



SWITZERLAND

SELECTED ISSUES

June 2021

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CONTENTS

ASSESSING CORPORATE VULNERABILITIES	3
A. Motivation and Stylized Facts	3
B. Model	4
C. Simulation Results	4
D. Policy Implications	5
FIGURES	
1. Output Growth by Sectors, 2020	6
2. Return on Assets	7
3. Impact on Cash Position of a Median Company	8
4. Impact on Equity of a Median Company	9
5. Impact of Key Policies on Liquidity Gaps	10
6. Post-Covid/Post-Policies Equity of a Median Company	11
References	12
SWISS FRANC—SAFE HAVEN FOR WHOM?	13
A. Heightened Appreciation Pressures	13
B. Who Shifted Private Capital Flows: Swiss Residents or Foreign Investors?	14
C. Policy Implications	19
FIGURE	
1. Swiss Residents: Net Acquisition of Foreign Financial Assets by Sector	16

APPENDICES

I. Swiss Financial Accounts: Data Availability on Stocks of Financial Assets and Liabilities of the Institutional Sectors	22
II. An Example of the Netting-out Adjustments	23
III. Estimates of Private Capital Flows without the Netting-out Adjustments	24
References	21

A MODEL OF THE HOUSING-MARKET BREAKEVEN VACANCY RATE FOR SWITZERLAND

A. Motivation and Stylized Facts	25
B. Theoretical Model	27
C. Empirical Results	28
D. Policy Implications	30

BOX

1. Mathematical Details of the Model	32
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REFORMING THE SWISS PENSION SYSTEM

A. Context	34
B. Need for Reform	37
C. Ongoing Reforms	37
D. Policy Options for Long-term Sustainability	38
References	41

ASSESSING CORPORATE VULNERABILITIES¹

This paper analyzes the impact of COVID-19 on liquidity and solvency risks of firms across different sectors of the Swiss economy, as well as mitigation effects of policies implemented in 2020. Developments in liquidity and equity positions are simulated based on financial data for a sector-median company. The simulations suggest that the policies implemented helped reduce liquidity shortfalls and solvency risks. Additional, targeted measures may be needed to support viable companies going forward.

A. Motivation and Stylized Facts

1. **The Swiss economy has been hit hard by COVID-19, although the impact on sectors has varied considerably.** The Swiss economy contracted by 3.4 percent overall in nominal terms in 2020. The pandemic and containment measures had heterogeneous impacts depending notably on contact intensity and the ability to work online (Figure 1). Accommodations and food services were hit hardest, recording a nearly 35 percent decline in activity. Arts, entertainment, and recreation were also severely impacted, with a nearly 20 percent drop. A few sectors grew, including public administration and agriculture.
2. **The pandemic affected companies through many channels.** Supply and demand were both affected; high, generalized uncertainty also played a role. Production processes were changed in many sectors, especially high-contact intensive areas, as protection measures were put in place.
3. **Before the onset of the pandemic, corporate financial vulnerabilities were generally low.** Average profitability and liquidity increased in many sectors compared to 2009 (Figure 2). However, liquidity and profitability of the median company varied across sectors. Accommodations and food services, the hardest-hit sector, had relatively low profitability and liquidity.
4. **The authorities implemented a range of measures to support firms and the economy during the pandemic.** Most aimed to support liquidity, including by compensating for loss of income. Measures with the largest outlays in 2020 were a federal guarantee for bridge loans and the short-time work program (STWP), which supported compensation for furloughed workers.
5. **The support measures likely helped avoid more adverse outcomes.** The large decline in activity could have led to a wave of bankruptcies, layoffs, losses in productive capacity, and losses for banks. However, this did not materialize. In 2020, non-mortgage credit growth was relatively strong, the bankruptcy rate declined, and the increase of unemployment was relatively small compared to previous crisis episodes and other advanced European countries.

¹ Prepared by Svitlana Maslova and Laura Valderrama (EUR), under the guidance of Mark Horton. The authors would like to thank Jing Zhou, Li Zeng, and seminar participants at the Swiss Federal Department of Finance for helpful comments.

6. This paper analyzes the impact of the pandemic on liquidity and solvency risks of non-financial corporates, discusses the effect of support measures, and provides policy recommendations. Section B describes a balance-sheet model to analyze the impact of the pandemic and policies on corporate financial positions. Section C presents results of model simulations based on Swiss data. Section D discusses policy implications and concludes.

B. Model

7. We consider the impact of the pandemic on both firm liquidity and solvency. Both measures are important to assess vulnerability. A firm is considered to be insolvent if it has negative equity and illiquid if its liquid assets are insufficient to cover net operating cash outflows and debt repayments. Solvency and liquidity risks are not mutually exclusive: bankruptcy risks rise if a company faces liquidity gaps and/or negative equity.

8. The analysis is based on a company balance sheets. Three equations are used to describe evolution of cash, cash flow, and equity and assess the impact of the pandemic and policies on liquidity (see IMF (2020) and Ebeke, *et al* (2021)). The evolution of cash is equal to the sum of cash flows, liquid assets, and new credit net of interest expenses, less maturing liabilities and dividends. In the second equation, cash flow is assumed to be affected by a shock (β), which affects turnover. A company may adjust intermediate inputs (e.g., materials) accordingly; fixed costs cannot be adjusted. Equity is estimated as the sum of the equity position in the previous period plus cash flows net of amortization, minus dividend payouts and interest payments on new credit.

$$\text{Cash}_t = \text{CashFlow}_t + \text{LiquidAssets}_t + (1 - \text{Interest}_t) * \text{NewCredit}_t - \text{MaturingLiabilities}_t - \text{Dividend}_t$$

$$\text{CashFlow}_t = \beta * (\text{Sales}_t - \text{Materials}_t) + (\text{FinancialRevenues}_t - \text{FinancialExpenditure}_t) - \text{Wages}_t - \text{OtherCosts}_t - \text{Taxes}_t$$

$$\text{Equity}_t = \text{Equity}_{t-1} + \text{CashFlow}_t - \text{Amortization}_t - \text{Dividend}_t - \text{Interest}_t * \text{NewCredit}_t$$

9. The model is calibrated with data for Switzerland. The simulation is based on financial data for median companies at 56 sectors of the Swiss economy as of 2018.² The turnover shock is based on national accounts data by production for respective sectors of the economy. Some variables (financial revenues, financial expenditures, and taxes) were not available and therefore assumed to be constant under different simulation scenarios.

C. Simulation Results

10. The simulation is a two-stage process. First, we estimate the impact of the pandemic on liquidity and equity of the median company. We assume that during the pandemic, inventories become illiquid, while companies can roll over debts. Second, we assess the impact of policy

² Data were provided by the Swiss authorities.

measures taken by the authorities on liquidity and equity positions. Among the range of policies taken by the authorities, we focus on the impact on companies of federally-guaranteed bridge loans and the SWTP. When assessing policy impacts, we assume that STWP would be able to compensate for 80 percent of wages and that bridge loans are equal to a minimum of CHF500 thousand or 10 percent of pre-COVID turnover. While bridge loans could be larger, the large majority of extended loans receiving guarantees were up to CHF500 thousand. The policies have different impact on liquidity and solvency: while the STWP positively affects both variables, bridge loans improve liquidity in the near term, but the higher debt increases solvency risk going forward.

11. COVID-19 has had sizable, adverse effects on liquidity and equity, although these have varied across sectors. The largest impact of the pandemic on liquidity positions of a median company compared with the pre-COVID position was observed in the accommodations, food service, and employment activities sectors (Figure 3). Similarly, equity positions are assessed to be significantly hit, with the largest changes in accommodations and tobacco products (Figure 4).

12. The simulations suggest that the COVID-19 response policies undertaken by the authorities helped reduce shortfalls. Corporate support policies have provided substantial liquidity (Figure 5). For some sectors, liquidity gaps closed completely, suggesting that median companies in these sectors are unlikely to have used the provided policy support in full. Support policies were likely to have been relatively less effective in reducing declines in equity; in the median companies of most sectors, equity is not likely to have been restored to pre-COVID positions (Figure 6). Moreover, median companies in two sectors, accommodations and food services, are assessed to have negative equity even after using short-time work support.

13. These findings are consistent with other research and with information on actual use of policy measures. Simulations based on a firm data across a number of European countries suggest that policy measures implemented in those countries could significantly reduce liquidity risks, but the capacity to mitigate the increase in solvency risks appears to be more limited (e.g., IMF (2020) and Ebeke et al). In addition, impact of the pandemic and policy measures was found to vary across sectors. In Switzerland, use of bridge loans was found to be largely driven by the exposure of companies to lockdown restrictions; about 43 percent of companies in accommodation and food services participated in this program (SNB(2020)). The results should be interpreted with caution, however, given simplifying assumptions used for the simulations and the need to consider actual take-up of measures.

D. Policy Implications

14. Policy support has been key to limiting a spike of bankruptcies. Timely implementation of policy measures helped to reduce liquidity shortfalls and solvency risks, although the ability to reduce solvency risk seems to be more limited.

15. With the pandemic continuing in 2021, policy support has rightly been extended. With this, various trade-offs emerge, including keeping companies alive and saving jobs versus containing fiscal costs and not hindering structural transformation. Policies should focus on providing further

capital support to otherwise viable companies. The hardship support program of the federal and cantonal governments provides a mix of loans and grants and is a step in this direction.

16. A forward-looking approach to assessing capital needs amidst COVID-related structural shifts would be beneficial. While policies should be targeted to support viable companies, assessment of viability is complex, given current high uncertainty. Other challenges to designing recapitalization measures relate to determining eligibility and support size, reducing moral hazard risk, and ensuring timely exit from support. Authorities in other European countries have been adjusting their programs to provide more targeted capital support.

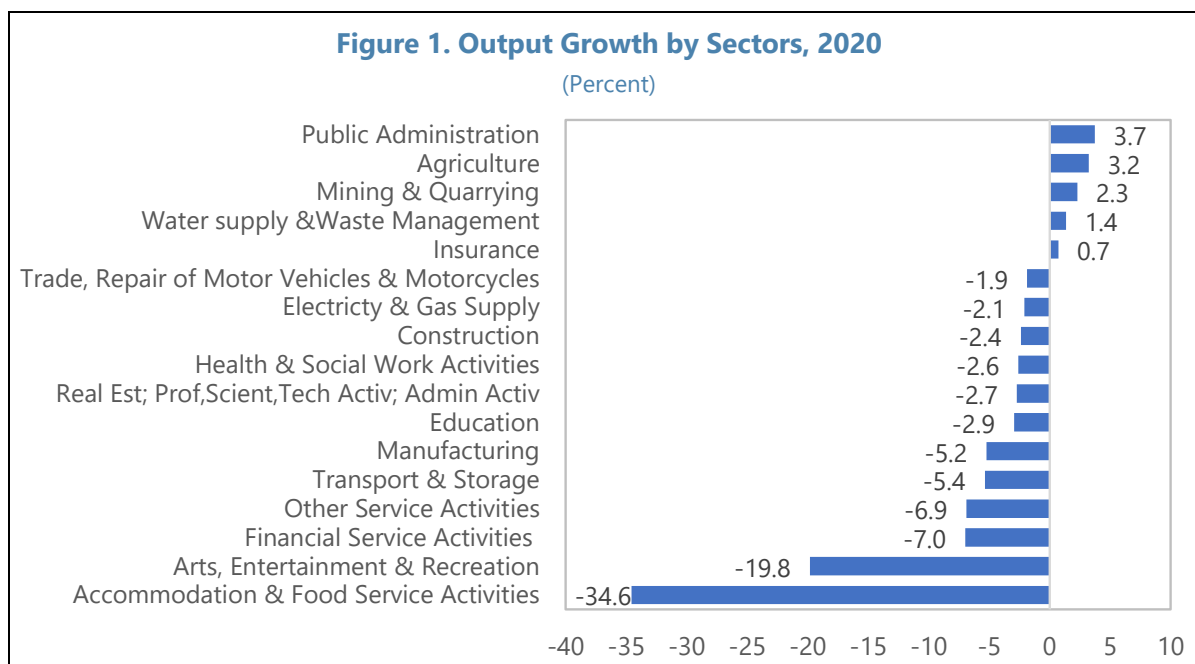


Figure 2. Return on Assets

(Percent)

