FINANCIAL STABILITY REPORT 2020

FMA

Financial Market Authority
Liechtenstein

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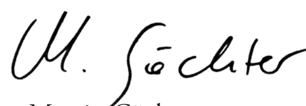
PREFACE

Since Liechtenstein does not have a national central bank, the FMA is legally responsible to contribute to the stability of the financial system in accordance with the Financial Market Supervision Act (FMA Act, Art. 4). Financial stability is a necessary condition for the efficient allocation of resources in an economy, the management of risks and the absorption of shocks. The stability of the financial system also ensures access to finance and credit for households and businesses both during booms and recessions and even in the case of severe macroeconomic shocks. While this report covers Liechtenstein's whole financial sector, it particularly focuses on the banking sector. The banking sector is not only by far the most important financial sector in Liechtenstein, but empirical evidence from previous crises also suggests that financial stability goes hand in hand with a stable banking sector.

This year's Financial Stability Report puts a special focus on the Covid-19 pandemic and its implications for the Liechtenstein economy and the financial sector. The global public health crisis is associated with the sharpest economic downturn since the Great Depression in the 1930s, and the future development – both in terms of the pandemic as well as its implications for the economy – remains highly uncertain. As a small and open economy, Liechtenstein is strongly affected by the global economic downturn, with plummeting export activity in the first half of the year. At the same time, the report also highlights the remarkable resilience of the Liechtenstein economy. In contrast to other countries, unemployment rates have remained at very low levels, and the financial sector benefits from high capital and liquidity buffers that increase the loss absorption capacity during the crisis. Remarkably, the banking sector – highly specialized in the Private Banking business – could even increase its profits in the first half of 2020, mainly in light of higher fee income based on increased trading activity of clients during high volatility episodes. Overall, Liechtenstein's financial sector is assessed to be sound and stable, with systemic risks remaining relatively low despite of the strong macroeconomic shock in the context of the global pandemic. At the same time, the international environment has become even more challenging in the past year, and the adverse effects in the financial sector will become visible with a significant delay relative to the real economy. The recovery from the unprecedented global recession will take time, and both the low interest rate environment and changing monetary policy strategies among major central banks will be associated with increasing challenges for financial intermediaries in the years ahead.

The recent advancement of the macroprudential supervision and policy framework – including the creation of a Financial Stability Council – has proved very helpful during the crisis and has facilitated the cooperation and exchange among responsible institutions. In light of the large role of the financial sector and its significance for the economy as a whole, a regular and careful analysis of the various risk factors is indispensable to appropriately calibrate and apply the various available macroprudential instruments, which crucially contribute to the stability of the financial sector.

Mario Gassner
Chief Executive Officer



Martin Gächter
Head of Financial Stability / Macroprudential Supervision

EXECUTIVE SUMMARY

Main findings

The global economy has been facing the deepest recession since the Great Depression in the 1930s, although some first signs of a beginning recovery have become visible over the summer. The sharp drop in world GDP is much more pronounced than during the global financial crisis, with double digit contractions in GDP in the second quarter of 2020 in many advanced economies. Global trade activity has also plummeted in the first half of the year, and still remains significantly below the levels at the start of the year. Since the beginning of the summer, early indicators have pointed to a sharp, but incomplete recovery, with uncertainty remaining elevated in light of recent increases in new infections in many countries.

As a small and open economy, Liechtenstein is strongly hit by the global economic downturn. Cyclical indicators point to the sharpest downturn on records, with a new GDP projection by the Liechtenstein Institute indicating a severe GDP contraction of –4% and –14% in the first two quarters of 2020, respectively. Contrary to the global financial crisis, when Liechtenstein's GDP contracted considerably more than in other (larger) economies, the contraction in terms of output does not stand out in the current recession when compared to other (larger) European economies. While external demand has strongly declined in the first half of the year, with a severe decrease in exports, the labor market has, as of now, remained remarkably resilient to the downturn.

Notwithstanding the significant drop in output, Liechtenstein's economy is expected to remain resilient despite the global downturn. Liechtenstein is characterized by some important institutional specifics which contribute to an increased level of stability and resilience of the economy. In particular, the strong industrial and manufacturing base, contributing more than twice as much to GDP as the financial sector, differentiates Liechtenstein from other financial centers. In light of the customs union with Switzerland and the membership in the European Economic Area (EEA), the financial sector and the real economy enjoy full market access to both the Swiss market and the European Union's Single Market. The EEA membership is not only central for Liechtenstein's international integration efforts, but also implies that the financial sector is fully regulated by EU standards. Additionally, the currency union with Switzerland and the associated membership in the Swiss franc currency area also contributes significantly to the stability of the economy. The industrial sector includes some highly successful niche players in global markets, with companies showing remarkable flexibility to changing structural circumstances. This flexibility results from strong competition in global markets and the need to be extremely innovative to increase productivity against the background of a strong appreciation of the Swiss franc over the last years. Furthermore, high equity ratios in the non-financial corporate sector, due to respective tax incentives, high liquid reserves (and no debt) in the public sector as well as high incomes and wealth in private households increase the resilience of the whole economy, as temporary shocks can be better cushioned. Based on the high loss-absorption capacities across sectors, the labor market has shown remarkable resilience in past crises, which is once again confirmed in the current recession, with unemployment remaining very low.

At the global level, financial markets have increasingly decoupled from developments in the real economy. Notwithstanding the deep recession in the real economy, financial market turbulence has

receded since May, with implied volatilities decreasing and equity markets showing strong recoveries. During the summer, valuations of stock markets in many countries have reached record highs. Interbank spreads are at the lowest level in years, with spread reductions being fostered by increasing excess liquidity levels. Credit markets have also recovered, with narrowing spreads and higher issuance levels. Despite of a likely rising rate of defaults, risk premia have remained low in both corporate and sovereign debt markets, while worsening credit quality poses significant vulnerabilities in bond and credit markets.

Total indebtedness of Liechtenstein's non-financial sector has remained low, but is highly concentrated in the household sector. On the back of low debt ratios in the non-financial corporate and virtually zero debt in the public sector, overall indebtedness of the economy has remained remarkably low, particularly when considering Liechtenstein's high level of economic development. Debt is however highly concentrated in the private household sector, and indebtedness has further increased over the last few years. While banks' lending standards in terms of loan-to-value ratios (LTV) have remained relatively cautious, data on mortgage affordability suggests significant household vulnerabilities.

Liechtenstein's banking sector has weathered the Covid-19 related economic downturn remarkably well so far. Despite a substantial decrease in assets under management (AuM) in light of the financial market correction, Liechtenstein's banking sector could even increase its profitability in the first half of the year, with capitalization levels also rising against the international trend. Nevertheless, the FMA is continuously monitoring the financial stability implications of the global pandemic, as the collapse in economic activity takes time to manifest itself in losses that may increase non-performing loan (NPL) ratios.

While both capitalization and liquidity indicators have remained at very high levels, efficiency indicators still point to further room for improvement in the banking sector. High asset quality, as shown by the low NPL ratio, as well as abundant capital and liquidity buffers continue to indicate a stable banking sector despite of strong growth in recent years. Profitability does not stand out among European peers, however, and efficiency measures are below average among European banking sectors, pointing to further room of improvement.

Risks in the non-bank financial sector have remained limited. Indicators suggest limited systemic risks arising from the insurance sector, not least due to prevalent business models, with growth continued to be driven by non-life insurances. In contrast to other countries, life insurances in Liechtenstein hardly suffer from the low interest rate environment. This is due to the fact that guaranteed products are rare in Liechtenstein and the bulk of capital investments is attributed to investments managed for the account and risk of policy holders as part of unit-linked life insurance. While Liechtenstein's pension system stands on stable footing, the global financial market environment will further increase the challenges of the sector to generate positive returns. The investment fund sector is closely linked to the banking sector and has shown dynamic growth rates in recent years, but remains small compared to other parts of the financial sector, with risks also remaining limited.

