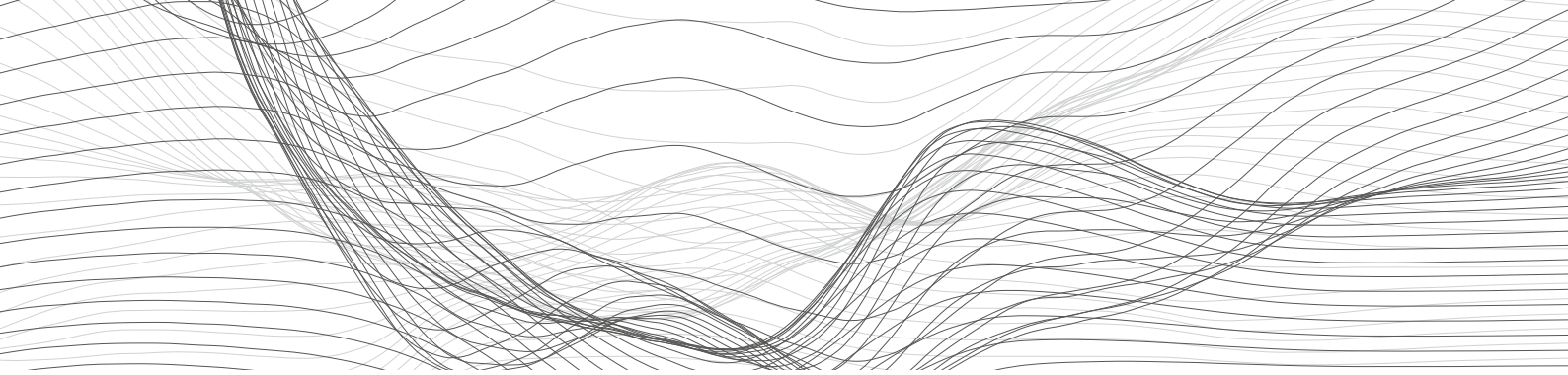

The banking sector and the Swiss financial account during the financial and European debt crises

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The banking sector and the Swiss financial account during the financial and European debt crises[1]

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The US financial crisis and the later eurozone crisis have substantially impacted capital flows into and out of financial centers like Switzerland. We focus on the pattern of capital flows involving the Swiss banking industry. We first rely on balance-of-payment statistics and show that net banking inflows rose during the acute phases of the crises, albeit with a contrasting pattern. In the wake of the collapse of Lehman Brothers, net inflows were driven by a substantial retrenchment into the domestic market by Swiss banks. By contrast, net inflows from mid-2011 to mid-2012 were driven by large flows into Switzerland by foreign banks. We then use more detailed data from Swiss banking statistics which allow us to differentiate the situation across different banks and currencies. We show that, during the US financial crisis, the bank flows cycle was driven strongly by exposures in US dollars, and to a large extent by Swiss-owned banks. During the eurozone crisis, by contrast, the flight to the Swiss franc and move away from the euro was also driven by banks that are located in Switzerland, yet are foreign-owned. In addition, while the demand for the Swiss franc was driven by both foreign and domestic customers from mid-2011 to early 2013, domestic demand took a prominent role thereafter.

JEL codes: E51, G15, G21, F21, F32, F36, F65

Key words: capital flows, safe haven, Switzerland, financial globalization, international banking.

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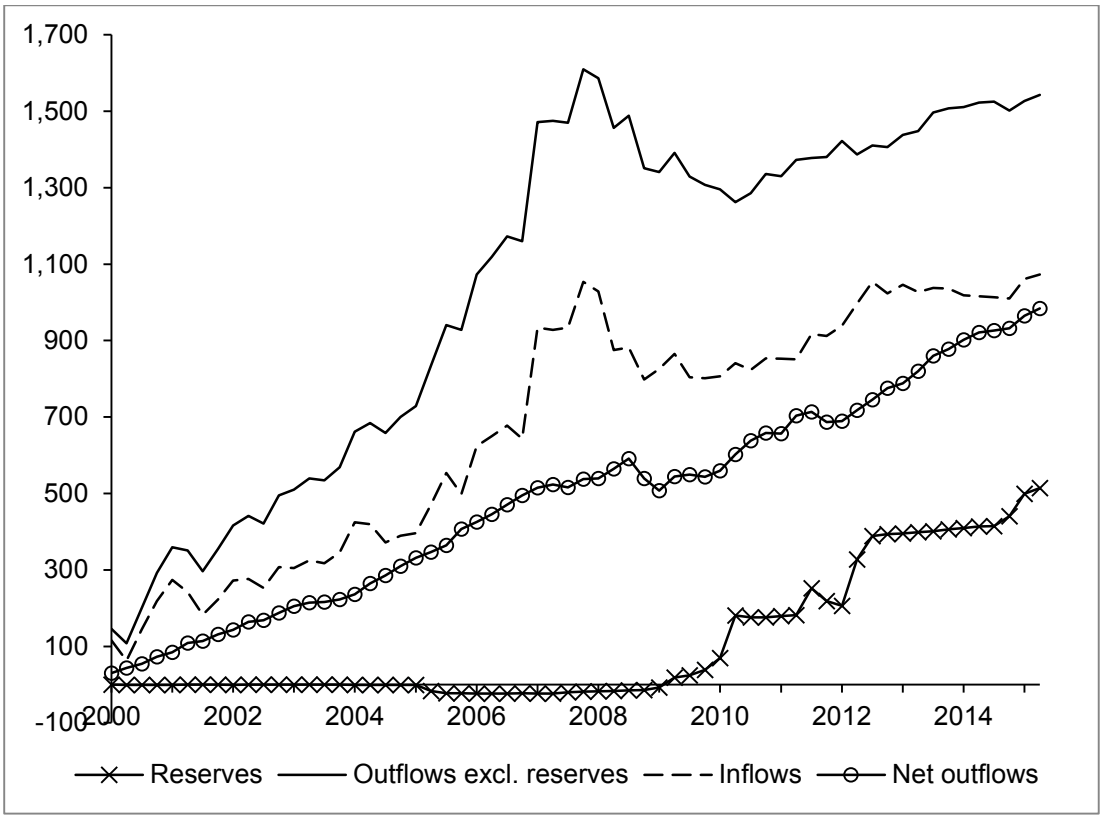
1 Introduction

The global financial crisis and the subsequent Eurozone crisis had pronounced effects on the behavior of international capital flows. Milesi-Ferretti and Tille (2011) document a "great retrenchment" where the period of financial globalization with large and growing outflows, was followed by a rapid reversal in the two quarters following the fall of Lehman Brothers and only a partial resumption of flows subsequently.

As Switzerland is an international banking center, this paper documents the behavior of cross-border capital flows to and from Switzerland with a particular focus on banking flows. Figure 1 shows the pattern of cumulated flows since 2000.[2] It presents net Swiss investment abroad, i.e. the balance of purchases and sales of foreign assets by Swiss residents, which we refer to as "outflows" for brevity, splitting them between reserve accumulation by the Swiss National Bank (crossed line) and private flows (solid). Increasing values of outflows indicate net purchases of foreign assets by Swiss investors, while a decrease indicates that Swiss investors sold more foreign assets than they purchased. Figure 1 also presents net foreign investment in Switzerland, i.e. the balance of purchases and sales of Swiss assets by foreign residents, which we refer to as "inflows" for brevity (dashed line).

Figure 1: Cumulated Capital Flows (billion CHF)

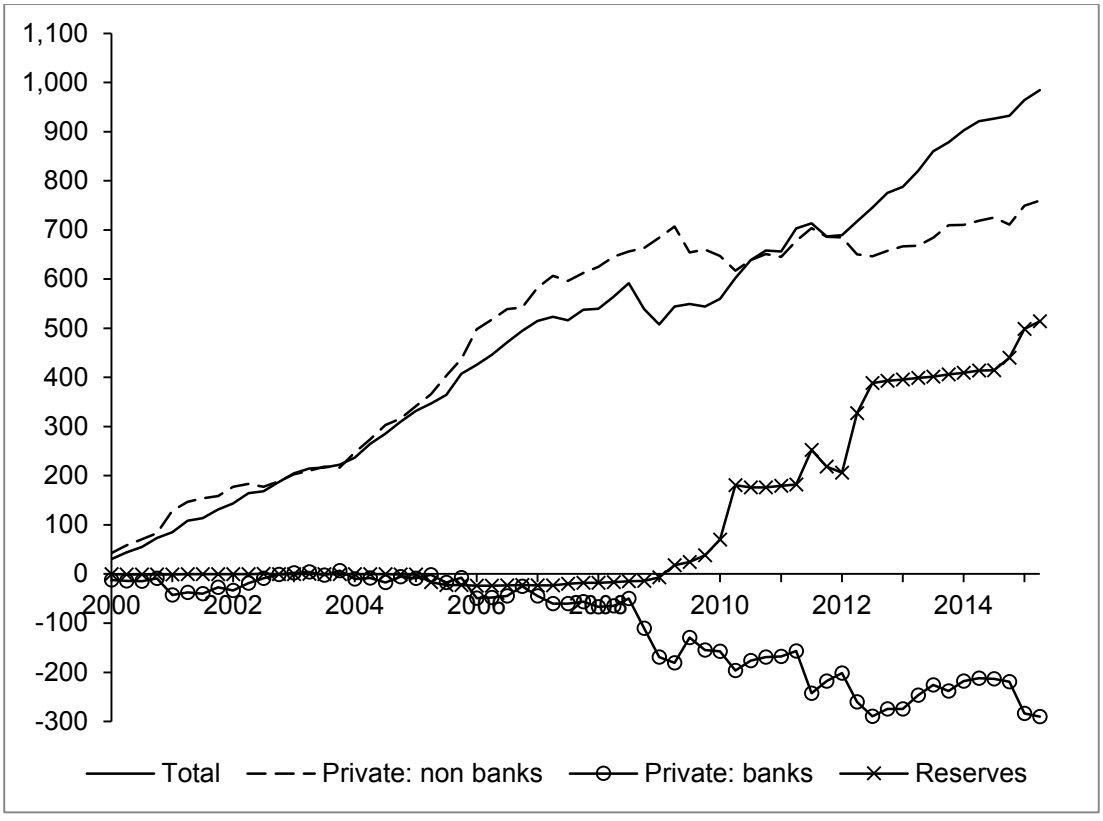


[2] Given the high volatility of quarterly Swiss capital flows, we choose to present the evidence in terms of cumulated flows since 2000 Q1. A rising line indicates positive flows, while a decreasing line indicates a retrenchment.

Finally, Figure 1 shows the difference between outflows and inflows (rounded line), which we refer to as "net outflows" and which matches the current account balance (up to errors and omissions).

Switzerland has experienced persistent net outflows since the early 1990s, which were only briefly affected by the crisis. The relative stability of net flows, however, hides a substantial heterogeneity. First, the pace of gross private flows has slowed sharply. While gross capital inflows (dashed line) were sizable before the crisis, they turned around in 2008-2009, before resuming at a much slower pace. Gross private outflows (solid line) present a similar pattern. As private flows moved roughly in step since 2009, net total outflows since then have been primarily driven by the accumulation of foreign exchange reserves by the Swiss National Bank. A second dimension of heterogeneity emerges when we contrast capital flows involving banks with other flows. Figure 2 splits the overall net outflows (solid line, corresponding to the rounded line if Figure 1) into reserve accumulation (crossed line), net banking outflows (rounded line), and net non- bank private outflows (dashed line). While net bank outflows were close to zero before the crisis, they have since turned negative. Other net private outflows, on the other hand, have slowed but did not turn into a retrenchment.

Figure 2: Cumulated Net Capital Outflows (billion CHF).



Our focus in this paper is on the role of the Swiss banking sector in the country's external position and capital flows. We proceed in two stages. We first rely on the quarterly balance of payments statistics to contrast banking flows with other flows. We then undertake a finer analysis by relying on more detailed banking data compiled by the Swiss National Bank. These data detail the composition of banks' balance sheets at a monthly frequency, distinguishing across various types of banks and various currencies. Throughout our analysis we do not treat the years since 2007 as part of one global crisis, but instead distinguish between the early stages driven by the US subprime crisis and later years dominated by the euro crisis.

Swiss banks were strongly affected by these crises. The US financial crisis that started in 2007 caused large losses for those banks exposed to US markets, and the breakdown of interbank markets after the collapse of Lehman Brothers froze global lending. These developments led international capital flows to stop, or even reverse direction. Capital flows to and from the Swiss banking sector showed an increase in net inflows, as lending *from* Switzerland to abroad contracted by more than lending from abroad *to* Switzerland. The balance of payments data show that these movements were much more acute that the ones for flows unrelated to banks.