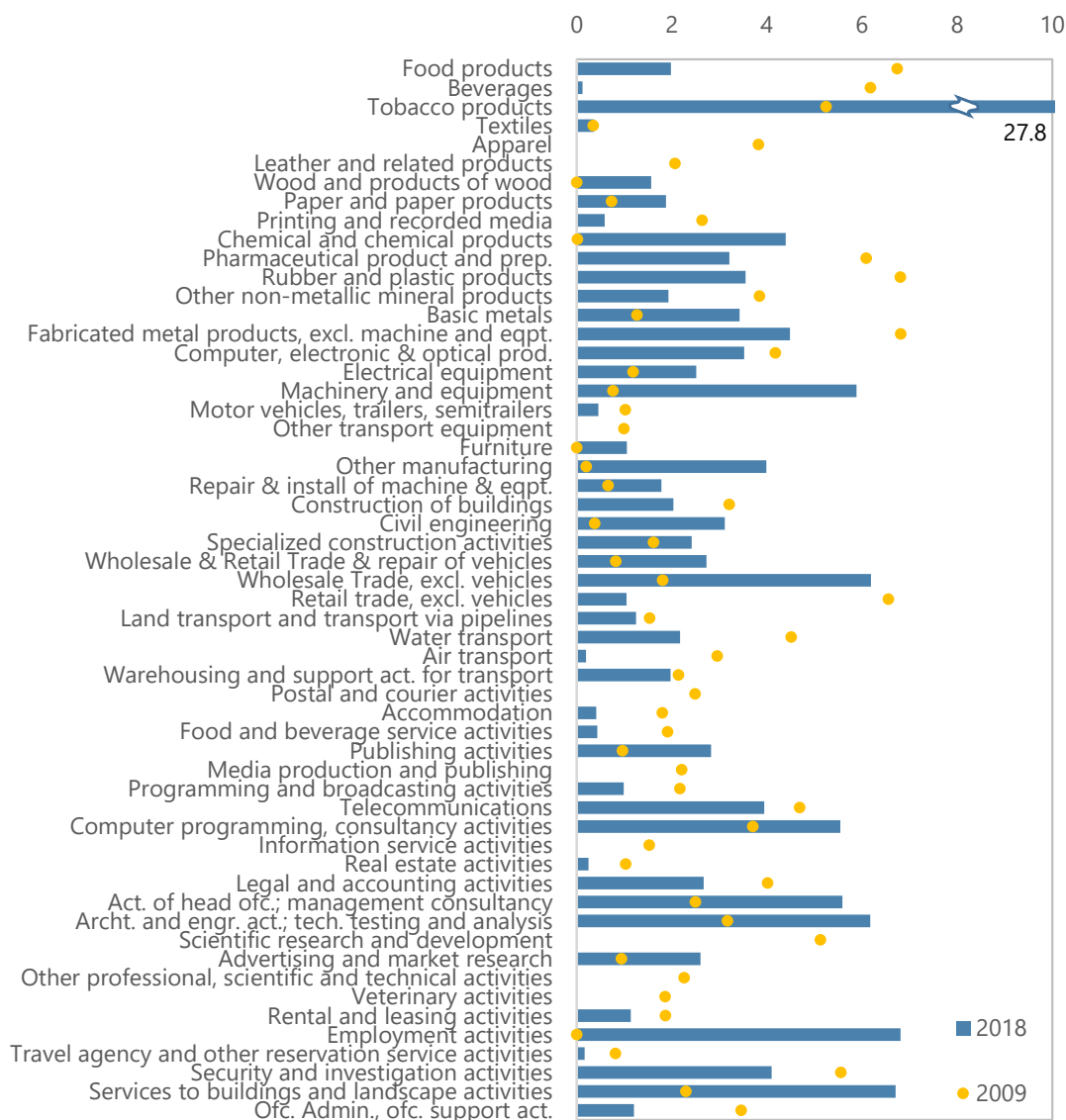


Figure 3. Impact on Cash Position of a Median Company

(CHF 1,000)

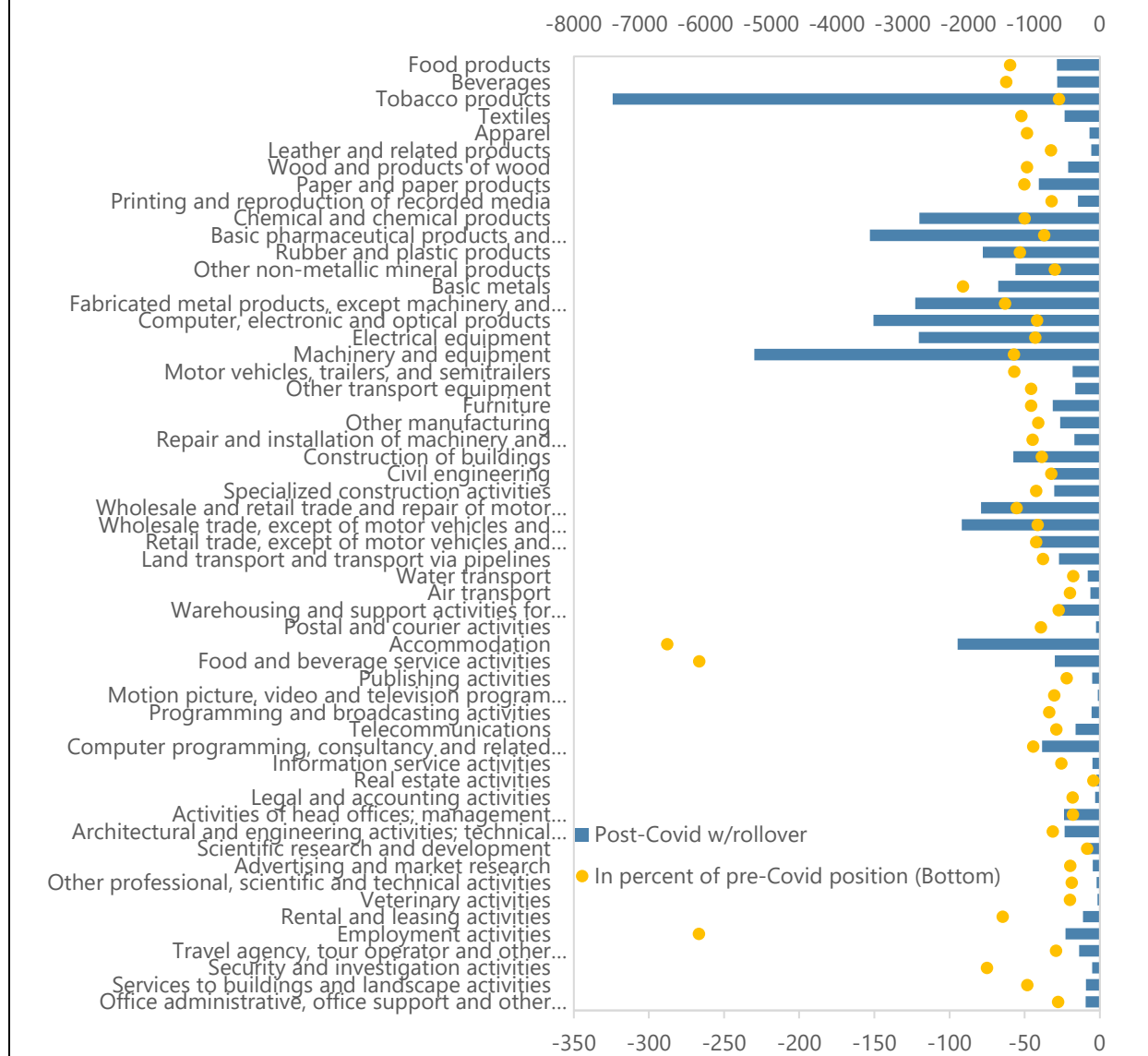


Figure 4. Impact on Equity of a Median Company

(CHF 1,000)

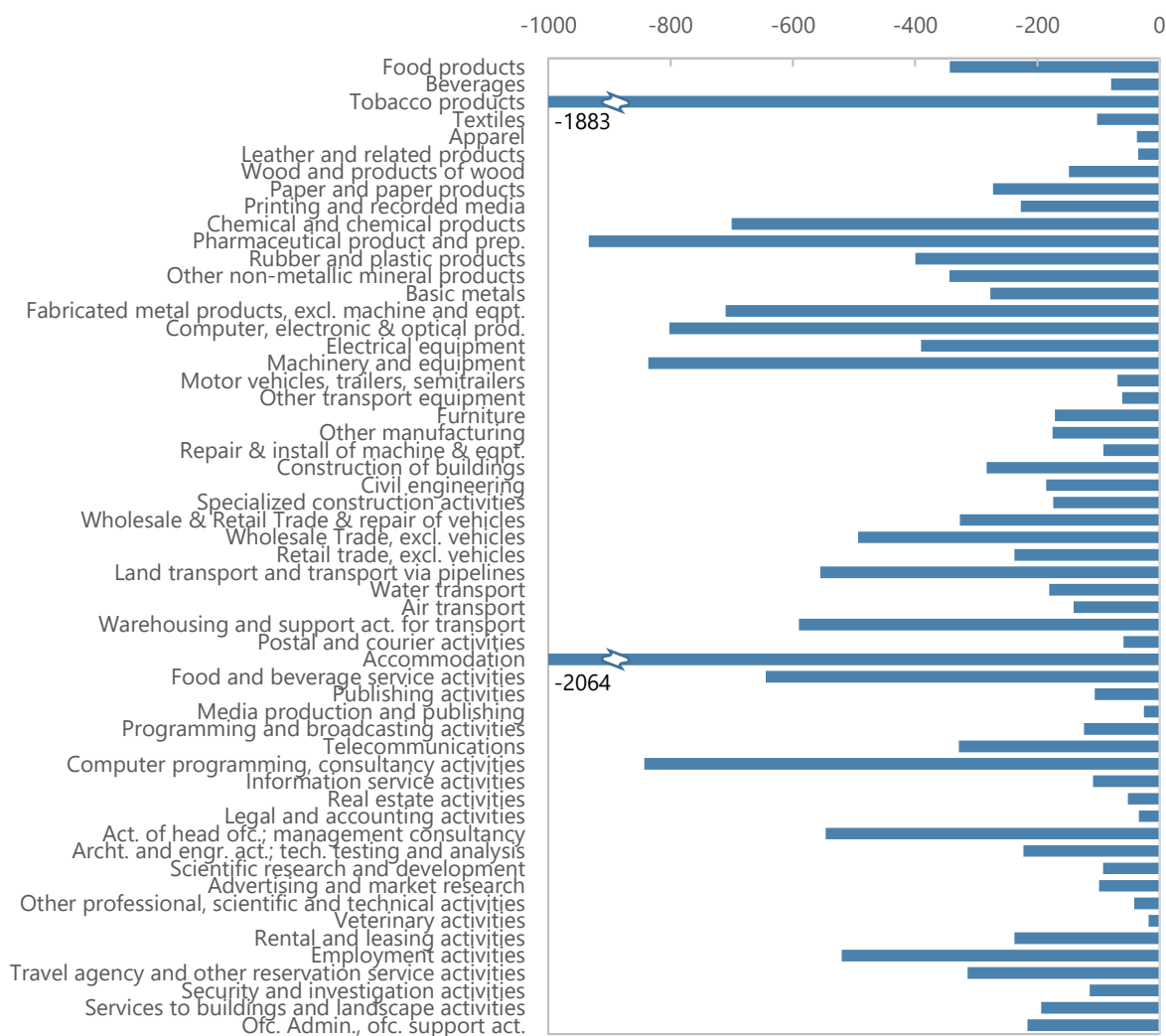


Figure 5. Impact of Key Policies on Liquidity Gaps

(CHF 1,000)

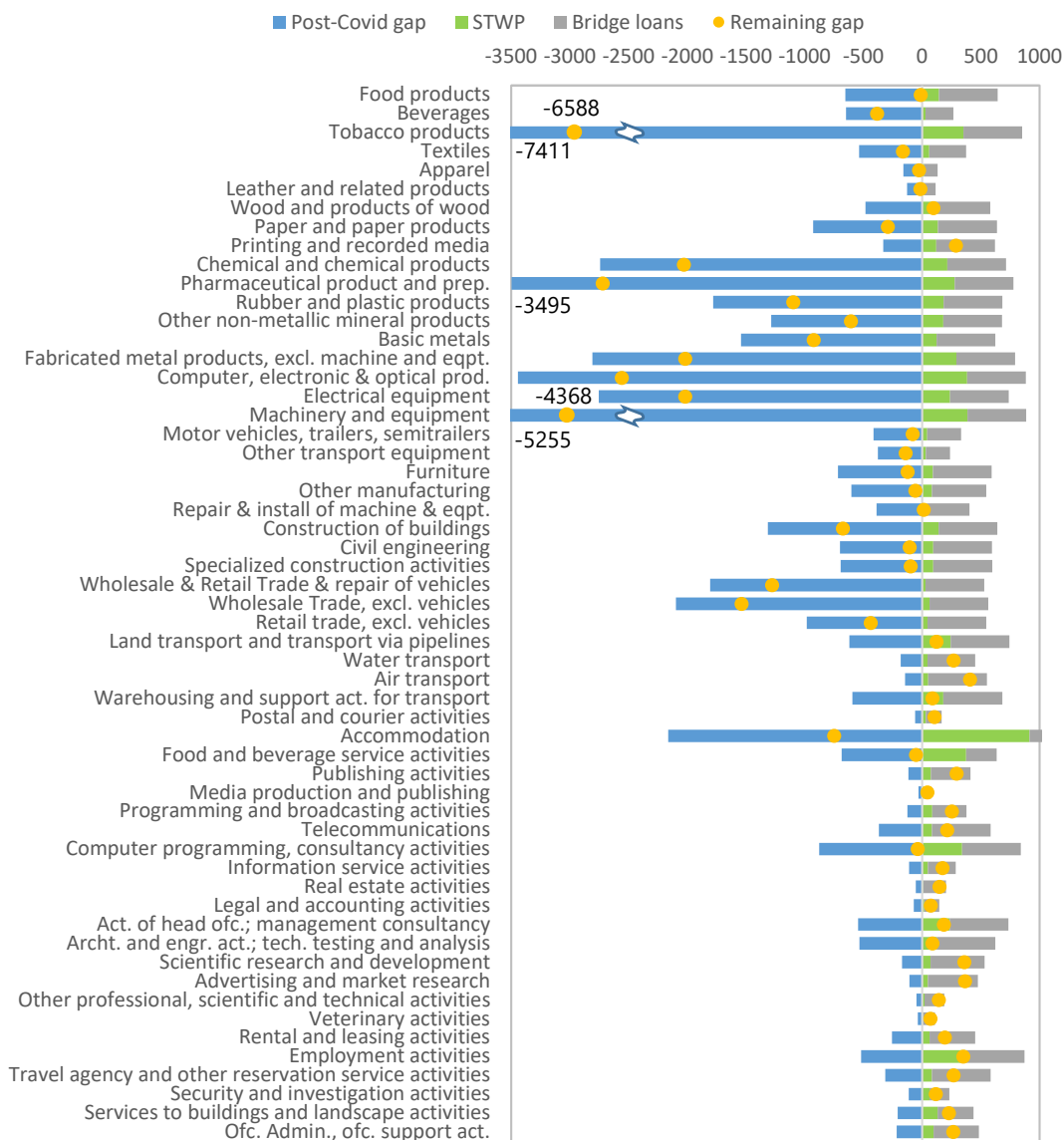


Figure 6. Post-Covid/Post-Policies Equity of a Median Company

(Percent, Pre-Covid Equity)



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SWISS FRANC—SAFE HAVEN FOR WHOM?¹

This paper suggests that, while foreign investments in Switzerland do not seem to have changed significantly since the global financial crisis (GFC), Swiss residents may have invested less abroad. This may have added to appreciation pressures. Restoring the interest of domestic residents to invest abroad may ease persistent appreciation pressures.

