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**Data and Methodology**

The study adopts a model-free decomposition framework that emphasizes empirical trends and patterns without imposing theoretical assumptions. By breaking down NFA into its primary components, Current Account (CA), Valuation Effects (VE), and Residuals, the analysis identifies the key drivers behind the observed fluctuations and evaluates their contributions over time. To provide a comprehensive perspective, the methodology integrates both annual and cumulative analyses, supplemented by robustness checks to ensure reliability.

The analysis spans the period from 1990 to 2022, a timeframe that captures significant global economic events, including the Great Recession, the European Debt Crisis, and the COVID-19 Pandemic. Data for this study primarily comes from the Swiss National Bank (SNB), which provides detailed information on NFA and its subcomponents. Additional data sources include the OECD and the Federal Reserve Bank (FRED), offering macroeconomic indicators such as exchange rates, bond yields, and stock market indices, as well as the Lane and Milesi-Ferretti (2007) dataset for supplemental international investment position data. All variables are analyzed at nominal values to focus on market-driven valuation effects without adjustments for inflation.

The NFA is decomposed into three core components. The Current Account (CA) captures flows of goods and services, net investment income, and transfers. Within CA, the analysis distinguishes between Goods and Services (G/S), Primary Income from foreign investments, and Secondary Income, which includes remittances and international aid. The Valuation Effects (VE) measure changes in the market value of Switzerland’s foreign assets and liabilities, attributed to exchange rate fluctuations (VE\_FX), asset price changes (VE\_AP), and interest rate movements (VE\_IR). Finally, Residuals account for unexplained changes, including statistical discrepancies or unmeasured factors. Additionally, NFA subcomponents such as Direct Investment, Portfolio Investment, Reserves, and Other Investments are examined to provide a nuanced understanding of Switzerland’s external financial position. The decomposition follows the fundamental accounting identity:

Where:

(Current Account): Reflects the annual balance of trade (exports minus imports), net investment income from abroad, and net transfers. The CA serves as a measure of the flow of net savings into or out of the country, directly contributing to changes in NFA.

(Valuation Effects): Captures changes in the market value of Switzerland’s foreign-denominated assets and liabilities due to:

* Exchange rate fluctuations: Affect the value of foreign assets and liabilities.
* Interest rate changes: Affect the value of bonds and other fixed-income securities.
* Asset price changes: Affect equity and bond portfolios.

Residual: Represents any unexplained or omitted factors, such as data discrepancies, statistical errors, or unaccounted variables, which contribute to changes in NFA.

To achieve the study’s objectives, the methodology employs five sequential analytical steps to achieve the study’s objectives. The first step involves a subcomponent behavior analysis, which examines how the subcomponents of NFA have evolved over the study period. This step provides descriptive insights into trends and patterns, contextualizing Switzerland’s external financial dynamics within global economic events. The second step is a time-series component analysis, which breaks down annual changes in NFA into contributions from CA, VE, and Residuals. This analysis identifies short-term drivers of fluctuations and highlights key events, such as the 2015 appreciation of the Swiss franc.

The third step is a Valuation Effects Decomposition, where VE is broken down into its subcomponents, exchange rate effects (VE\_FX), asset price effects (VE\_AP), and interest rate effects (VE\_IR). This decomposition isolates the impact of currency fluctuations, equity market performance, and bond yield changes on NFA. By quantifying each subcomponent, the analysis identifies the most significant drivers of valuation adjustments, such as the dominance of VE\_AP during equity market turmoil. The fourth step examines cumulative contributions, evaluating the long-term impact of CA, VE, and Residuals on NFA dynamics. This perspective distinguishes between structural drivers, such as the stability of CA, and episodic volatility caused by VE. Finally, the methodology incorporates a sensitivity test using a bootstrap resampling technique. This test validates the decomposition of VE into its subcomponents (VE\_FX, VE\_AP, and VE\_IR), ensuring the robustness of the findings by estimating confidence intervals and variability for each component.

Each subsection builds on the preceding one to provide a systematic exploration of Switzerland’s NFA dynamics. The subcomponent behavior analysis offers a foundational understanding of trends. The time-series component analysis delves into annual contributions, while the cumulative contributions highlight long-term drivers. The sensitivity test ensures the reliability of the results. Together, these analyses deliver a comprehensive understanding of the variables shaping Switzerland’s external financial position and their macroeconomic implications.

**Subcomponent behavior analysis**

This analysis examines how the individual subcomponents of Switzerland’s Net Foreign Assets (NFA), such as Direct Investment, Portfolio Investment, Reserves, and Other Investments, evolved over time. It identifies trends, patterns, and key shifts in these components, linking them to significant global economic events. This step provides a descriptive foundation for understanding the structural makeup of NFA.

NFA represents the balance between Switzerland’s foreign assets and liabilities, reflecting the country's net financial position relative to the rest of the world. For this analysis, we use Switzerland's Net International Investment Position (NIIP) data, which provides a comprehensive overview of foreign holdings. Both NFA and NIIP capture the same core idea: how much a country owns abroad (assets) compared to what foreigners own in that country (liabilities). This balance can be positive (net creditor) or negative (net debtor), indicating the country’s overall financial relationship with the global economy.

NIIP and NFA are calculated considering Direct Investment (long-term investments like ownership of companies and real estate abroad), Portfolio Investment (investments in foreign stocks, bonds, and other securities), Other Investment (loans, deposits, and other financial transactions), Reserve Assets (foreign reserves held by the central bank), and Derivatives (contracts such as options, futures, and swaps). The sectoral decomposition of Switzerland’s NFA reveals a nuanced evolution that reflects both domestic economic policies and global financial dynamics. This analysis places Switzerland’s trends within a global context, emphasizing its unique position as a financial haven and contrasting its sectoral developments with global patterns.

Direct investment encompasses long-term financial relationships and ownership stakes between entities across borders. This includes equity capital, which reflects ownership in foreign firms, and debt instruments, such as intra-group loans. Changes in interest rates can impact on the value of debt instruments by altering borrowing costs and the present value of fixed-rate obligations. Exchange rate movements revalue both equity and debt denominated in foreign currencies, while asset price fluctuations directly affect the valuation of equity holdings through capital gains or losses.

Portfolio investment is another significant component, involving investments in financial securities without controlling stakes. These include debt securities, such as bonds, and equity securities, like shares. Interest rates are particularly influential on debt securities, as rising rates decrease their market value by reducing the present value of future payments. Exchange rate changes revalue foreign currency-denominated securities, while shifts in stock market indices or bond prices drive valuation changes in equity and debt securities. Portfolio investments are therefore highly sensitive to global market dynamics, making them a key driver of valuation effects within Switzerland’s NFA.

Derivatives, including options, futures, and swaps, form a specialized component of NFA. These instruments derive their value from underlying assets and are commonly used for hedging or speculative purposes. Interest rates influence the valuation of interest rate-linked derivatives, such as swaps, while exchange rates directly affect the value of currency derivatives tied to foreign exchange markets. Changes in asset prices also impact equity or commodity-linked derivatives, demonstrating the broad range of factors that can affect this component. Although derivatives often play a supporting role in NFA, they contribute to its overall sensitivity to financial market conditions. Other investments encompass a wide range of financial instruments, such as currency and deposits, cross-border loans, and other assets and liabilities. Currency deposits and loans are particularly affected by interest rate changes, as shifts in rates influence the value of fixed-income instruments.

Reserve assets are held by the Swiss National Bank to maintain monetary and exchange rate stability. These include gold holdings, the reserve position in the IMF, special drawing rights (SDRs), foreign currency investments, and other reserve positions. Interest rates impact the valuation of reserve assets held in foreign bonds, as higher rates reduce bond prices. Exchange rate fluctuations revalue foreign currency reserves, and changes in asset prices, such as gold, affect the valuation of reserve holdings. Reserve assets are critical for maintaining Switzerland’s economic resilience, particularly during periods of global financial turbulence.

Graph 1 represents Switzerland’s Net Foreign Assets (NFA) as reported by the Swiss National Bank, decomposed into its components: Direct Investment (Dir Inv), Portfolio Investment (Port Inv), Derivatives (Deriv), Other Investment (Other), and Reserves (Res), measured annually from 1990 to 2022 in billions of USD. The trends highlight the evolving dynamics of Switzerland's external financial position and the roles of each component in shaping NFA over time.

Direct Investment steadily increased from 22 billion USD in 1990 to a peak of 409 billion USD in 2012, reflecting Switzerland’s significant ownership of foreign assets. After 2012, there is a sharp decline to 63 billion USD in 2016, followed by partial recovery to 252 billion USD in 2022 (The post-2012 decline coincides with global economic turbulence and regulatory changes, which may have reduced the profitability of Swiss direct investments abroad).

**Graph 1. Swiss NFA (by component) evolution 1990 to 2022**

Source: SNB

Portfolio Investment grew consistently from 98 billion USD in 1990 to a peak of 335 billion USD in 2008. This growth was driven by Switzerland’s investments in foreign equities and bonds, reflecting its position as a global financial hub. After 2008, Portfolio Investment fluctuated sharply, turning negative in 2021 (-67 billion USD). By 2022, it recovered to 36 billion USD, indicating partial stabilization. The sharp decline post-2008 reflects financial market volatility, with significant capital reallocation likely due to risk aversion and changing investor strategies.