Liechtenstein has reacted quickly to mitigate the consequences of the global Covid-19 pandemic. The government and the parliament have got a comprehensive fiscal package off the ground to mitigate the

consequences of the global recession and to protect the labor market during the lockdown. The FMA has also reacted quickly to the unexpected developments, announcing a wide range of measures, including the postponement of non-urgent reporting requirements, introducing additional high-frequency reporting in the banking sector and by conducting ad-hoc surveys among supervised entities. While the FMA has regularly assessed potential risks to financial stability emerging from the economic downturn related to the global pandemic, the financial sector has shown remarkable resilience during the crisis so far.

In light of the Covid-19 pandemic, business continuity management measures worked well across the financial sector. Ad-hoc surveys at the beginning of the pandemic in March revealed that the financial sector was able to adapt quickly to the new situation, with financial intermediaries neither reporting severe problems in context of business continuity nor in terms of financial or prudential indicators. In most cases, financial intermediaries were able to change quickly to a working-from-home environment, and could avoid interruptions of financial services for clients.

Liechtenstein has established a well-designed macroprudential policy framework, with a transparent division of responsibilities among the FMA, the Financial Stability Council (FSC) and the government. In light of the large financial sector and its significance for the economy as a whole, macroprudential supervision and policy plays a key role in Liechtenstein. In absence of a national central bank, ensuring financial stability is legally defined as part of the FMA's mandate. Based on the findings of the FMA's financial stability analyses and the subsequent discussion between the FMA and the government, the FSC proposes and publishes macroprudential measures, recommendations and warnings. In this context, the FSC has become well established in Liechtenstein.

A comprehensive policy-mix composed of capital buffers as well as lender- and borrower-based measures is currently in place to improve the systemic resilience of the financial sector and to reduce the build-up of systemic risks. With the revision in 2019, Liechtenstein has introduced an effective and transparent macroprudential capital framework for the banking sector. In light of the vulnerabilities related to the high indebtedness of private households, the policy-mix also includes various instruments to mitigate risks in the real estate sector. While the macroprudential policy stance is considered being generally appropriate to mitigate the identified systemic risks in Liechtenstein's banking sector, the FMA is continuously monitoring risks to financial stability, and will propose additional measures if deemed necessary.

Risks and recommendations

On balance, mainly on the back of global factors related to the Covid-19 pandemic, the financial stability outlook has worsened since the 2019 Financial Stability Report. In light of the world economy facing its sharpest contraction since the Great Depression in the 1930s, the financial stability implications of the economic downturn have to be monitored closely. While a weak international environment, associated with subdued global trade activity and weak external demand, is particularly challenging for small and open economies like Liechtenstein, the financial sector and the economy as a whole have shown remarkable resilience to the downturn so far.

A spillover of the crisis to the financial sector has to be avoided. To allow the financial sector to play an important supportive role in the following economic recovery, a spillover of the downturn of the real economy to the financial sector must be prevented by all means. Apart from the contraction of the real economy and potential second-round effects in the financial sector, low interest rates and stretched valuations in equity markets pose additional challenges for financial intermediaries' profitability, which may also lead to increased risk taking.

Fiscal policy has reacted quickly to the looming recession. The wide range of fiscal measures for safeguarding jobs and mitigating the consequences of the pandemic-related recession are welcome from a financial stability perspective. While sound public finances and large liquid assets enable the government to extend the existing fiscal measures if deemed necessary, the government should also plan ahead for an adequate exit strategy from the strong fiscal measures, as a continuation of the prudent fiscal policy approach is a crucial anchor of stability both for the financial sector and the whole economy in light of volatile GDP growth rates inherent to a small and open economy.

Against the background of the current global recession and elevated levels of uncertainty, a prudent and cautious distribution policy remains essential in the whole financial sector. Considering the overall situation and the uncertain economic impact of the global pandemic, sufficient levels of capital and loss absorbing capacity are crucial to mitigate the impact of the current crisis. Financial intermediaries across all financial sectors are therefore recommended to follow a prudent and cautious distribution policy taking into account elevated levels of uncertainty. While it seems likely that the Liechtenstein banking sector is less affected by the global setback in economic activity than banks in other countries, it is still important to keep the high levels of loss-absorption capacity to be prepared for any unexpected adverse developments in the bumpy recovery phase ahead.

On top of this, a high level of risk awareness regarding a deterioration in credit quality is absolutely crucial. Asset quality in general and the non-performing loan (NPL) ratio more specifically have to be monitored regularly in the next year, as the adverse effects of the recession are likely to become visible with a significant delay. Second-round effects in the financial sector, particularly after the expiration of fiscal support measures across countries, may turn out to be stronger than currently anticipated. In an environment of elevated uncertainty, a high level of risk awareness regarding potential losses or loss provisions is absolutely crucial.

In light of the Covid-19 crisis, financial institutions should, where necessary, take additional measures with regard to business continuity management (BCM). The sudden occurrence of the Covid-19 pandemic and its spread across Europe constituted a sort of "reality stress test" for financial intermediaries in terms of business continuity management. While the financial market has reacted quickly and efficiently to the new requirements, including a fast switch to a working-from-home environment, financial intermediaries should carefully analyze the lessons learned and, if deemed necessary, take additional measures to be prepared for any adverse incidents in the future.

Strengthening international cooperation and compliance with international and European standards in financial market regulation remains absolutely crucial. Although the regulatory pressure is challenging both for financial intermediaries and national regulators, the implementation of international standards is without any alternative, particularly for small and open economies with a large financial sector. Thus, being part of a transparent international regulatory framework, such as the EEA, plays a key role to ensure legal certainty, international integration and market access for Liechtenstein's financial intermediaries. In this context, a further deepening of the collaboration with relevant European authorities and the implementation of the relevant ESRB recommendations is important. The implementation of relevant international standards, not only in the banking, but also in the non-bank financial sector, is absolutely crucial to mitigate reputation risks and associated spill-over effects within the financial sector. In this context, the FMA also explicitly welcomes the initiative by the government to aim for a membership in the International Monetary Fund (IMF), as suggested in the government's Financial Centre Strategy.

With regard to AML/CFT supervision, a zero-tolerance policy is essential. Recent international cases of money laundering have shown the associated risks both in terms of stability and reputation for the respective jurisdiction and the financial sector as a whole. The FMA has put an increased focus on AML/CFT supervision by concentrating the supervisory activities in a single division and increasing the respective staff resources already back in 2019. As a result of the reorganization, AML supervisory activities have become even more focused and effective, which is in the ultimate interest of the whole financial sector. Since reputational risks are particularly important in a country focusing on private banking, wealth management and structuring, a high awareness of AML risks among financial intermediaries as well as a supervisory focus on AML issues are also important from a financial stability perspective.

While indicators have already shown some advancements, increasing structural efficiency in the banking sector remains an important factor to safeguard banks' profitability in the long term. Liechtenstein banks have an average profitability and show room for improvement in terms of efficiency, as indicated by a relatively high cost-income ratio. Although below-average efficiency indicators are partly due to the respective business model and high regulatory pressure, continuing efforts to increase structural efficiency is key to ensure both a sustainable level of profitability and the financial resources to invest in long term projects. Furthermore, the monitoring of innovations in the financial sector, especially among new start-up firms, is important to scrutinize possibilities of further digitalization measures enhancing efficiency.

Financial intermediaries will face an increasingly challenging environment associated with high market valuations and the low interest rate environment. Low interest rates and stretched valuations in equity markets pose challenges for financial intermediaries' profitability. The renewed downward shift of yield curves across the globe may be associated with a positive one-off effect on the asset side of financial institutions' balance sheets, but also reduces future profitability prospects. While Liechtenstein's banking and insurance sectors are less vulnerable to the low interest rate environment than their peers in other countries, recent developments are nevertheless associated with increasing challenges in terms of profitability for the years ahead.