The subsequent Eurozone crisis also affected capital flows in the Swiss banking sector. Investors sought refuge in the Swiss franc, leading to large net inflows of funds. Additionally, the persistent uncertainty associated with the crises has led banks to phase out their international exposures and instead focus on their domestic activities. Banking flows again showed larger movements than other flows. Another major feature is the large role of accumulation of foreign exchange reserves by the Swiss National Bank, a dimension that was absent in the US crisis.

The detailed banking statistics allow us to take a finer look to banking capital flows and show substantial heterogeneity across various types of banks, as well as across the two crises. During the first US crisis, Swiss-owned banks – a category that includes UBS, Credit Suisse and all cantonal banks – dominated capital flows into the banking system. In contrast, foreign-owned banks played an increasing role in channeling capital flows into Switzerland during the Eurozone crisis. Such foreign-owned banks are physically located in Switzerland but owned by foreign counterparties.

The different phases of the crises were also associated with distinct patterns in terms of the currency denomination of cross-border transactions. First, the run-up to the financial crisis was characterized by a steady buildup of a long US dollar cross-border position and a short euro cross-border position. During the US crisis of 2007 and 2008, these positions were rapidly undone, and the international US dollar position of the Swiss banking sector decreased by the equivalent of CHF200 billion within less than a year, while the international euro position increased by around CHF110 billion.[3] The Eurozone crisis was characterized

[3] These amounts correspond to 35% and 19%, respectively, of Swiss nominal GDP (equivalent to CHF573 billion in 2007).

instead by an increase of Swiss franc-denominated liabilities to foreign counterparties, which reflected the inflow of capital from abroad in search of a safe haven exposure in Swiss francs.

The rest of the paper proceeds as follows. Following a literature review, we briefly present the evolution of the various categories of capital flows from the balance of payments statistics in Section 3. Section 4 introduces the banking data. Section 5 contrasts the patterns of capital flows of Swiss-owned banks and foreign-owned banks operating in Switzerland. Section 6 discusses the different patterns across currencies, and section 7 contrast them for domestic and international positions. The final section concludes.

2 Relation to the Literature

The rise of financial globalization and the behavior of international capital flows during the two crises have been the object of a sizable literature. Lane (2013) considers the linkages between globalization and the crisis. The world economy saw a large increase in countries' external assets and liabilities, as well as in capital outflows and inflows, up to the crisis. This pattern was most pronounced among advanced economies, and especially in Europe where the international expansion of European banks was a major driver. While the role of financial integration in triggering the crisis remains a matter of debate, it is clear that it played a large role in the transmission of the crisis.

Milesi-Ferretti and Tille (2011) document the abrupt retrenchment of capital flows in 2008 and 2009. This was especially pronounced for banking flows, with positive gross flows before the crisis being followed by negative gross flows of similar magnitudes as banks pulled out of foreign markets in the wake of the collapse of Lehman Brothers. Flows only partially resumed once the more acute phase of the crisis had passed, and this recovery has been particularly muted in Europe because of the tensions in the Eurozone. The central role of banking flows in Europe is also documented by Lane and Milesi-Ferretti (2012), who look at the patterns of external adjustment during the crisis.[4]

The international activity of banks is also the focus of a substantial literature. Bruno and Shin (2015) show the central role played by international banks in the leveraging cycle and the transmission of shocks across countries. Focusing on the patterns during the crisis, De Haas and Van Horen (2011) assess the exit of international banks from foreign markets and show that it was most pronounced in markets that were more peripheral to the banks' activities. Goldberg (2013) assesses the impact of international capital mobility on the ability of policy- makers to conduct autonomous policy, and finds that integration through global banks makes the so-called policy "trilemma" tougher, with policy-makers having to trade off exchange rate stability and domestic stability.

Another angle to the literature is to consider the growing role of the global *financial*

[4] See Lane (2013), as well as Brutti and Sauré (2015) in the context of cross-country holdings of sovereign debt. Auer (2014) examines the extent to which these capital market retractions inside the Eurozone affected the emergence of large Target2 balances in the European System of Central Banks.

cycle as distinct from the global business cycle. Rey (2013) finds a prominent role for the financial cycle, which substantially reduces the policy autonomy of countries that are not at the core of the global economy. Her analysis implies that global factors linked to financial markets play a large role in driving international capital flows. Researchers have considered the drivers behind these episodes of unusually large capital flows (Forbes and Warnock, 2012; Ghosh et al., 2014) and have documented a central role for global factors, including the degree of appetite for risk (as proxied by the VIX Index). In the Swiss context, Nitschka (2015) documents the importance of appetite for risk as a determinant of both the Swiss exchange rate and the prices of specific assets classes such Swiss bonds or share prices. Bruno and Shin (2015) also argue for a central role for global considerations in driving banking flows.

In terms of the specific features of Switzerland, Yesin (2015) shows that the pattern of capital flows has clearly changed with the crisis. Prior to 2007, Switzerland experienced large and volatile gross capital flows. Outflows and inflows were closely correlated, however, and thus net capital flows were much less volatile. Since the crisis, the volume of gross capital flows has decreased. While these flows have become less volatile, outflows and inflows no longer move in close step, and net capital flows have thus become substantially more volatile.

3 The Changing Pattern of Swiss Capital Flows

The sharp reduction in the pace of capital flows to and from Switzerland since 2007 was displayed in Figures 1 and 2. In this section, we take a finer look at the phases of the evolution of capital flows across various subsamples. The discussion is based on Figure 3 which offers a synthetic view of capital flows. The figure consists of four panels showing the overall capital flows, and then splitting them between flows involving the banking sector, non-banking private flows, and reserve accumulation by the Swiss National Bank.[5] In each panel we display flows in CHF billion in terms of averages expressed at an annualized rate, with gross outflows (grey bars), gross inflows (white bars) and net outflows (black bars).

Figure 3 distinguishes between six stages. The first stage shows the pattern before the crisis, from the first quarter of 2000 to the second quarter of 2007. We then consider the initial crisis year, before the fall of Lehman Brothers (2007.3 until 2008.3). The next stage covers the two quarters after the Lehman collapse where flows were particularly volatile (2008.4 until 2009.1). These early stages display the impact of the first stage of the crisis that originated in the US. The last three stages encompass the various phases of the Eurozone crisis. The initial Eurozone crisis phase covers the periods from the early indication of problems in Greece to the acute tensions in mid-2011 (from 2009.2 until 2011.2). The next

[5] The paths of gross and net flows for banks and other private flows are depicted in Figures A1 and A2 in the Appendix.

stage starts with the time of tension of 2011 and adoption of the exchange rate floor by the Swiss National Bank to the until the "whatever it takes" speech by Mario Draghi in the summer of 2012 (from 2011.3 until 2012.3). The final stage covers the subsequent period where the situation in Europe stabilized to some extent (2012.4 until 2015.2).

For brevity we focus our discussion on the most salient features of flows. Before the crisis, Switzerland experienced large gross outflows and inflows in banks, with little net flows, reflecting its nature as a financial center. The overall net capital outflows (equivalent to 12% of GDP) were driven by non-bank private flows where large gross outflows exceeded sizable gross inflows. Reserve accumulation played no role.

The initial year of the US crisis (second stage in Figure 3) led to a large turnaround in banking flows that remained even, leading to a zero net effect. Non-bank private flows were relatively unaffected, and reserve accumulation was negligible. The retrenchment of banking flows accelerated sharply during the Lehman collapse stage, a pattern similar to that found by Milesi-Ferretti and Tille (2011) (for a more detailed description, see Yesin 2015). The magnitude of the retrenchment in gross banking flows increased, and they became uneven with a larger retrenchment by Swiss banks from abroad (grey bars) than by foreign banks from Switzerland (white bars). In terms of private non-bank flows, gross flows both contracted, leaving net flows unaffected. Reserve accumulation remained relatively small.[6]

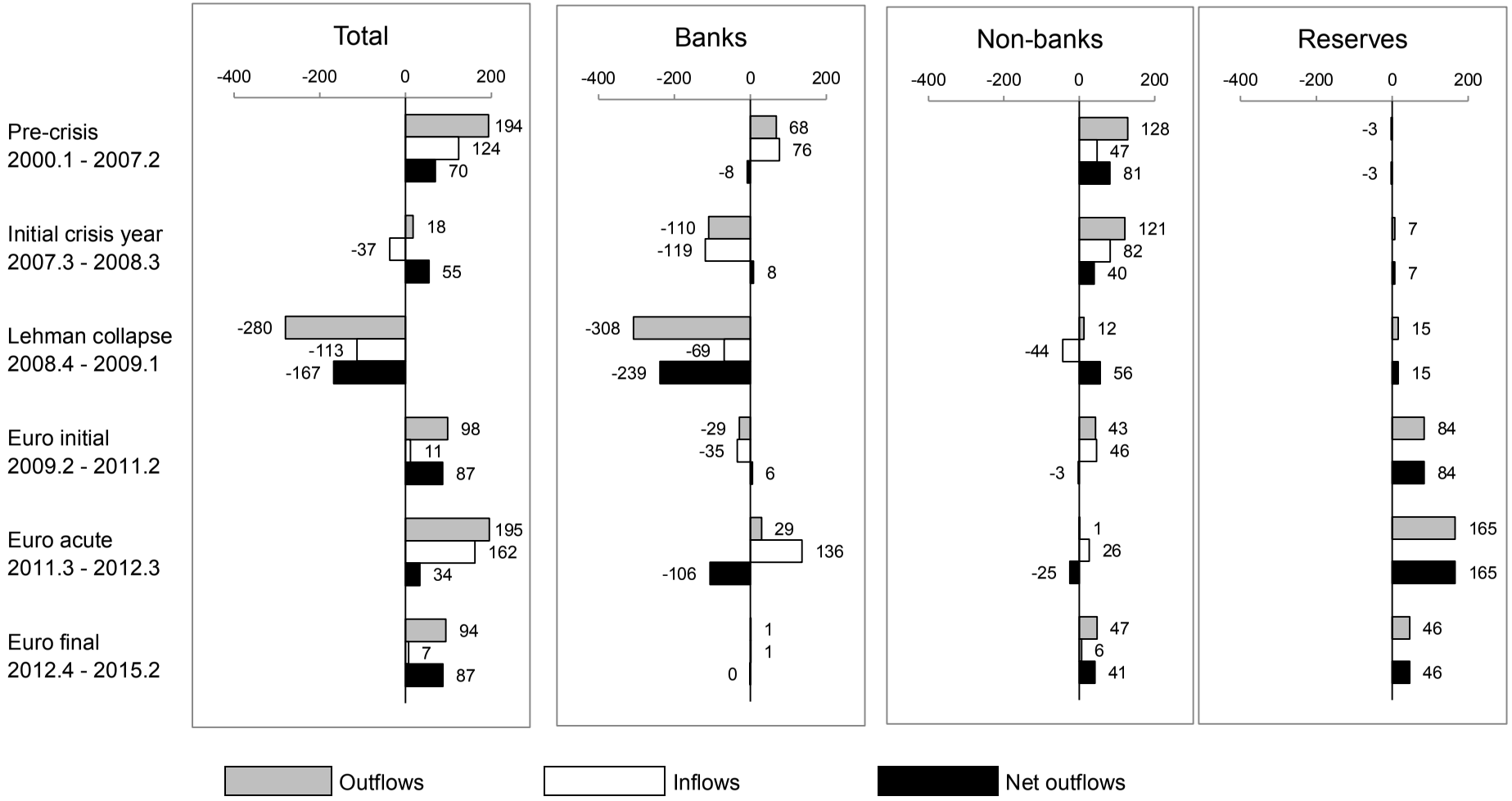
The three stages of the Eurozone crisis saw a large role of foreign reserve accumulation. In the first stage until 2011.2, bank flows kept contracting but at a much smaller and more even pace than before. While non-bank flows recovered, this was uneven and left net flows to be essentially zero. The overall net outflows were thus solely reflecting the accumulation of reserves by the Swiss National Bank, primarily in the spring 2010.

The acute phase of tension in the Eurozone (fifth stage in Figure 3) saw a very uneven pattern in banking flows, with large movements into Switzerland that were not offset by outflows from Swiss banks. With non-bank private flows remaining small, the banking flows were mirrored by a large accumulation of reserves by the Swiss National Bank, which primarily took place in the summer of 2011 and the summer of 2012 (see Yesin 2015).

In the final stage, the Eurozone crisis became less acute thanks to proactive policy actions in the Eurozone. This led to the end of banking inflows. Non-bank private flows displayed a pattern more in line with the pre-crisis one, with net gross outflows, albeit of a more moderate magnitude. With limited net private flows the overall net outflows still reflected reserve accumulation to a large extent, especially in late 2014 and early 2015 before the end of the exchange rate floor.

[6] Overall net flows show a sharp contrast to other stages, with a sizable negative value. This is not driven by a move from a current account surplus to a deficit, but is instead mirrored in the statistical errors and omissions which can be sizable in the Swiss balance of payments.