Derivatives have minor and inconsistent impacts, ranging between -8 billion USD (2005) and 4 billion USD (2006, 2013). This component plays a limited role in Switzerland's NFA. Derivative positions are likely used for hedging purposes, and their impact on overall NFA is minimal compared to other categories. While Other Investment made positive contributions before 2009 (38 billion USD in 1990), it turned sharply negative afterward, reaching -532 billion USD in 2020 and -423 billion USD in 2022. The negative contributions likely reflect Switzerland’s substantial external liabilities in loans, deposits, and trade credits, with significant outflows during periods of global financial uncertainty (2009, 2020).

Reserves grew steadily from 38 billion USD in 1990 to a remarkable 1,111 billion USD in 2021, before slightly declining to 923 billion USD in 2022. The sharp increase in reserves post-2012 reflects Switzerland’s foreign exchange interventions to mitigate the appreciation of the Swiss franc and manage economic stability. Switzerland’s reserve accumulation highlights the central bank’s active role in currency market interventions, ensuring export competitiveness and financial stability.

Graph 2 shows Switzerland’s NFA by sector. The SNB’s foreign reserve accumulation, reflected in its NFA component, grew substantially over the period, peaking at 1,016 billion USD in 2021 before declining to 752 billion USD in 2022. This growth was particularly pronounced after 2008, corresponding to periods of financial crises and currency pressures. During the 2008–2009 global financial crisis, the SNB increased its foreign reserves significantly to stabilize the Swiss Franc and manage the inflow of capital. The 2011–2015 Eurozone debt crisis saw further interventions by the SNB, including the introduction of a CHF/EUR exchange rate floor in 2011, which required purchasing foreign assets to prevent Franc appreciation. The removal of this exchange rate floor in 2015 and subsequent reliance on negative interest rates led to sustained foreign reserve growth.

Globally, central banks also expanded their foreign reserves post-2008, but the scale and motivation differed. Emerging markets (China, India) accumulated reserves primarily for self-insurance against external shocks. Advanced economies (the Eurozone, Japan) focused on monetary easing but did not rely heavily on foreign reserve interventions, as their currencies lacked the same safe-haven status. Switzerland’s SNB stands out globally for its aggressive interventions to manage currency pressures. For example, Japan’s foreign reserve holdings increased modestly during this period, but the Bank of Japan relied more on domestic monetary easing than direct foreign reserve accumulation.

**Graph 2. Swiss NFA (by sector) evolution 1990 to 2022**

Source: SNB

Swiss banks transitioned from being net creditors in 1990 (holding 77 billion USD in NFA) to persistent net borrowers starting in 2011, reaching -192 billion USD in 2021. This transformation is marked by significant volatility and structural shifts. Pre-2008, Swiss banks were globally active creditors, engaging in significant cross-border lending, benefiting from liberal regulations. 2008–2011, the global financial crisis triggered deleveraging in the banking sector. Tightened liquidity and capital regulations forced banks to reduce risky foreign exposures. Post-2011, Swiss banks increasingly relied on foreign funding, reflected in negative NFA values. This shift coincided with regulatory reforms, reduced cross-border lending, and a focus on domestic and regional operations.

In the Eurozone, deleveraging was also evident, but European banks maintained a more balanced foreign position as they benefited from ECB liquidity measures. In contrast, U.S. banks rebounded faster due to the Federal Reserve’s quantitative easing policies, which stabilized funding markets and encouraged global expansion. Swiss banks sustained negative NFA suggests a unique reliance on foreign funding and a strategic shift away from global lending, potentially linked to Switzerland’s tighter regulatory environment and the small size of its domestic market.

"Other Sectors," which include non-financial corporations, households, and private investors, have demonstrated resilience but with notable volatility. Globally, private sector foreign investments have varied significantly based on market conditions. U.S. and Eurozone households reduced foreign asset holdings after 2008 due to losses in equity markets and increased risk aversion. Swiss private investors maintained positive contributions to NFA, benefiting from Switzerland’s stable financial environment and the diversification of foreign investments. Switzerland’s private sector stands out for its active role in international markets, reflecting the country’s high savings rate and access to global financial markets. The sectoral decomposition of Switzerland’s NFA provides valuable insights into its evolving role in the global financial system. The SNB’s dominant position, the transformation of the banking sector, and the resilience of "Other Sectors" reflect a complex interplay of domestic policy and global trends. These dynamics underscore Switzerland’s unique position as a safe-haven economy, shaped by its central bank’s proactive policies and the adaptability of its private sector.

**Graph 3. Total assets and Liabilities GDP %**

A graph of a graph showing the growth of the gdp

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Source: SNB

Expressing NFA as a share of GDP allows for a comparison of Switzerland's external financial position relative to the size of its domestic economy. This makes it easier to assess the significance of the country's NFA in the context of its economic output. Switzerland’s NFA share of GDP (graph 3) shows a consistent positive trend overall, confirming its status as a net creditor in the global economy. In 1990, the NFA was approximately 73.5% of GDP, and by 2022, it remained positive at around 95.5% of GDP, despite fluctuations over the years.

The long-term trend indicates that Switzerland has managed to accumulate foreign assets consistently exceeding its liabilities, which has helped it maintain economic stability and resilience through global economic shifts. During the early 1990s, Switzerland’s NFA remained relatively stable, fluctuating around 75-80% of GDP. This stability reflects a combination of modest current account surpluses and conservative financial management. By the mid-to-late 1990s, the NFA began to grow, reaching over 93.5% in 1997 and surpassing 106.8% in 1998. This period coincided with a global surge in financial globalization, where Swiss banks and financial institutions expanded their foreign investments, taking advantage of favorable economic conditions.

1999 experienced a sharp increase in NFA share, reaching 113.4%. This rise can be attributed to strong capital inflows into Switzerland, driven by its reputation as a financial haven during emerging market crises, such as the 1997 Asian Financial Crisis and the 1998 Russian debt crisis. Entering the 2000s, the NFA remained high, fluctuating around 110%–133% of GDP. The peak in 2002 at 133.4% likely reflects valuation gains on foreign assets due to the appreciation of the Swiss franc. This period also saw sustained current account surpluses, driven by strong exports of high-value goods and services, such as pharmaceuticals and financial services. The 2008 Global Financial Crisis marked a temporary decline in the NFA share, falling to 107.7% in 2008. This drop reflects the impact of financial market volatility and asset devaluations. However, Switzerland’s conservative financial policies and robust foreign asset base allowed for a quick recovery, with the NFA rebounding to 120.3% by 2009.

The 2010s began with Switzerland maintaining a strong NFA position, at 124.4% in 2010. However, from 2011 to 2015, the NFA share declined significantly, reaching a low of 71.3% in 2014. Several factors contributed to this decline, following the European debt crisis, the Swiss franc appreciated sharply, impacting the valuation of foreign-denominated assets negatively. Economic challenges in Europe, Switzerland’s largest trading partner, affected export-driven current account surpluses. The Swiss National Bank’s interventions to manage exchange rate volatility also influenced asset valuations.

By 2016, the NFA began to recover, reaching 89.2%, driven by the stabilization of global financial markets and renewed growth in foreign investments. The recovery continued into the late 2010s, with the NFA share peaking again at 112.1% in 2018. The 2020s saw another significant rise in the NFA, peaking at 123.3% of GDP in 2020 during the COVID-19 pandemic. This increase was likely driven by the appreciation of Swiss franc assets relative to liabilities during the global economic slowdown. Increased inflows into Switzerland as investors sought stability amid global uncertainty. By 2021 and 2022, the NFA share stabilized around 95%–103%, reflecting adjustments as global economies recovered and financial markets normalized.

In 1990, Switzerland's total assets accounted for 212.91% of GDP, reflecting its substantial foreign investments even at the start of the dataset. During the early 1990s, the asset-to-GDP ratio remained relatively stable, with a slight decline to 208.91% in 1992, potentially reflecting a period of slower global financial activity following the Gulf War (1990-1991). By the mid-1990s, the ratio began to rise steadily, reaching 271.92% in 1996 and peaking at 343.11% in 1997. This growth coincided with the surge in global financial globalization, as Swiss financial institutions expanded their foreign investment portfolios. The mid-to-late 1990s were characterized by a favorable global economic environment, where increased trade and capital flows supported the expansion of foreign asset holdings.

The Asian Financial Crisis of 1997, however, led to increased demand for Swiss financial stability, which partially explains the continued rise in assets. By 1998, total assets had grown significantly to 397.12% of GDP, and by 1999, they reached 406.98%. The sharp increase in this period reflects Switzerland's growing role as a safe-haven economy. During global financial crises, such as the 1998 Russian Debt Crisis, investors channeled their capital into Switzerland’s stable financial system. In the early 2000s, total assets as a percentage of GDP surged further, peaking at 478.38% in 2000. This growth reflects increased foreign investments driven by the global expansion of financial markets and Switzerland's export-driven economy. The tech boom of the late 1990s and early 2000s also contributed to this trend, as Swiss financial institutions invested in high-performing global markets. Between 2001 and 2007, Switzerland's total assets-to-GDP ratio remained high, fluctuating around 450–670%. The peak in 2007 at 671.82% can be attributed to the pre-crisis expansion of global financial markets and valuation gains on Swiss assets. This period also saw increased foreign direct investment and portfolio investments, driven by Switzerland’s attractiveness as a global financial hub. The 2008 Global Financial Crisis marked a significant turning point. The asset-to-GDP ratio declined sharply to 528.66% in 2008, as financial markets contracted, and asset values fell globally. However, the decline was relatively moderate compared to many other countries, reflecting Switzerland's conservative financial policies and diversified asset base.

