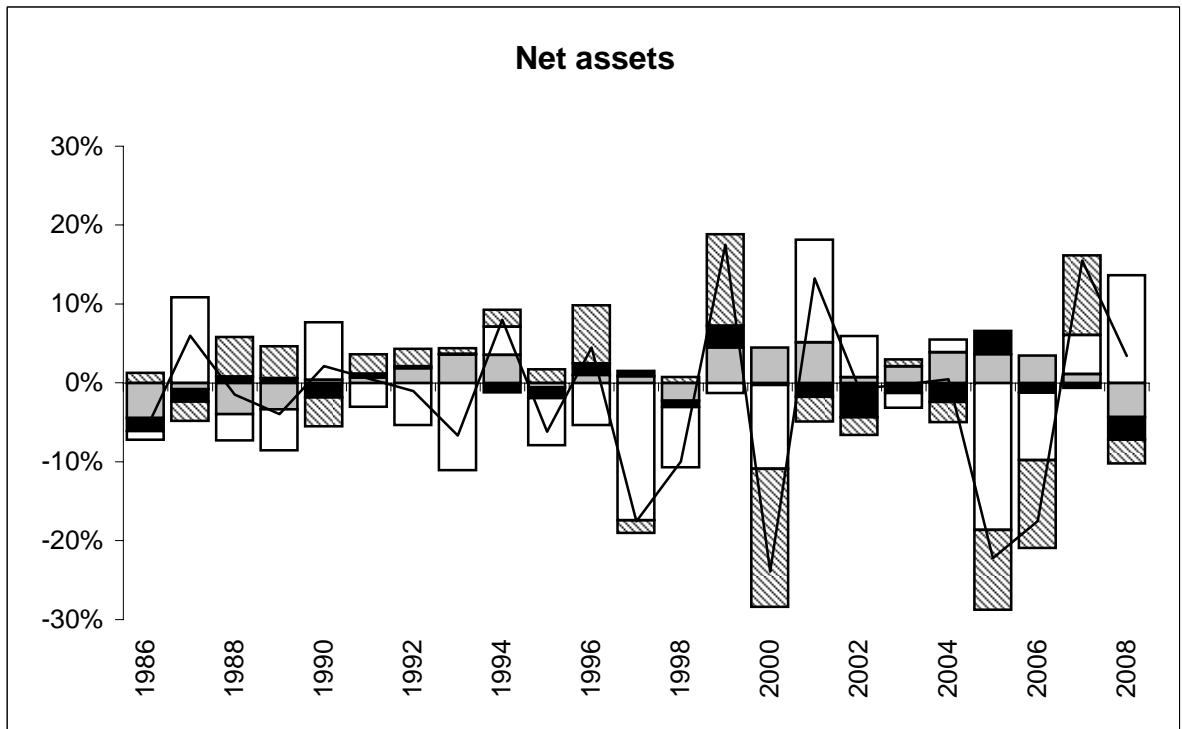
Figure A.2: Dynamics of FDI at market value
Percent of GDP



Change in position
 Financial flows
 Exchange rate val.

Asset price val.
 Other val.