Market participants expect an extended period of low interest rates, but current expectations in financial markets may prove too optimistic, implying significant risks for market corrections. In an environment of high valuations both in stock and bond markets, combined with elevated levels of uncertainty regarding the economic recovery, asset prices could react strongly to even small changes in interest rates or risk premia. Financial markets have increasingly decoupled from developments in the real economy, and market participants currently assume a flat yield curve going forward. In this context, business models of pension funds and life insurances are changing, as generating sufficient investment income becomes increasingly difficult. Ensuring stability of the pension system, for instance, may thus need additional measures in case of a prolonged period of ultra-low interest rates.

Independent from the future path of interest rates, the "lower for longer" environment implies severe challenges for the whole financial sector. Low interest rates are associated with lower interest margins and lower investment income, implying lower profitability for many financial market participants. While the "lower for longer" scenario is currently the most probable outlook and also expected by market participants, high uncertainties remain. With the long-term downward trend of interest rates hitting the zero-lower bound, accompanied by a reworking of monetary policy strategies by some major central banks, the outlook for interest rates and inflation may be more uncertain than currently envisaged by financial markets. An increase of interest rates, either due to monetary policy reactions to higher inflation or because of an increase in risk premia, would lead to significant valuation losses in the balance sheets of financial intermediaries. A well-developed risk management is therefore key amidst high policy and financial market uncertainty.

In the context of high household indebtedness, possibilities to address the identified vulnerabilities in households' balance sheets need to be discussed. While Liechtenstein's economy exhibits a low debt ratio, mainly due to zero public debt and low debt ratios in the non-financial corporate sector, elevated levels of household indebtedness are a cause of concern and one of the main risks in the banking sector. In a first step, increasing data availability with respect to banks' lending standards is absolutely crucial. Additionally, based on the in-depth analysis that is currently discussed among policymakers, the FSC might consider proposing additional measures, i.e. recommending to tighten existing measures or to introduce additional macroprudential measures ensuring sustainable lending standards and tackling the risks and vulnerabilities in the mortgage sector.

With regard to macroprudential policy, the intense and ambitious work program should be continued in the FSC. The FSC has shown its ambitions with an intense work program in its first 18 months of existence, including regular discussions on struc-

tural and cyclical systemic risks in Liechtenstein's financial sector, the development of a macroprudential policy strategy, the revision of the capital buffer framework in the banking sector, an in-depth analysis of systemic risks related to the high indebtedness of private households, and the implementation of a range of recommendations by the European Systemic Risk Board (ESRB). As intended, the creation of the FSC has further facilitated the collaboration between the FMA and the government on financial stability issues and has helped to increasingly turn the spotlight on the identification and mitigation of systemic risks. With the macroprudential policy framework being well established in Liechtenstein, it is crucial to retain the well-working cooperation within the FSC and to continue working on the ambitious agenda in terms of macroprudential policy. Addressing systemic risks identified in the private household sector by recommending respective measures to either the government or the FMA will be one of the next important tasks for the FSC. Additionally, a further improvement in terms of data availability – not only regarding real estate vulnerabilities, but also other systemic risks – will also remain high on the agenda in the coming months.

MACROECONOMIC ENVIRONMENT AND FINANCIAL MARKET DEVELOPMENTS

International environment

In light of the Covid-19 pandemic, the global economy faces the worst recession since the Great Depression in the 1930s. The IMF projects global growth at –4.4% in 2020, much worse than during the height of the global financial crisis, when global GDP decreased by only –0.1% in 2009. Quarterly growth rates have tumbled, with GDP in the second quarter of 2020 decreasing by –7.9% in the United States, –11.8% in the euro area and –7.3% in Switzerland during the lockdown periods (Figure 1), with countries more affected by the Covid-19 pandemic also facing the largest downturns.

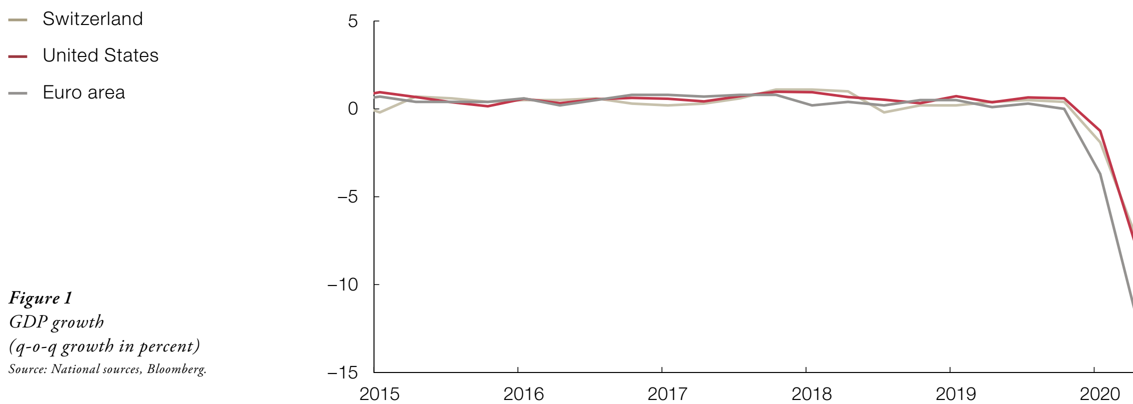


Figure 1
GDP growth
(q-o-q growth in percent)
Source: National sources, Bloomberg.

Global trade activity has also plummeted in the first half of the year. In light of GDP developments and interrupted supply chains, global trade recorded its worst quarter since the global financial crisis, with global merchandise imports declining by –10.9% in the second quarter (Figure 2). While growth rates have turned positive since June again, the level of trade activity still remains significantly lower than in the same time period of the previous year.

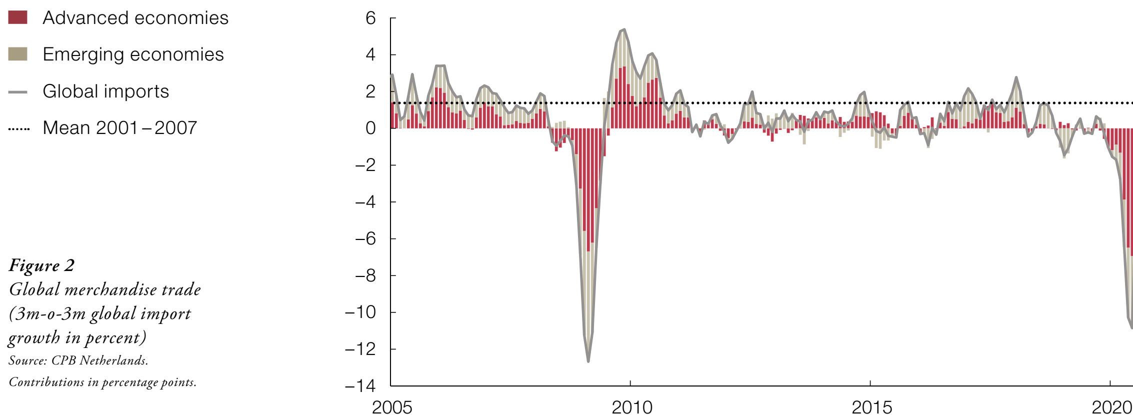


Figure 2
Global merchandise trade
(3m-o-3m global import growth in percent)
Source: CPB Netherlands.
Contributions in percentage points.

Early indicators point to a sharp, but incomplete recovery following the widespread lockdowns earlier this year. High-frequency measures of economic activity, such as Purchasing Manager Indices (PMIs), show a strong, but incomplete recovery since May and June, also on the back of strong fiscal stimulus measures across all major economies. Growth forecasts for the whole year have stabilized recently in light of improving short-term indicators, but the beginning recovery is expected to be protracted and will take until beyond 2021 to reach pre-pandemic GDP levels.