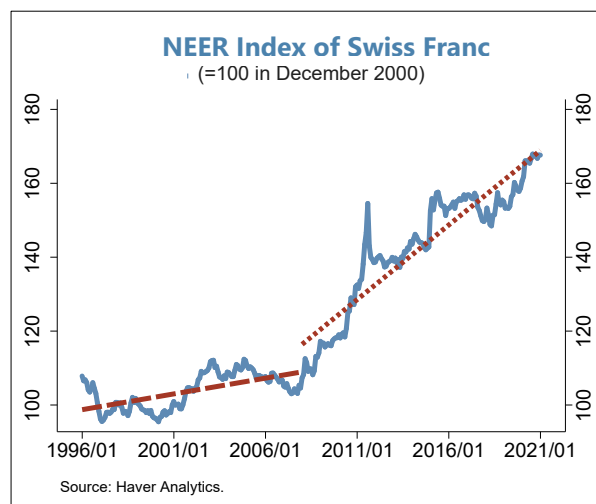
A. Heightened Appreciation Pressures

1. The franc has faced heightened appreciation pressures since the GFC. Although it has experienced a long-term appreciation trend, pressures were more moderate prior to the GFC. The nominal effective exchange rate (NEER) depreciated by about 3 percent between 1996 and 2007. In contrast, the NEER has appreciated by more than 50 percent since the GFC.

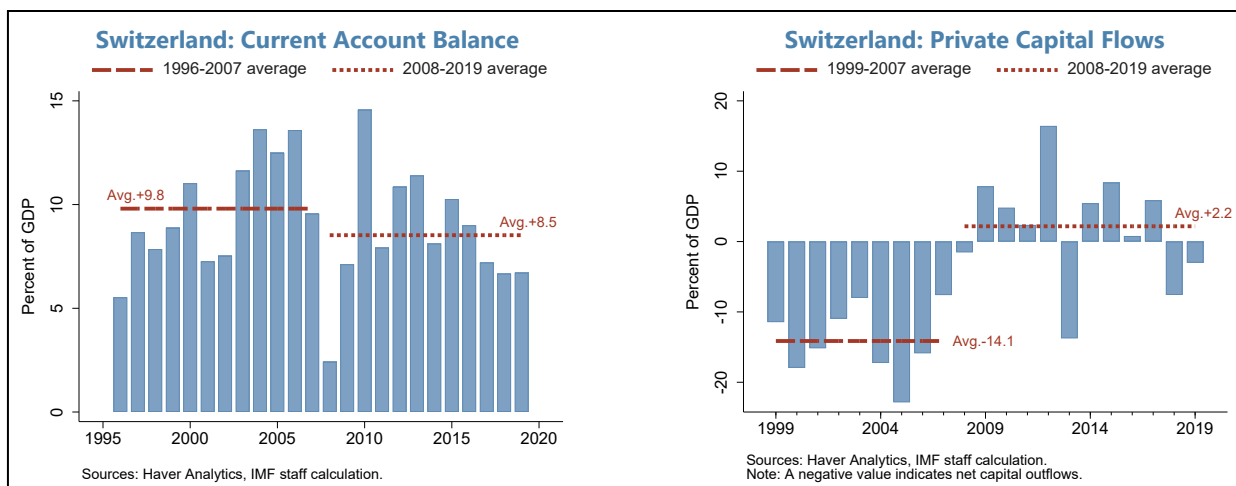
2. Although large, Switzerland's persistent current account (CA) surpluses have not been the main "culprit" behind stronger appreciation pressures. While the high CA

surplus may have been an important source of the appreciation pressure, the CA surplus alone does not explain a major change before and after the GFC. Switzerland's CA surpluses in percent of GDP were actually higher prior to the GFC—they averaged 9.8 percent of GDP between 1996 and 2007 and 8.5 percent of GDP during the post-GFC period (2008–2019).

3. A major shift happened to private capital flows. During 1999–2007, private capital outflows from Switzerland averaged 14.1 percent of GDP. These formed a dynamic balance with the current account: on the one hand, Switzerland had large FX inflows from the high CA surpluses; on the other, the private sector helped recycle them abroad, leaving relatively mild pressures on the franc. Since the GFC, however, this has not been the case. During 2008–2019, private capital flows turned into an annual average *inflow* of 2.2 percent of GDP. From a big-picture perspective, this shift is an important factor explaining why the SNB was forced to step in and fill the gap via foreign exchange interventions (FXIs).



¹ Prepared by Li Zeng (EUR). The author would also like to thank Mark Horton and Rachel van Elkan (both EUR) and seminar participants at the Swiss National Bank for their helpful comments.

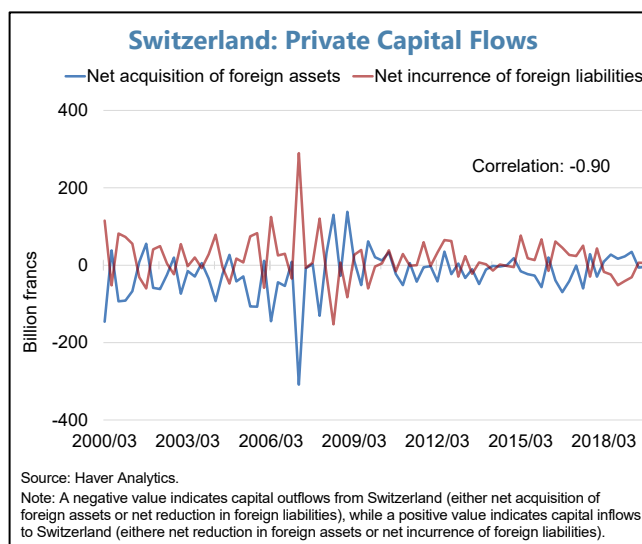


B. Who Shifted Private Capital Flows: Swiss Residents or Foreign Investors?

4. Answering this question requires some assumptions:

- *Investors have control over the allocation of their financial assets.*

Since any transaction involves at least two parties, this assumption helps define whose action is taken. As an example, suppose a Swiss resident buys shares on the US stock market. Since this transaction leads to an increase in the Swiss resident's foreign assets, it would be considered as his or her action. On the other hand, if a foreign investor buys shares on the Swiss stock market, such an incurrence of foreign liabilities (from the Swiss perspective) would be considered as an action of the foreign investor.



This assumption alone is not sufficient though, which can be seen from the high negative correlation between Switzerland's net acquisition of foreign assets (presumably actions by the Swiss residents) and net incurrence of foreign liabilities (presumably actions by foreign investors). The assumption alone would not only suggest that foreign investors were simply acting in the opposite direction of the Swiss residents, but also that foreign investors had tried to rush out of Switzerland at the height of the GFC.

- *In addition, investors also have certain control over their financial liabilities.*

The puzzling observation of GFC exit from Switzerland by foreign investors was largely driven by "offsetting financial flows." As an example, if a Swiss bank closed a foreign branch during the GFC,

large declines in Switzerland's foreign assets and liabilities would be observed simultaneously, while the actual capital flowing in and out of Switzerland may well have been very small. For the purpose of this paper, such offsetting financial flows booked in the BOP statistics should be netted out; otherwise, they would suggest a large withdrawal of foreign investment by Swiss residents and a similar withdrawal of investment in Switzerland by foreign investors at the same time.

This paper uses information from the Swiss financial accounts—which set out financial assets and liabilities of the Swiss economy and institutional sectors—to net out offsetting financial flows. Again, the assumption is that Swiss residents have control over transactions of those liabilities for which the Swiss financial accounts have breakdown information by counterparty domicile. The transactions of those liabilities are therefore considered as actions by Swiss residents and are netted out from the net acquisition of foreign assets by Swiss residents. More detailed information about the Swiss financial accounts and an illustrative example of the netting-out exercise can be found in the appendices. Once the netting-out adjustments are made for Swiss residents, the opposite modifications are made for foreign investors, information about which comes primarily from the financial accounts of the BOP.

It should be noted that among Swiss institutional sectors, netting-out adjustments are critical only for commercial banks. For other sectors, either foreign liability transactions are small, or the amounts of such transactions stayed relatively stable before and after the GFC and therefore do not bear implications for the structural break in private capital flows studied here. While the netting exercise based on the Swiss financial accounts is imperfect, it does provide more sensible results compared with relying on BOP data.

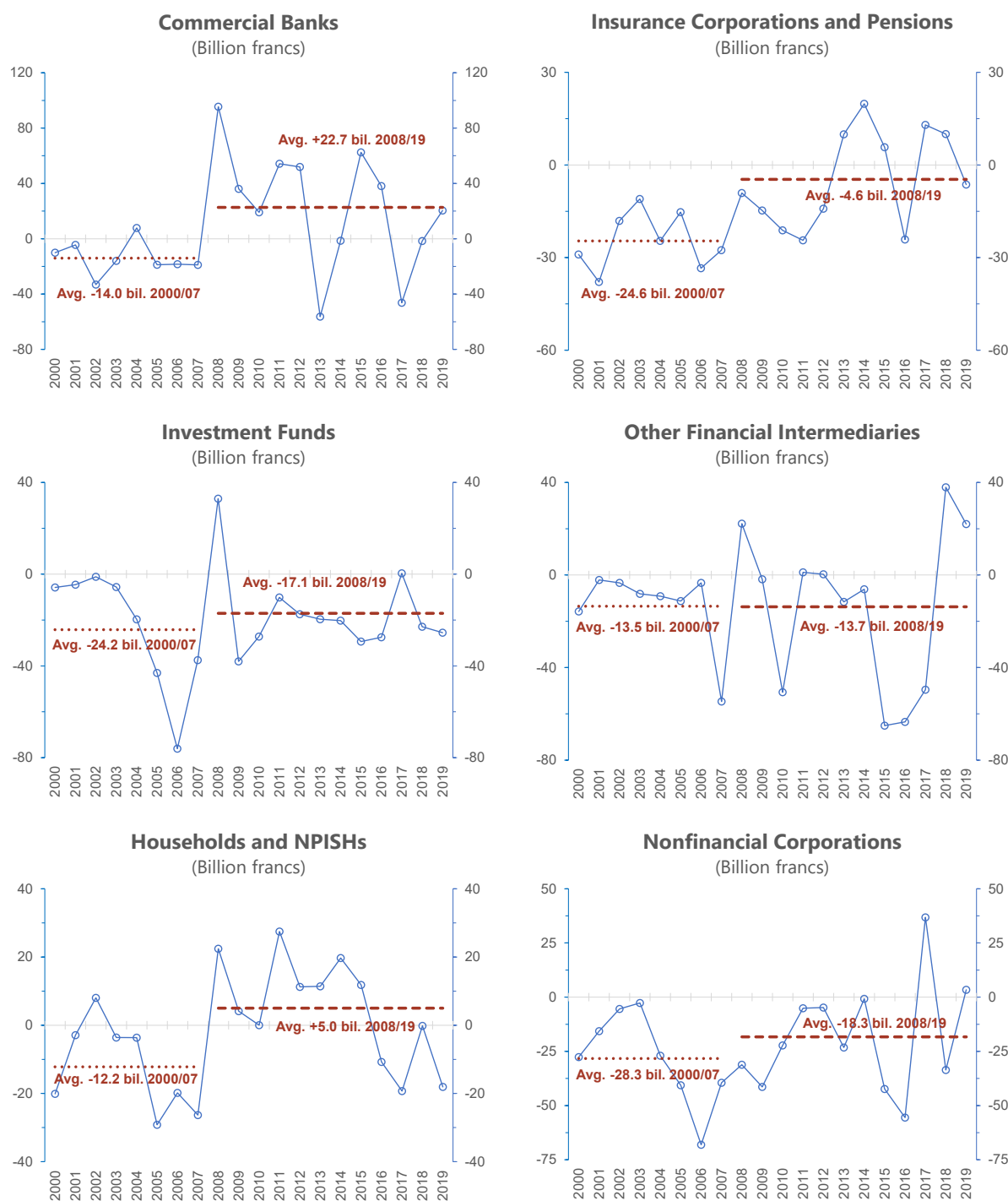
5. Almost all Swiss private investors have significantly reduced the amount of financial assets allocated abroad since the GFC:

- **Commercial banks.** During 2000–07, Swiss commercial banks acquired, on average, CHF 14 billion of foreign assets annually. Since the GFC, they have, on average, *reduced* foreign assets by about CHF 23 billion a year—a shift of almost CHF 37 billion annually compared to the pre-GFC episode.

- **Insurance corporations and pension funds.** The post-GFC reduction in overseas investment by these institutions was also large, by CHF 20 billion on average, from CHF 25 billion prior to the GFC to around CHF 5 billion since. An interesting observation is that while Swiss banks seem to have started to “return home” and significantly reduce their foreign assets during the GFC, it was not until 2013—after the breakout of the European sovereign debt crisis—that insurance companies and pension funds began to do so.