Figure 3: Average Capital Flows (billion CHF, annualized rates).



Note: outflows are "net Swiss investment abroad", i.e. the balance of purchases and sales of foreign assets by Swiss investors; inflows are "net foreign investment in Switzerland", i.e. the balance of purchases and sales of Swiss assets by foreign investors; net outflows are the difference between outflows and inflows.

The composition of Swiss international capital flows has thus gone through sizable changes, especially for banking flows. The pre-crisis situation of large and offsetting positive gross flows was followed by an even retrenchment in the first year of the US crisis, followed by a lopsided retrenchment in the Lehman Brothers stage and a lopsided resumption of gross flows during the Eurozone crisis with large gross inflows. Interestingly, Switzerland is exposed to the mirror image of the pattern for most countries during movements in the global financial cycle. During periods of global boom, most countries are faced with rising inflows and often an appreciation of their currency, with the opposite pattern occurring when global capital flows retrench. Switzerland, in contrast, experienced inflows during the crisis (once the panic over the collapse of Lehman had passed) that were associated with appreciating pressure on the franc, a pattern that reflects it nature as a safe haven.

4 Capital Flows into the Banking Sector and Swiss Banking Statistics

As banks played a prominent role in the acute fluctuations of capital flows during the crises, we now further explore the patterns of bank flows using more detailed monthly balance sheet data compiled by the Swiss National Bank.

Specifically, we examine the evolution of international assets, international liabilities, and the net international investment position (Net IIP) of the Swiss banking system. The data allow us to split the positions across various types of banks and across the currencies in which the positions are denominated. The statistics, compiled by the Swiss National Bank,[7] cover banks with a physical presence in Switzerland as they are overseen by the Swiss authorities and thus deliver information on their balance sheet exposures to the Swiss National Bank.

As the Swiss banking statistics include information on the residency of the counterparties with which Swiss banks are doing business, they allow us to infer international capital flows. For example, if a private customer residing in Germany owns a bank account in Switzerland, the Swiss bank reports the balance of the account as a liability to a non-resident party. Similarly, if a Swiss bank has issued a credit to a firm based outside Switzerland, it reports the outstanding amount as a claim against a non-resident party. In our analysis, we examine the outstanding stocks in assets and liabilities of Swiss banks vis-à-vis parties residing outside of Switzerland.

While the values of international assets and liabilities are affected by the capital inflows and outflows in the Swiss banking system, the relationship is not one-to-one. First, the coverage of the Swiss banking statistics is not complete, as some small banks are not covered. Second, there are some differences in the definition of the "Swiss banking system" between the balance-of-payment statistics and the banking statistics. For instance, the

[7] The figures include positions in derivative instruments. However, only the accumulated value (or outstanding cost) of such positions is included, not the notational amount

balance of payments data are recorded according to the IMF's *Balance of Payments Manual* (International Monetary Fund, 2013), so bank flows only include assets and liabilities against non-resident banks and customers. By contrast the definition of the banking sector in the banking statistics data examined in this section differs slightly from the definition in the balance of payments.[8] Finally, and most importantly, the value of outstanding assets and liabilities fluctuates not only because of capital flows (i.e. active transfers of assets between Switzerland and the rest of the world) but also because of movements in the value of existing international assets and liabilities denominated in foreign currencies due to exchange rate fluctuations.

4.1 Gross and net assets of the Swiss banking system

The evolution of the international exposure of the Swiss banking sector over the last 15 years is presented in Figure 4, which depicts the evolution of international assets, international liabilities, and the Net IIP of all Swiss banks vis-à-vis foreign counterparts. "International assets" (solid line) refers to claims that banks resident in Switzerland have on counterparties located aboard (such as a private customer residing abroad, a firm based abroad or a foreign bank). Similarly, "International liabilities" (dotted line) refers to liabilities that banks resident in Switzerland have towards any such counterparties. The net international position (dashed line), or Net IIP, is the difference between international assets and liabilities.

The evolution of the exposure can roughly be summarized into three distinct phases that we refer to as "boom" (pre-crisis), "bust" (post-Lehman), and "safe haven" (2011 onwards, which covers the last three stages of Figure 3). International assets and liabilities both expanded rapidly in the first phase, especially from mid-2005 until the end of 2007. Foreign assets rose from CHF800 billion in January 2005 to CHF1,412 billion in May 2007. Foreign liabilities mirrored this development, reaching CHF1,325 billion in July 2007, up from CHF710 billion in early 2005. Both assets and liabilities thus increased by well over two thirds, peaking before the onset of the financial turmoil that culminated in the collapse of Lehman Brothers on 15 September 2008. As the movement was evenly matched for both categories, the Net IIP changed little.

The second phase starts with the collapse of Lehman Brothers and lasts until mid-2011. It was characterized by a strong retrenchment of international exposures. The amount held by Swiss banks abroad fell sharply (to CHF628 billion in July 2011), as did the amount held by international investors in Swiss banks[9] (to CHF630 billion in July 2011). Note that the "bust" period saw a decrease in the net position of the Swiss banking system, from net claims of CHF87 billion in July 2007 to a roughly balanced position in July 2011. The repatriation of both assets and liabilities that followed the collapse of Lehman thus marked

[8] Most importantly, the Swiss Banking Statistics include the value of foreign direct investments of Swiss banks. In the IMF's balance of payment statistics, the latter are included in direct investment, without being counted to banking transactions.

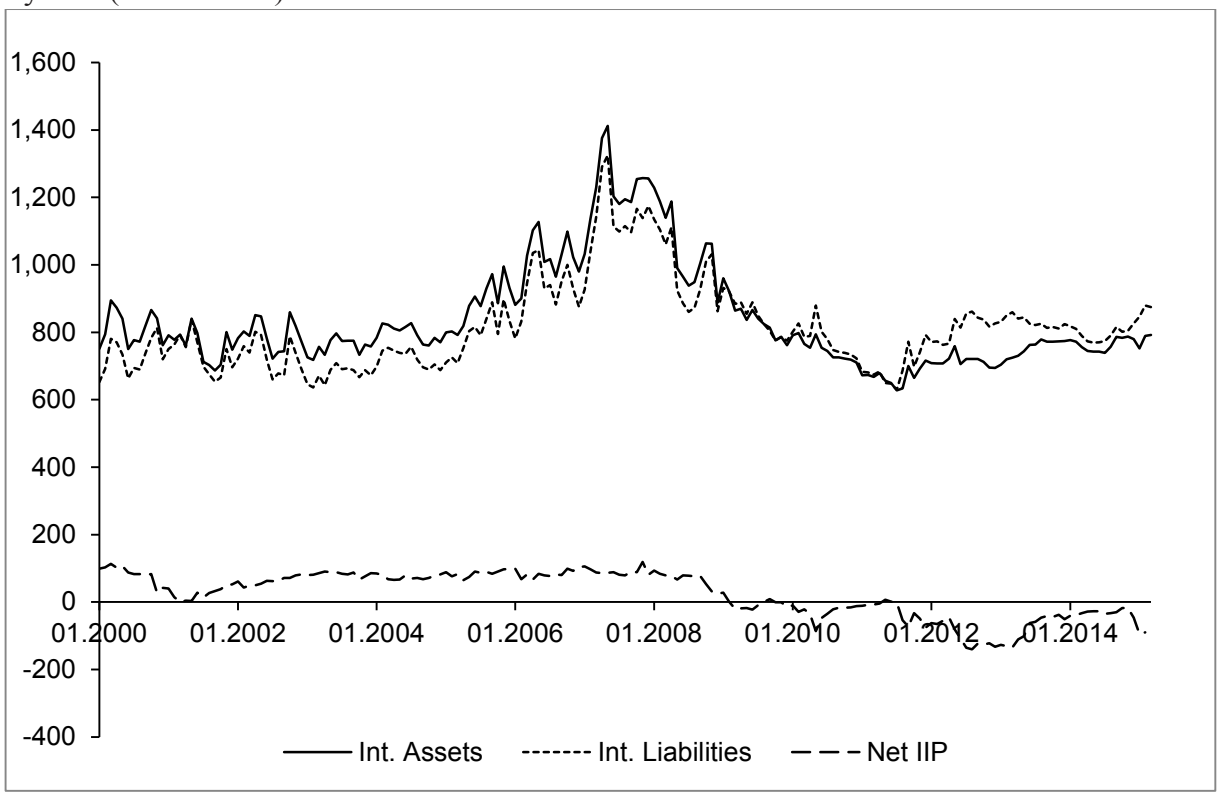
[9] Such funds are liabilities towards Swiss banks.

the end of the Swiss banking system's position as a net lender to non-Swiss counterparties.
The Eurozone crisis period started in mid-2011 and initially witnessed a gradual increase of both international assets and liabilities, albeit at a slow pace. This has been more pronounced for liabilities, which increased by CHF826 billion from mid-2011 until the end of 2014, compared to an increase of CHF780 billion in the value of assets. Note that the net position has moved further into negative territory since the end of minimum exchange rate against the euro in January 2015.
The overall changes in the net international position of the Swiss banking system display two distinct phases associated with net capital inflows. During the 2007-2011 "bust" period, Swiss banks repatriated their assets more aggressively than foreign counterparts repatriated theirs from Switzerland. After 2011, inflows of foreign capital resumed, accompanied by a more modest outflow of domestic capital, resulting in a net capital inflow.

4.2 Net assets, valuation effects and capital flows

As pointed out above, the value of assets and liabilities shown in Figure 4 is not only affected by capital flows, but also by changes in the value of existing international positions. In particular, a sizable share of assets and liabilities is denominated in foreign currencies, so the value of these positions in Swiss francs is affected by movements in exchange rates.

Figure 4: International Assets, International Liabilities and Net IIP of the Swiss Banking System (billion CHF).



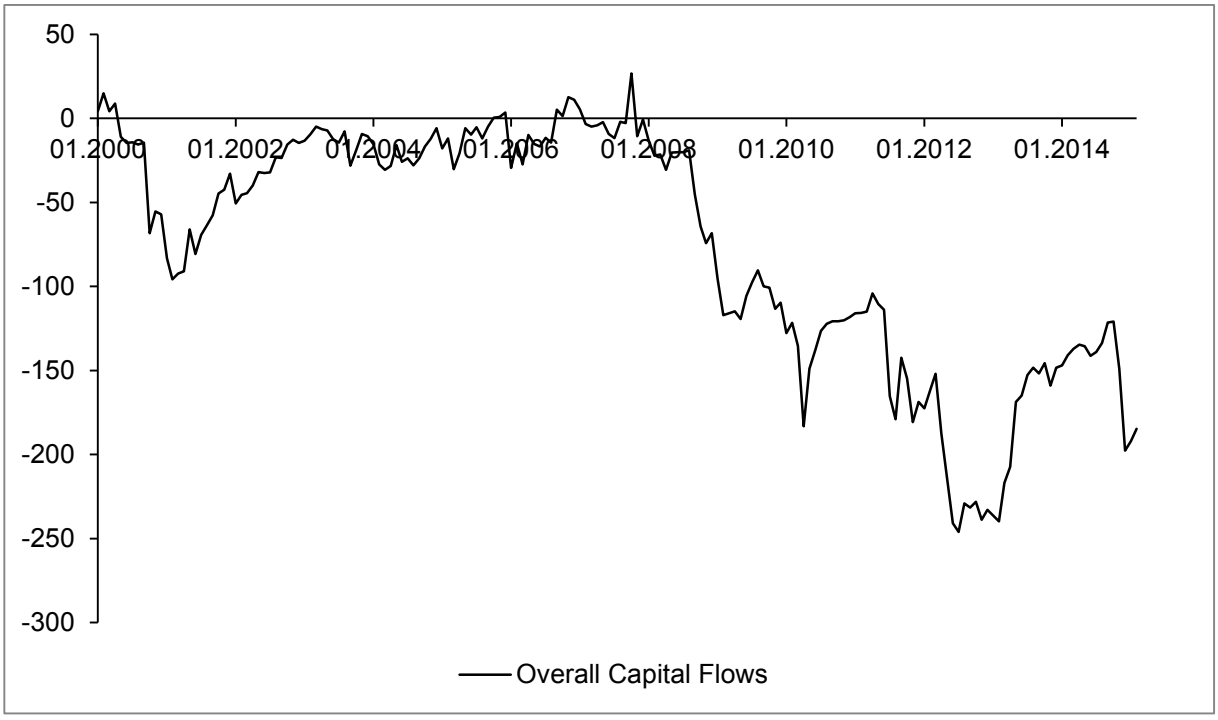
This valuation effect needs to be filtered out to compute capital flows into and out of the banking system. Between time t-1 and t, the change in net foreign assets of the Swiss banking system is composed as follows.

$$NIP_{banks,t} - NIP_{banks,t\text{-}1} = Capital\ Flows_{banks,t} + \Delta Netval_{banks,t} + E_{banks,t}, \quad (1)$$

where $\Delta Netval_{banks,t}$ represents the net valuation changes of existing assets and $E_{banks,t}$ is the error term that is present because statistics are imperfectly measured, and also because there are capital account transfers.[10]

Using data on the currency compositions of assets and liabilities and exchange rates with the Swiss franc, we compute the valuation effect. Removing it from the change in the position then gives the capital flows (including the error terms).[11] Figure 5 displays the valuation-adjusted cumulative net capital flows into the Swiss banking system since January 2000. Over the last 15 years, the banking sector has received a net capital inflow of CHF185 billion. These inflows did not take place evenly, but were instead concentrated in two distinct periods. The time from the start of 2008 to the start of 2013 saw net capital inflows of CHF233 billion. This was partially reversed in 2013 with net outflows of CHF90 billion. Net inflows then resumed in late 2014 and early 2015.