Following the crisis, Switzerland’s total assets-to-GDP ratio rebounded, reaching 606.76% in 2010 and stabilizing in the following years. Between 2011 and 2015, the ratio fluctuated between 523.86% and 623.44%, reflecting a period of recovery in global financial markets and steady growth in Switzerland’s foreign investments. However, between 2013 and 2014, the ratio declined slightly, likely due to the Eurozone Debt Crisis and the subsequent appreciation of the Swiss franc. The franc’s rise reduced the value of foreign-denominated assets when converted back to Swiss currency, impacting the total asset-to-GDP ratio.

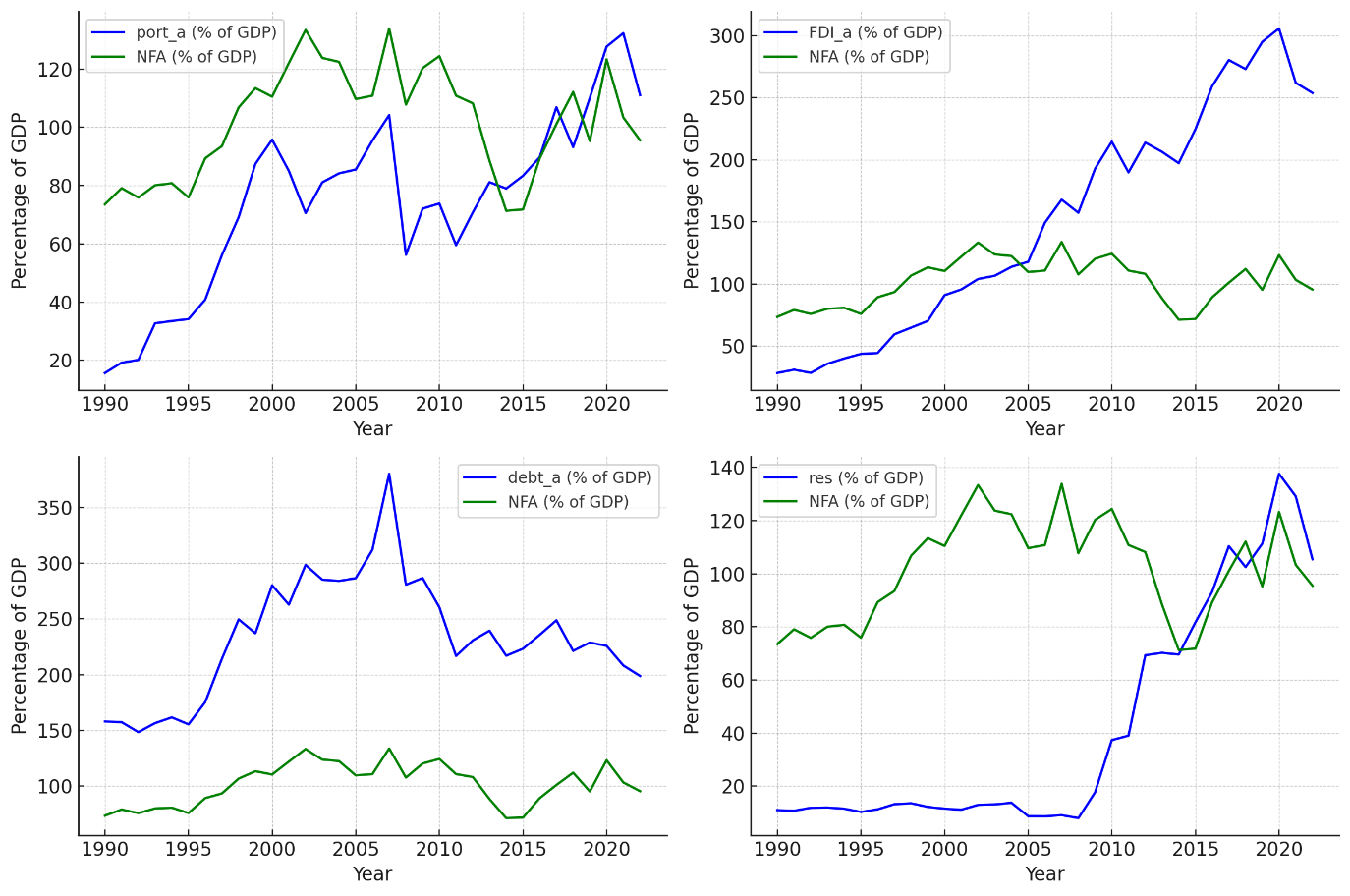
By 2016, total assets had grown significantly, reaching 687.75% of GDP. This increase was driven by recovering global markets and renewed investor confidence in Switzerland’s economic stability. The subsequent growth continued into 2017 and 2018, with the ratio peaking at 753.93% in 2019, reflecting the strength of the Swiss financial sector. The COVID-19 pandemic in 2020 led to another significant rise in total assets, peaking at 809.64% of GDP. By 2021 and 2022, the ratio declined slightly to 747.05% and 687.68%, respectively, as global economies began to recover, and financial markets normalized. Despite this decline, the ratio remains historically high, reflecting Switzerland’s continued prominence as a global financial hub.

Liabilities as a percentage of GDP also increased but at a slower rate compared to assets. From 143% in 1990, liabilities peaked at 698% in 2020. The asset-liability gap remained positive across the dataset, underscoring Switzerland's financial stability. However, the gap experienced fluctuations influenced by external shocks. For instance, during the global financial crisis of 2008, the gap narrowed as both assets and liabilities saw significant adjustments. Assets dropped from 672% in 2007 to 529% in 2008, while liabilities declined from 544% to 426%. This simultaneous contraction highlights the crisis's impact on Switzerland's external balance sheet. Post-crisis, the asset-liability gap widened again, reaching its largest value in 2020, reflecting strong asset performance relative to liabilities during a period of significant global market uncertainty. The consistent positive gap between assets and liabilities reflects Switzerland's creditor status, were asset growth outpaced liability accumulation.

Expressing asset and liabilities categories as a percentage of GDP (graph 4 and 5) contextualizes the scale of external exposure relative to the domestic economy. Large asset-to-GDP ratios indicate a significant role in international financial markets, but they can also reveal vulnerabilities. Switzerland’s portfolio assets as a percentage of GDP steadily increased throughout the analyzed period. This growth reflects the expansion of Swiss financial institutions into global markets.

In the 1990s, portfolio assets began at moderate levels but surged during periods of financial globalization, peaking during periods of economic prosperity in the early 2000s and post-2010 recovery phases. By the late 2010s, the share reflected Switzerland’s ongoing strategy of maintaining significant investments in global equity markets. Conversely, portfolio liabilities showed slower growth compared to assets. This dynamic reflects Switzerland's strong savings rate and conservative foreign borrowing practices. While liabilities grew during the same periods as portfolio assets, they consistently remained below asset levels, underscoring Switzerland’s net creditor position in equity markets.

**Graph 4. Assets categories as GDP %**



Source: SNB

The share of foreign direct investment assets relative to GDP highlights Switzerland's role as a major investor abroad. The data shows steady growth in FDI assets, particularly in the late 1990s and 2000s, reflecting Swiss multinational companies' active participation in global markets. FDI experienced robust increases during periods of strong economic growth and recovered quickly following global crises. On the other hand, FDI liabilities as a percentage of GDP remained consistently lower than FDI assets, reflecting the limited presence of foreign direct investors in Switzerland compared to the country's outbound investments. This disparity reinforces Switzerland’s role as an exporter of capital, aligning with its long-standing net creditor status.

The share of debt assets relative to GDP increased significantly over time, particularly during periods of global financial uncertainty. As investors sought stability in Swiss institutions, the demand for Swiss-denominated debt claims grew, boosting Switzerland's external debt holdings. Debt assets consistently formed a significant component of Switzerland’s total foreign assets. Debt liabilities also increased but at a slower pace than assets. This behavior reflects Switzerland's cautious approach to external borrowing. While there were periods of growth in liabilities, particularly in times of global economic expansion, the ratio remained well below debt assets, contributing positively to Switzerland's net foreign asset position. Switzerland’s foreign exchange reserves as a percentage of GDP have remained a relatively stable component of its external financial portfolio.

**Graph 5. Liabilities as GDP %**

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Source: SNB

The Swiss National Bank actively manages reserves to stabilize the Swiss franc and mitigate external shocks. During periods of heightened global volatility, such as the 2008 Global Financial Crisis and the 2020 COVID-19 pandemic, reserves increased slightly, reflecting the SNB's efforts to protect the Swiss economy from external risks. The shares of derivative assets and derivative liabilities relative to GDP were less significant compared to other components. This is consistent with the smaller role of financial derivatives in Switzerland’s external financial strategy. During periods of financial market volatility, derivatives played a minor but stabilizing role in Switzerland’s overall portfolio.