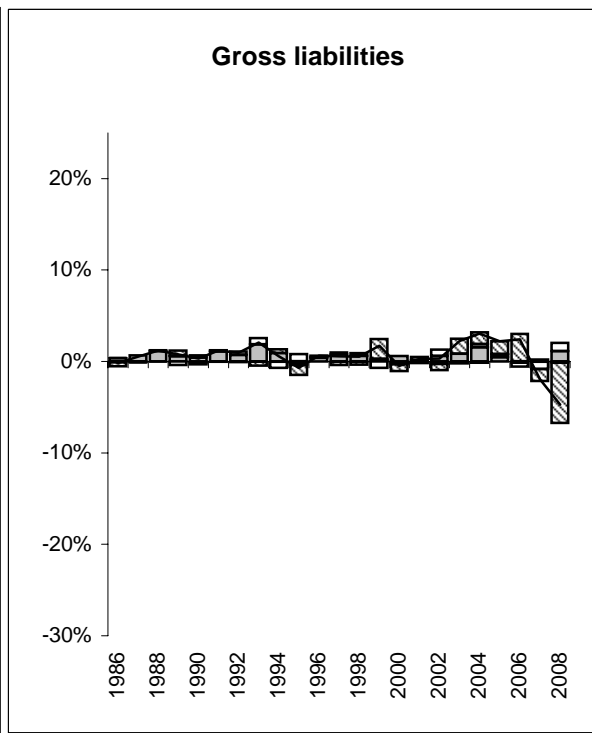
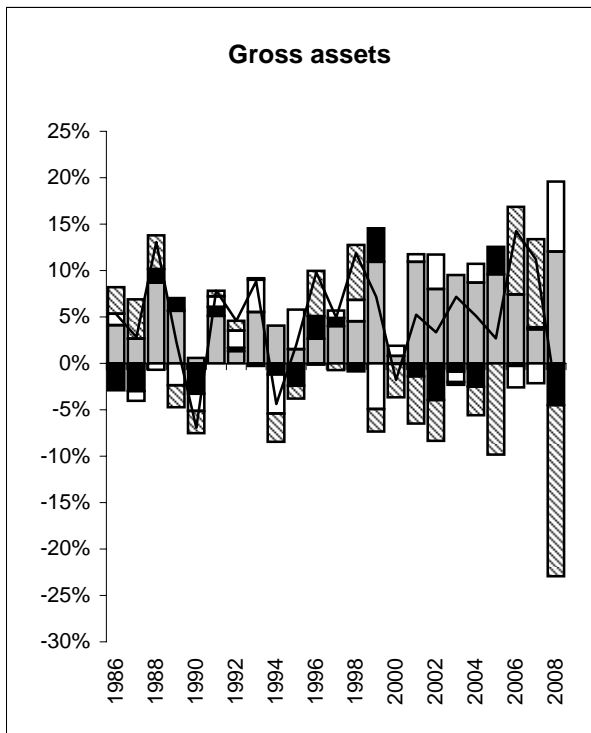
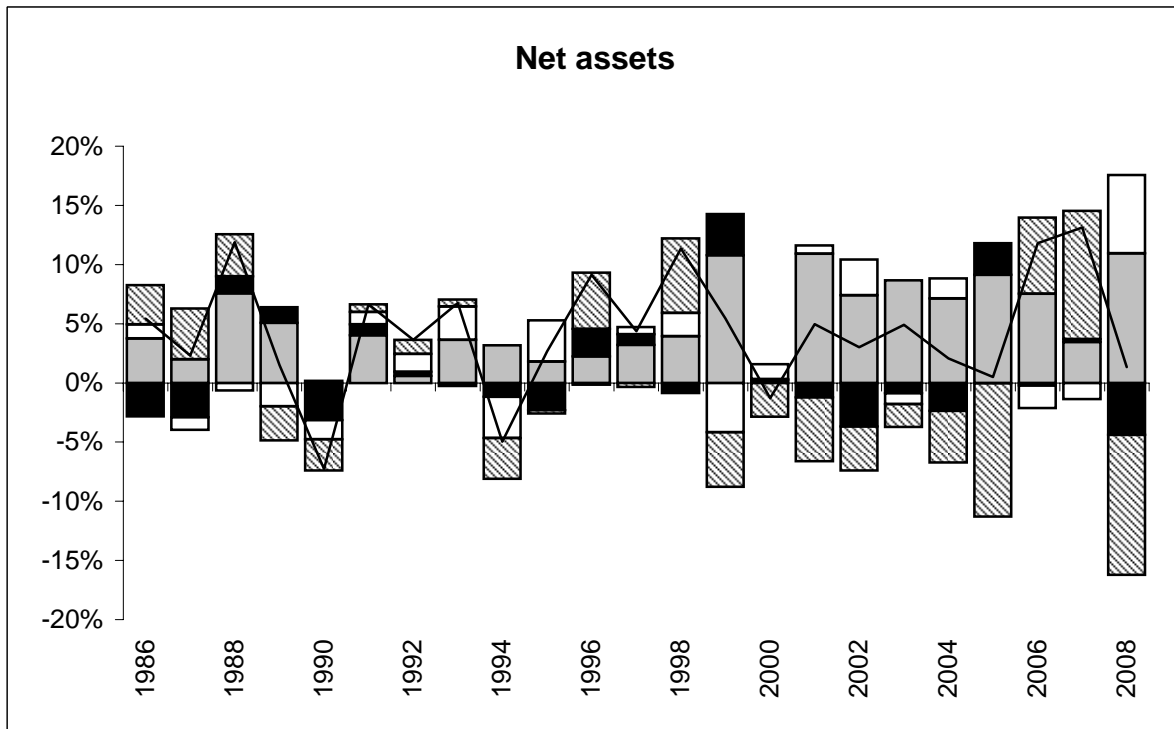
Figure A.3: Dynamics of portfolio equity
Percent of GDP



Change in position
 Financial flows
 Exchange rate val.

Asset price val.
 Other val.