Figure 5: Cumulative Net Capital Flows into the Swiss Banking System (billion CHF).



[10] Note that the error term includes both errors in the balance-of-payments identity and capital account transfers in the Net IIP accumulation equation (the latter are capital flows that do not change the cross-border asset and liability position, such as bequests or debt cancellations); see also Lee et al. (2008).

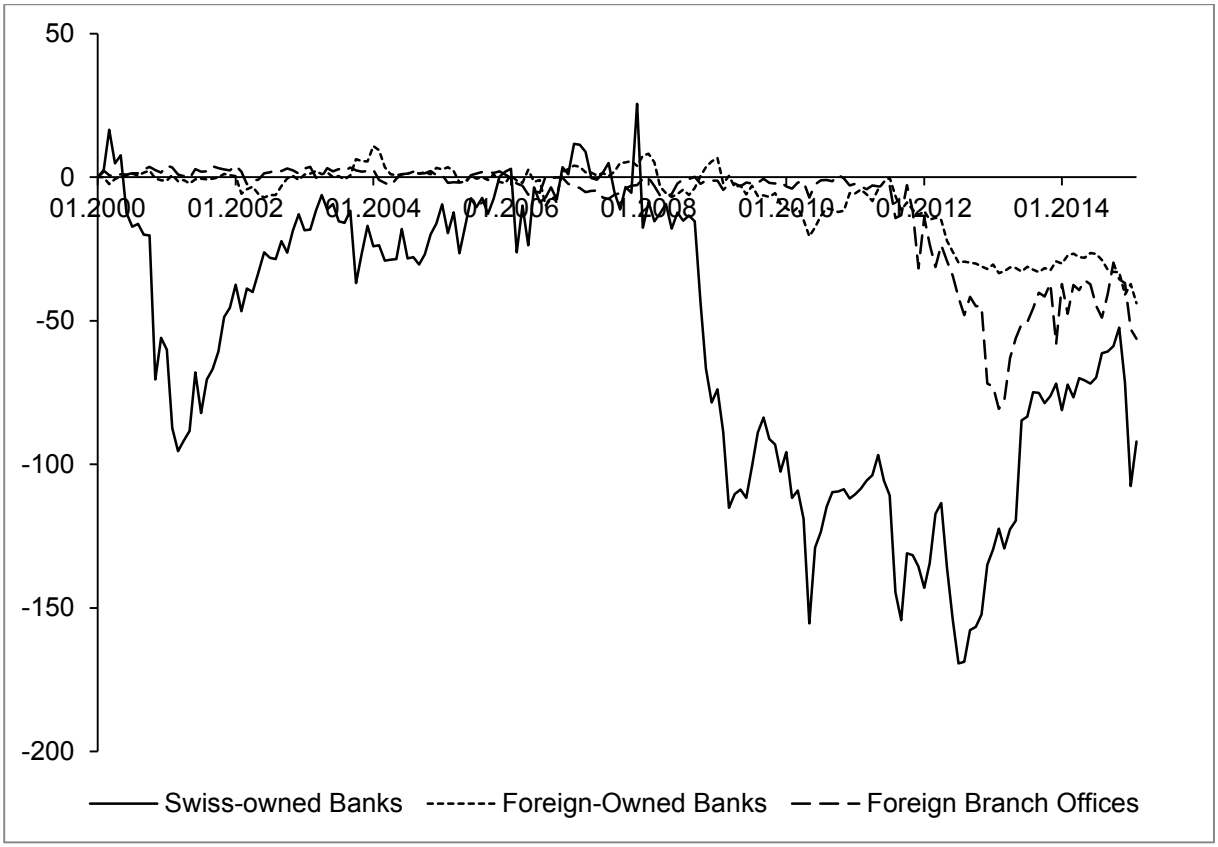
[11] Our adjustment only corrects for the impact of the main exchange rates (USD and EUR). The value of banks' positions is also affected by other changes, especially write-offs of non-performing assets. In particular UBS suffered large losses during the crisis, writing down US$18.7 billion in 2007 and a further US$19 billion in the first quarter of 2008 (UBS, 2007; 2008). Still, the movements in capital flows during the crisis years were much too large to be primarily driven by such losses.

5 Bank Ownership and Capital Flows

The overall evolution of the Net IIP of the Swiss banking system shown in Figure 5 hides substantial heterogeneity across different categories of banks. Following Auer (2015), we split banks into three categories that are primarily differentiated by ownership. The first category, "branches of foreign banks", consists of the Swiss branches of foreign-domiciled banks. These branches are registered in Switzerland and are thus included in the Swiss banking statistics (the banking statistics guidelines note that branches of foreign banks are mostly branch offices of foreign-domiciled international banking corporations).[12]

The second category, "foreign-owned banks", consists of banks physically located and registered in Switzerland that are controlled by foreigners. These banks are not branches of foreign banks since they are legally separate entities from their parent companies, but they are more than 50% owned by foreign parties.

Figure 6: Net Capital Flows of Swiss-Owned Banks, Foreign-Owned Banks, and Foreign Branch Offices (billion CHF).



[12] An example is J.P. Morgan Securities Plc., London, Zweigniederlassung Zürich.

The third and largest category, "Swiss-owned banks", groups the Swiss-owned banks, i.e. banks that are neither branches of foreign banks nor more than 50% foreign-owned.[13]

Figure 6 shows the valuation-adjusted Net IIP of the Swiss banking sector for these three categories.[14] We clearly observe that until mid-2011, the entire movement in the Net IIP can be attributed to Swiss-owned banks. By contrast, the inflow of capital during the "safe haven" period was also driven by branches of foreign banks and foreign-owned banks. Swiss-owned banks instead experienced capital outflows during the second half of 2012. Our detailed data thus show phases of movements, with a retrenchment by Swiss-owned banks during the global crisis followed by a move into Switzerland by foreign banks during the Eurozone crisis.

Figures A3, A4, and A5 in the Appendix show the valuation-adjusted gross and net flows for each category. The pattern for Swiss-owned banks, which account for the bulk of all assets and liabilities of the Swiss banking system, shows that they not only drove the boom-bust cycle in foreign assets and liabilities, but they also accounted for the bulk of movements in the overall Net IIP until 2010.

However, foreign-owned banks have also played a role in the Eurozone crisis period. Branches of foreign banks, which had a very small Net IIP until early 2012, have since experienced sizable capital inflows. While their cumulated gross outflows were steady during the period 2012 to early 2015, their cumulated gross inflows rose markedly. Auer (2015) documents that underlying this capital inflow was a strong increase in the Swiss franc positions of these branch offices. In other words, foreign-owned banks played a prominent role in the international drive to invest in the franc during the peak of the Eurozone crisis. Foreign-owned banks located in Switzerland (excluding branches of foreign banks) also experienced substantial changes during the "safe haven" period – from early 2011 until March 2015, the Net IIP for this category decreased substantially. This resulted both from lower gross outflows and higher gross inflows.

Figure 7, describes the evolution of overall capital flows from the start of 2000 until the end of March 2015 by following the format of Figure 3 and classifying the time since then into seven stages of the global financial and the European debt crisis.[15] In this figure, we document the evolution of capital flows to and from the three types of banks (foreign branches, other foreign-owned, and Swiss-owned banks) over the seven stages. For each stage, we construct the average annualized capital inflow, outflow, and net capital flow.

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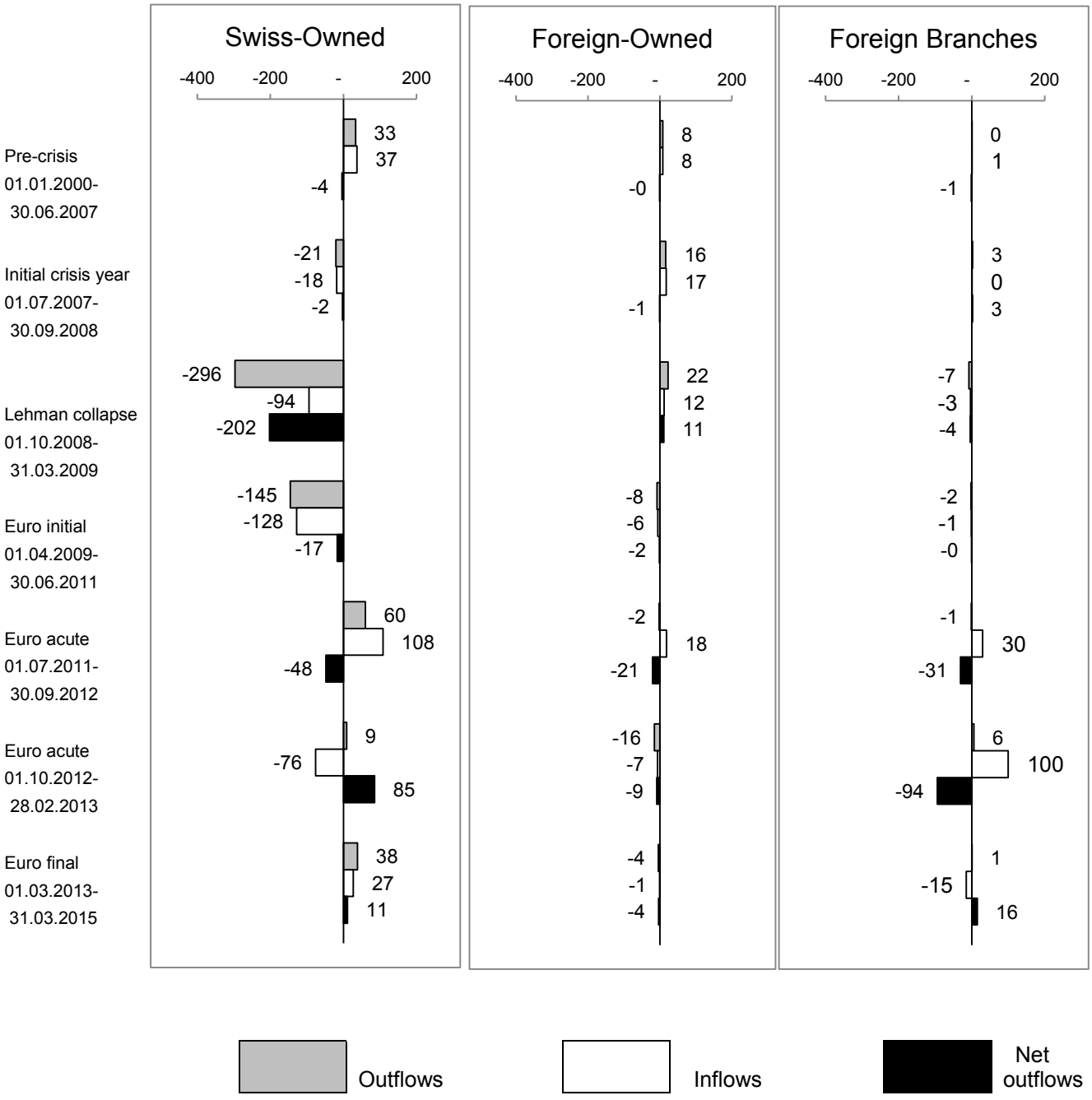
[13] Examples are UBS, Credit Suisse and Zurich Cantonal Bank. Note that only branches located in Switzerland are included in this paper so that these statistics correspond to statistics on international capital flows (i.e. this paper examines only banks included in the category "*Erhebungsstufe Inländische Bankstellen*" in the SNB's banking statistics, which corresponds to the definition of exposures as collected in the BIS's locational banking statistics). The various types of banks are described in detail in the SNB's annual report on banks in Switzerland (e.g. Swiss National Bank, 2013).

[14] We note that the net valuation effects are not extremely large in the banking statistics because net currency positions are moderate. Thus, while valuation effects strongly affect gross capital flows, they do not impact net capital flows that much in this specific sample.