Exchange rates play a crucial role in revaluing foreign currency deposits and loans, while broader financial instability can indirectly impact the valuation of other assets and liabilities. This component highlights the importance of stable financial systems in mitigating volatility within Switzerland’s NFA. Graph 6 provides a breakdown of Switzerland's Net Foreign Assets (NFA) by currency in billions of USD, categorized into four components: USD, EUR, other currencies, and CHF (Swiss francs). The data spans from 1990 to 2022, offering a comprehensive view of how Switzerland's external position in different currencies evolved over three decades.

Switzerland's NFA denominated in USD demonstrates consistent growth from $83 billion in 1990 to $1,141 billion in 2022. This steady increase underscores the centrality of the US dollar in global trade, finance, and investment. The notable growth in USD holdings during the 2000s corresponds to the Federal Reserve's monetary policies, including low interest rates, which increased the attractiveness of USD-denominated assets.

The period following the 2008 global financial crisis marked a pivotal moment, with a slight dip in USD holdings in 2008 ($283 billion) reflecting global financial volatility. However, the recovery was swift, with a strong upward trajectory observed during the 2010s. This increase aligns with quantitative easing policies by the Federal Reserve, which boosted liquidity in global USD markets, making USD assets more accessible and appealing to investors, including Swiss institutions. In the 2020s, USD holdings peaked at $1,227 billion in 2021. The significant accumulation during this period can be attributed to the USD’s resilience as a safe haven currency during the COVID-19 pandemic and subsequent economic recovery.

**Graph 6. Switzerland’s NFA currency breakdown**

Source: SNB

The EUR component of Switzerland's NFA emerged in 1999 with the introduction of the euro. Initial holdings of $250 billion grew steadily, reaching a peak of $1,280 billion in 2018 before moderating to $1,093 billion in 2022. The rapid accumulation of EUR assets during the early 2000s reflects Switzerland’s deep economic ties with the Eurozone, its largest trading partner. The euro facilitated trade and investment within Europe, boosting Switzerland’s EUR-denominated NFA. The Eurozone debt crisis (2010–2012) disrupted this trend, as concerns over the stability of the euro led to more cautious investments in EUR assets. However, the post-crisis recovery was robust, with holdings increasing sharply during 2013–2018. The eventual decline in EUR holdings after 2018 may reflect shifts in global investment preferences, with investors diversifying away from the euro due to persistent economic challenges within the Eurozone, such as low growth and political uncertainty.

The "Other" category, which includes currencies like the British pound, Japanese yen, and emerging market currencies, shows significant growth over the period. From $151 billion in 1990, these holdings rose to $1,070 billion in 2022. The steady increase highlights Switzerland’s strategic diversification into non-USD and non-EUR currencies to reduce dependency on major global currencies and mitigate risks associated with currency-specific shocks. The rise in "Other" currency holdings during the 2000s corresponds to increased global trade and investment in emerging markets. Additionally, central banks worldwide, including Switzerland’s, began diversifying their reserves during this period, seeking exposure to currencies beyond the traditional USD and EUR. The COVID-19 pandemic did not significantly disrupt this trend, as "Other" currencies remained a stable component of Switzerland’s external position.

Swiss franc (CHF) liabilities are persistently negative throughout the period, growing from -$38 billion in 1990 to -$2,522 billion in 2022. This negative position reflects Switzerland’s unique role as a safe haven for global investors, who demand CHF-denominated assets during times of uncertainty. The liabilities represent foreign claims on CHF assets, which Switzerland uses to attract capital while maintaining its status as a stable and low-risk economy. Significant expansions in CHF liabilities are observed during periods of global crises, such as the global financial crisis (2008–2009) and the COVID-19 pandemic (2020–2021). These periods saw heightened demand for CHF assets, resulting in larger negative positions. The Swiss National Bank's interventions to manage the franc’s value, including purchasing foreign reserves, further contributed to this trend.

Graph 7 provides a breakdown of Switzerland's Net Foreign Asset (NFA) holdings by currency in USD billions from 1990 to 2022. The currencies include the Swiss franc (CHF), US dollar (USD), euro (EUR), and other currencies.

**Graph 7. Switzerland’s assets in foreign currency**

Source: SNB

Swiss franc-denominated assets remained relatively stable from 1990 to 2015, fluctuating between $193 billion in 1990 and $445 billion in 2015. However, CHF holdings decreased notably after 2015, reaching $475 billion by 2022. This trend reflects Switzerland's deliberate efforts to manage the value of its currency and minimize excessive CHF appreciation, which could harm its export competitiveness. The global financial crisis (2008) saw an increase in CHF assets ($582 billion), driven by heightened demand for Swiss franc-denominated assets during global market volatility. The subsequent decline in CHF holdings after 2015 corresponds to the Swiss National Bank's interventions, including the removal of the euro peg in 2015, which led to significant exchange rate adjustments. The reduction in CHF holdings during the 2016–2022 period also indicates Switzerland's diversification into other currencies to mitigate risks associated with over-reliance on CHF assets.

USD-denominated assets show consistent growth over the period, rising from $147 billion in 1990 to $2,243 billion in 2022. This growth highlights the prominence of the US dollar as the world’s primary reserve currency and its critical role in global trade and financial markets. The period from 2000 to 2007, when USD assets increased sharply from $448 billion to $924 billion, reflecting global economic expansion and strong performance in US financial markets. The global financial crisis in 2008 caused a temporary slowdown in USD growth, with assets rising more modestly to $793 billion. However, recovery was swift, driven by the Federal Reserve's quantitative easing policies. The surge in USD holdings during the 2016–2022 period reflects global investors' increasing preference for USD-denominated assets amidst rising geopolitical uncertainties, including trade tensions and the COVID-19 pandemic.

Euro-denominated assets first appear in 1999, coinciding with the introduction of the euro. From $343 billion in 1999, EUR assets grew steadily to $1,746 billion in 2018, before declining to $1,715 billion in 2022. This trend underscores Switzerland’s close economic integration with the Eurozone, its largest trading partner. The early 2000s saw rapid growth in EUR assets as the euro facilitated seamless trade and investment across Europe. Holdings rose from $343 billion in 1999 to $936 billion in 2007. During the Eurozone debt crisis (2010–2012), growth in EUR assets slowed, reflecting concerns over the euro's stability. However, the euro remained a critical component of Switzerland's external assets due to geographic and economic ties. The decline in EUR holdings after 2018 reflects ongoing challenges within the Eurozone, such as slow economic growth and political uncertainties, leading to a relative shift in investment preferences towards USD and other currencies.

Assets denominated in other currencies, including the British pound, Japanese yen, and emerging market currencies, show consistent growth, increasing from $234 billion in 1990 to $1,267 billion in 2022. This trend highlights Switzerland’s diversification strategy to reduce reliance on major reserve currencies. The late 1990s and early 2000s, when other currencies became more prominent due to globalization and the expansion of trade with non-Eurozone countries. A significant increase from 2010 to 2020, as holdings in other currencies grew from $1,037 billion to $1,427 billion. This reflects Switzerland’s efforts to capitalize on emerging market growth and diversify its reserve portfolio amidst persistent global uncertainties.

Graph 8 shows Switzerland's liabilities by currency from 1990 to 2022 in USD billions. Swiss franc-denominated liabilities show consistent growth over the period, rising from $232 billion in 1990 to a peak of $3,342 billion in 2021, before declining to $2,997 billion in 2022. This trend reflects the strong demand for CHF-denominated assets by foreign investors, particularly during periods of global uncertainty. The substantial increase during the global financial crisis of 2008 and the COVID-19 pandemic underscores this demand, as investors sought stability amidst economic volatility. The decline in CHF liabilities after 2021 suggests a partial normalization of global financial markets and possibly reduced intervention by the Swiss National Bank to stabilize the franc.

USD-denominated liabilities display steady growth from $64 billion in 1990 to $1,163 billion in 2021, before slightly decreasing to $1,102 billion in 2022. The dollar's role as the world’s primary reserve currency and its liquidity in global markets contribute to its steady presence in Swiss liabilities. Key periods of accelerated growth, such as 2004–2007 and 2016–2020, align with periods of robust global trade and financial market expansion. The slowdown after 2021 could reflect shifts in global financial flows or reduced reliance on USD funding as other currencies gained prominence.

EUR-denominated liabilities emerge in 1999 with the introduction of the euro, starting at $92 billion and growing to a peak of $640 billion in 2021 before moderating to $623 billion in 2022. This growth highlights Switzerland’s close economic ties with the Eurozone, its largest trading partner. Periods of significant growth, such as the early 2000s and post-2012 recovery, align with the euro's stabilization after the Eurozone debt crisis. However, the recent decline in EUR liabilities may indicate cautious exposure to the euro amidst ongoing uncertainties in the Eurozone economy.

**Graph 8. Switzerland’s liabilities in foreign currency**

Source: SNB

Liabilities in other currencies grew steadily from $84 billion in 1990 to $218 billion in 2021, with a slight decline to $198 billion in 2022. The consistent growth reflects Switzerland's diversification of liabilities into non-traditional reserve currencies, such as the British pound, Japanese yen, and currencies from emerging markets. This trend highlights Switzerland’s strategy to balance risks associated with major reserve currencies like the USD and EUR.