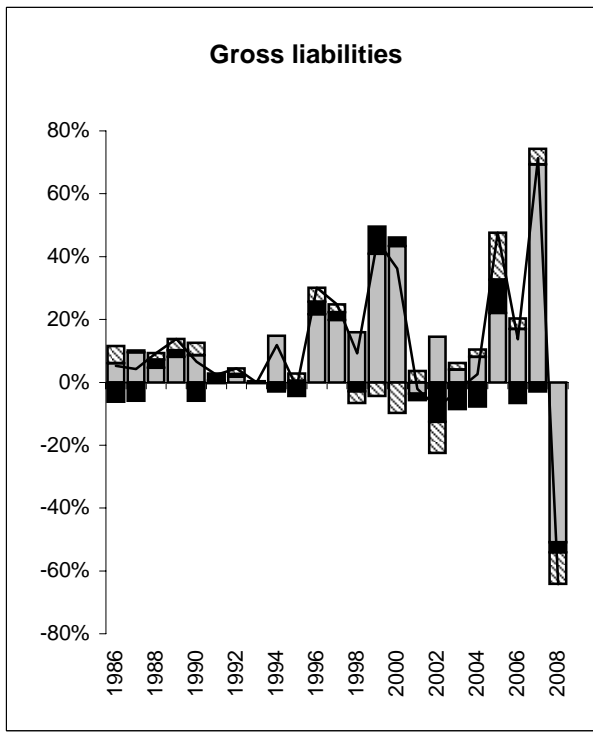
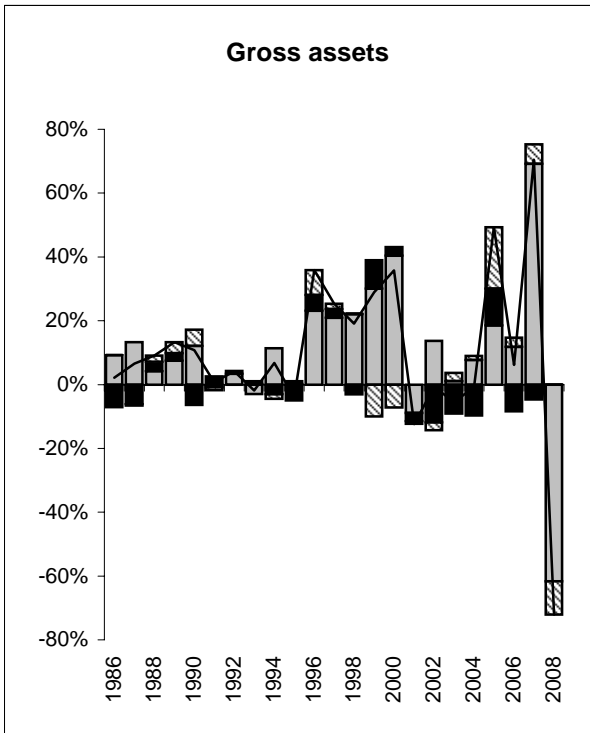
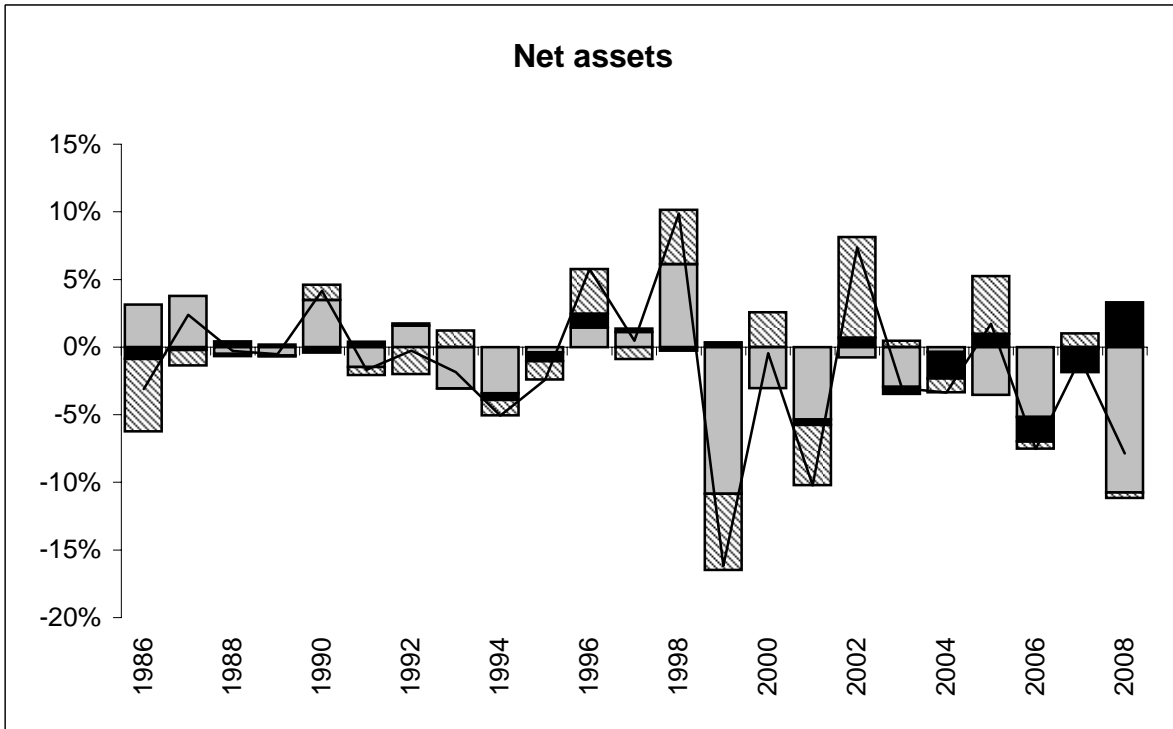
Figure A.4: Dynamics of portfolio debt
Percent of GDP