[15] The banking statistics are available at a monthly frequency as opposed to the data on capital flows, which is available at quarterly frequencies only. To point out the sometimes more nuanced patterns visible in the monthly data, Figure 7 includes seven instead of the six time splits employed in Figure 3.

Figure 7: Net Capital Flows of Swiss-Owned Banks, Foreign-Owned Banks, and Foreign Branch Offices in Various Sub-periods (billion CHF).



Note: outflows are "net investments of Swiss banks abroad", i.e. the balance of purchases and sales of foreign assets by Swiss banks; inflows are "net foreign investment in banks in Switzerland", i.e. the balance of purchases and sales of Swiss assets by foreign investors; net outflows are the difference between outflows and inflows.

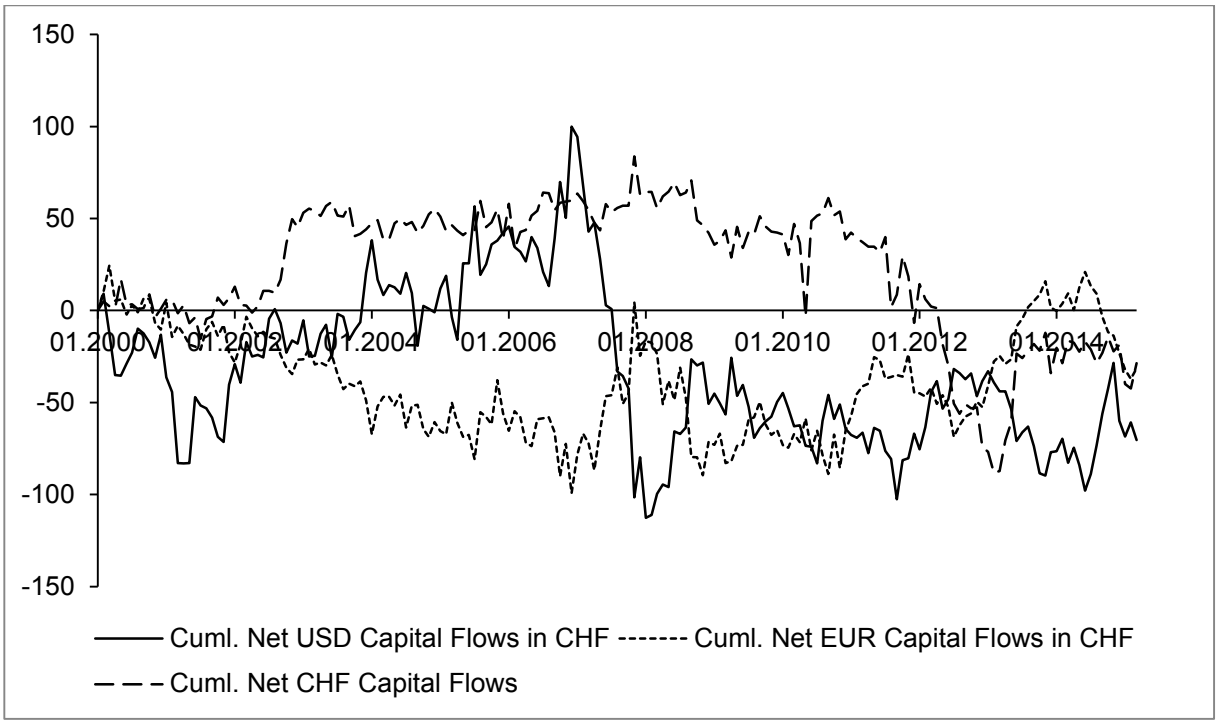
Again, these time splits document the importance of Swiss-owned banks during the Lehman collapse and the early phases of the European crisis that was followed by the importance of foreign owned banks during mid-2011 to early 2013. Thereafter, again Swiss-owned banks dominated capital flows to and from Switzerland.

6 The Currency Composition of International Exposures

The global and Eurozone crises led to substantial movements in exchange rates with the Swiss franc, as investors sought assets not only located in Switzerland, but also denominated in francs. We now rely on the split of positions by currency to present the evolution of the Net IIP of the Swiss banking system in terms of currency denomination. The analysis of this section follows Benetrix et al. (2015), Auer (2015) – who in particular documents the increasing positions of foreign residents vis-à-vis Swiss banks – and Benetrix and Lane (2015), who examine the cross-country exposure in Swiss francs.

Figure 8 shows the valuation-adjusted Net IIP of positions denominated in Swiss francs (solid line), US dollars (dashed line) and euros (dotted line). The dollar Net IIP, for instance, is equal to the difference in dollar-denominated international assets and dollar-denominated international liabilities. A positive value indicates that the Swiss banking system holds net dollar claims on foreign counterparties, while a negative value shows that it owes a net dollar liability to non-residents.

Figure 8: Cumulative US Dollar-, Euro- and Franc-Denominated Net Capital Flows (billion CHF).



We observe that very large swings arose for the various currencies. In the "boom" phase before the crisis, the dollar Net IIP first rose substantially, before falling abruptly by the equivalent of around CHF200 billion within less than a year in 2007. At the same time, the massive decrease of the dollar Net IIP was mirrored by a large increase in the euro Net IIP. In other words, the initial stages of the global crisis saw a switch from the dollar to the euro, while the Swiss franc Net IIP remained steady.

The pattern is quite different during the "safe haven" period, which is characterized by a decrease in the Swiss franc Net IIP and an increase in the euro Net IIP. In other words, foreign investors have increased their franc exposure by moving away from the euro. The dollar Net IIP, by contrast, has remained stable.

Figures A6, A7, and A8 in the Appendix show the valuation-adjusted gross and net flows by currency. These Figures document that the dollar position of the Swiss banking system underwent extremely large swings. During the "boom" years and until late 2006, both international assets and liabilities expanded rapidly, leading to a marked increase in the dollar Net IIP. This boom came to an end in January 2007, well before any financial turmoil arose. Assets were the first to decrease, followed by liabilities, leading to a reversal of the dollar Net IIP from positive to negative values at the end of 2007. Since then, the dollar Net IIP has fluctuated but remained fairly stable, with a gradual increase in both assets and liabilities.

The cycle can also be observed in euro-denominated positions; assets and liabilities both increased between 2005 and 2007, with liabilities increasing by more than assets. This was followed by a fall during the crisis. Interestingly, the euro Net IIP mirrors the dollar Net IIP during the "boom" period when the euro Net IIP decreased steadily, and in the initial stages of the crisis as the euro Net IIP rose substantially in late 2006 and early 2007 and then fluctuated until 2011. A comparison of the dollar and euro positions shows that Swiss banks shifted their international exposure to euros at the beginning of the (initially US-centered) global financial crisis.

The pattern changed during the Eurozone crisis, when foreign investors moved away from the euro during the second half of 2012 and the first half of 2013, leading the Swiss banking sector to accumulate net claims on foreign residents in euros. During that time, the euro liabilities of Swiss banks remained flat or even decreased slightly, while euro assets increased substantially.

Positions denominated in Swiss francs mirror the pattern for euro positions during the "safe haven" period. Franc positions expanded at a steady pace during the "boom" phase, albeit to a much lesser extent than US dollar positions. They continued to increase in 2006 and 2007, with the trend only stopping in late 2008. Throughout these years, the Swiss franc Net IIP remained steady. The pattern is quite different in the "safe haven" years, during which the Swiss franc Net IIP rapidly became negative. This change was driven by a large increase in inflows as foreign residents accumulated franc claims on the Swiss banking system. Outflows, by contrast remained small.

7 A Comparison between National and International Positions

We now combine our analysis in terms of residence with our analysis in terms of currencies, by assessing whether the net positions in foreign currencies are undertaken vis-à-vis other residents or vis-à-vis foreign counterparts. Specifically, we examine the net international investment position by currency type and contrast it with the domestic net investment position in the same currency. The domestic net investment position is constructed in parallel to the net international investment position, and is defined as the total claims of Swiss banks on the Swiss non-bank private sector minus the total liabilities of Swiss banks towards the Swiss non-bank private sector.

Our first result is that banks did not always offset their on-balance sheet international currency exposures by mirroring domestic exposures, that is, they carry currency exposures on their balance sheets.[16] For example in March 2015, Swiss banks were CHF50 billion short in euro positions, CHF96 billion short in dollar positions, and CHF136 billion long in franc positions. Starting with dollar-denominated positions, Figure 9 shows the domestic and international net dollar positions of the Swiss banking system. It splits the total net balance sheet exposure of Swiss banks to the dollar (solid line) between the net international dollar position (dashed line, which is the same as the dashed line in Figure A6 in the Appendix) and the net domestic dollar position (dotted line).

Figure 9 shows that the movements in the overall exposure are driven by the positions vis-à-vis non-residents. By contrast the exposure against domestic counterparts is minimal until 2012, after which it starts moving into negative territory. At the end of the sample the Swiss banking system was short in dollars against both international and national counterparties, to the tune of $46 billion and $53 billion respectively.

Figure 10 displays a similar split between the domestic and international counterparties for the euro-denominated positions of the Swiss banking system. The movements in the overall exposure (solid line) are again primarily driven by exposure to foreign counterparts (dashed line), while the exposure to domestic counterparts (dotted line) is more steady. A striking contrast to the pattern vis-à-vis the dollar is that while foreign and domestic exposures were broadly similar until end 2010, they have since diverged with a more dominant role of the domestic exposure. The dashed line shows the net international euro position, which is the same as the dashed line in Figure A6 in the Appendix. The dotted line shows the net domestic euro position, and the solid line shows the net total euro position, which is equal to the sum of the domestic and international euro positions.

[16] This statement refers to on balance sheet exposures only. It could be the case that banks take offsetting off-balance sheet positions such as derivatives. Since such positions do not impact banks' balance sheets, they cannot be inferred from Swiss balance sheet statistics.

Figure 9: International, Domestic and Total US Dollar Positions (billion USD).

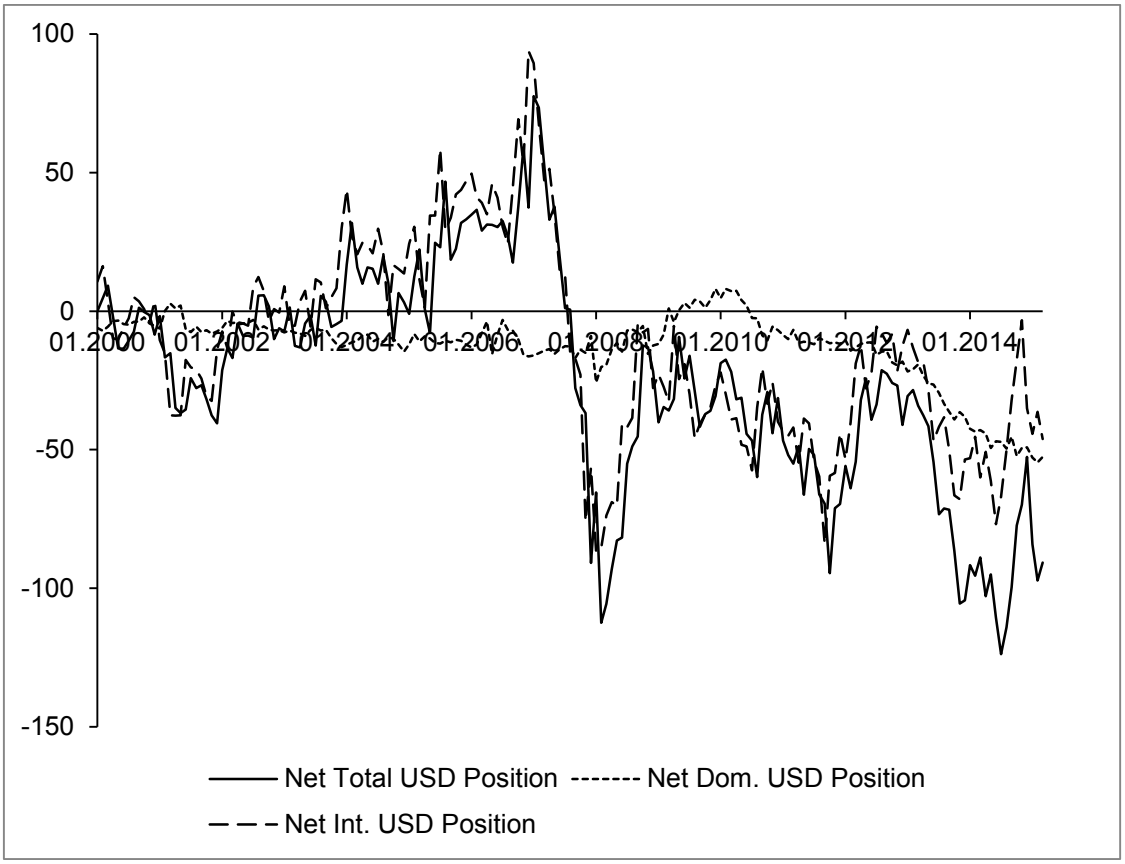


Figure 10: International, Domestic and Total Euro Positions (billion euros).