Furthermore, uncertainty has remained elevated, as recent increases in new infections in many countries pose large downside risks. The uptick in new Covid-19 cases throughout European countries has reinforced fears of a second wave of the pandemic and the potential need for a second lockdown or other containment measures. A renewed public health emergency could hamper the economic recovery and threaten the survival of already strained businesses across various sectors. Besides that, geopolitical tensions – e.g. between the United States and China, but also regarding the negotiations between the EU and the UK on their future relationship – point to a high degree of political uncertainty ahead.

Unemployment rates are on the rise, and the outlook for labor markets are gloomy as fiscal support measures may be cut back in the next months. The rise in unemployment rates was rather limited in most European countries so far (Figure 3) against the backdrop of strong fiscal measures including short-time work and furlough schemes to protect jobs during and after the lockdown periods. However, the unemployment rate may not tell the full story as the labor force participation rate has declined sharply in many countries and frequent usage of short-time work schemes is associated with a significant decline in household income. Additionally, governments have to be careful in driving back their work support schemes, as the economy otherwise might be going off the cliff if demand does not yet match labor supply capacities.

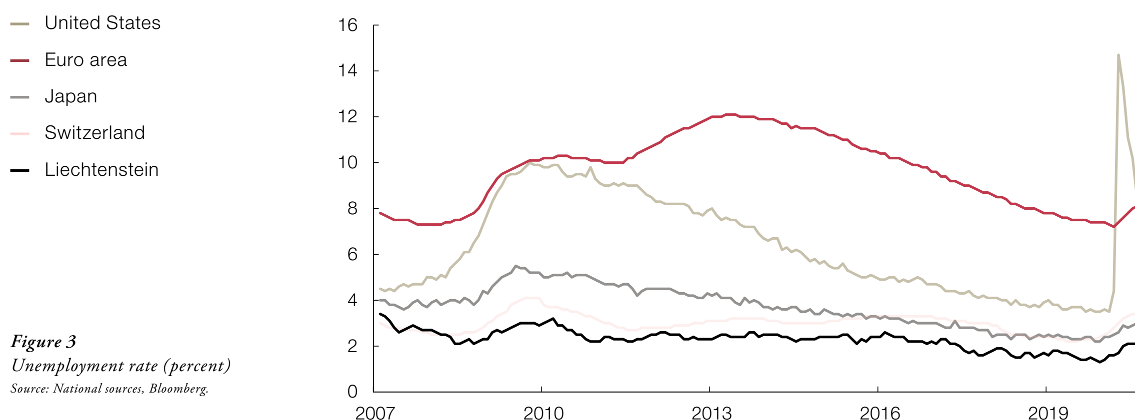


Figure 3
Unemployment rate (percent)
Source: National sources, Bloomberg.

Sovereign debt has risen sharply in most advanced economies. In light of the extensive support to the economy, euro area governments have issued more than EUR 850 billion of debt on a net basis to mitigate the income shocks to corporates and households and to support real economic activity. Following a decade of maturity prolongation in a low interest-rate environment, a significant share of this new debt – more than 40% – exhibits maturities of below two years, thus increasing refinancing needs and rollover risks in the near term. Further increasing debt levels could lead to renewed sustainability concerns for the most highly indebted countries, and may also increase once again the fragmentation within the euro area.

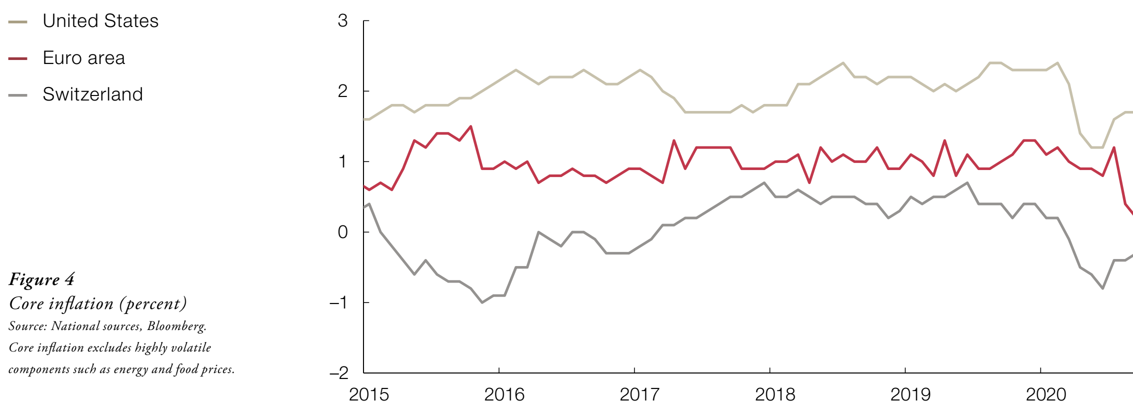


Figure 4
Core inflation (percent)
Source: National sources, Bloomberg.
Core inflation excludes highly volatile components such as energy and food prices.

Inflation pressures have subsided against the backdrop of the adverse demand shock, but long-term forecasts are highly uncertain. Unsurprisingly, in light of the sharp recession, inflation rates have decreased markedly in major economies, even when accounting for volatile components such as energy or food prices ("core inflation", Figure 4). As one of the major risks for the global economy highlighted in last year's Financial Stability Report has now materialized, central banks now have to fight the sharp recession with limited monetary policy space, as they are bounded by the effective zero lower bound. While they still have many monetary policy tools at their disposal, apart from lowering interest rates, their expanded asset purchase programs and the ongoing discussions regarding a major revision of monetary policy strategies are associated with increased uncertainty regarding the future path of inflation. Although the main challenge during the downturn will be not to undershoot the respective inflation targets, the recent move by the Federal Reserve in the direction of a "price level targeting" could have large implications for both nominal and real interest as well as inflation rates. In any case, following a steady downward trend of real interest rates over the last 35 years, the downward risks for both real and nominal interest rates are effectively limited.

BOX 1

The implications of the Covid-19 pandemic for the Liechtenstein economy

The Covid-19 pandemic has hit the world economy as well as Liechtenstein very hard, both from the demand and the supply side. The pandemic and also the measures to contain the spread of the virus, in particular the shutdown of the economy from March to May 2020, have induced a series of shocks, which have affected the demand but also the supply side, i.e. the production of goods and services. A simultaneous occurrence of shocks on the demand and the supply side is a specific feature of the Corona Crisis and distinguishes the current recession from other historic economic crises such as the oil crisis in the 1970s or the global financial crisis in 2008/09.[1]

It appears that the negative supply effects have been less pronounced compared to demand side effects. The international production chains have remained fairly intact and a broad shortage of the labor supply in Liechtenstein – more than half of the labor force are daily commuters from abroad – could be prevented. By contrast, low external demand remains a strong burden for the export-oriented country.

Available sub-annual business cycle data in Liechtenstein, such as export figures or the KonSens business cycle index, indicate that the economic trough was reached in the second quarter of 2020. As outlined in Brunhart et al. (2020), the business cycle amplitude of economic activity in Liechtenstein has been high in international comparison during previous decades. The pronounced international trade orientation, the high industrial share in total gross value added (47% in 2017) and the strong focus on investment and intermediate goods are associated with a higher sensitivity to international shocks. Compared to other countries, for instance Switzerland, growth rates are thus usually considerably higher in booms and lower in recessions. In the financial crisis year 2009, Liechtenstein's annual real GPD decreased by –11%, compared to –2.2% in Switzerland. Considering this large difference in previous recessions and the Swiss GDP predictions for the entire year 2020 (SECO 2020, KOF 2020) of around –5%, one might expect negative real GDP growth rates of well below –20% in Liechtenstein. However, Liechtenstein's business cycle data based on the first two quarters in 2020 indicate that this expectation is likely to be too pessimistic.