Change in position
 Financial flows
 Exchange rate val.

Asset price val.
 Other val.

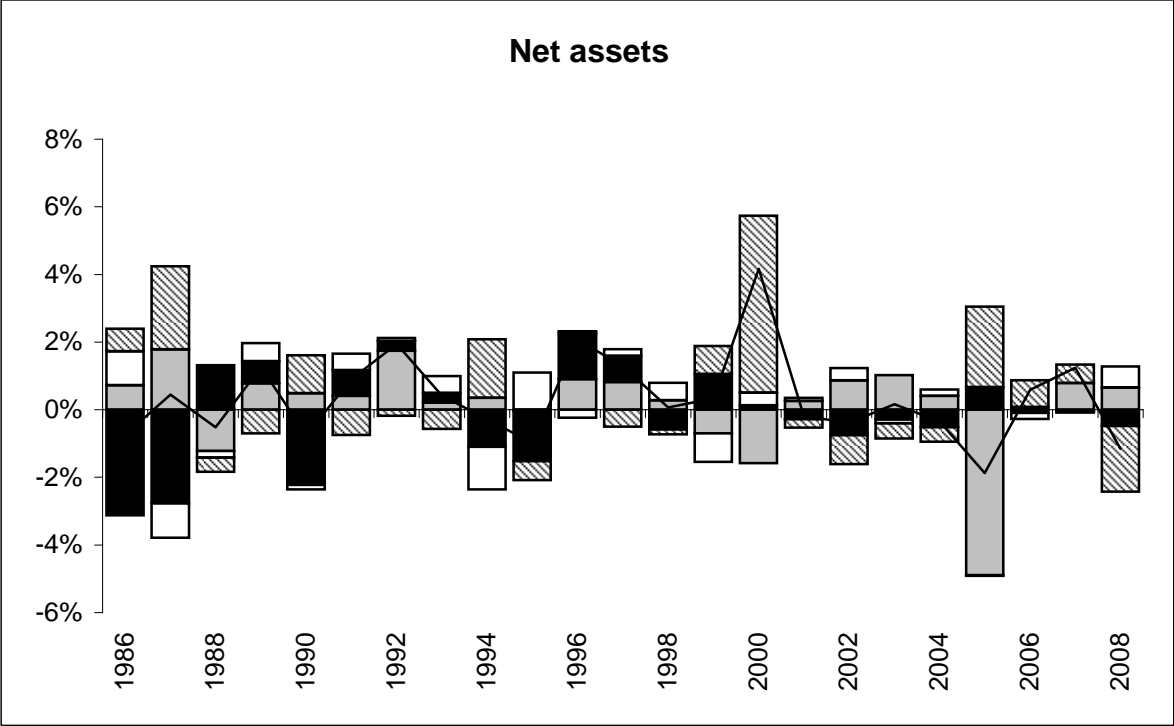
Figure A.5: Dynamics of other positions
Percent of GDP



Change in position
 Financial flows
 Exchange rate val.

Asset price val.
 Other val.

Figure A.6: Dynamics of reserves
Percent of GDP



— Change in position ■ Financial flows ■ Exchange rate val.
 □ Asset price val. ▨ Other val.