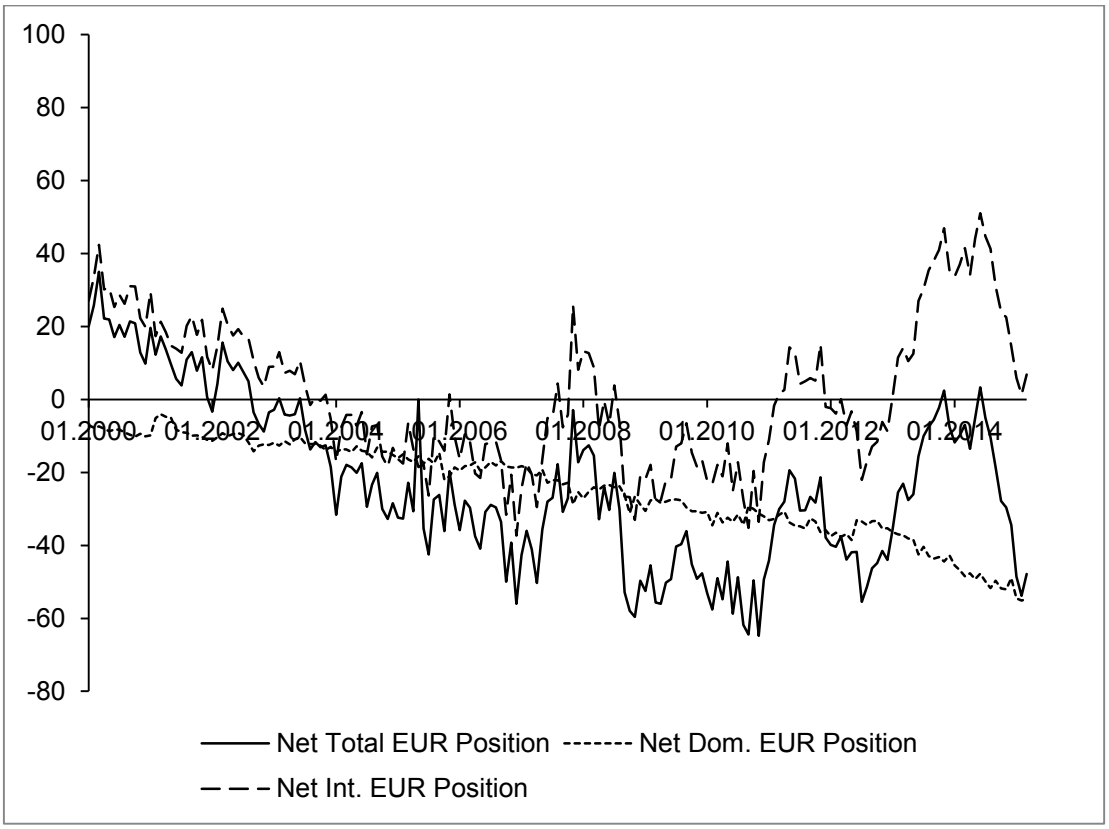
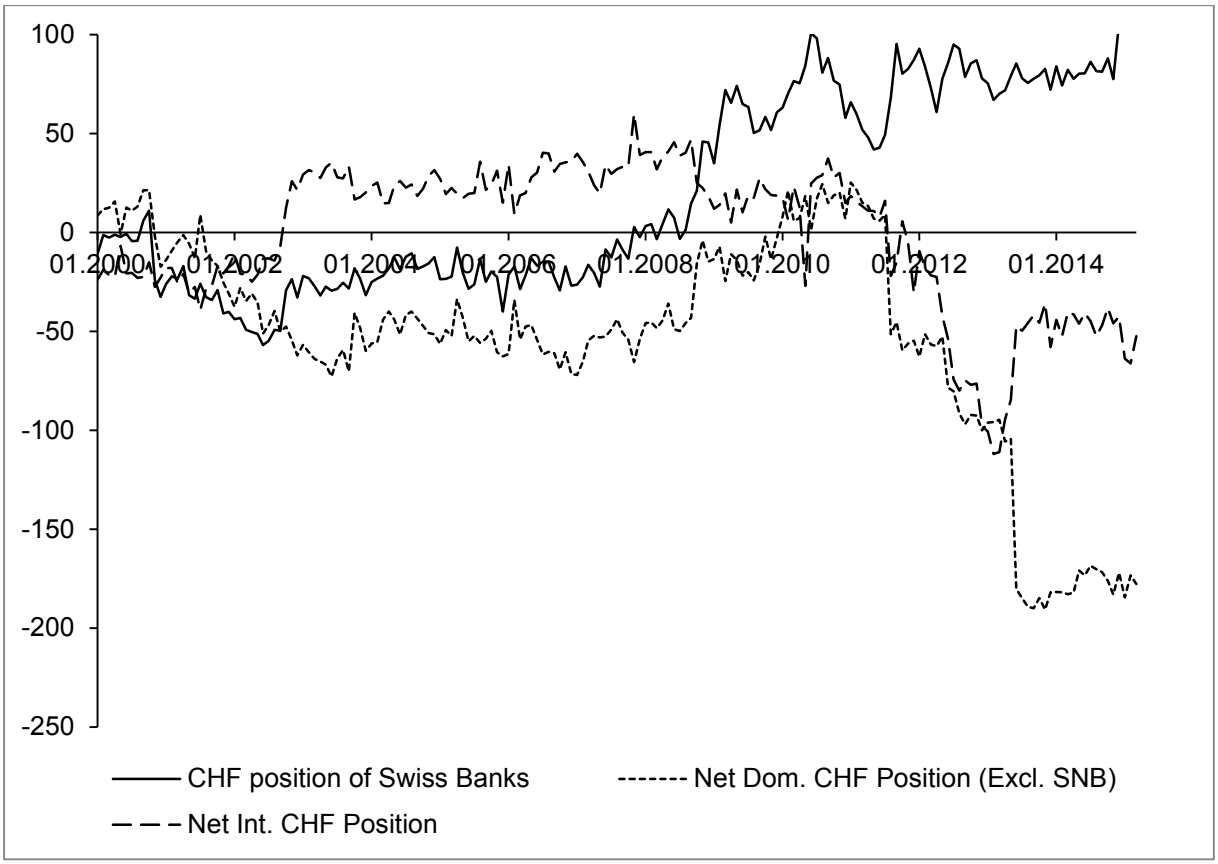


Figure 10 shows that Swiss banks have also become increasingly short in their euro-denominated assets. The fluctuations in the overall exposure (solid line) are again primarily driven by exposure to foreign counterparts (dashed line), while the exposure to domestic counterparts (dotted line) is more steady. The trend exposure displays a striking contrast to the pattern vis-à-vis the dollar. While foreign and domestic exposures were broadly similar until end 2010, they have since diverged with a more dominant role of the domestic exposure which stood at a negative €55 billion in March 2015.

It is quite possible that at least some of these currency exposures are offset by positions in derivatives (for which we have no data, as they are not recorded on balance sheets). However, it is noteworthy that the on-balance-sheet currency exposures are much larger towards the end of the sample than they were in earlier periods. For example, in the beginning of 2000, Swiss banks were CHF32 billion long in euro positions, CHF8 billion long in dollar positions, and CHF11 billion short in franc positions.

Our analysis sheds light on the origin of the demand for Swiss francs. Figure 11 presents the national and international Swiss franc positions of the Swiss banking system (the net domestic position does not include the Swiss National Bank).

Figure 11: International, Domestic and Total Swiss Franc Positions (billion CHF).



From early 2011 until mid-2013, both foreign residents and domestic residents built up Swiss franc exposures at about the same rate (also see Auer, 2015). Since mid-2013, however, foreign franc positions have actually decreased while domestic ones have increased, so the demand for Swiss franc increasingly came from domestic sources. In March 2015, domestic non-bank residents held net claims totaling CHF200 billion more than they did in early 2011, while foreign residents' net claims on the Swiss banking system were around CHF70 billion lower than in the beginning of 2011.

The solid line in Figure 11 shows the total Swiss franc exposure of the Swiss private banking system, which in this case is *not* equal to the sum of the domestic and international net franc positions because the total franc exposure of the Swiss banking system also includes the sight deposits at the Swiss National Bank. It holds that:

$$\textit{CHF Position of Swiss Banks} = \textit{SNB Sight Deposits} + \textit{Net Int. CHF Position} + \textit{Net Dom. CHF Position} \quad (2)$$

Although both the domestic and the international net investment positions are negative, sight deposits of private banks at the Swiss National Bank are so large that the net franc position of Swiss banks is positive.[17]

8 Discussion and Conclusion

This paper examines the importance of the Swiss banking sector for capital flows into Switzerland by combining data on the balance of payments with detailed data on the balance sheets of Swiss banks.

The boom in the international activities of the Swiss banking sector until mid-2007 was followed by a bust in late 2008 and early 2009, with a strong retrenchment of capital from international markets, and finally a central role of "safe haven" considerations from mid-2011 to mid-2013. We show after the collapse of Lehman Brothers, net capital inflows were driven by a larger retrenchment towards the domestic market by Swiss banks than by foreign banks towards their home markets. In contrast, the net inflows from mid-2011 to mid-2012 were driven by large flows into Switzerland from foreign banks.

In terms of currency exposures, we document that the boom-bust cycle was driven strongly by exposures in US dollars, and also that it was driven to a large extent by Swiss-owned banks. In contrast, the flight to the Swiss franc and move away from the euro during the "safe haven episode" was also due to banks that are located in Switzerland but foreign-owned.

Assessing the specific drivers of capital flows falls beyond the scope of this paper, but is the topic of a growing literature (Forbes and Warnock, 2011; Ghosh et al., 2012). Given the

[17] For example, in March of 2015, Swiss National Bank sight deposits stood at CHF375 billion. Altermatt and Baeriswyl (2015) provide a detailed analysis of the impact of the SNB's liquidity operations on the CHF holdings of Swiss banks.

long and continuing history of Switzerland as a safe financial center (see Baltensperger and Kugler, 2015), movements in global risk perceptions are likely to have played a large role. Another contributing factor could be the reforms in the regulation of bank activities aimed at a reassessment of their risk-taking. Switzerland is among the countries at the forefront of these efforts, with regulatory efforts being focused in particular on large systemic banks that account for a large share of the international activities of Swiss banks. It is possible that these efforts have impacted international capital flows in the banking sector, but a more specific assessment would require a detailed analysis that falls beyond the scope of this paper.

In light of the striking changes in the pattern of the Swiss balance of payments, a natural question is whether these will prove temporary and fade once the crisis is over, or whether a more persistent adjustment is to be expected. While any assessment is speculative at this point, it is likely that the sharp losses suffered by banks could make them reluctant to return to their pre-crisis business model. This may entail a reduction of cross-border activities, but it is also possible that banks could shift activities (say, from investment banking into wealth management) while maintaining a strong foreign presence.

A final issue is whether additional policy measures are warranted in light of the large gyrations of international capital flows. Assessing this in the context of Switzerland goes beyond the scope of our paper, which focuses on laying out the major facts. Nonetheless, the issue is at the center of the international policy agenda, with an active discussion of appropriate measures – including those aimed specifically at international lending and borrowing – currently taking place (e.g., IMF, 2013b; Fahri and Werning, 2014; Jeanne, 2013; and Alvero and Fischer (2015) for the case of Switzerland).

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Appendix: Supplementary Figures

Figure A1: Cumulated Banking Capital Flows (billion CHF).