Graph 9 shows the Swiss Real Effective Exchange Rate (REER) and the Swiss franc (CHF) to US dollar (USD) exchange rate (end of period) from 1990 to 2022. These two indicators are vital for understanding Switzerland’s price competitiveness and the performance of its currency in the global market. Effective exchange rates reflect how exchange rate changes affect trade flows, exports, and imports. The REER index, which adjusts nominal exchange rates for relative inflation, remained stable during the early 1990s, hovering around 101 to 108. This reflects a period of relative stability in Switzerland's price competitiveness. During the same time, the CHF/USD exchange rate weakened slightly, rising from 1.30 CHF/USD in 1990 to 1.48 CHF/USD in 1993. This depreciation indicates a strengthening US dollar, driven by robust economic growth in the US. Switzerland's REER stability suggests that inflation differentials with its trading partners were minimal, maintaining steady competitiveness.

From the mid-1990s, the REER rose from 108 in 1994 to 114 in 1995, reflecting a loss of price competitiveness for Switzerland. This was accompanied by a sharp appreciation of the CHF against the USD, with the exchange rate strengthening from 1.48 CHF/USD in 1993 to 1.15 CHF/USD in 1995. The strong franc during this period can be attributed to Switzerland’s safe-haven status amid global uncertainty, including the Mexican peso crisis (1994) and concerns about emerging markets. The combination of REER appreciation and a stronger CHF would have put pressure on Swiss exporters, making their goods relatively more expensive in international markets.

The late 1990s and early 2000s saw fluctuations in the REER and CHF/USD exchange rate. The REER declined slightly to 100 in 2000, indicating improved price competitiveness. However, the CHF weakened significantly against the USD, with the exchange rate reaching 1.68 CHF/USD in 2001. This period coincided with strong US economic performance and high demand for US assets during the dot-com bubble. The REER’s stability during this time suggests that the weakening of the CHF did not lead to inflationary pressures or significant changes in Switzerland’s competitiveness. A notable trend emerges after the early 2000s, as the CHF begins to strengthen steadily against the USD.

**Graph 9. Switzerland REER and CHF exchange rate**

Source: SNB

By 2008, the exchange rate had fallen to 1.06 CHF/USD, reflecting a stronger franc. Simultaneously, the REER hovered around 100 to 106, indicating stable competitiveness despite the appreciating currency. The global financial crisis (2008–2009) further bolstered the CHF’s safe-haven status, as investors sought stability amidst economic turmoil. By 2009, the CHF/USD exchange rate had dropped to 1.03, while the REER rose to 104, signaling a slight loss of competitiveness.

The period from 2010 to 2015 saw significant changes in both indicators. The CHF appreciated sharply against the USD, with the exchange rate reaching parity at 0.94 CHF/USD in 2011. This coincided with a spike in the REER, which reached 118 in 2011, reflecting a substantial loss of price competitiveness. The Eurozone debt crisis during this time caused investors to flock to CHF assets, driving up the currency’s value. The Swiss National Bank (SNB) introduced a euro peg in 2011 to stabilize the franc, but the strong REER suggested that Swiss goods and services were becoming increasingly expensive compared to those of trading partners.

In 2015, the SNB removed the euro peg, leading to a sharp appreciation of the CHF. The REER remained elevated at 117, reflecting ongoing challenges to price competitiveness. The exchange rate stabilized around parity with the USD, hovering between 0.99 and 1.02 CHF/USD from 2015 to 2016. The SNB's intervention in currency markets during this period aimed to limit excessive appreciation and protect the Swiss economy from export declines.

From 2017 onwards, both the REER and the exchange rate exhibit relative stability. The REER fluctuated between 111 and 116, suggesting moderate changes in Switzerland’s competitiveness. The CHF/USD exchange rate stabilized around 0.98 CHF/USD, reflecting a balance between the CHF’s safe-haven appeal and global economic recovery. The COVID-19 pandemic in 2020 temporarily pushed the exchange rate to 0.88 CHF/USD, reflecting strong demand for the franc during a period of global uncertainty. Despite this, the REER remained stable at 116, indicating that inflation differentials with trading partners were minimal, preserving Switzerland’s competitiveness.

By 2022, the REER had stabilized at 112, while the exchange rate stood at 0.92 CHF/USD. This reflects a steady position for the Swiss economy, with the REER indicating a balanced level of competitiveness and the exchange rate reflecting the CHF’s strength as a safe-haven currency. The slight decline in the REER compared to earlier years suggests that Switzerland had regained some competitiveness, likely due to controlled inflation and stable monetary policy.

Switzerland’s Net Foreign Assets (NFA), as decomposed into Direct Investment, Portfolio Investment, Derivatives, Other Investment, and Reserves, exhibit distinct trends and dynamics over the period 1990–2022. Direct Investment steadily increased until 2012, reflecting Switzerland’s strong foreign asset ownership, but declined sharply thereafter due to global economic turbulence and regulatory changes, partially recovering by 2022. Portfolio Investment, driven by foreign equities and bonds, peaked in 2008 but has experienced significant fluctuations since, including turning negative in 2021. Derivatives played a minimal role throughout, primarily used for hedging, while Other Investment shifted to significant negative contributions post-2009, likely due to Switzerland’s external liabilities in loans and trade credits. Reserves showed a marked increase, particularly after 2012, as the Swiss National Bank (SNB) actively intervened in foreign exchange markets to stabilize the Swiss franc, maintaining Switzerland’s safe-haven status during global crises.

The sectoral breakdown highlights the SNB’s substantial foreign reserve accumulation, Swiss banks' transition from net creditors to net borrowers after 2011, and the resilience of private investors in maintaining positive contributions to NFA. Expressed as a percentage of GDP, Switzerland’s NFA consistently demonstrates its status as a net creditor, with assets consistently exceeding liabilities. The analysis now shifts focus to the Current Account (CA), which represents a key driver of Switzerland’s NFA.

The current account measures the flow of goods, services, income, and transfers between Switzerland and the rest of the world. It is a critical component of NFA because persistent surpluses or deficits can directly influence the accumulation or depletion of Switzerland’s foreign assets. We calculate the current account as the sum of its four main components: net trade (goods and services), investment income (primary income), and transfers (secondary income). Analyzing these inflows and outflows helps us understand the direct contributions of CA to NFA dynamics and the role of Switzerland’s external sector.

Graph 10 shows the Current Account (CA) of Switzerland, divided into its components: Goods and Services (G/S), Primary Income, and Secondary Income, measured in billions of USD from 1990 to 2022. G/S contributes positively to the Current Account across all years. From 4 billion USD in 1990, it grows significantly to 111 billion USD by 2022, highlighting the importance of Switzerland’s export-driven economy. The steady and robust growth of G/S reflects Switzerland’s export-driven economy, which remains a key stabilizing factor in the Current Account. Switzerland’s competitive manufacturing (pharmaceuticals, machinery) and services (financial services) sectors ensure consistent trade surpluses. G/S declines only slightly in response to global crises 2008 and 2020.

Primary Income contributes positively to most years, reflecting Switzerland’s strong position as a global financial center and its significant returns from foreign investments. In 2008, a sharp decline to -36 billion USD, reflecting financial market turmoil during the global financial crisis, which severely impacted income from foreign investments. While Primary Income has historically provided positive contributions, its fluctuations highlight Switzerland’s exposure to global financial market risks. Negative contributions in recent years suggest challenges in sustaining investment returns, likely due to low global interest rates and market instability. Secondary Income consistently detracts from the Current Account, reflecting Switzerland’s payments abroad for international aid, remittances, and other transfers.

**Graph 10. Swiss CA evolution 1990 to 2022**

Source: SNB

Between 1990 and 2013, Secondary Income contributions remained relatively stable at around -2 to -4 billion USD. From 2014 onward, the deficit worsened significantly, reaching -18 billion USD in 2014, and fluctuating between -12 and -16 billion USD in the subsequent years. The consistent negative contributions suggest structural factors, such as Switzerland’s commitments to international payments and transfers, rather than short-term economic fluctuations. While not a significant driver of variability, it consistently detracts from the Current Account surplus.

The data highlights Switzerland’s strong and resilient Current Account surplus, primarily driven by the consistent growth of Goods and Services (G/S). Despite volatility in Primary Income, particularly during financial crises and the pandemic, Switzerland’s trade strength offsets these fluctuations. The structural deficit in Secondary Income remains a challenge but does not undermine the overall surplus. The robustness of G/S and the gradual recovery in Primary Income post-2020 suggest a solid foundation for Switzerland’s external financial position in the years ahead. The CA displays overall growth from $8.4 billion in 1990 to $80.4 billion in 2022, reflecting Switzerland’s sustained export competitiveness and net income from investments abroad. This consistent surplus highlight Switzerland’s role as a global creditor and a hub for high-value goods and services, such as pharmaceuticals, machinery, and financial services. In 2008 and 2020, the CA fell sharply to $7.1 billion and $3.9 billion, respectively.

Switzerland's goods account (graph 11), as divided by the Swiss National Bank, comprises three components: Foreign Trade, which is the trade balance for exported and imported goods. Supplements to Foreign Trade, which is adjustments to foreign trade, such as net adjustments for processing trade or statistical discrepancies, and merchanting, which is revenue from merchanting activities (goods bought and sold abroad without entering Switzerland). Switzerland exhibited a foreign trade deficit for most of the 1990s. However, after 2000, persistent surpluses became the norm, with significant increases after 2010. The transition from deficits in the early 1990s to consistent surpluses in the 2000s reflects structural changes in Switzerland's trade dynamics. Negative supplements indicate adjustments for statistical discrepancies or processing trade losses, potentially reflecting greater import content in Swiss exports (foreign components in high-value Swiss goods), and statistical reclassifications of goods or trade-related services.