Switzerland: Capital Flows of Domestic Private Sectors 1/			
CHF billions	2000-2007 average	2008-2019 average	Change
Banks	-14.0	22.7	36.7
Insurance corporations and pension	-24.6	-4.6	20.0
Households	-12.2	5.0	17.2
Nonfinancial corporations	-28.3	-18.3	10.0
Investment funds	-24.2	-17.1	7.1
Other financial intermediaries	-13.5	-13.7	-0.2
All domestic private sectors	-116.8	-26.1	90.7
1/ A negative value indicates net acquisition of foreign assets (or capital outflows from Switzerland).			

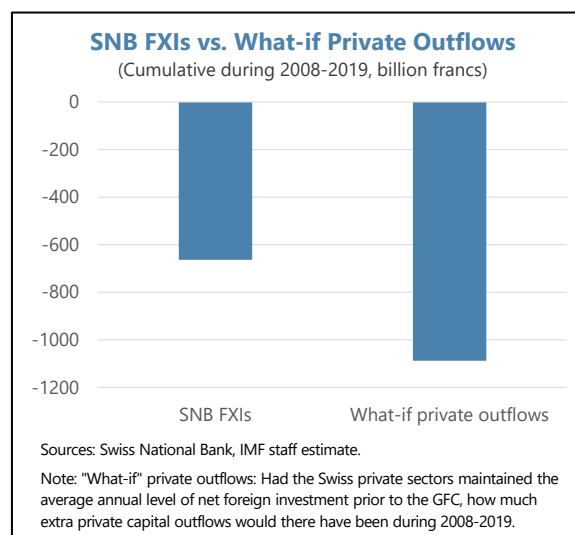
Figure 1. Swiss Residents: Net Acquisition of Foreign Financial Assets by Sector



Sources: Swiss National Bank, IMF staff estimate.

Note: Net incurrence/reduction of certain foreign liabilities was netted out (see Appendix 1). A negative value indicates a net acquisition of foreign assets (or capital outflows from Switzerland). Other financial intermediaries include, for instance, the Swiss mortgage bond institutions, and finance and holding companies of foreign groups whose activities in Switzerland are limited to group management and treasury operations.

- **Investment funds.** Compared with 2000–2007, investment funds have reduced their net acquisition of foreign assets by around CHF 7 billion a year since the GFC. The decline would be smaller, around CHF 2.5 billion a year, if 2008 is excluded.
- **Other financial intermediaries.**² The average annual acquisition of foreign assets by these institutions stayed virtually unchanged before (CHF 13.5 billion) and after (CHF 13.7 billion) the GFC. It is the only part of the Swiss private sector that did not reduce overseas investment after the GFC.
- **Households.** Similar to the banks, capital movements by households turned from net outflows prior to the GFC to net *inflows* since. The shift in the annual average was around CHF 17 billion. Interestingly, after the minimum CHF exchange rate versus the euro was discontinued in 2015, Swiss households seemed to have started to allocate financial wealth abroad again on a net basis. It remains to be seen whether this was affected by the COVID-19 pandemic.
- **Nonfinancial corporations.** Since the GFC, Swiss nonfinancial corporations have reduced their net acquisition of foreign assets from an annual average of CHF 28 billion to CHF 18 billion.
- **All private sectors together.** Putting all the segments of the Swiss private sector together, the average annual net acquisition of foreign assets dropped from almost CHF 120 billion a year prior to the GFC to about CHF 26 billion, a decline of over 75 percent. As noted previously, overseas investment by Swiss residents played an important role of recycling the current account surpluses abroad. When private capital outflows shrank or even turned the opposite direction, the SNB had to step in via FXIs. The SNB did not fully fill the gap left by the private sector, one of the reasons why the franc appreciated more after the GFC than during the previous period.

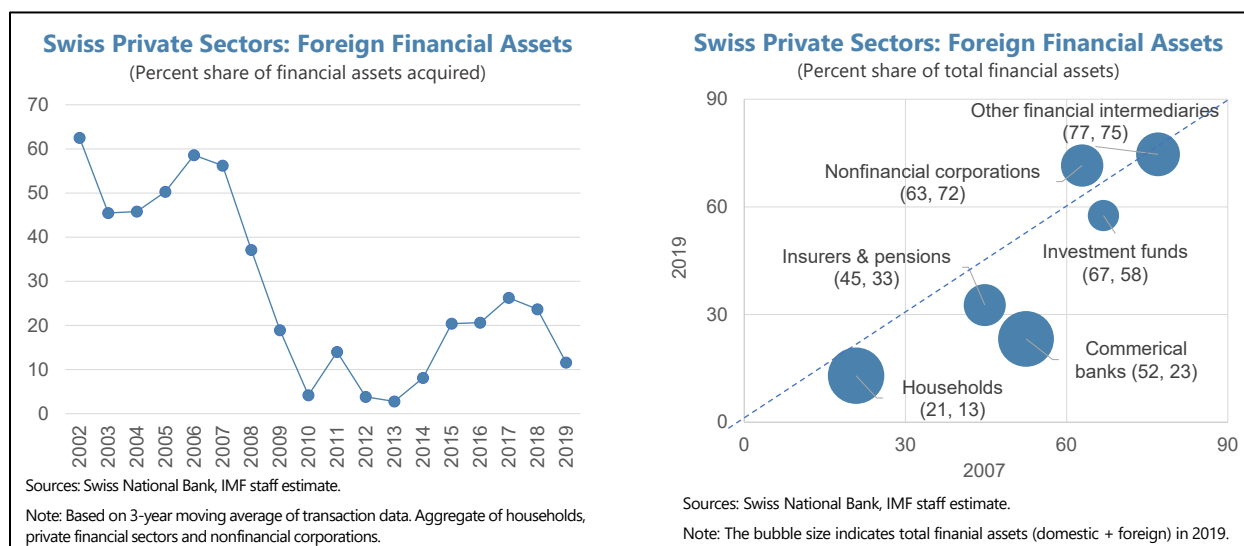


6. There are alternative ways to see the lower investments abroad of the Swiss private sector since the GFC. During 2002–07, net acquisition of foreign financial assets accounted for 40–60 percent of total financial assets acquired by the Swiss private sector each year. In the post-GFC period, this ratio averaged around 15 percent.³ Partly as a result of this change, foreign financial assets now make up much smaller shares of the total financial assets held by the Swiss private

² Important components of this sector are finance and holding companies of foreign groups whose activities in Switzerland are limited to group management and treasury operations, both of the Swiss mortgage bond institutions, as well as the investment foundations of tax-exempt old-age benefit institutions.

³ The calculations are based on numbers after the netting-out adjustments explained above.

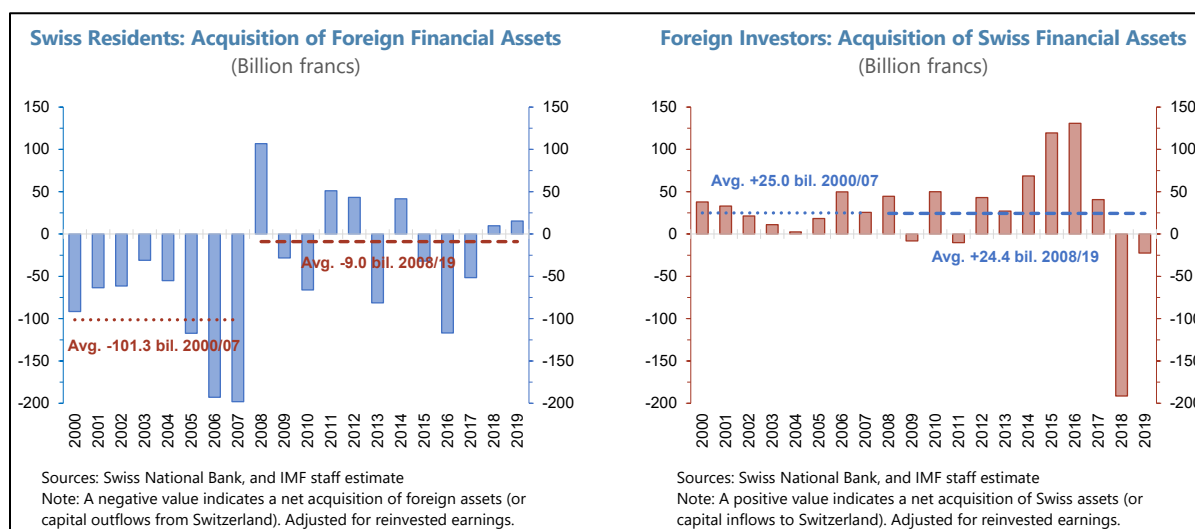
sector. The biggest decline was observed among banks—in 2007, 52 percent of Swiss commercial bank financial assets were foreign assets; this declined to 23 percent in 2019. The share of foreign assets also dropped significantly for Swiss households, from 23 percent in 2007 to 13 percent in 2019. Foreign assets held by insurance companies and pension funds, investment funds, and other financial intermediaries, also declined, although not as sharply as for banks and households. The only exception was nonfinancial corporations, where the share of foreign financial assets increased from 63 percent in 2007 to 72 percent in 2019.



7. Some caveats should be noted in interpreting these findings. First, foreign asset investment or holding is not equivalent to foreign currency exposure. In fact, many foreign assets held by Swiss investors are franc-denominated. Considering the continued appreciation of the franc, Swiss investor interest in *non-franc* assets may have declined even more than their interest in *foreign* assets. Second, a sector's *direct* investment in or holding of foreign assets may not accurately reflect its *ultimate* exposure to foreign assets. For example, a pension fund may have indirect holdings of foreign assets through a domestic investment fund. Although this shows the need to be cautious in interpreting individual sub-sector's holding of foreign assets (both in level and in share), it does not affect the aggregate amount of foreign assets acquired by the Swiss private sector. Finally, in addition to investment, changes in the stock of foreign assets can also be driven by exchange rate movements and capital gains or losses. Exchange rate changes are particularly important for Switzerland, given the large, cumulative nominal appreciation of the franc.

8. Notably, while foreign investors have continued to invest in Switzerland, post-GFC average amounts have not changed significantly. After the netting-out adjustments, the annual acquisition of Swiss financial assets by foreign investors averaged CHF 25 billion during 2000–07 and stayed virtually unchanged during 2008–2019 at CHF 24.4 billion. There were large withdrawals of investment from Switzerland in 2018 and 2019, likely influenced by tax reforms in other advanced economies, notably the U.S. If 2018 and 2019 were excluded, the post-GFC average annual acquisition of Swiss financial assets would have been around CHF 50 billion. While the CHF 25 billion

increase relative to the pre-GFC average is sizable, it is still much smaller compared with the decline in the Swiss residents' acquisition of foreign assets.⁴



C. Policy Implications

9. From an aggregate perspective, persistent post-GFC appreciation pressure on the Swiss franc seem to have been driven more by domestic Swiss residents than by foreign investors. Switzerland has remained an attractive investment destination for foreign investors, but not significantly more so than it was prior to the GFC. This is not surprising considering the progress that Switzerland has made in improving banking transparency and aligning its domestic taxation with international standards. On the other hand, Swiss investors have become less willing to allocate financial assets overseas, adding appreciation pressures on the franc and with the SNB playing a bigger role in recycling current account surpluses through FXIs and acquisition of foreign assets.

10. There may be a self-reinforcing component in the behavioral change by Swiss investors. While their initial decisions to invest less abroad might have been related to economic developments, such as the GFC or the European sovereign debt crisis, franc appreciation hastened by these behavioral changes made investment in foreign financial assets even less attractive. To a certain degree, there may have also been a “coordination failure” among Swiss private sectors: while individual Swiss investors might have been making the best decision from their own perspective by investing less abroad, jointly they may have led the Swiss economy to a less-favorable equilibrium compared with the pre-GFC period, when private capital outflows broadly offset CA surpluses and left more moderate appreciation pressure. Such a self-reinforcing mechanism and “coordination failure” suggest that policy measures may help “break” this cycle, and push the economy to a more favorable equilibrium. The experience of other economies with high CA surpluses—for example,

⁴ The aggregate numbers for Swiss residents shown in the chart are slightly differently those shown in the table before, because they are adjusted for reinvested earnings, which do not constitute actual capital flows in and out of Switzerland. The estimates without the netting-out adjustments are shown in Appendix 3.

Norway or Singapore—suggests that policy actions do not need to lie solely within the scope of monetary policy and FXI.

11. Short of establishing a sovereign wealth fund or public holding company, measures to restore the interest of domestic residents in investing abroad may alleviate appreciation pressures. These could include steps to reduce the attractiveness of domestic financial assets (e.g., further cutting the policy interest rates, although potential side effects would need to be carefully balanced), removal of regulatory impediments, changing of asset management guidelines, or modifying tax incentives to foster greater overseas investment.