To evaluate the real GDP contraction in the wake of Covid-19 in an international comparison, quarterly real GDP figures (adjusted for seasonal and calendar effects) for Liechtenstein are estimated for the first two quarters of 2020.[2] Official GDP figures for Liechtenstein are currently available up to 2018, and only in annual and nominal form. Current GDP figures thus have to be estimated. This is done by applying a temporal disaggregation method in the tradition of Chow and Lin (1971), which links Liechtenstein's annual GDP figures with economic variables that are available on a sub-annual basis and highly correlated with annual GDP. Using this regression relation, and under the annual aggregation constraint (quarters must sum up to the annual GDP benchmark), the sub-annual GDP dynamic is being estimated for the years 1998 to 2018. The model also allows for an extrapolation for the years without official annual GDP data. Figure B1.1 shows estimated quarterly GDP together with realized GDP from 1998

1 *See Brunhart, Gächter and Geiger (2020) for a discussion of macroeconomic implications of Covid-19 for Liechtenstein.*

2 *This box and the included GDP estimations build on Brunhart (2020).*

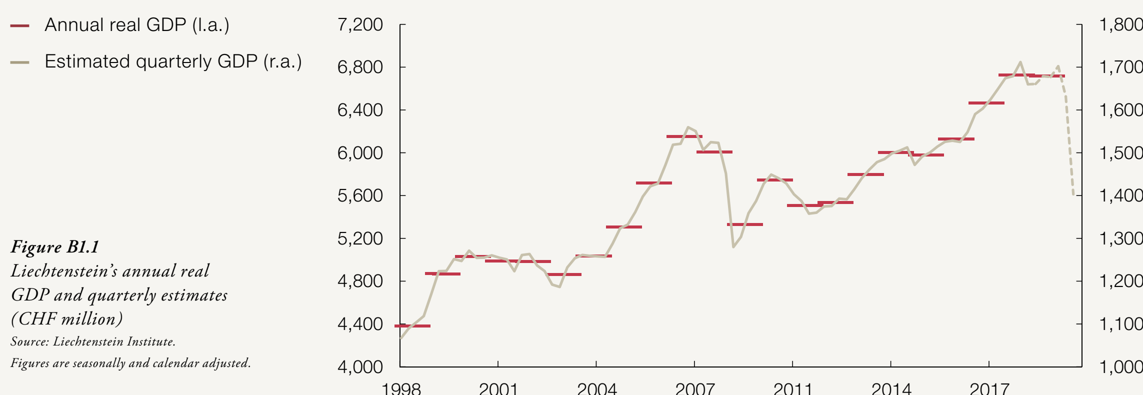


Figure B1.1
Liechtenstein's annual real GDP and quarterly estimates (CHF million)
Source: Liechtenstein Institute.
Figures are seasonally and calendar adjusted.

to 2018. Real GDP numbers for 2019 and the first two quarters of 2020 are estimated.

The model predicts approximately zero real GDP growth for the year 2019, followed by quarterly real GDP growth of –4% and –14% in the first two quarters of 2020, respectively (seasonally and calendar adjusted). Figure B1.2 illustrates that Liechtenstein's current real GDP drop is deeper compared to most larger economies, as expected. However, in the context of the Corona Crisis, the drop in output appears to be only slightly larger on average, and even smaller than in some of the listed countries. Notably, Liechtenstein's decline in real GDP growth in the first two quarters of 2020 is of similar magnitude compared to the global financial crisis. In the fourth quarter of 2008, real GDP dropped by –5%, and by –12% the first quarter 2009. By contrast, the current real GDP decline in all other countries shown in Figure B1.2 was considerably larger than during the global financial crisis. In some countries, the current downturn was more than three times larger than in 2008/09 and marks the deepest international recession of the post-war area. Thus, the overreaction of Liechtenstein's (negative) GDP growth rates compared to larger nations in the first half of 2020 was much lower than it is usually the case.

It appears that domestic demand in larger countries did not play the stabilizing role it usually does during recessions. One of the reasons why Liechtenstein, as well as other very small states, exhibits higher economic volatility, is that domestic demand cannot act as a buffer against international shocks. During the current pandemic, however, the usually stabilizing feature of larger domestic markets could not take effect, because the Covid-19 pandemic does not only affect international trade, but also domestic demand through uncertainty directly caused by the pandemic or by the containment measures. As a result, larger countries, which were stabilized through domestic demand in other recessions, also experience a dramatic drop in output. Another reason which has prevented Liechtenstein from even larger losses in output so far in contrast to the global financial crisis is that the financial sector, which also plays a very important role in Liechtenstein besides the industrial sector, is much less affected this time.

Even though international forecasts expect a pronounced business cycle recovery in the second half of 2020, it is expected that pre-crisis GDP levels will not be achieved before 2022 in most economies (KOF 2020, OECD 2020). The shape of the economic recovery (L-, U- or V-shape) will heavily

BOX 1

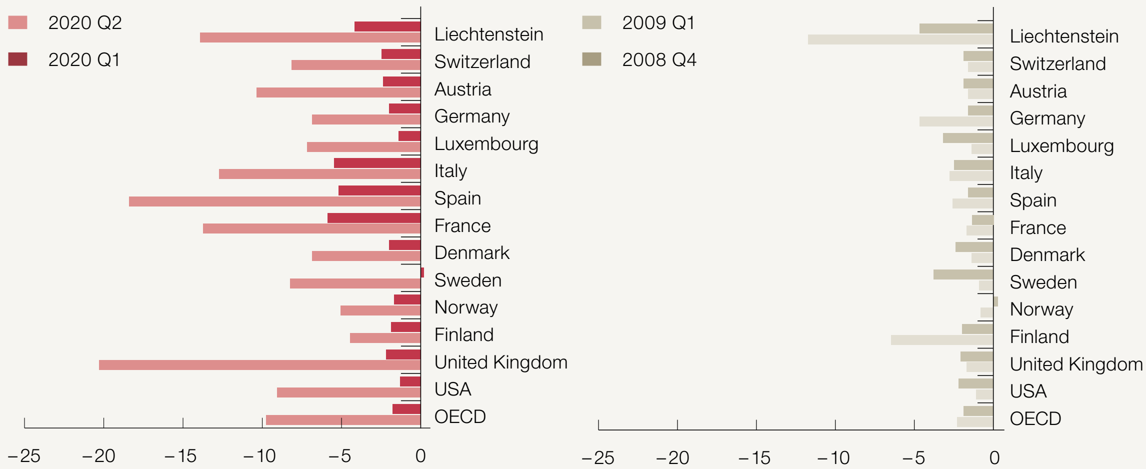


Figure B1.2
Real GDP growth during the global financial crisis and Covid-19 (quarterly changes in percent)
Source: Liechtenstein Institute, Eurostat, OECD. Figures are seasonally adjusted.

depend on the future pattern of the national and international spread and containment of Covid-19 (Dorn et al. 2020). Whether the unusual case of similar affectedness of Liechtenstein compared to other larger countries also holds for the entire year 2020 will mainly depend on international demand, especially for investment and intermediate goods.

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Economic developments in Liechtenstein

Liechtenstein's economy is strongly hit by the global economic downturn. The KonSens, a quarterly, coincident composite indicator for Liechtenstein's business cycle, decreased to –4.54 in the second quarter, the lowest value since the start of the time series in 1998 (Figure 5). Since the indicator abstracts from the long-run growth trend, it can be interpreted as a standardized capacity utilization measure of Liechtenstein's entire economy.

Figure 5
KonSens – a cyclical indicator for Liechtenstein (index)
Source: Liechtenstein Institute.