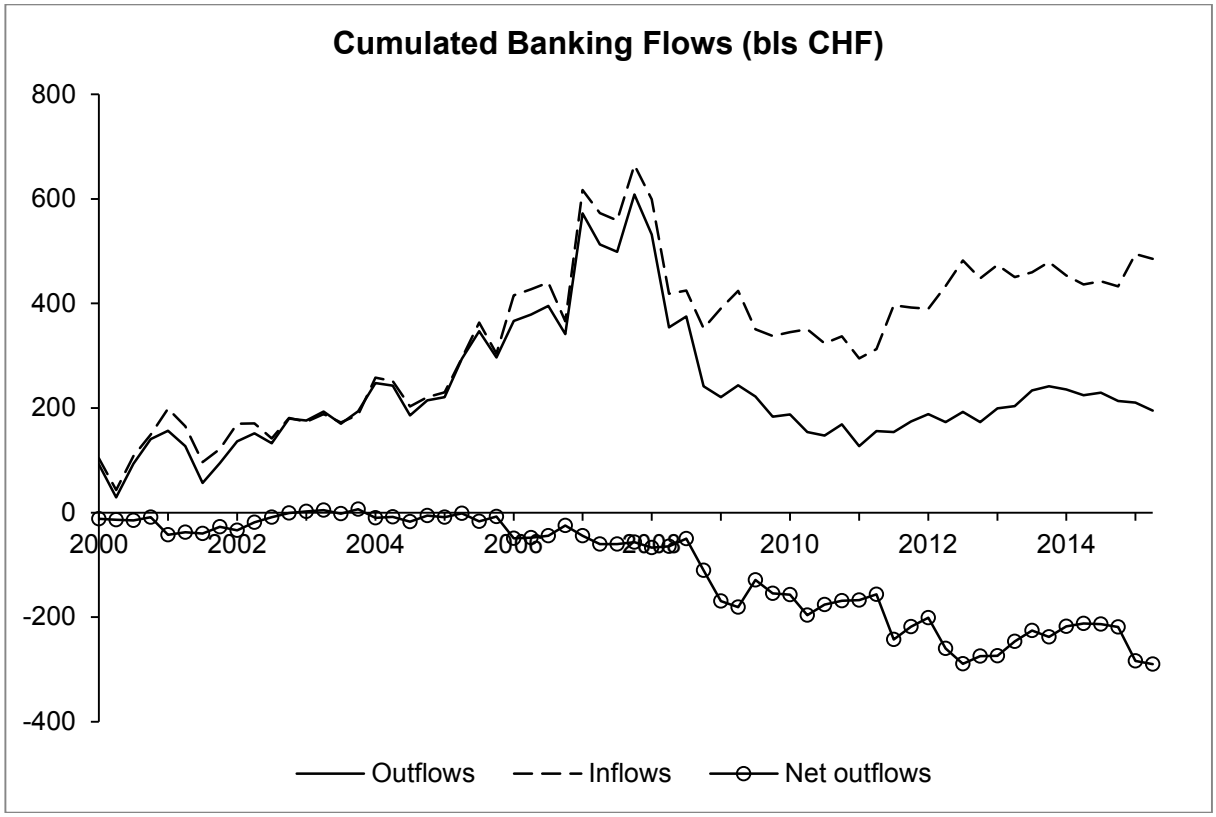


Figure A2: Cumulated Private Non-bank Capital Flows (billion CHF).

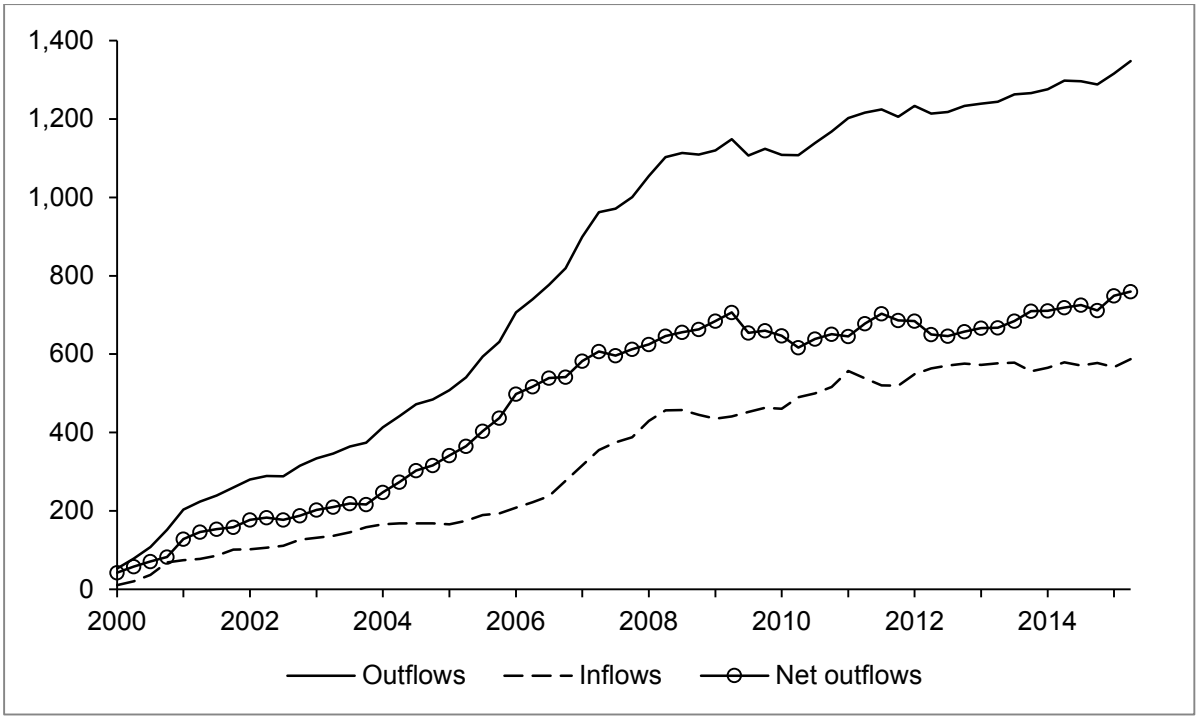


Figure A3: International Assets, International Liabilities, and Net IIP of Swiss- owned Banks (billion CHF).

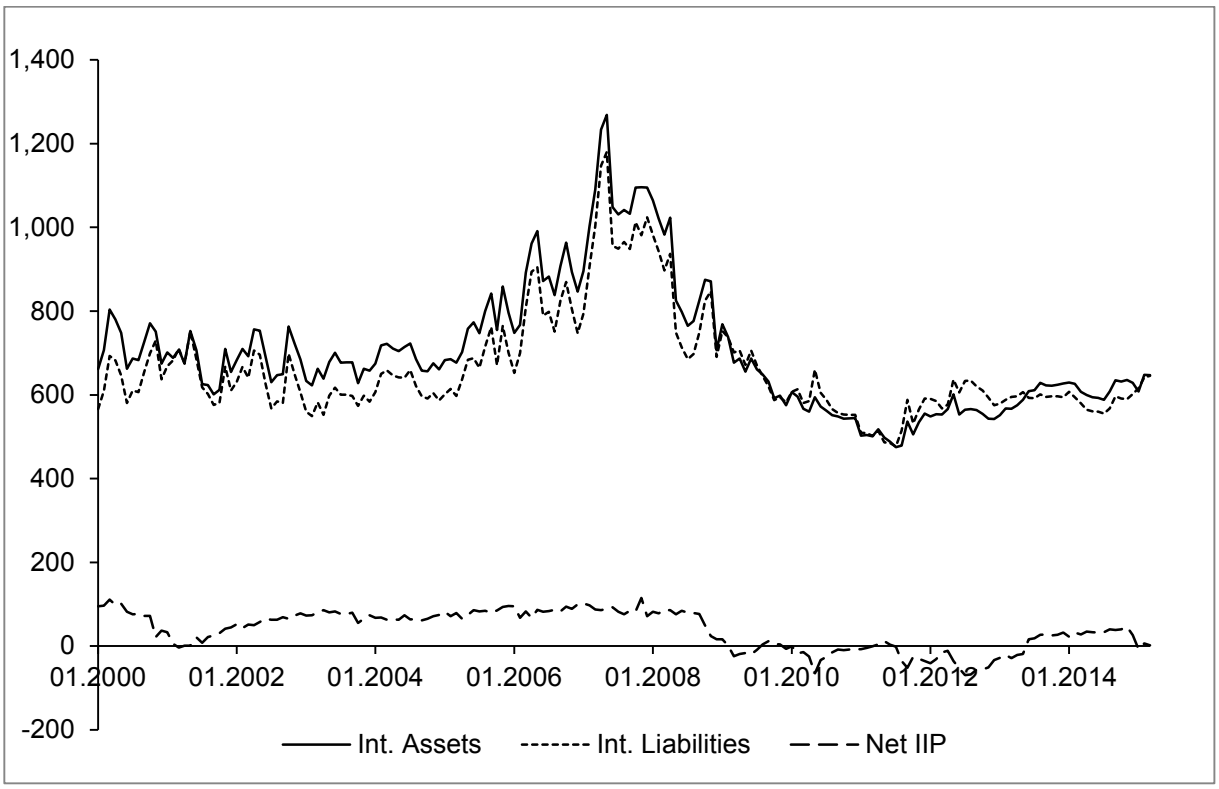


Figure A4: International Assets, International Liabilities, and Net IIP of Branches of Foreign Banks (billion CHF).

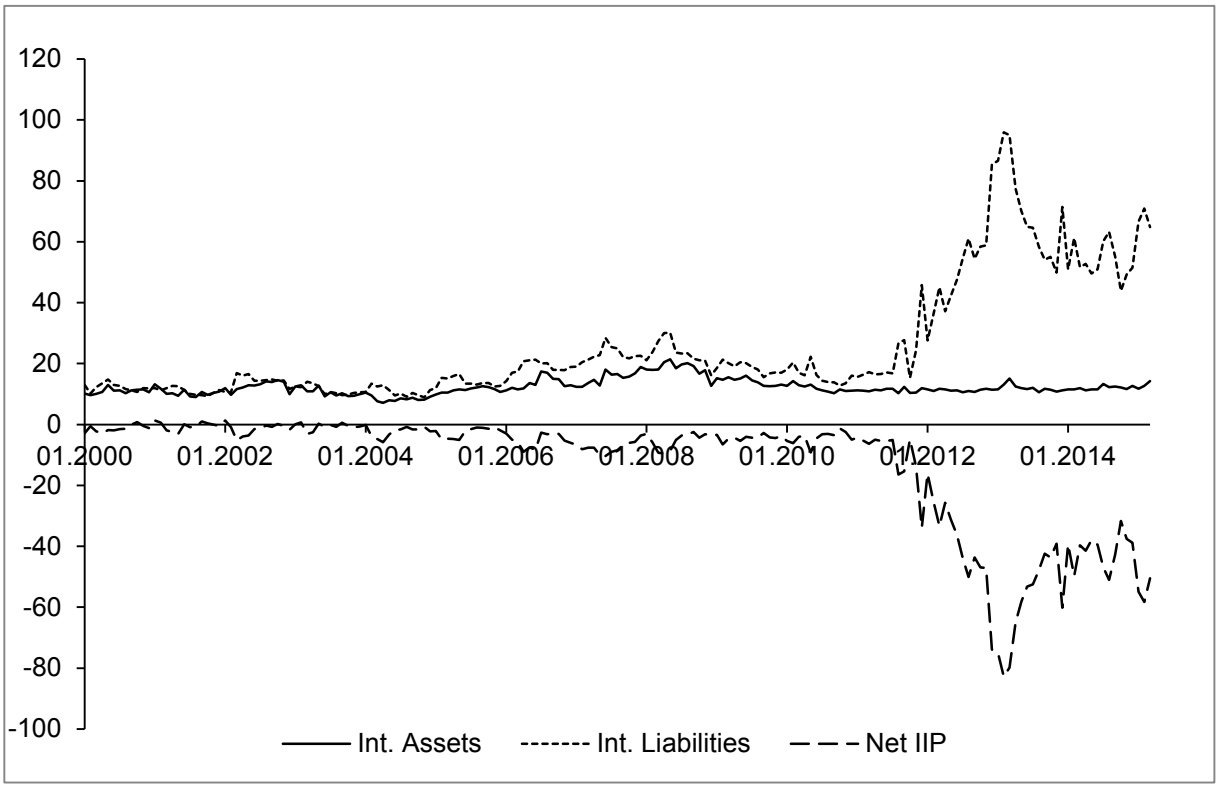


Figure A5: International Assets, International Liabilities, and Net IIP of Foreign-Owned Banks (billion CHF).