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Appendix I. Swiss Financial Accounts: Data Availability on Stocks of Financial Assets and Liabilities of the Institutional Sectors

	Sector	Currency and deposits	Debt securities	Loans	Shares and other equity	Unites in collective investment schemes	Insurance and pension schemes	Financial derivatives	Other accounts receivable	Monetary gold and SDRs	Total financial assets / liabilities (bil. francs)	Share financial assets / liabilities with domestic / foreign breakdown (%)	Share of known foreign assets (%)
Assets	Households	✓	✓	n.a.	✓	✓	✓	n.a.	n.a.	n.a.	2786	100	13.8
	Commercial banks	✓	✓	✓	✓	✓	n.a.	X	n.a.	n.a.	2601	98.4	22.0
	Insurance corporations and pensions	✓	✓	✓	✓	✓	✓	n.a.	n.a.	n.a.	1628	100	31.1
	Investment funds	✓	✓	n.a.	✓	✓	n.a.	n.a.	n.a.	n.a.	963	100	54.2
	Other financial intermediaries	✓	✓	✓	✓	✓	n.a.	n.a.	n.a.	n.a.	1638	100	74.1
	Nonfinancial corporations	✓	✓	✓	✓	✓	✓	n.a.	X	n.a.	1465	97.0	72.5
	SNB	✓	✓	✓	✓	✓	n.a.	X	n.a.	✓	860	100.0	93.1
	General Government	✓	✓	✓	✓	✓	n.a.	X	X	n.a.	417	87.5	4.5
Liabilities	Households	n.a.	n.a.	✓	n.a.	n.a.	n.a.	n.a.	X	n.a.	922	98.3	2.1
	Commercial banks	✓	X	✓	X	n.a.	n.a.	X	n.a.	n.a.	2510	85.9	26.9
	Insurance corporations and pensions	n.a.	X	✓	X	n.a.	✓	n.a.	n.a.	n.a.	1513	88.8	15.0
	Investment funds	n.a.	n.a.	✓	n.a.	X	n.a.	n.a.	n.a.	n.a.	1064	2.3	0.2
	Other financial intermediaries	✓	X	✓	X	X	n.a.	n.a.	n.a.	n.a.	1601	21.0	18.2
	Nonfinancial corporations	n.a.	X	✓	X	n.a.	n.a.	n.a.	n.a.	n.a.	2752	26.6	14.8
	SNB	✓	n.a.	n.a.	✓	n.a.	n.a.	X	n.a.	✓	861	100.0	12.5
	General Government	X	X	X	n.a.	n.a.	✓	X	X	n.a.	298	1.8	1.8

The summary is based on the stock information at the end of 2019.

"v" indicates that a sector not only has such financial assets or liabilities, but also has the information on breakdown by counterparty domicile.

"X" indicates that a sector has such financial assets or liabilities, but the breakdown by counterparty domicile is not available for such assets or liabilities.

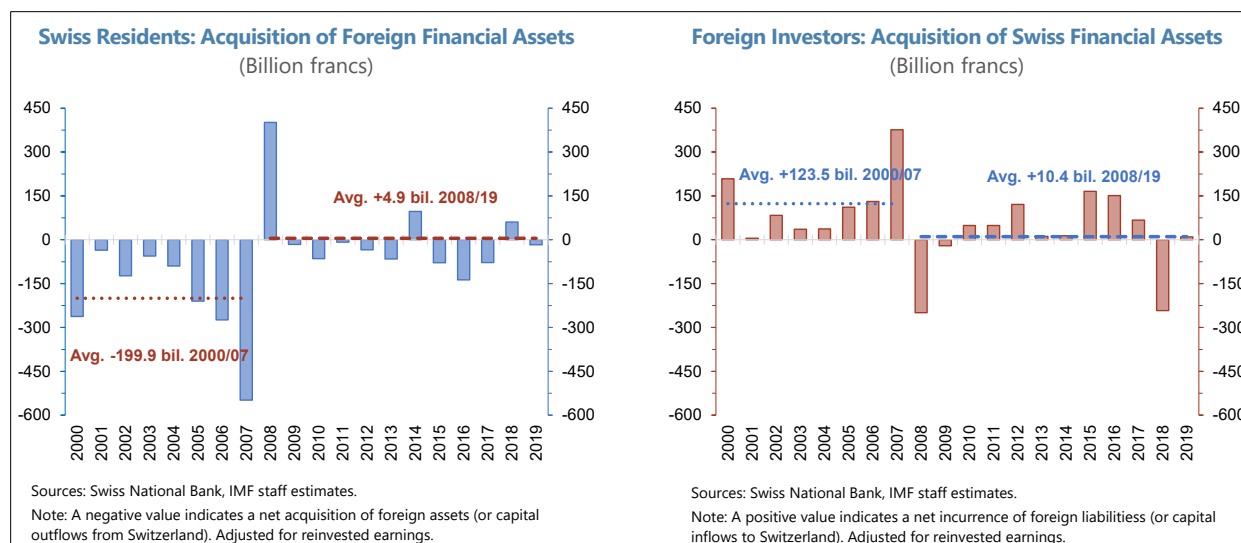
"n.a." indicates not applicable or data is not available.

Appendix II. An Example of the Netting-out Adjustments

Swiss commercial banks, net financial transactions, 2008 (billion francs)	Currency and deposits	Debt securities	Loans	Shares and other equity	Unites in collective investment schemes	Insurance and pension schemes	Financial derivatives	Other accounts receivable	Monetary gold and SDRs
Assets	-336.7	-14.8	-26.1	1.1	0	n.a.	X	n.a.	n.a.
Liabilities	-281.0	X	0	X	n.a.	n.a.	X	n.a.	n.a.
Note: "X" indicates that the breakdown between domestic and foreign counterparties is not available. "n.a." indicates not applicable or data is not available.									

- Commercial banks' net acquisition of foreign financial assets in 2008 would be CHF-95.5 billion (i.e., net reduction), where $-95.5 = -336.7 - 14.8 - 26.1 + 1.1 - (-281.0)$.
- The liabilities transactions already netted out here will be later excluded from the calculation of foreign investors' acquisition of Swiss financial assets.

Appendix III. Estimates of Private Capital Flows without the Netting-out Adjustments



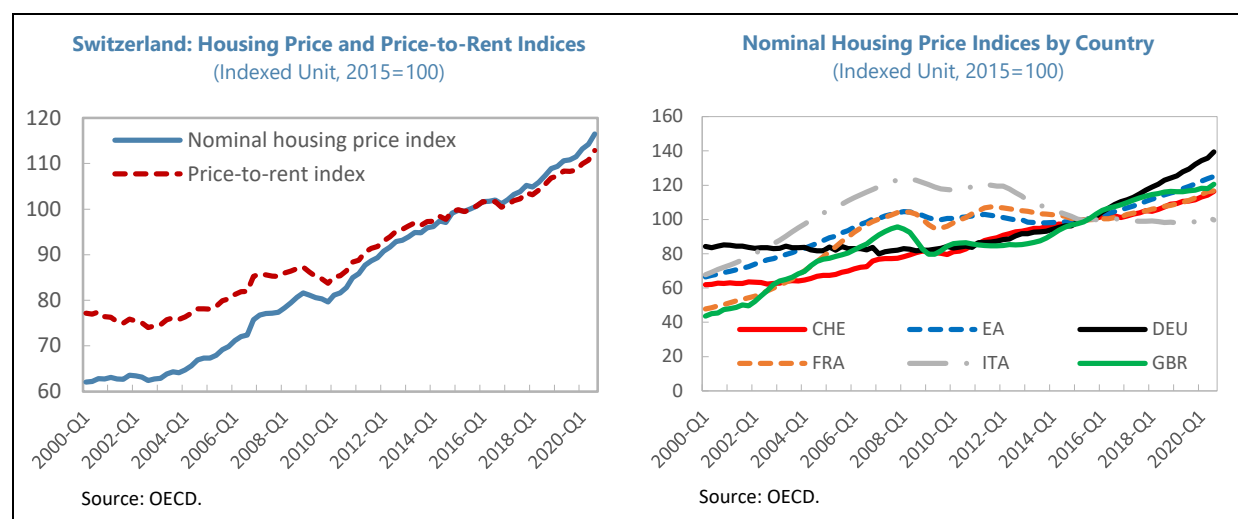
A MODEL OF THE HOUSING-MARKET BREAKEVEN VACANCY RATE FOR SWITZERLAND¹

This paper investigates the housing-market breakeven vacancy rate in Switzerland. A theoretical model is studied, and an empirical estimation is applied to examine how different macroeconomic factors affect the breakeven vacancy rate. Results suggest that the housing-market breakeven vacancy rate has increased steadily and reached a high in 2020, mainly reflecting the effect of falling interest rates on financing costs. The findings suggest the need for fiscal and macroprudential policy actions.

A. Motivation and Stylized Facts

1. Housing is an important asset class in Switzerland. The domestic capital market is relatively thin, and demand from investors for real estate has remained high, due in part to lack of alternative yield opportunities. Real estate is an attractive investment because it provides positive cash flow from rents (unlike negative yielding bonds) and prospects of valuation gains. Lack of other investment opportunities has driven individual investors, banks, insurance companies, and pension funds into the property market, especially the buy-to-let segment.

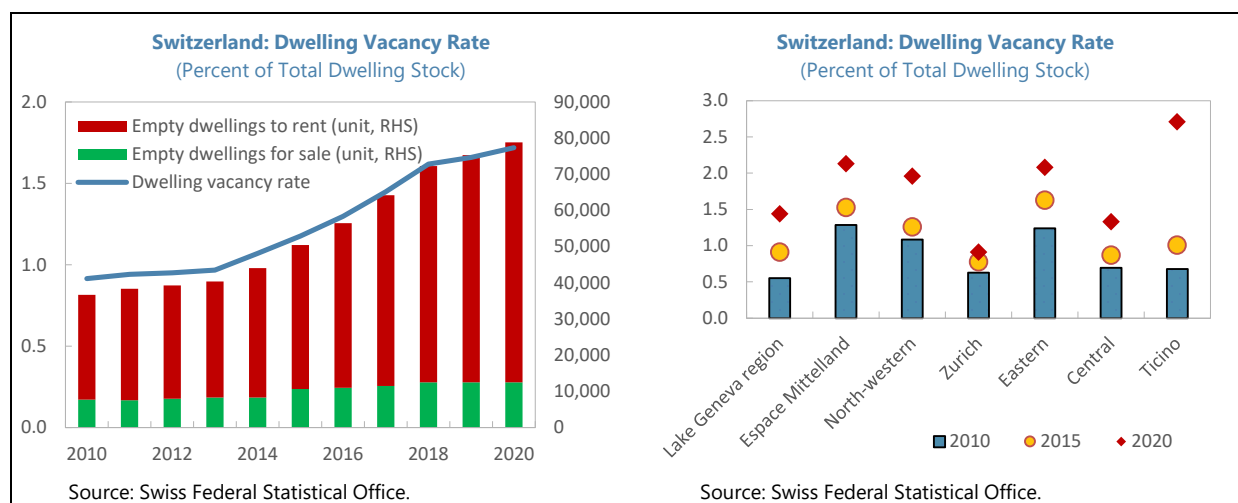
2. Both housing prices and the price-to-rent ratio have increased in recent years. Since the mid-2000s, residential property prices have risen steadily amid declining interest rates. According to the OECD, nominal housing prices have climbed by about 50 percent since the Global Financial Crisis (GFC). Meanwhile, rents have also moved up, although the pace of rental increases has not been as fast as the run-up of housing prices.



¹ Prepared by Zhongxia (Sam) Zhang. The author is grateful to Mark Horton, Rachel van Elkan, Svitlana Maslova, Li Zeng, and seminar participants from the Swiss National Bank, the Financial Markets Supervisory Authority (FINMA), the Federal Finance Administration, the State Secretary for international Finance (SIF), and the State Secretariat for Economic Affairs (SECO) for helpful comments.

3. Higher housing prices are not a phenomenon unique to Switzerland, as other countries in Europe have observed similar trends. Since 2015, France, Germany, and the United Kingdom have all experienced rises in housing prices. The magnitude of housing price increases in Switzerland is comparable to that in France, but less than those in Germany or the UK. Notably, the Swiss housing market did not have a major price correction over the last two decades, and the upward-moving trend has been less volatile than in other markets.

4. As houses have become more expensive, vacancy rates have risen. Dwelling vacancy rates have increased from 0.9 percent in 2010 to 1.7 percent in 2020, the highest level since the Swiss Federal Statistical Office revised its vacancy-rate calculation methodology in 2010. A surge in empty dwellings for rent explains most of the rise in the vacancy rates, as the increase in empty dwellings for sale has been limited. Large and steady increases in vacancy rates are universal across all geographical regions in Switzerland. The Ticino Region has seen a four-fold increase in vacancy rates, the most among all regions. Higher housing prices and affordability risks and rising vacancy rates have drawn significant public attention.



5. Exposure to real estate is high and widespread in Switzerland, making the real estate market critical for the real economy and financial stability. By the end of 2020, the overall mortgage exposure of the banking sector amounted to CHF 1,072 billion, accounting for about 85 percent of domestic loans. The mortgage-to-GDP ratio was expanding at a pace of 3 percentage points of GDP per year during 2011–2019 and rose by 10 percentage points in 2020, significantly outpacing income growth and bringing domestic bank credit to around 180 percent of GDP. Swiss insurance companies and pension funds have increased their asset allocation in real estate to one-third. Investments in real estate investment trusts have also grown. Swiss households are ultimate beneficial owners through direct property ownership and indirectly through savings in banks, pensions, insurance vehicles, and other asset holdings. Future real estate price corrections could hurt household balance sheets and raise financial stability issues, especially for domestically-focused banks.

6. This paper formulates a housing-market breakeven vacancy rate, examines its determinants, and discusses policy implications. First, a theoretical model is proposed to examine how housing prices, price-to-rent ratios, interest rates, and a vacancy tax affect the housing-market breakeven vacancy rate. Second, actual data are used to empirically estimate the Swiss breakeven vacancy rate and decompose contributions from housing price increases, interest rates, and price-to-rent ratios. Third, the paper discusses potential policy implications of the findings and highlights the role of fiscal policy and macroprudential policy in safeguarding healthy housing-market developments and financial stability.