Alternative early indicators also point to a sharp deterioration of GDP growth in the first half of the year. GDP increased by 5.0% in 2017 and 4.2% in 2018 (in nominal terms), with economic activity already weakening in the course of 2019, i.e. before the start of the global pandemic. Since then, business sentiment has deteriorated sharply, to the lowest level ever recorded in the second quarter (Figure 6). While no official GDP data is available for 2019 and 2020, a new GDP nowcast is available from the Liechtenstein Institute, as presented in Box 1. Quarterly GDP estimates suggest a decline of GDP by –4% in the first quarter, followed by –14% in the second quarter. While these figures also suggest a sharp downturn, even against the background of a highly volatile economy such as Liechtenstein's[3], the drop in terms of output does not stand out when compared to other (much larger) European economies. In the case of the Covid-19 related recession, the GDP downturn in Liechtenstein is therefore expected to be comparable in terms of magnitude with other European economies. This is remarkable, as small and open economies like Liechtenstein typically suffer more strongly in the case of a global recession, as most of their demand relies on exports. In 2009, for instance, GDP contracted by –2.2% in Switzerland, while Liechtenstein suffered a GDP decline of –11%.

3 *In last year's Financial Stability Report, the comparatively high GDP volatility in Liechtenstein was examined in light of the small economy and the important role of the financial sector.*

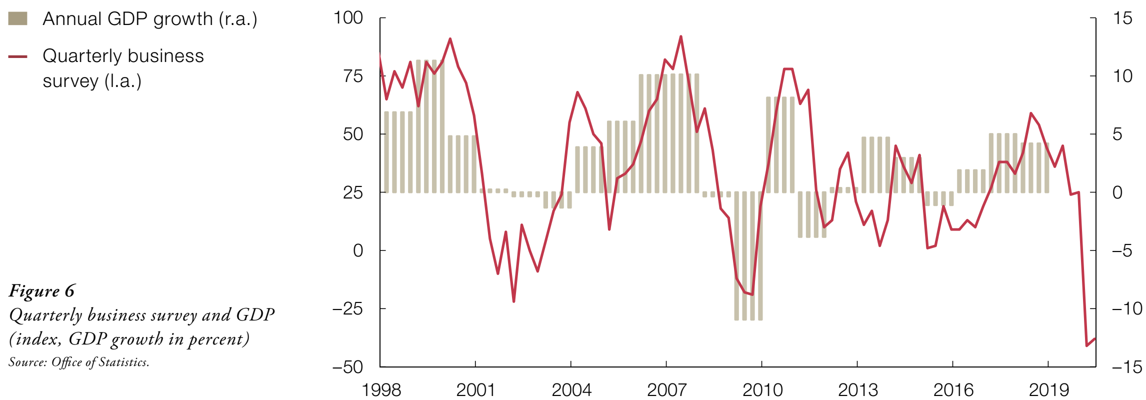

Figure 6
Quarterly business survey and GDP (index, GDP growth in percent)
Source: Office of Statistics.

External demand has suffered substantially in the first half of the year. Particularly in April and May, direct exports from Liechtenstein plummeted relative to last year. In the first nine months of 2020, exports decreased by a cumulative amount of CHF 474 million relative to the previous year (Figure 7), with direct imports also recording a sharp decline. Although exports recovered to a certain degree in July and August, Liechtenstein's export sector is expected to be hit hard by the global recession. When comparing export performance with its neighbor Switzerland, the analysis shows that Liechtenstein exports are more sensitive to both exchange rate and global growth developments, mainly because of the sectoral composition of exports. While Switzerland's exports are particularly dominated by the pharmaceutical industry, the machinery industry – i.e. investment goods that are far more dependent on both competitive prices as well as global growth – plays the most important role in Liechtenstein's export mix. As a result, Liechtenstein's exports react much more sensitively to macroeconomic shocks, such as changes to the exchange rate or a drop in external demand (see also Box 2).

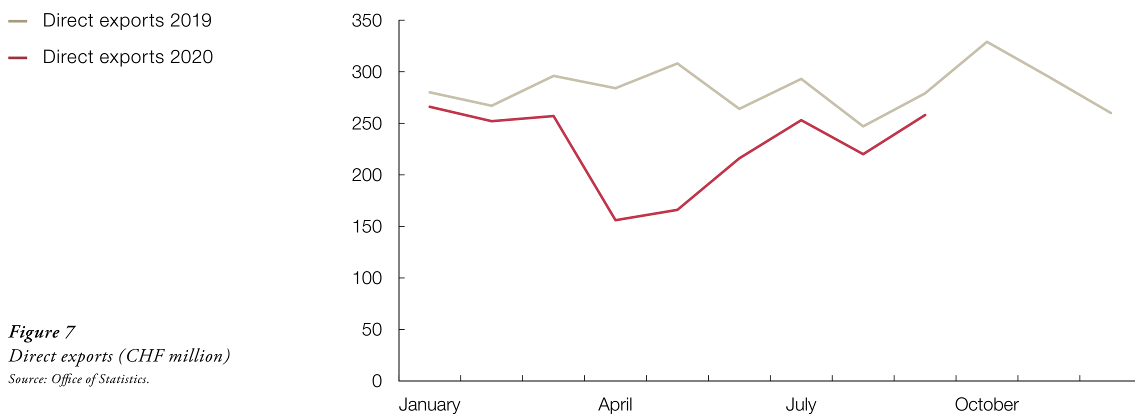

Figure 7
Direct exports (CHF million)
Source: Office of Statistics.

Also because of the comprehensive fiscal support measures by the government, the labor market has remained remarkably resilient to the downturn so far. Unemployment rates only increased marginally so far in Liechtenstein, from 1.7% in February to 1.9% in September. During the height of the public health emergency, many companies had to close due to the imposed lockdown, roughly a quarter of total employees in Liechtenstein were registered for the short-term work scheme provided by the government. Since then, the number of short-term workers has decreased substantially, and job vacancies have increased over the course of the summer, while still remaining significantly below the level of the same month in 2019 (Figure 8).

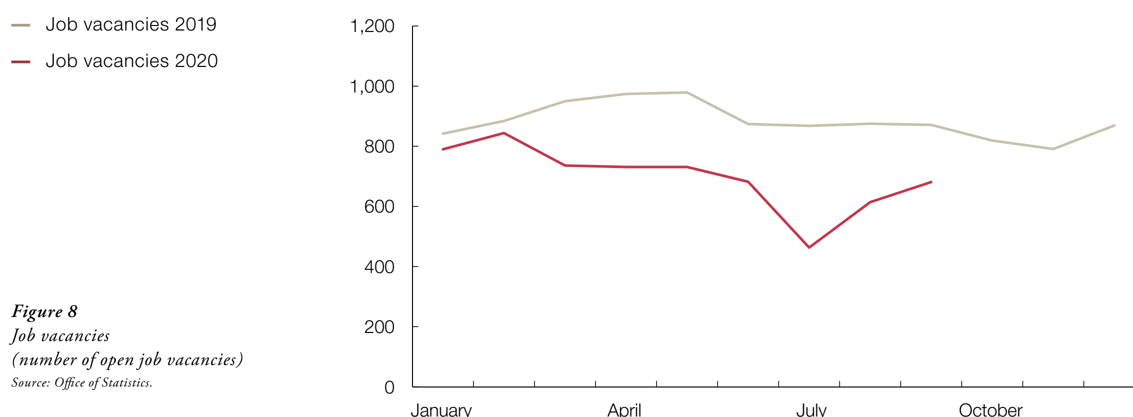

Figure 8
Job vacancies
(number of open job vacancies)
Source: Office of Statistics.