**Graph 11. Goods account evolution.**

Source: SNB

The growth in merchanting highlights Switzerland's role as a global hub for trading intermediaries, with Swiss companies acting as brokers for international trade. By 2022, merchanting contributed double the revenue of foreign trade (net exports), underscoring its importance to the goods account. Merchanting revenues have grown steadily, even during periods of foreign trade volatility (2008 financial crisis and 2020 pandemic). Record highs in foreign trade and merchanting in 2021–2022 highlight Switzerland's ability to capitalize on global demand shifts, likely due to its high-value export industries (pharmaceuticals, machinery, and luxury goods).

The SNB divides the services account into transport, tourism, insurance, financial services, license fees, telecommunications, manufacture, research and development, business and other. Financial services have consistently been the dominant driver of the services account, beginning with a contribution of $6.5 billion in 1990 and steadily growing over the decades. This sector peaked at $23.3 billion in 2007 and remained a strong contributor, reaching $20.8 billion in 2022.

Switzerland’s global reputation as a financial hub, particularly in wealth management and banking, underpins the resilience of this component even during periods of economic turbulence, such as the 2008 financial crisis and subsequent global recessions. The consistent strength of financial services underscores its critical role in supporting the Swiss services account. Tourism, in contrast, presents a more volatile trend, with periods of growth in the 1990s and early 2000s followed by a steady decline in later years. Tourism peaked at $3.1 billion in 2010 but recorded significant deficits in subsequent years, including a negative $1.7 billion in 2022. This decline likely reflects Switzerland’s challenges as a high-cost destination and competition from more affordable global tourism markets. While external factors such as currency appreciation may play a role, the persistent downward trend signals structural issues that could be addressed through targeted policies to revitalize the sector.

The analysis reveals that financial services remain the backbone of Switzerland's services account, providing stability and growth even during economic downturns. However, the growing deficits in business services and R&D indicate structural challenges that could benefit from targeted investment in domestic capabilities. Tourism’s struggles highlight the need for innovative strategies to maintain competitiveness in a globalized market. Meanwhile, the steady growth in insurance services and improvements in transport demonstrate areas of resilience that can be further leveraged. Addressing these challenges and capitalizing on strengths will ensure that Switzerland’s services account continues to support its broader current account surplus and economic stability.

**Graph 12. Primary Income subcomponents evolution**

Source: SNB

The primary income account (graph 12) is divided into labor income and investment income, which represent key components of cross-border income flows. Labor income refers to payments made to workers across borders, such as wages and salaries earned by foreign or expatriate workers. In the Swiss context, labor income is typically a deficit as many foreign workers commute or migrate to Switzerland for employment. Investment income represents income derived from cross-border investments, such as dividends, interest, and reinvested earnings. Switzerland, as a major international financial center, typically records significant surpluses in investment income due to its extensive foreign investment holdings.

The overall pattern of the primary income account highlights a structural reliance on foreign labor and the evolving dynamics of investment returns. The growing labor income deficit underscores Switzerland’s dependence on an international workforce, while the volatility in investment income reflects the sensitivity of Switzerland’s external earnings to global economic conditions. Sustaining robust investment income will be essential for offsetting the labor income deficit and maintaining the primary income account’s contribution to the broader current account surplus. A potential area for improvement could be diversifying investment income sources or targeting sectors with higher yields to stabilize income flows amidst global financial uncertainties.

The secondary income account demonstrates Switzerland's role as a net provider of financial resources in the form of transfers. The public sector’s increasing outflows reflect a commitment to international solidarity and responsibilities as a high-income nation, while private sector transfers underscore the economic ties between Switzerland’s resident foreign population and their home countries. Efforts to maintain transparency and efficiency in these transfers are essential to ensure they continue to serve their intended purposes effectively. While these outflows do not directly generate returns for Switzerland, they contribute to its global standing as a responsible economic partner.

Switzerland consistently runs trade surpluses, driven by exports of high-value goods and services. Its strong CA reflects a diversified and competitive export base. Switzerland benefits from substantial net investment income, reflecting its large stock of foreign assets. This income is sensitive to global interest rates and equity market performance, contributing to CA volatility during crises. Switzerland’s consistent CA surpluses contrast with advanced economies like the U.S. and the U.K., which run persistent CA deficits due to reliance on foreign savings to finance domestic consumption and investment. Like Germany and Japan, Switzerland’s CA reflects strong export competitiveness and net investment income. Unlike emerging markets (China, India), which often run CA surpluses driven by trade alone, Switzerland’s surplus also heavily relies on investment income.

**Time Series Component Analysis**

This analysis breaks down annual changes in NFA into contributions from its three main components: the Current Account (CA), Valuation Effects (VE), and Residuals. By focusing on year-to-year dynamics, this step identifies short-term drivers of fluctuations and highlights periods of stability or volatility, offering insight into how these factors interact during significant economic events.

When analyzing annual changes in Switzerland's Net Foreign Assets (NFA), Valuation Effects (VE) emerge as the most volatile and impactful component, particularly during periods of financial or currency market turbulence. VE demonstrates a high sensitivity to external shocks, such as exchange rate movements, asset price fluctuations, and interest rate changes. However, the Current Account (CA) remains a foundational driver of NFA, contributing consistently positive and stabilizing effects, even during periods of global economic instability. This dual dynamic of episodic volatility (VE) and consistent stability (CA) underscores their complementary roles in shaping Switzerland's NFA dynamics.

The CA’s stable trajectory reflects Switzerland’s traditionally strong trade surpluses and consistent investment income from abroad. These attributes are rooted in Switzerland's competitive export sector and its role as a global financial hub. During major economic crises, such as the 2008 financial crisis and the Eurozone debt crisis, CA contributions remained robust. This highlights the resilience of trade and income flows, which are less affected by external shocks compared to valuation changes. CA’s contributions serve as a buffer against the more volatile VE, ensuring a stabilizing influence on NFA over time. VE is highly sensitive to financial market conditions, contributing significantly to NFA fluctuations during turbulent periods. In the 2008 Financial Crisis shows a sharp drop in VE contributions was driven by significant global asset price declines and heightened exchange rate volatility, causing valuation losses on foreign assets. The 2015 Swiss Franc Appreciation, marked by the removal of the Swiss franc’s peg to the euro caused a dramatic appreciation, leading to a spike in VE as foreign-denominated assets were revalued upward.

Graph 13 shows that VE is highly volatile compared to CA, underscoring its sensitivity to financial market dynamics. Residuals are strongly present, indicating that there are unexplained dynamics in NFA changes not captured by CA or VE. These could result from data mismatches, omitted variables, or other non-linear factors.

**Graph 13. Components year-to-year contribution**

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The high volatility of VE compared to CA indicates that financial market dynamics (exchange rates, asset prices, and bond yields) are major determinants of Switzerland's NFA fluctuations. Switzerland’s consistent trade and investment surplus provides a stable contribution to NFA, serving as a buffer against valuation-driven volatility. This means that the Swiss National Bank’s interventions in foreign exchange markets and asset purchases have a direct impact on NFA dynamics via VE. What is more, the SNB’s interventions in foreign exchange markets and asset purchases have a direct impact on NFA through VE. For instance, currency interventions aimed at mitigating exchange rate appreciation can influence valuation adjustments on foreign assets.

While CA provides long-term stability, VE introduces short-term variability, reflecting the dual nature of Switzerland’s external financial dynamics. Policymakers must balance these forces to maintain financial stability. The episodic dominance of VE during crises highlights the vulnerability of NFA to global financial turbulence. This necessitates robust risk management policies to mitigate valuation-driven fluctuations. Residuals emphasize the need for further analysis to capture unexplained dynamics, such as incorporating additional variables or refining the decomposition methodology.

The CA shows a relatively high mean and low variability compared to other components. This indicates that the CA consistently contributes to NFA changes, driven by Switzerland's structural trade surpluses and steady primary income flows. Its smaller standard deviation reflects that the CA is stable over time. VE has a lower mean but significantly higher variability. This reflects the impact of financial market fluctuations (exchange rates, asset prices, and bond yields), which are inherently volatile.

VE plays a critical role in short-term dynamics, occasionally causing sharp changes in NFA. Residuals have a negative mean and the highest standard deviation, indicating that unobserved or unmeasured factors dominate variability in NFA changes. The large standard deviation highlights that these residuals often capture unpredictable or extreme deviations. Residuals dominate overall variability, indicating that much of NFA's short-term movements remain unexplained or poorly captured by observable components. This underscores the need to refine the model or investigate potential missing factors (capital gains, hedging strategies, or financial derivatives).

**Valuation Effects Decomposition**

Switzerland’s NFA is influenced by three key external factors: interest rates, exchange rates, and asset price changes. Interest rates primarily affect fixed-income instruments, reducing the value of debt securities and loans during periods of rising rates. Exchange rates revalue all foreign-currency-denominated components, from direct and portfolio investments to reserve assets. Asset price changes, meanwhile, drive valuation effects in equity investments, derivatives, and reserve holdings. These interactions demonstrate the complex nature of Switzerland’s external financial position and its sensitivity to global economic conditions. By understanding these dynamics, policymakers and financial institutions can better manage the risks and opportunities associated with Switzerland’s NFA.