B. Theoretical Model

7. The housing-market breakeven vacancy rate is defined as the percent of empty homes at which costs and incomes are equal, with neither profit nor loss. The breakeven vacancy rate satisfies the following condition:

- Interest costs + operating expenses + taxes and fees = property appreciation + rent price × (100% - vacancy rate)

The left side of the equation represents sources of costs in a real estate investment; the right side comprises sources of income, both price appreciation and rental income. If the actual vacancy rate is below the breakeven vacancy rate, investing in real estate is profitable. On the other hand, if the actual vacancy rate is above the breakeven rate, investing is loss-making. While the actual vacancy rate of real estate property is bounded between 0 and 100 percent, the breakeven vacancy rate can be negative or above 100 percent.

8. This paper develops a classic asset pricing model for the housing market. The model uses recursive macroeconomic theory to form a maximization problem under an infinite horizon into a series of two-period optimization decisions. The value of a real estate asset today is thus equal to the discounted future value of the income-producing asset in the next period. Changes in housing prices and rents, interest rates, and other costs are linked in an equilibrium equation. The breakeven vacancy rate can be derived as a function of other macroeconomic variables. The full mathematical description of the model is shown in Box 1.

9. Because the breakeven vacancy rate depends on other variables, this paper investigates how other macroeconomic variables affect the breakeven rate. Using partial derivatives (i.e., comparative statics), three important propositions are obtained:

- Proposition 1: a lower mortgage-lending rate increases the breakeven vacancy rate. Intuitively, lower interest costs reduce the cost side of the equation and are balanced by lower rents or higher vacancy rates, everything else equal.
- Proposition 2: a higher housing price increases the breakeven vacancy rate. Similarly, higher housing prices elevate the income side of the equation and are balanced by lower rents or higher vacancy rates, everything else equal.

- Proposition 3: a vacancy tax reduces the breakeven vacancy rate, when the vacancy rate is positive. This is because higher tax costs increase the cost side of the equation and are balanced by higher rents or lower vacancy rates, everything else equal.

C. Empirical Results

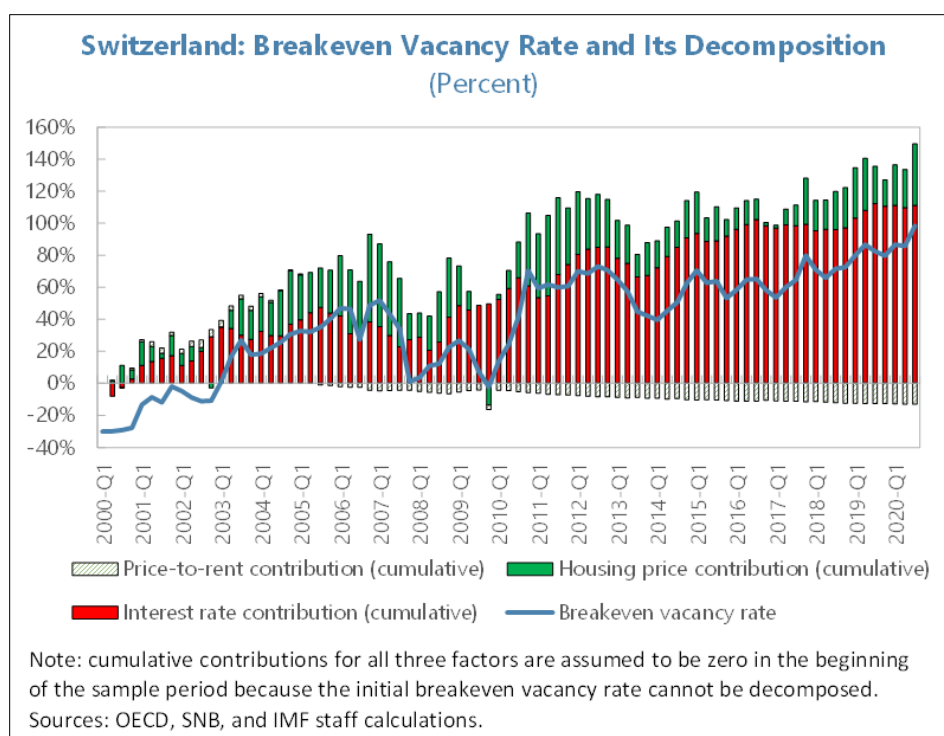
10. With some simplifications, the theoretical model can be studied based on empirical housing market data for Switzerland. While historical time series on operating expenses, taxes and fees are not available and are hard to measure, historical data on mortgage interest rates, housing prices, and price-to-rent ratios are readily available. Housing prices and price-to-rent ratios can be obtained from the OECD, and mortgage interest rates from the Swiss National Bank (SNB). Therefore, values of breakeven vacancy rates can be approximated and decomposed if we drop the factors of operating expenses, taxes, and fees. Specifically, the breakeven vacancy rate satisfies the following simplified condition:

- Interest costs = property appreciation + rent price $\times$ (100% - vacancy rate)

From the above equation, it is evident that the breakeven vacancy rate is a function of (1) interest rates; (2) changes in housing prices; and (3) the price-to-rent ratio.

11. The estimated Swiss housing-market breakeven vacancy rate is high and has been on the rise in recent years. The estimated results using historical data suggest that the housing-market breakeven vacancy rate has followed an upward trend over the past two decades. The breakeven rate increased from about 0 percent in the early 2000s to close to 100 percent in 2020. This implies that it would have been profit-neutral to acquire a residential property in 2020, even with full expectations that the property would be vacant. While the GFC and associated price corrections caused the breakeven rate to decline to around 0 percent during 2009–2010, it rebounded subsequently and reached an all-time high in 2020.

12. The interest-rate factor has contributed the most to the increases in the breakeven vacancy rate. Over the past two decades, the 10-year mortgage interest rate has decreased from around 6 percent in 2000 to 1 percent in 2020. According to the estimation, this decline contributed 82 percent of the total increase in the breakeven vacancy rate, the most among all macroeconomic factors. Housing price appreciation is the second largest contributor, accounting for around 28 percent of the rise in the breakeven vacancy rate. During 2000–2020, nominal housing prices have grown by 88 percent, or an annual rate of 3.2 percent. Lastly, the price-to-rent factor contributed the least—and negatively—to the breakeven vacancy rate. During 2000–2020, price-to-rent ratios have increased by 46 percent, or 1.9 percent each year. As rent prices diminish relative to house prices, a higher share of real estate is required to be rented out, thus placing downward pressure on the breakeven vacancy rate, everything else being the same.



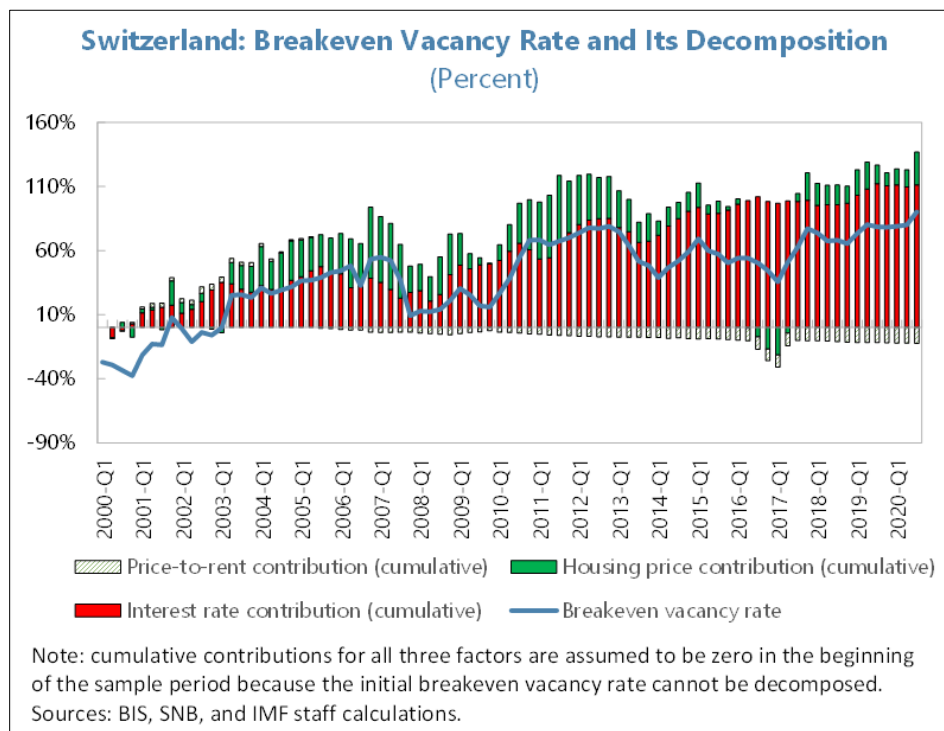
Decomposition of breakeven vacancy rate by macroeconomic factor, 2000-2020		
	Cumulative contribution	Percent of total contribution
Interest rate factor	105%	82%
Price appreciation factor	36%	28%
Price-to-rent ratio factor	-12%	-10%
Change in breakeven vacancy rate	128%	100%

13. The nearly 100 percent breakeven vacancy rate in 2020 may seem very high, but it can be explained by actual data. In Q3:2020, Swiss housing prices increased by 1.3%, y/y, while the 10-year mortgage rate was 1.26%. A hypothetical example illustrates that investors could achieve breakeven without renting the property. Suppose an investor bought a property one year ago with a mortgage for CHF 1,000,000 and an interest rate of 1.26%. In Q3:2020, borrowing costs would be $1.26\% \times \text{CHF } 1,000,000$. If the investor decided to sell the property, the returns are $(101.3\% - 100\%) \times 1,000,000 = 1.3\% \times \text{CHF } 1,000,000$. Without renting the property (i.e., 100% vacancy rate), borrowing costs and income from home appreciation are roughly the same. The estimates show that the lower-for-longer interest rate environment and higher housing prices have fundamentally affected the cost-return profile, contributing to rising breakeven vacancy rates. Results indicate that the interest rate has been the dominant factor for the breakeven vacancy rate in recent years; the flattened and downward-shifting yield curve has generated a long super-cycle in the Swiss real estate market.

14. The rising breakeven vacancy rate coincides with higher actual vacancy rates. Both breakeven and actual vacancy rates are rising and positively correlated in recent years. However, it is important to distinguish the two concepts: the breakeven vacancy rate is not same as the actual vacancy rate, because the latter requires a higher rate of return than a zero-profit rate of return. In addition, it is useful to focus on the rising trend of the breakeven vacancy rate in general while

treating the estimated breakeven rate with caution. If operating expenses, taxes, and fees are included in the calculation, the estimated breakeven vacancy rate will be lower. While it is hard to quantify the optimal level of breakeven vacancy rate for a housing market, ideally it should be positive but small. High housing vacancies create welfare losses to the society.

15. Robustness checks using alternative data sources show similar results. To test the robustness of the results, the BIS residential property price index is used. Results are qualitatively similar. The estimated breakeven vacancy rate follows an upward trajectory, mostly due to the interest rate factor.



D. Policy Implications

16. The findings have strong potential policy implications. Results show that the housing-market breakeven vacancy rate in Switzerland has risen steadily and reached an all-time high in 2020, reflecting mainly the effect of falling interest rates on financing costs. The findings reveal unintended side-effects of monetary policy on financial stability. A price correction in the residential real estate market or materialization of affordability risks could negatively affect financial institutions, such as domestically-focused banks with large, concentrated mortgage portfolios and lead to credit losses. These risks call for continued close monitoring and possible responses from fiscal and macroprudential policies. The authorities should continue to conduct tailored stress tests to assess market risks, examining how increases in interest rates and declines in housing prices and economic output would affect both owner-occupied residential properties and investment properties and to what extent such shocks would deplete capital buffers of financial institutions.

17. For fiscal policy, a review of a possible vacancy tax could be considered. A vacancy tax would disincentivize investors from holding empty homes and thereby aim to address price pressures and affordability concerns. Prior international experiences provide lessons for designing a vacancy tax. For example, in Canada, British Columbia has a speculation and vacancy tax on non-principal residences. A home that is not a principal residence must be rented for at least six months per year to be exempt from the tax. In 2017, the Australian government introduced a vacancy fee for foreign owners of residential dwellings if the dwelling is not residentially occupied or rented out for more than six months in a year. The Singapore government has adopted an Additional Buyer's Stamp Duty (ABSD) to target developers' hoarding of flats. In Hong Kong SAR, the government has proposed a similar vacancy bill that targets completed-but-empty flats. In addition to a vacancy tax, the Swiss authorities could also review possible tax provisions that may contribute to imbalances in the real estate sector, such as tax deductibility of mortgage interest payments.

18. The January 2020 tightening of bank macroprudential self-regulation was welcome, but the impact may be limited. The Swiss Banking Association adopted self-regulation measures to contain risks in lending for residential investment properties in early 2020. The measures raised the minimum down-payment requirement to 25 percent of the loan value and shortened the repayment period for the first-third of the loan. While the new measures targeted borrowing for investment properties, they did not affect investors who use own-equity, such as pension funds or insurance companies, or nonbank lenders. Borrowers could also bypass the measures by relying on other debt to meet higher down-payment conditions. Tightened self-regulation in the financing of investment properties appears to have had little influence on the overall growth of mortgage volumes, which was 3.2 percent in 2020, same as in 2019. Also, at the outset of the COVID-19 pandemic in March 2020, the sectoral countercyclical capital buffer targeted at mortgage loans financing residential property was deactivated, reducing the respective requirement from 2% to 0% and thus loosening real-estate market financing conditions. The deactivation was appropriate but should be temporary—the authorities should consider reactivation once sustained recovery is underway.