Notwithstanding the sharp drop in output, the Liechtenstein economy is expected to remain resilient despite the global downturn. Liechtenstein's resilience to global macroeconomic shocks, as observed over the last decades, results from important structural specifics of the economy. First, Liechtenstein's industrial and manufacturing sector, contributing 47% to the country's GDP, includes highly successful niche players in global markets. These export-oriented companies are remarkably adaptive to new circumstances. In light of the small domestic market, they are used to compete against global market leaders and had to remain flexible in the past to adjust to new structural circumstances, e.g. to keep step with the strong appreciation of the Swiss franc. The economy is also extraordinarily innovative due to high private spending on research and development, as explained in last year's Financial Stability Report. Second, high equity ratios in the non-financial corporate sector, due to respective tax incentives, as well as high liquid reserves (and no debt) in the public sector increase the resilience of the whole economy. Third, the highly specialized economy benefits from its full access to the European Single Market as well as to Switzerland's market, based on its customs union with Switzerland since 1923 and the membership in the European Economic Area (EEA) since 1995. The currency union with Switzerland and the associated membership in the Swiss franc currency area also contributes significantly to the stability of both the financial sector and the economy as a whole. Finally, private wealth and incomes are very high. According to data from the United Nations, Liechtenstein is ranked

first among 212 countries in terms of gross national product (GNP) per capita, amounting to approximately USD 180,000 in 2017. High wealth increases the resilience of private households and the economy as a whole, because temporary shocks can be better cushioned. This resilience is reflected in the labor market, as employment has steadily increased in the past 20 years despite strong volatility in GDP growth, with only one exception in 2009. The far above-average capitalization ratios in the banking sector, accompanied by abundant liquidity, is another important factor of stability for the economy, as unexpected adverse developments can be absorbed by the financial sector without any negative implications for credit supply or financial stability. While the financial stability implications of the current Covid-19 related recession have to be monitored closely in the near future, available indicators suggest that the financial sector is well prepared for the challenges ahead, as explained in the following chapters.

Exchange rate sensitivity of Liechtenstein exports

Due to the small size of the economy, the geographical location and the high degree of integration into international markets, goods exports traditionally play an important role for Liechtenstein. The share of exports exceeds 50% of GDP, with the majority of goods exports originating from the metal and engineering industries. Since the global financial crisis in 2008, exports have essentially stagnated and have not yet reached pre-2008 levels. By contrast, Liechtenstein's larger neighbor Switzerland, with whom Liechtenstein forms a customs union, experienced a modest but continuous recovery of goods exports since the financial crisis despite sharing the same currency.

The difference between the overall export developments in Liechtenstein and Switzerland is mainly driven by the respective sectoral composition. Figure B2.1 shows the development of Swiss and Liechtenstein exports in real values indexed to 1 in 2008. The solid line shows the development of overall goods exports whereas the dotted lines represent goods exports excluding pharmaceutical/chemical products and precision instruments/watches. In case of Liechtenstein, where these sectors are relatively small, overall export dynamics are largely unaffected whether or not the two mentioned sectors are left out of consideration. In Switzerland, however, the two sectors are clearly driving the upward movement in overall exports. Thus, even though the drop in exports due the financial crisis is generally more pronounced in the case of Liechtenstein, the difference in the post-2009

BOX 2

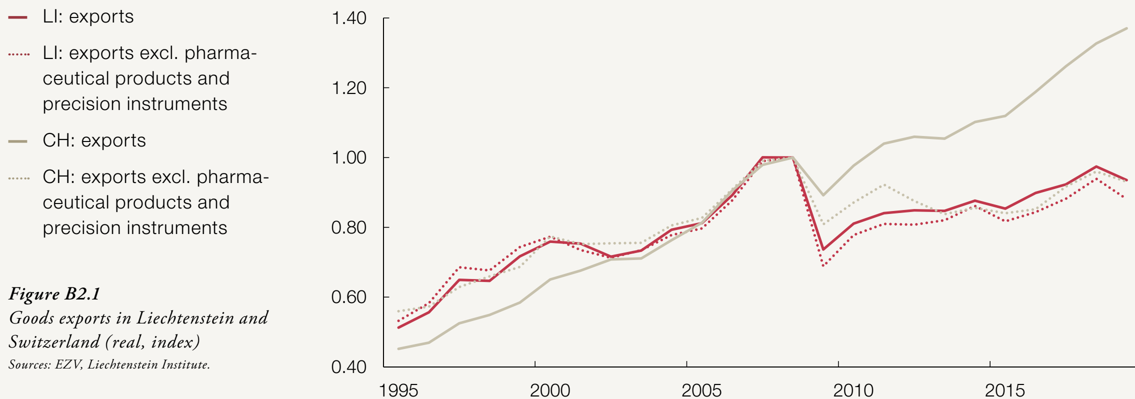

Figure B2.1
Goods exports in Liechtenstein and Switzerland (real, index)
Sources: EZV, Liechtenstein Institute.

dynamics is mainly caused by differing export compositions, driving the divergence of export dynamics in Liechtenstein and Switzerland (Brunhart und Geiger 2019a).

With the exception of some specific sectors, we observe a weak development of goods exports in Liechtenstein as well as Switzerland following the global financial crisis. The main driver behind the weak export development is the shortfall of global demand, especially for durable consumption and investment goods, which collapsed dramatically in the wake of the global financial crisis (Francois and Wörz, 2009). In addition, since the financial crisis, appreciation tendencies of the Swiss franc have affected the export industry in the Swiss franc currency area (see e.g. Indergand and Pochon, 2019). Since 2007, the Swiss franc appreciated from roughly 1.6 against the euro to currently about 1.1, as evident in Figure B2.2. However, the estimation of the effects of the exchange rate on Liechtenstein and Swiss exports is not trivial due to related endogeneity issues.

Figure B2.2
CHF/EUR exchange rate (monthly averages)
Source: SNB.

BOX 2

CH band
LI band
CH actual
CH counterfactual
LI actual
LI counterfactual

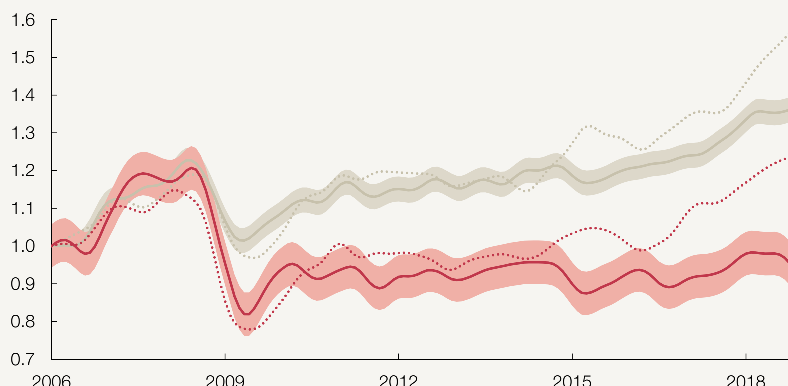

Figure B2.3
Counterfactual development of exports (nominal, index)
Source: Liechtenstein Institute. The figure shows the development of Liechtenstein (red line) and Swiss exports (golden line) together with the respective counterfactual development (dashed lines). Shaded bands indicate the standard deviation of the actual and the constructed time series before the exchange rate shock in January 2015.

By exploiting the abrupt and surprising end of the minimum exchange rate target in 2015, a counterfactual of the evolution of Swiss and Liechtenstein exports is constructed. The counterfactual is estimated as a weighted average of the OECD countries that give an indication for how Swiss and Liechtenstein exports would have developed if the SNB sustained the minimum exchange rate target. To make the export series comparable across countries, the respective trend-cycle components of the export series are indexed to 1 in 2006. We evaluate the effects of exchange rate fluctuations on Swiss and Liechtenstein exports considering the difference between realized and counterfactual exports (Brunhart and Geiger, 2019b).

Swiss and Liechtenstein exports denominated in Swiss Franc experienced strong and persistent negative effects from the 2015 exchange rate shock. Figure B2.3 shows the development of Swiss and Liechtenstein nominal exports (solid lines) together with the estimated counterfactual (dashed lines). In addition, the shaded bands indicate the usual deviation between the counterfactual and realized exports calculated as the standard deviation of the difference between the two before 2015. In case of both countries, the counterfactual is clearly above the realized time series indicating that exports fell short of their hypothetical development without the exchange rate shock. Comparing the difference between the counterfactual and the realized exports of the two countries, it is striking that the effects of the exchange rate shock appear to be of a similar order of magnitude.