Valuation effects capture changes in the value of Switzerland’s foreign assets and liabilities due to fluctuations in exchange rates, interest rates, and asset prices. These effects can significantly impact NFA without involving actual capital flows. Switzerland’s foreign asset portfolio includes substantial holdings in foreign currencies and investments, making valuation effects a significant factor in NFA fluctuations. By quantifying VE, we capture the effects of external market changes, which play a critical role in the volatility of Switzerland’s NFA. This analysis highlights how financial markets and currency movements impact Switzerland’s financial stability. We established a direct link for each market condition.

**Exchange Rate Effects:** Exchange rate effects arise from changes in the value of foreign-denominated assets and liabilities due to exchange rate fluctuations. We are looking for the impact of exchange rate fluctuations on the value of foreign assets and liabilities, which is:

Where:

* : The stock of foreign-denominated assets held by Switzerland (foreign direct investments abroad, portfolio investments, reserves).
* : The stock of Swiss-denominated liabilities owed to foreign entities.
* : The change in the exchange rate (CHF per USD). A positive means foreign currencies depreciate relative to the Swiss Franc, and a negative means foreign currencies appreciate.

This approach isolates how fluctuations in exchange rates () impact the valuation of foreign-denominated assets and liabilities, holding their nominal amounts constant. When the Swiss Franc appreciates (foreign currencies depreciate), then the value of foreign-denominated assets decreases in CHF terms. The value of foreign-denominated liabilities also decreases, but the net impact depends on whether assets exceed liabilities. When the Swiss Franc depreciates (foreign currencies appreciate), then the value of foreign-denominated assets increases in CHF terms. The value of foreign-denominated liabilities also increases, but the net impact depends on the net position .

If Switzerland has a positive net position , an appreciating Swiss Franc leads to a negative valuation effect (). While a depreciating Swiss Franc leads to a positive valuation effect (). If Switzerland has a negative net position , the opposite occurs. The formula directly isolates the impact of exchange rate changes on valuation without considering other variables like market returns or interest rates. This makes it straightforward and transparent. By using , the formula accounts for the net exposure to exchange rate fluctuations, ensuring that the magnitude of the effect reflects the actual economic risk.

Exchange Rate Effects account for 42,61% of total Valuation Effects (VE), making it the second-largest driver of VE. This contribution reflects the impact of currency fluctuations on the valuation of foreign-denominated assets and liabilities. Notably, periods of sharp currency movements, such as 2015 when the Swiss franc’s peg to the euro was removed, exhibit significant spikes in VE\_FX. As a global financial hub and with the Swiss franc serving as a safe-haven currency, managing exchange rate volatility remains crucial for stabilizing NFA dynamics. The large contribution of VE\_FX underscores the need for active currency management and hedging strategies to mitigate valuation risks. Exchange rate fluctuations account for approximately 31.24% of the variance in VE, highlighting their significant but relatively moderate volatility compared to other components.

**Asset Price Changes:** Asset price effects arise from changes in the market value of equity or other investments. We are looking for the impact of stock market changes on the value of portfolio assets and liabilities, which is:

Where:

* : The stock of foreign portfolio equity investments held by Switzerland (foreign equities, mutual funds, etc.).
* : The stock of portfolio equity investments in Switzerland held by foreign investors.
* : The percentage change in the Swiss Stock Market Index (SSMI) for global stock market movements.

This formula captures how changes in market equity prices (as represented by ) affect the valuation of foreign portfolio assets and liabilities held by Switzerland. The SSMI (or equivalent index) is used as a proxy for stock market price changes, assuming that Portfolio Assets are influenced by global equity market trends, and Portfolio Liabilities are similarly affected but reflect the value of foreign holdings in Swiss equities. The Net Portfolio Position determines the overall sensitivity of Switzerland’s Net Foreign Assets (NFA) to equity market changes. With a positive Net Portfolio Position, a rise in stock prices () results in a positive valuation effect (). A decline in stock prices () results in a negative valuation effect (). A negative position would imply the opposite effects.

The formula isolates the impact of changes in stock prices on the valuation of foreign portfolio equity holdings and liabilities, making it directly relevant to asset price dynamics. By considering the net portfolio position , the formula reflects Switzerland’s actual exposure to stock market changes rather than treating assets and liabilities separately. The use of as a proxy captures the aggregate trend in equity price changes, ensuring that the formula accounts for market-wide valuation shifts.

Asset Price Effects emerge as the dominant subcomponent, contributing 51,4% of total VE. This dominance highlights the substantial influence of equity market performance on portfolio valuations. For example, during periods of financial market volatility, such as the global financial crisis (2008–2009) and the Covid-19 pandemic (2020), VE\_AP witnessed pronounced spikes driven by changes in the Swiss Stock Market Index (SSMI). The results indicate that Switzerland’s large exposure to global equity markets makes asset price fluctuations the primary driver of valuation effects. Policies aimed at mitigating risks associated with equity market volatility, such as portfolio diversification, are critical for financial stability. This effect contributes 68.71% to its total variance. This reflects the significant exposure of Switzerland's portfolio equity securities to equity market fluctuations.

**Interest rate effects**: Interest rate effects arise from changes in bond yields, which impact the value of fixed-income securities. We look for the impact of changes in interest rates on the value of debt instruments, following:

Where:

* : The stock of fixed-income securities (bonds, other debt instruments) held by Switzerland abroad.
* : The stock of fixed-income securities issued in Switzerland and held by foreign investors.
* ​: The change in bond yields (annual yield on 10-year government bonds​).

This formula captures how changes in interest rates (represented by ​) affect the market value of debt instruments, based on the difference between foreign debt assets and domestic debt liabilities. When bond yields (​) rise (), the market value of existing bonds decreases because their fixed coupon payments become less attractive relative to new bonds offering higher yields. When bond yields fall, the market value of existing bonds increases because their fixed coupon payments become more attractive relative to new bonds offering lower yields.

The net debt position represents Switzerland's exposure to bond yield changes. Rising yields lead to a negative valuation effect () because the value of assets declines more than liabilities. Falling yields lead to a positive valuation effect () because the value of assets increases more than liabilities. The formula focuses exclusively on how bond yield changes (​) affect the market value of fixed-income securities, isolating this specific effect from other valuation drivers. By using the net debt position, the formula accurately reflects Switzerland's actual exposure to interest rate changes. The final valuation effects are the sum of exchange rate effects, asset price changes and interest rate effects.

Interest Rate Effects represent a minor subcomponent, contributing 5,9% of total VE. While smaller in magnitude, VE\_IR has visible impacts during periods of significant shifts in bond yields. For instance, years with notable interest rate movements, such as during the European debt crisis, saw a measurable contribution from VE\_IR. This finding suggests that although debt instruments are less sensitive to valuation changes, they still play a role in Switzerland’s external financial position. Integrating interest rate risk management into debt portfolios could help reduce exposure to valuation changes associated with interest rate volatility. Here, this effect contributes only 0.06% to VE total variance.

**Residuals**

The residual component captures any unexplained changes in NFA that cannot be directly attributed to CA or VE. These may include data discrepancies, unforeseen changes in the asset portfolio, or other unobserved factors. Residuals are calculated as the difference between the total annual change in NFA (ΔNFA) and the combined contributions of CA and VE. This residual element reflects any unexpected or omitted factors affecting NFA.

Including residuals ensures that all sources of change in NFA are accounted for, even those not captured by CA and VE. This comprehensive approach allows for a fuller understanding of NFA dynamics and reveals potential irregularities or unique factors that may influence Switzerland’s international position.

Residuals ensure that all sources of change in NFA are accounted for, even those that are unobservable or not explicitly included in the CA or VE components. This makes the decomposition complete and comprehensive. Residuals may reveal unique or unexpected dynamics specific to Switzerland, such as its role as a global financial haven or the influence of central bank policies. By including residuals, the decomposition avoids underestimating the complexity of NFA dynamics. This approach acknowledges that not all changes can be fully explained by observable components like CA and VE.

The average and cumulative results (graph 14) indicate that asset price changes (reflecting equity market fluctuations captured by the SSMI index) play the most significant role in driving valuation effects over time. Switzerland’s financial claims and liabilities in portfolio equity securities are sensitive to stock market dynamics, which aligns with its status as a major global financial hub. This dominance of asset price effects can be explained by factors rooted in the structure of the Swiss economy and its financial system. Switzerland is a global financial hub, with significant cross-border investments in equity markets. Its financial institutions, such as banks, asset managers, and pension funds, hold vast amounts of portfolio equity securities.

Changes in global stock markets, as captured by the Swiss Stock Market Index (SSMI), have a substantial impact on the valuation of these assets. Portfolio equity assets form a large portion of Switzerland’s foreign assets compared to other investment types (debt instruments). Equity valuations are extremely sensitive to stock market dynamics, amplifying the effect of asset price changes. Equity markets experience higher volatility compared to other asset classes like bonds or currencies. This volatility translates into significant fluctuations in the valuation of Swiss foreign assets and liabilities. Swiss investments are spread across global equity markets. As a result, international market events (e.g., the 2008 financial crisis or the 2020 COVID-19 pandemic) have a magnified impact on the valuation of these assets.