19. The Swiss authorities should expand their macroprudential toolkit by implementing additional statutory measures. In line with 2019 IMF Financial Sector Assessment Program (FSAP) recommendations, they should exercise the legal mandate for supply- and demand-side measures, accompanied by formalization of institutional decision-making responsibilities and accountability obligations. The 2019 FSAP advised that the macroprudential policy decision-making process should be more agile, with greater expectations to act. Options include raising risks weights for income-producing properties and expanding macroprudential instruments, such as risk surcharges and limits on loan-to-value, debt-to-income, and debt-service-to-income ratios.

Box 1. Mathematical Details of the Model

The theoretical model follows the classic consumption-based asset pricing literature. It has all the standard assumptions on the representative household's utility function. Housing is an asset in this model.

The following equilibrium condition indicates that the present value of the housing price is equal to the discounted future value of the housing price plus rents less taxes and fees. P is the housing price, O is the rent price, q is the vacancy rate, $\alpha \geq 0$ is the operating expense ratio, $\tau \geq 0$ is the vacancy tax rate, and M is the marginal rate of substitution.

$$P_t = E_t\{M_{t+1}(P_{t+1} + O_{t+1}(1 - q_{t+1}) - \alpha P_{t+1} - \tau P_{t+1}q_{t+1})\} \quad (1)$$

Therefore, the breakeven vacancy rate can be solved:

$$E_t(q_{t+1}) = E_t\left\{\frac{1 + \frac{O_{t+1}}{P_{t+1}} - \alpha - \frac{1}{M_{t+1}} \frac{P_t}{P_{t+1}}}{\frac{O_{t+1}}{P_{t+1}} + \tau}\right\} \quad (2)$$

Comparative statics can be used to examine how other macroeconomic variables affect the breakeven vacancy rate. Let the M_{t+1} equal to $\frac{1}{1+i_t}$, $\alpha = 0$ and drop the expectation sign. It can be shown that lower mortgage lending rate and vacancy tax rate, higher housing price lead to larger breakeven vacancy rate.

$$\frac{\partial q_{t+1}}{\partial i_t} = -\frac{\frac{P_t}{P_{t+1}}}{\frac{O_{t+1}}{P_{t+1}} + \tau} < 0 \quad (3)$$

$$\frac{\partial q_{t+1}}{\partial \frac{P_{t+1}}{P_t}} > 0 \quad (4)$$

$$\frac{\partial q_{t+1}}{\partial \tau} = -\frac{1 + \frac{O_{t+1}}{P_{t+1}} - (1 + i_t) \frac{P_t}{P_{t+1}}}{\left(\frac{O_{t+1}}{P_{t+1}} + \tau\right)^2} = -\frac{1}{\frac{O_{t+1}}{P_{t+1}} + \tau} q_{t+1} \quad (5)$$

When $q_{t+1} > 0$, $\frac{\partial q_{t+1}}{\partial \tau} < 0$.

Equations under the case with no operating expense and vacancy tax can be studied based on empirical data. Historical data for mortgage rate i_t , housing price P_t/P_{t+1} , and price-to-rent ratio P_{t+1}/O_{t+1} are readily available, thus values of breakeven vacancy rate can be approximated and decomposed.

$$q_{t+1} = 1 - \left((1 + i_t) \frac{P_t}{P_{t+1}} - 1\right) \frac{P_{t+1}}{O_{t+1}} \quad (6)$$

$$\Delta q_{t+1} = \frac{\partial q_{t+1}}{\partial i_t} \Delta i_t + \frac{\partial q_{t+1}}{\partial \frac{P_t}{P_{t+1}}} \Delta \frac{P_t}{P_{t+1}} + \frac{\partial q_{t+1}}{\partial \frac{P_{t+1}}{O_{t+1}}} \Delta \frac{P_{t+1}}{O_{t+1}} \quad (7)$$

$$\Delta q_{t+1} = \left(-\frac{P_t}{P_{t+1}} \frac{P_{t+1}}{O_{t+1}}\right) \Delta i_t + \left(-(1 + i_t) \frac{P_{t+1}}{O_{t+1}}\right) \Delta \frac{P_t}{P_{t+1}} - \left((1 + i_t) \frac{P_t}{P_{t+1}} - 1\right) \Delta \frac{P_{t+1}}{O_{t+1}} \quad (8)$$

Box 1. Mathematical Details of the Model (concluded)

To understand why interest rate is the dominant factor for breakeven vacancy rate in recent years, we can rewrite Equation (6) as the following equation:

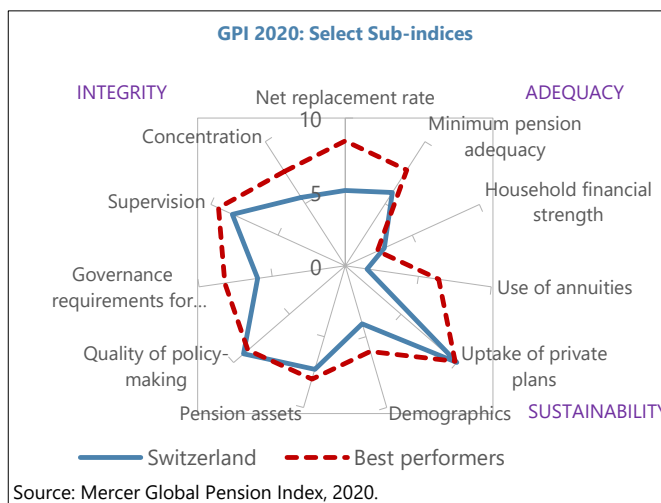
$$i_t = \frac{P_{t+1} - P_t}{P_t} + \frac{O_{t+1}}{P_t}(1 - q_{t+1}) \quad (9)$$

Intuition: The left-hand side of the equation is the investment cost (mortgage rate), the right-hand side of the equation is the investment return (price appreciation and rental income). When housing price increase is equal to the mortgage lending rate (i.e., $\frac{P_{t+1}}{P_t} = 1 + i_t$), breakeven vacancy rate is $q_{t+1} = 100\%$.

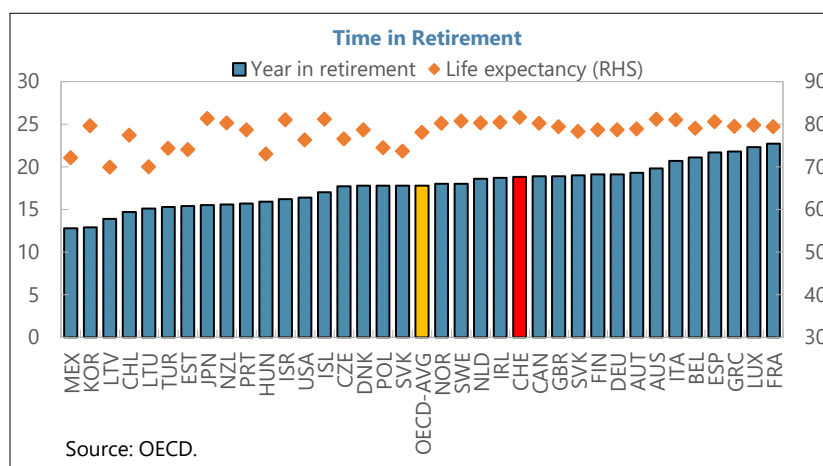
REFORMING THE SWISS PENSION SYSTEM¹

A. Context

1. The Swiss pension system has performed well historically, ensuring relatively high retirement incomes while maintaining a stable funding position. With close to 150 percent of GDP in pension assets, the Swiss pension system is one of the most well-capitalized systems among OECD countries, with funding levels in both public and private systems also remaining relatively stable. A large share of voluntary savings (accounting for about 60 percent of assets), and relatively high wealth (4th in the OECD) and disposable income levels have contributed to good retirement incomes. The Swiss system also compares well with peers on governance and financial sustainability indicators, although it is slightly below average in terms of adequacy. This reflects deterioration against other countries in recent years due to lack of reforms in response to demographic developments.²



2. Demographic trends are beginning to pose a challenge to the long-term sustainability of the system. The society is aging fast—the old-age dependency ratio is expected to more than double over the next decades—and the statutory retirement age of 65 years for men and 64 years for women has not adjusted to increasing life expectancy, now 84 years. As a result, the length of time in retirement is expected to become one of the longest among OECD countries. Total pension spending has outpaced revenues in recent years, and in the absence of reforms, the cumulative funding gap of the first pension system pillar could reach up to 3 percent

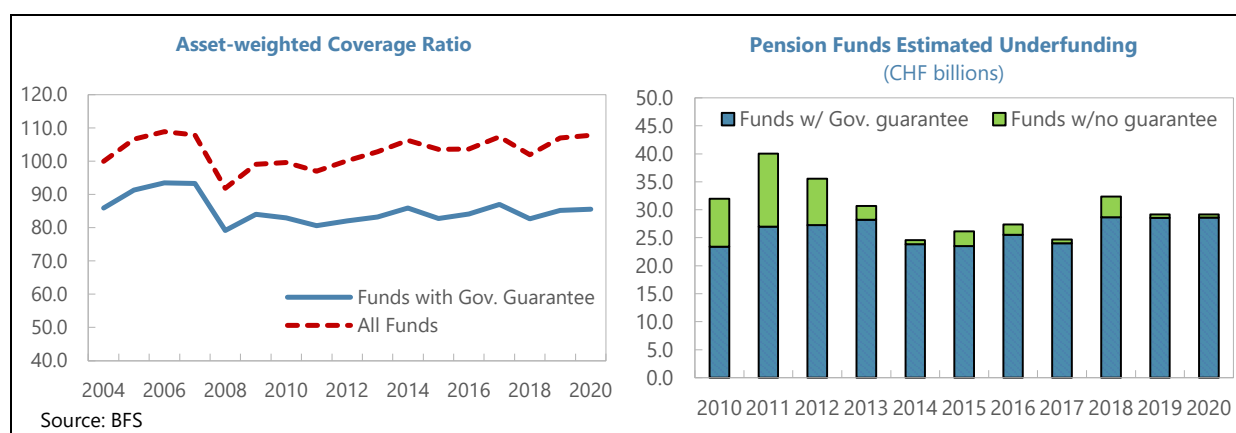


¹ Prepared by Karina Garcia (EUR). The author would also like to thank Mark Horton, Svitlana Maslova, and Li Zeng (all EUR), as well as seminar participants from the Federal Social Insurance Office and the Federal Finance Administration for helpful comments.

² Mercer Global Pension Index, 2020.

of GDP by 2030. This would put added pressure on the second pillar and on voluntary savings to contribute more to maintaining living standards.

3. The low-interest-rate environment has also strained the long-term sustainability of pension fund (PF) finances. Low interest rates have affected yields and the risk-return tradeoff. This has been exacerbated by a rigid system in which PFs operate, with key parameters set in order to achieve a target replacement rate of 60 percent (together with the first pillar). To reach this objective, a minimum return on assets is set (currently at 1 percent), along with a fixed conversion rate (currently 6.8 percent), both of which imply returns well above the market.³ These parameters and their growing divergence from market developments result in operational challenges for PFs. While the coverage ratio for the whole system has remained relatively stable, the coverage ratio for funds with a government guarantee has remained below 100 percent for several years,⁴ implying an underfunding of more than 4 percent of GDP.⁵

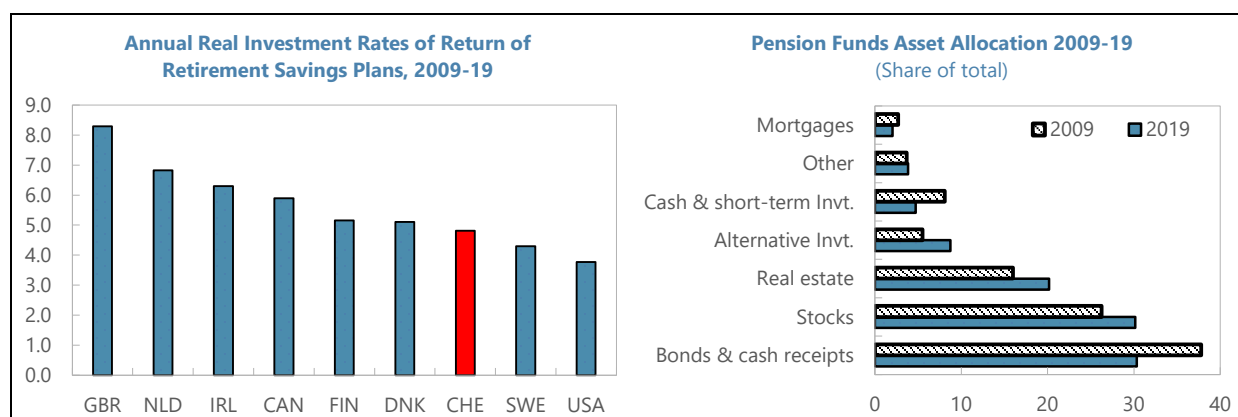


4. PF investment returns have underperformed peers in recent years. The low interest rate environment has affected PF investment performance globally, but Swiss PF performance has lagged although it stands just above average among OECD countries. In response to the low interest rates, PFs have changed their asset allocation away from fixed-income investments in search for higher yields—especially stocks and real state. This approach has been relatively less successful in Switzerland than in other countries, partly reflecting fewer high-return domestic investment opportunities, as well as relatively lower foreign-asset diversification, currently set at 40 percent of investment portfolios.