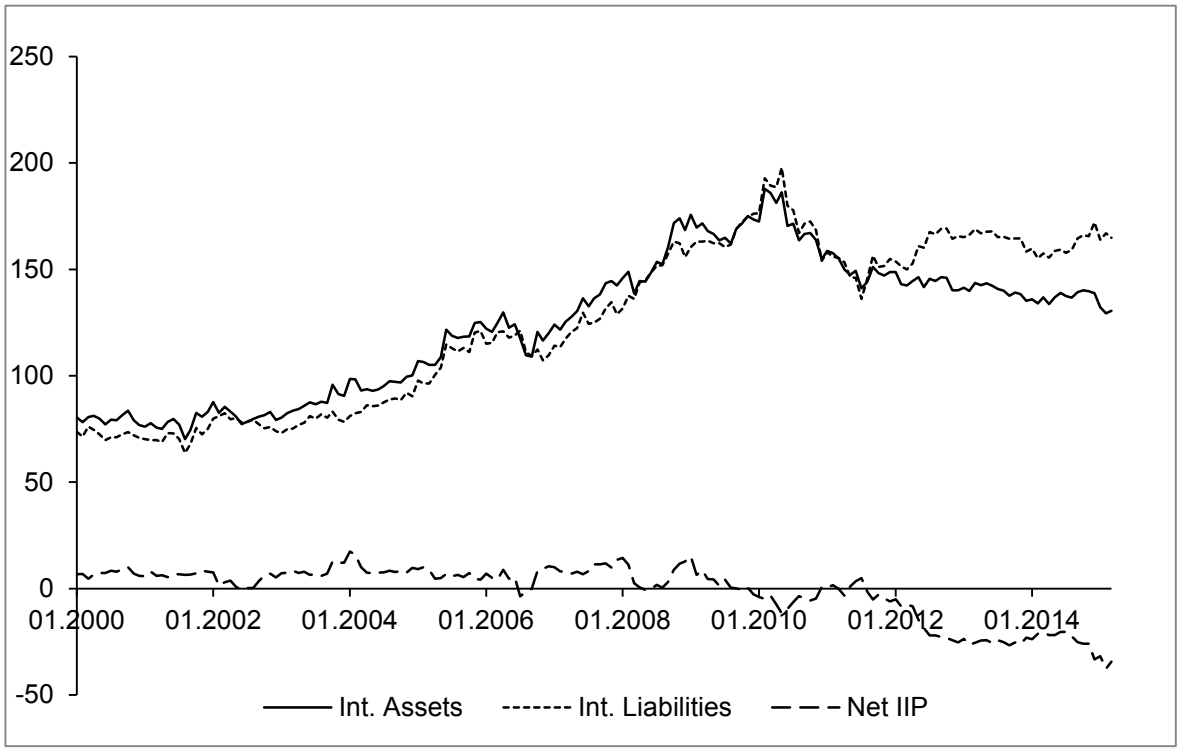


Figure A6: USD Denominated International Assets, Liabilities, and Net IIP (billion USD).

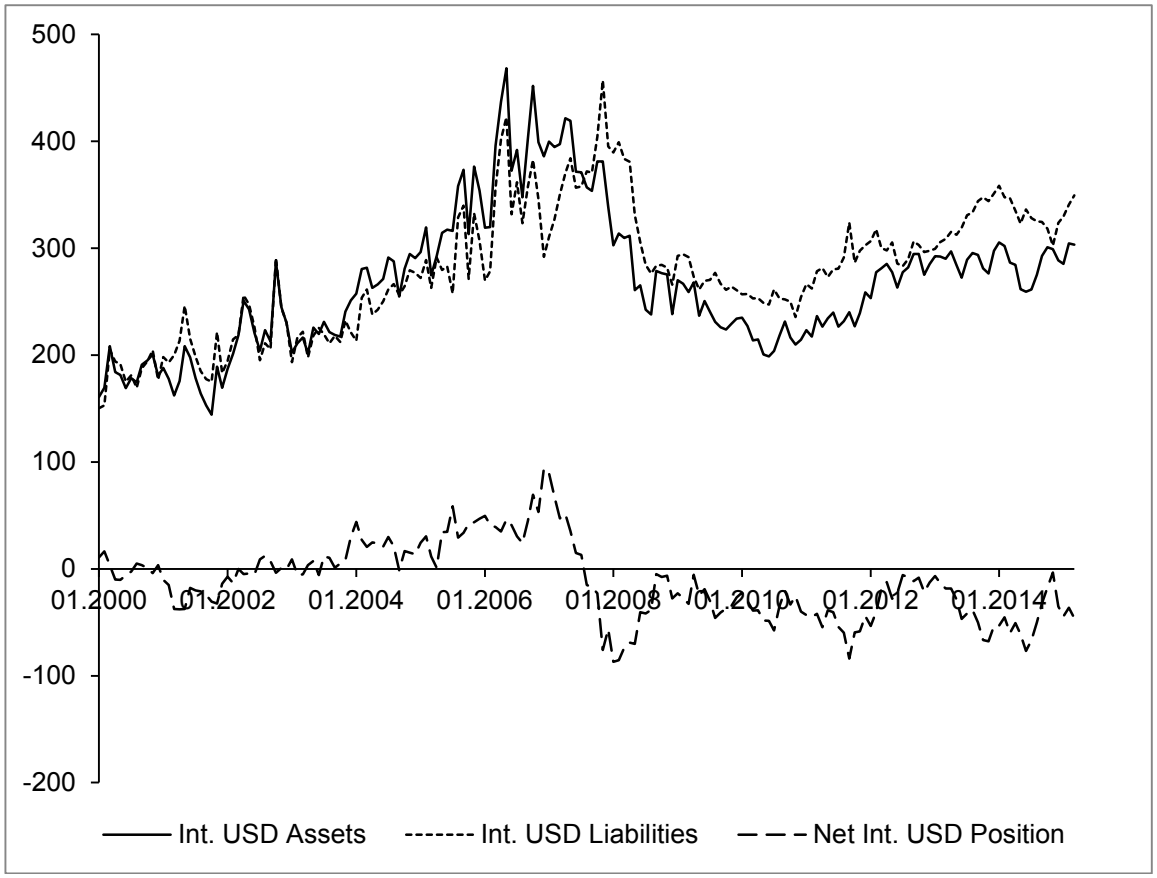


Figure A7: EUR Denominated International Assets, Liabilities, and Net IIP (billion EUR).

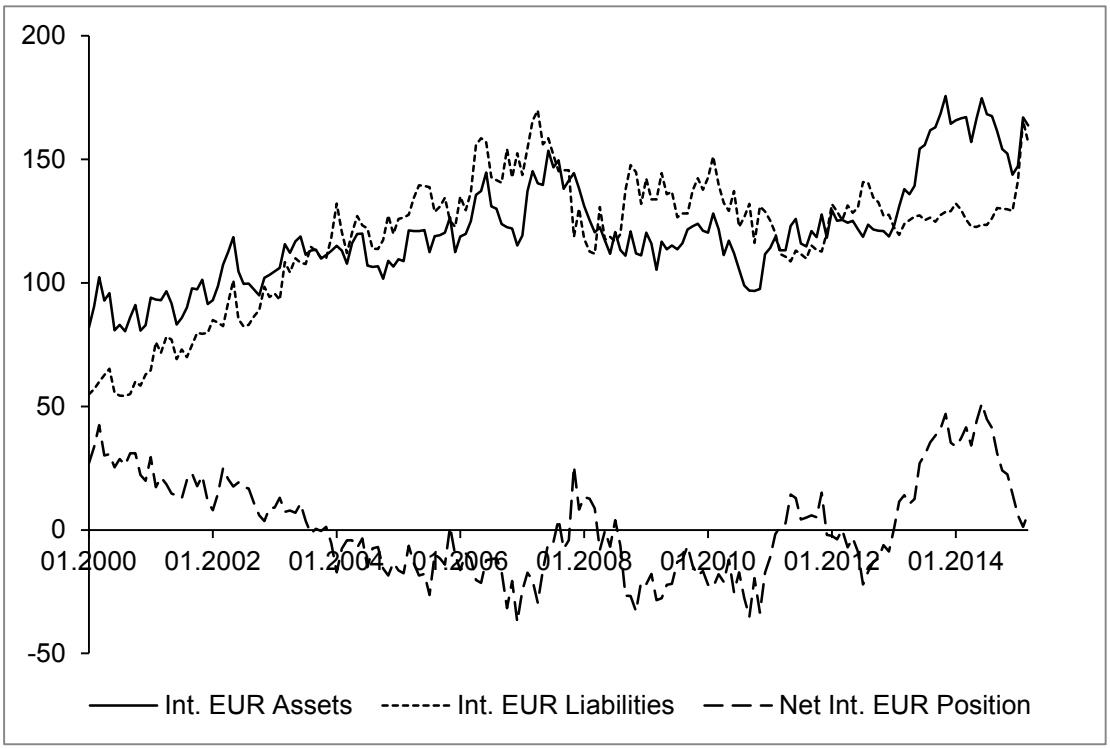
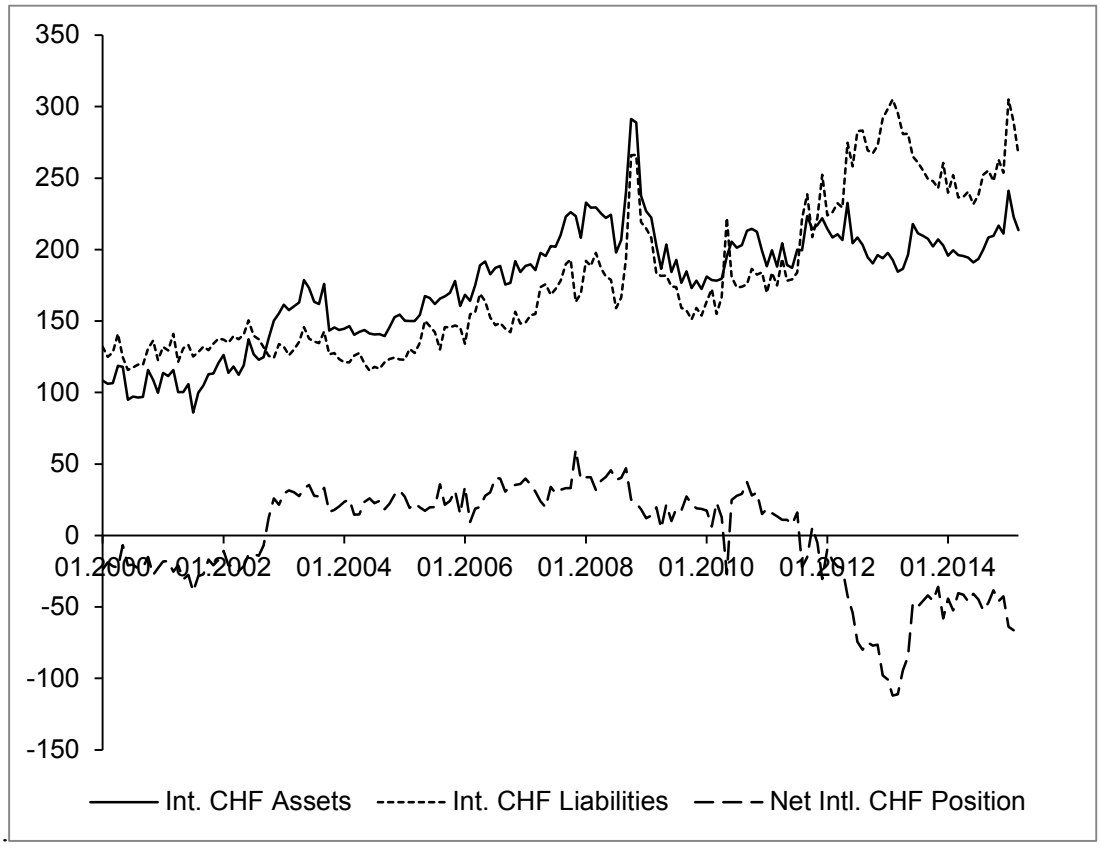


Figure A8: CHF Denominated International Assets, Liabilities, and Net IIP (billion CHF).



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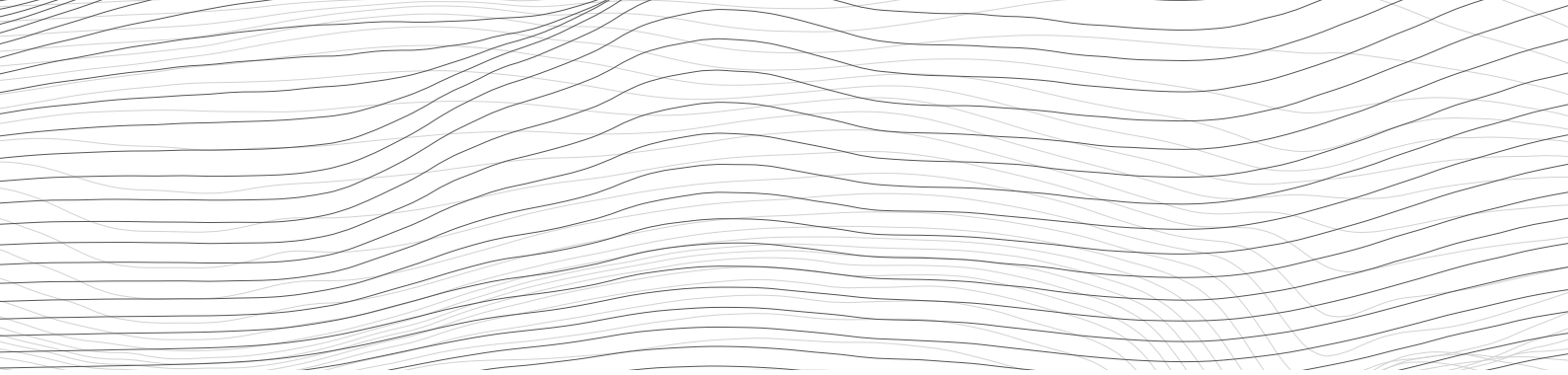

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