The Swiss franc and Swiss financial instruments are perceived as safe havens during global economic uncertainty. This dynamic often leads to capital flows into Swiss equity markets, further amplifying their influence on asset valuations. Swiss investors often allocate a significant portion of their portfolios to equities due to their higher long-term returns, which enhances the dominance of asset prices in driving VE. While exchange rate fluctuations are significant, Switzerland’s prudent monetary policy and interventions by the Swiss National Bank (e.g., foreign exchange reserves) often mitigate their impact.

**Graph 14. VE components contribution**

A graph of a graph showing the number of years

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Swiss debt assets and liabilities are less sensitive to changes in interest rates due to relatively low levels of foreign debt exposure compared to equity, and a long-standing low-interest-rate environment in Switzerland, reducing the impact of rate fluctuations on bond valuations.

Exchange Rate Effects (VE\_FX): Contributing 42.61% to VE on average and 31.24% to VE variance, VE\_FX reflects the impact of currency fluctuations on the valuation of foreign-denominated assets and liabilities. Significant spikes, such as during the 2015 Swiss franc appreciation, underscore its importance in NFA dynamics. Managing exchange rate volatility remains crucial to stabilize VE. Asset Price Effects (VE\_AP): As the dominant subcomponent, VE\_AP contributes 51.40% to VE on average and accounts for 68.71% of its variance.

This dominance is driven by Switzerland’s large exposure to global equity markets, where fluctuations, such as during the 2008 Financial Crisis and the COVID-19 pandemic, heavily influence portfolio valuations. VE\_AP’s role underscores the need for portfolio diversification to mitigate risks. Interest Rate Effects (VE\_IR): Contributing only 5.9% to VE on average and 0.06% to its variance, VE\_IR has a minimal but noticeable impact during periods of significant bond yield changes, such as during the European debt crisis. Its limited influence reflects Switzerland’s prudent debt management and relatively low sensitivity to interest rate volatility.

**Cumulative Contributions**

This analysis examines the long-term contributions of CA, VE, and Residuals to NFA changes over the entire study period. It distinguishes between structural drivers, such as the persistent surpluses in CA, and episodic factors like VE volatility. This step provides a macro-level understanding of what consistently shapes Switzerland’s external financial position over time.

The cumulative contributions plot (graph 15) evaluates the long-term impact of the Current Account (CA), Valuation Effects (VE), and Residuals on Switzerland’s Net Foreign Assets (NFA) from 1990 to 2022. Unlike year-to-year changes, this analysis focuses on the aggregate influence of each component over time, providing a broader perspective on the drivers of NFA dynamics. Cumulative CA contributions grow steadily, rising from approximately 150 billion USD in 1990 to around 850 billion USD by 2022. Switzerland’s export-oriented economy, with high-value industries such as pharmaceuticals, machinery, and financial services, ensures consistent trade surpluses. Persistent net investment income from Swiss-owned assets abroad adds to the CA’s stability.

**Graph 15. Components cumulative contribution**

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In the 2008 Financial Crisis, the CA maintained its upward trajectory, indicating resilience in Switzerland’s export sector despite global economic turmoil. However, after the Swiss National Bank (SNB) removed the Swiss franc’s peg to the euro, CA contributions remained robust, reflecting the economy’s structural strength despite currency volatility. The CA contributes over 85% of cumulative NFA growth by 2022, underscoring its role as a structural driver of Switzerland’s external financial position. This stability highlights the resilience of Swiss exports and the importance of net investment income in supporting the country’s global financial position.

VE contributions are more volatile than CA, with cumulative values oscillating between positive and negative territory during periods of financial instability. By 2022, cumulative VE contributions reach around 200 billion USD, significantly lower than CA but still crucial for explaining short-term fluctuations. Switzerland’s large holdings of foreign assets mean that Swiss franc appreciation reduces the valuation of these assets when converted to francs, often causing negative VE during crises. For example, during the Eurozone Debt Crisis (2010-2012), VE turned negative as the franc appreciated against the euro. VE fluctuates with global financial market movements. During the 2008 Financial Crisis, global equity market crashes reduced the valuation of Switzerland’s portfolio assets, contributing to negative VE. As global interest rates declined during the post-crisis recovery, bond valuations increased, partially offsetting negative VE from other sources. VE’s cumulative contributions, while positive in the long run, remain far more volatile than CA, reflecting Switzerland’s exposure to global financial markets.

Residuals remain relatively small, with cumulative contributions hovering near zero by 2022, indicating that most changes in ∆NFA are explained by CA and VE. Residuals show occasional spikes (1993, 2008), likely due to measurement errors, unobservable macroeconomic shocks. These spikes may also reflect policy interventions, such as changes in SNB reserve management strategies or unaccounted capital flows.

Cumulative analysis shows that CA dominates as the structural driver of NFA, contributing over 85% of its growth by 2022. The resilience of Switzerland’s export sector and consistent investment income underpin this stability, even during crises like the 2008 Financial Crisis and the 2015 Swiss franc appreciation. VE’s cumulative contributions, while smaller and more volatile, capture Switzerland’s exposure to global financial market fluctuations, such as equity market crashes and currency volatility. Residuals remain near zero cumulatively, reflecting that most NFA changes are accounted for by CA and VE, though occasional spikes suggest unobservable shocks.

**Robustness Check**

To validate the reliability of the results, a robustness check is performed using a bootstrap resampling technique. This method estimates confidence intervals for the contributions of VE subcomponents (VE\_FX, VE\_AP, VE\_IR) and ensures that the findings are not unduly influenced by outliers or sample-specific anomalies. This step enhances the credibility of the analysis.

Bootstrap resampling is a statistical method that generates multiple simulated datasets by repeatedly sampling with replacement from the original dataset. These simulated datasets, or bootstrap samples, are used to estimate the distribution of a statistic, such as the mean, variance, or confidence intervals, without requiring strict assumptions about the underlying data distribution. This method is particularly useful for complex datasets where traditional parametric methods may fail due to violations of assumptions like normality or homoscedasticity.

**Table 1. Sensitivity test results**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **mean** | **lower\_ci** | **upper\_ci** |
| **VE\_FX** | 733,1 | 399,0 | 1172,8 |
| **VE\_AP** | 1573,1 | 653,1 | 2755,8 |
| **VE\_IR** | 1,3 | 0,8 | 1,7 |

In practice, bootstrap resampling involves creating new datasets of the same size as the original by randomly selecting observations, with some observations appearing multiple times and others not at all. For each bootstrap sample, the statistic of interest is recalculated, and the process is repeated hundreds or thousands of times. The resulting distribution of the statistic across all bootstrap samples is then used to derive its central tendency (e.g., mean), variability (e.g., variance), and confidence intervals. By relying solely on the observed data, bootstrap resampling avoids the need for theoretical distributional assumptions, making it a non-parametric approach.

The sensitivity analysis using the bootstrap method provided crucial insights into the robustness of the variance decomposition of the valuation effects (VE) subcomponents—exchange rate effects (VE\_FX), asset price effects (VE\_AP), and interest rate effects (VE\_IR). The mean variance estimates highlight the relative contribution of each subcomponent, with VE\_AP emerging as the dominant driver of valuation effects, followed by VE\_FX, while VE\_IR contributed minimally. Specifically, VE\_AP showed the largest mean variance at 1573.11, with a wide confidence interval ranging from 653.11 to 2755.81. This indicates that asset price changes, influenced heavily by fluctuations in Swiss and global equity markets, are highly variable and sensitive to market conditions. The wide interval reflects the susceptibility of asset price-driven valuation changes to external shocks, such as financial crises or significant market corrections.

VE\_FX, with a mean variance of 733.09 and a confidence interval of 399.04 to 1172.83, underscores the substantial role of exchange rate fluctuations in shaping valuation effects. While not as dominant as asset prices, exchange rate effects are still critical, particularly given Switzerland’s position as a safe-haven economy. During periods of global uncertainty, the Swiss franc often appreciates, altering the value of foreign-denominated assets and liabilities. The narrower confidence interval compared to VE\_AP suggests that while exchange rate effects are significant, they are relatively more stable in their contribution to valuation effects over time. VE\_IR, with a mean variance of only 1.28 and a tight confidence interval of 0.84 to 1.71, reflects the limited role of interest rate changes in driving valuation effects. This is consistent with Switzerland’s historically low-interest rate environment, where changes in yields have minimal impact on the valuation of debt instruments.

The narrow interval indicates that interest rate effects are predictable and less prone to variability, suggesting that their influence on NFA dynamics is more subdued compared to the other subcomponents. The dominance of VE\_AP highlights the need to closely monitor equity market trends and their impact on Switzerland’s foreign asset and liability valuations. Meanwhile, the significance of VE\_FX underscores the interconnectedness of Switzerland’s financial position with global currency markets, emphasizing the role of exchange rate policies and global investor sentiment. The minimal impact of VE\_IR suggests that interest rate policy changes are less relevant for Switzerland’s external position, aligning with its low-yield environment.

The wide confidence intervals for VE\_AP and VE\_FX highlight the uncertainty and potential for extreme outcomes, particularly during volatile periods. This underscores the importance of stress testing NFA under scenarios of sharp market corrections or significant currency fluctuations. By capturing the variability and robustness of each valuation effect component, the bootstrap analysis provides a nuanced understanding of their relative contributions and highlights areas where external shocks could pose risks to Switzerland’s financial stability. This sensitivity analysis not only validates the reliability of our decomposition methodology but also emphasizes the dynamic interplay of market conditions in shaping Switzerland’s NFA, guiding future research and policy discussions.

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