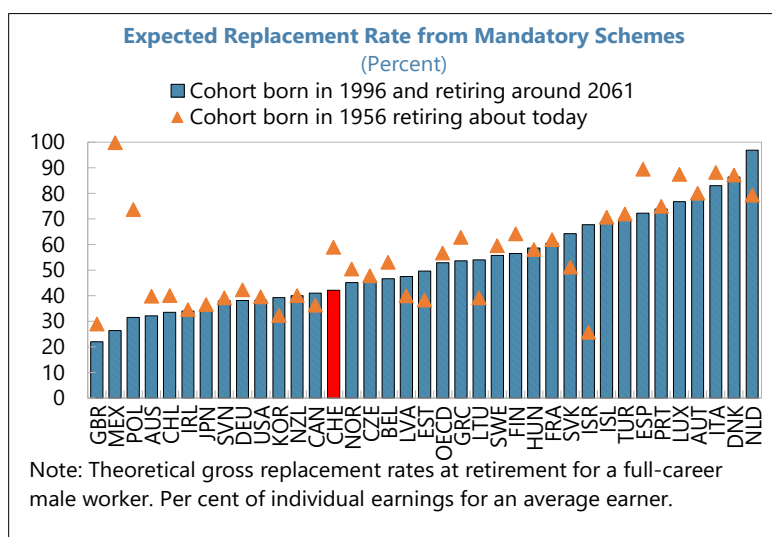
³ It is estimated that the current mandatory conversion rate of 6.8 percent implies returns on assets of about 4.8 percent, well above market rates. See Bauman and Koller, 2018.

⁴ The law allows PFs with a state guarantee to operate with a coverage ratio below 100 percent, provided they develop a funding plan to achieve full capitalization in the long term.

⁵ The underfunding refers to the gap to reach a coverage ratio of 100 percent of liabilities.



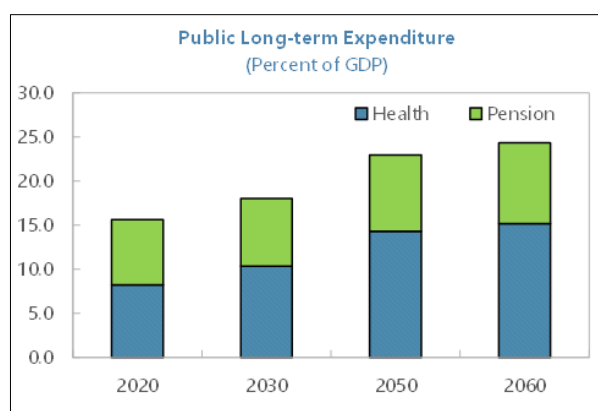
5. The effects of demographic trends and economic conditions on pension adequacy could amplify social inequalities. Without reforms, replacement rates from mandatory schemes could decline significantly in the coming years, enforcing the importance of voluntary savings in supporting living standards.⁶ Overall, large Swiss savings provide a cushion for falling pensions benefits; however, lower-income earners are less likely to be able to compensate for a shortfall in pensions via savings and thus are more likely to rely on supplementary benefits. This, in turn, could have an impact on public finances.⁷ Similarly, skill and gender pension gaps could also increase, given disparities in employment rates and working hours. And although overall employment rates are high, there is a large gap between employment rates of highly-educated and less-educated adults—25 percentage points, close to the median OECD country. The lifetime earnings of Swiss women are lower than men because of lower hours worked and wage gaps.



B. Need for Reform

6. The current system contributes to distortions in the operation of PFs. To sustain a coverage ratio above 100 percent, some PFs take on more risky investments (e.g., private equity, real estate). Others—especially PFs relying on extra-mandatory or voluntary savings—have made re-distributional adjustments by reducing the effective rate applied to extra-mandatory contributions, which in tandem has implied a reduction in average conversion rates.⁸ This means a cross-subsidy from active workers to pensioners in the second pillar that some estimates suggest amounts to CHF 5–7 billion, depending on the funds assessed.⁹ PFs that rely only on beneficiaries with mandatory savings have no such room for maneuver, sustaining larger gaps and—for some—becoming undercapitalized.

7. Demographic trends will continue to put pressure on public finances. Total aging related spending is expected to increase considerably over the next decades. Given the fiscal framework and debt-brake rule and the need to maintain a structural balance, room for policy maneuver is limited. Higher pension spending may displace other spending or require tax increases, weighing on growth. Reforms to contain aging-related expenditures today will reduce the need for higher future taxes or spending cuts tomorrow.



C. Ongoing Reforms

8. The latest approved reform helped reduce the funding gap, but will be insufficient to bring sustained financial stability. The latest reform became effective in 2020 and increased resources for the first pillar, raising about CHF 26 billion by 2030 through an increase in contributions from VAT revenues and in contribution rates. According to the Federal Social Insurance Office (FSO), this will reduce the expected financing gap by half, but it will only delay the year that the fund tips into negative equity.

9. Parliament is considering additional reforms to further bridge the first pillar funding gap and address market misalignments in the second pillar. Both reforms have the objective to increase financial stability while maintaining the same level of pensions. In addition, reforms to the second pillar aim to improve benefits for low-income pensioners and for those who work part-time or have more than one job. To address the first-pillar funding gap, a gradual harmonization of male and female retirement ages and an additional increase in funding through more VAT revenues are

⁸ The law allows funds to freely set returns and benefits on extra-mandatory savings, only requiring that the pensioner is better off than if they had not made extra-mandatory contributions.

⁹ See [Credit Suisse](#) and [2019 Financial Condition Report of Pension Funds](#).

proposed. These measures are expected to fully close the funding gap through 2030. The second-pillar reform seeks to reduce financing pressure on PFs through a one-step decline in the conversion rate from 6.8 to 6 percent. Incentives to remain in the labor force past retirement age have also been proposed, together with flexibility in retirement to allow for a gradual transition from working life to retirement.

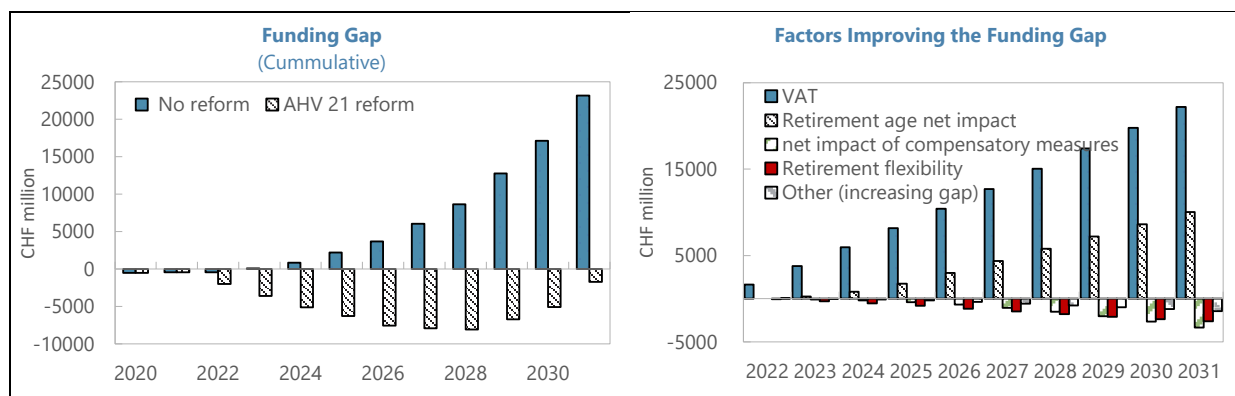
10. Compensatory measures are envisaged to offset some of the negative impact of the reforms on benefits. These measures include a transitory 9-year mechanism to compensate for the increase in the retirement age for women, a reduction of early retirement penalties, and a more favorable pension formula. In addition, to compensate retirees under the second pillar who will face a lower pension from the reduction in the conversion rate, a life-long supplementary pension is being proposed—partly financed by a 0.5 percentage point increase in the contribution rate—and an increase in retirement assets through modification of deductions and age-related credits. The overall cost of these measures is estimated at around CHF 3 billion over the next 10 years.

D. Policy Options for Long-term Sustainability

11. The proposed reforms are a step in the right direction but will not ensure long-term sustainability of the first pillar. The proposal helps guarantee the financial stability of the pension system through 2030, but beyond that, expenses will continue to increase along with the rapid growth of the elderly population. Furthermore, the bulk of the improvement is provided through higher VAT revenues, which have only been guaranteed through 2030. Further increases to VAT, while possible given Switzerland's relatively low VAT rate, will require approval by popular vote, making the process uncertain and potentially difficult.¹⁰ While harmonization of retirement ages is also an important driver in closing the finance gap, the proposal only provides a one-year increase of the retirement age for women, not enough to compensate for the increase in retirement benefits over time. This underscores the importance of implementing reforms that fix the system more durably over the long term, rather than relying on budget-financing fixes.

12. A more ambitious reform is needed to compensate for demographic trends and to put pension finances on a sound long-term footing. The authorities' proposed measures to extend working life in Switzerland are welcome, and much needed. They would help increase employment rates for those above 65 years of age, raising the effective retirement age and reducing the cost of aging. But further increases of the retirement age are needed to keep up with and overcome the fast increase in the old-age dependency ratio. According to recent estimates by the OECD, an increase in the retirement age by 3 years would limit the rise of the old-age dependency ratio to 5 percentage points by 2030, instead of the projected 12 percentage-point rise. Going a step further, to significantly enhance long-term sustainability of the system, the retirement age could be linked to increases in life expectancy, a good practice that other countries have considered (e.g., Sweden, Denmark, Finland).

¹⁰ Switzerland's 7.7% VAT rate is the lowest among OECD countries.



13. The second pillar needs to fully adapt to market developments to reduce existing distortions. Expanding coverage of the second pillar (to part-time workers or those with multiple jobs) is welcome, as it will help reduce the risk and incidence of inadequate retirement income, especially for those with low salaries. Similarly, the proposed cut of the conversion rate is a step in the right direction. However, the proposed cut from 6.8 to 6 percent is not enough to fully align the system with market returns. Some studies estimate that the appropriate conversion rate is between 4.5 and 5 percent, depending on expected returns and retirement age.¹¹ As long as misalignment remains, cross-subsidy at the expense of active-insured persons is likely to continue.

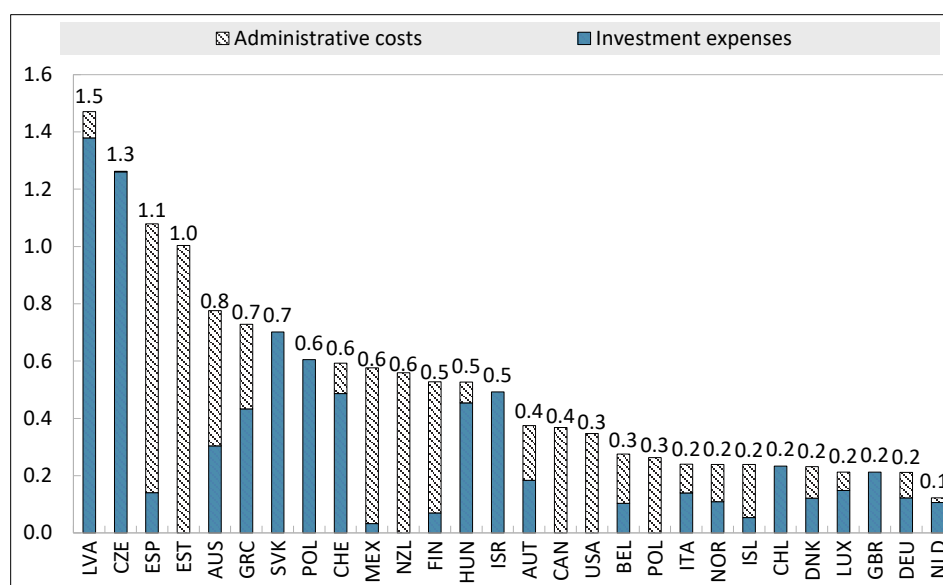
14. The authorities' proposed compensation measures for adjustments to conversion rates are warranted, but could be better targeted. The proposed reduction of the conversion rate highlights the tension between improving the sustainability of the system and maintaining the adequacy of the benefits. The proposed life-long supplementary benefits could be more targeted: rather than extending the benefits to all pensioners, they should focus on those more affected by the reforms (e.g., those with a relatively lower income or life-long earnings).

15. Measures to improve the investment performance of PFs should also be considered. Portfolio allocation is limited to a defined list of investment categories with specific maximum limits and limits on foreign-currency investments. The regulation does provide some flexibility in breaching the limits in an *ad hoc* manner, which has allowed PFs to increase exposure to alternative, higher return asset classes. However, without a transparent risk-return assessment of portfolio allocations, such limits could give a false sense of security by assuming that pension assets are well managed as long as the allocations stay within the legal limits. To improve the investment environment, regulations could focus more on establishing limits based on the risk-return behavior of PF managers rather than on portfolio limits, providing more latitude to PFs to pursue investment strategies in line with their own risk profile that are optimal from a risk-diversification point of view. This would be more in line with the relatively well-developed Swiss capital markets.

16. Additional efficiency gains could come from strengthening PF governance and promoting further consolidation of small funds. Some studies have found empirical evidence that PF governance is positively related to excess returns, benchmark out-performance, and Sharpe

¹¹ Helvetia (2018), Le Taux de Conversion, Helvetia Prévoyance professionnelle.

ratios.¹² Switzerland's operational costs in relation to assets managed, a good measure of PF efficiency, are above the median of OECD countries, most of which comes from investment fees. With more than 1,500 pension funds, economies of scales from managing a larger pool of assets are hardly exploited and have contributed to high management costs. Smaller pension funds, on average, manage a significantly lower share of their assets internally, and current regulations require some of them to use costly collective-investment vehicles to invest in alternative asset classes, posing unduly high operating costs. A more cost-effective way of managing alternative assets would be to invest in strengthening in-house investment and risk management capabilities. This is difficult for smaller funds. Further consolidation of PFs would also help reduce overall costs and improve investment returns, as larger funds tend to perform better than smaller ones and have more professional governance and risk management practices in place.



¹² See Ammann and Ehmann (2016).

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