BOX 2

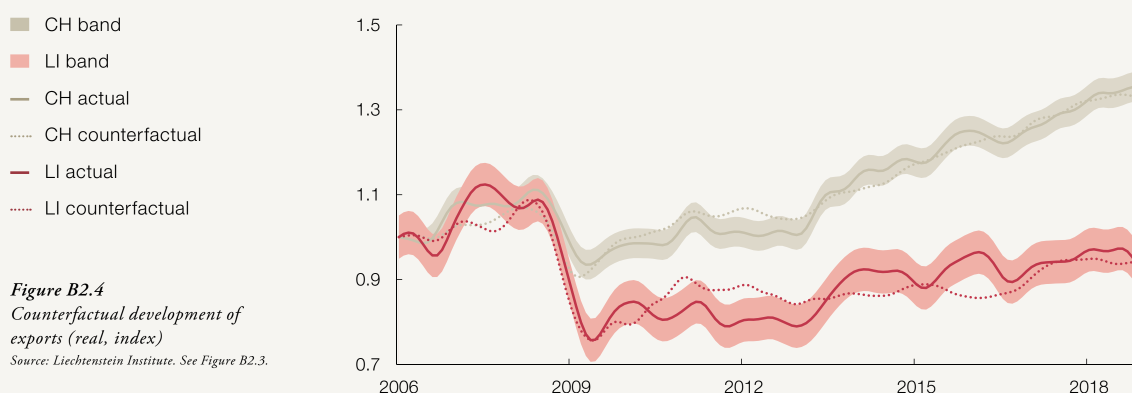

Figure B2.4
Counterfactual development of exports (real, index)
Source: Liechtenstein Institute. See Figure B2.3.

Estimating the effect of the exchange rate shock on real values, the shock had only little effect on Liechtenstein and Swiss exports. Figure B2.4 shows the development of Liechtenstein and Swiss real exports. In both cases, the difference between realized exports and the respective counterfactuals is unsystematic in the wake of January 2015. Thus, real values of export goods remain largely unaffected by exchange rate shocks. As nominal exports decrease due to the exchange rate shock, so do prices of exported goods as visible in the protracted deflation tendencies in the Swiss export sector. This has several reasons. On the one hand, input and intermediate goods become relatively cheaper due to the Swiss franc appreciation. On the other hand, exporters in the Swiss franc currency area seek to compensate the appreciation by taking efforts to cut costs, and by accepting lower profit margins. Overall, this suggests a certain resilience and flexibility vis-à-vis exchange rate fluctuations of the export sectors in both countries, at least on the aggregate level.

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Financial market developments

Financial markets have increasingly decoupled from developments in the real economy. While stock markets corrected markedly in March during the sharp increase in infections, in most countries by around 30% or even more, they have recovered strongly since then, with the S&P 500 even reaching new record levels in August (Figure 9). As a result, stock market valuation indicators, e.g. forward price to earnings ratios, have returned to historically high levels, with the US equity market capitalization at the highest level on record compared to the size of the US economy. These buoyant financial market developments increasingly diverge from economic fundamentals, which are characterized by a strong decline in corporate earnings and continued high uncertainty surrounding the economic outlook. As a result, risks remain elevated that investors may be forced to reassess their views on valuations if the spread of the virus worsens materially or if the expected improvement in earnings does not materialize.

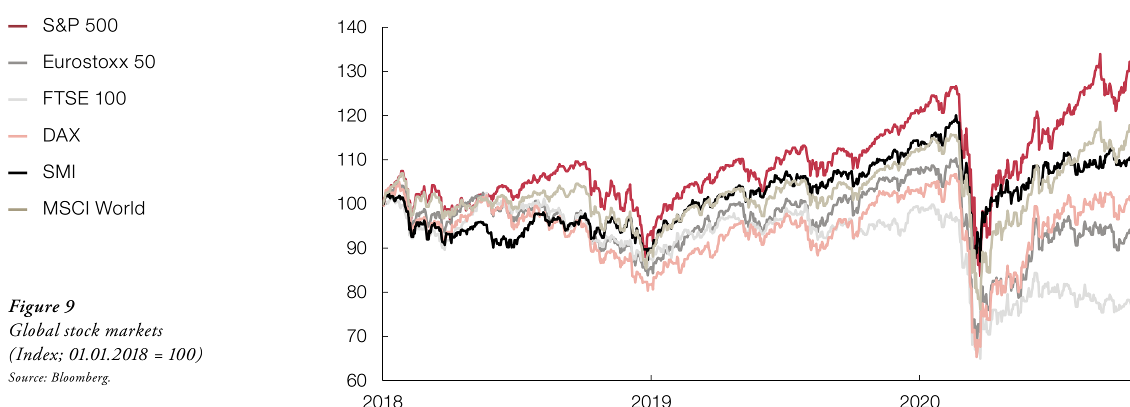


Figure 9
Global stock markets
(Index; 01.01.2018 = 100)
Source: Bloomberg.

Along with the recovery in stock indices, volatility has receded both in equity and bond markets. At the height of the crisis, stock market volatility in the United States, as measured by the CBOE Volatility Index (VIX), has reached levels last seen during the global financial crisis. Since then, however, both implied stock and bond market volatility have diminished with the general rebound in financial market prices, although stock market volatility has remained somewhat higher than before the start of the Covid-19 related financial market turbulences (Figure 10).

Despite of highly elevated corporate sector vulnerabilities, risk premia in corporate bond markets have diminished to very low levels. Corporate earnings had started to decelerate already before the pandemic both in the United States and in the euro area, but fell sharply in the first half of the year. To fill liquidity needs, companies have continued to draw on credit lines and also issued large amounts of debt, with non-financial corporate debt levels increasing sharply in most advanced economies. Particularly in the worst affected sectors, plummeting corporate cash flows have been replaced by borrowing. Never-

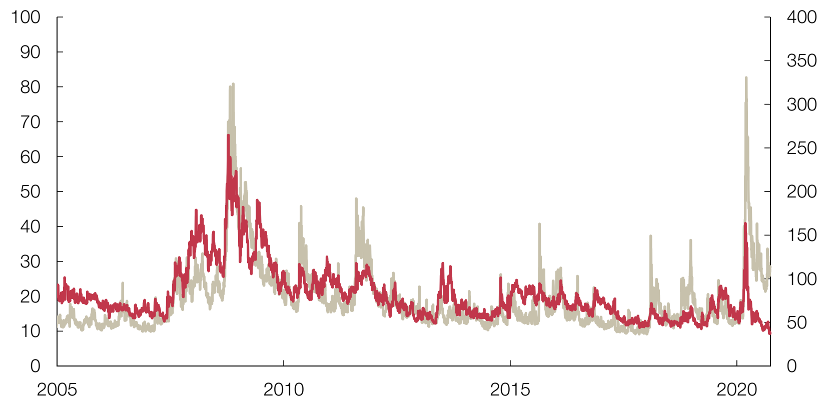


Figure 10
Implied stock and bond market volatility (indices)
Source: Bloomberg.

theless, corporate financing conditions have remained favorable, with risk premia both in the United States (Figure 11) and in the euro area back at the levels before the financial market turbulences in March. Financing conditions were supported by government guarantee schemes contributing to lower lending rates and declining bond yields. As a result, in most countries, with the notable exceptions being Sweden and the United States, corporate insolvencies have declined sharply in the first half of the year relative to the year before, raising concerns about the creation of so-called "zombie firms" that could undermine productivity growth in the years ahead. The expected increase in corporate insolvencies after the expiration of fiscal measures and government guarantees does not seem to be priced in global bond markets, confirming the impression of a remarkable disconnect between financial markets and the real economy.

Sovereign bonds also trade at historically expensive levels. Highly-rated sovereign bonds are trading near their highest levels on record. On a global level, more than 80% of global bonds now trade at yields below 2%, and 10-year government bond spreads in the euro area have narrowed further to around pre-Covid levels.

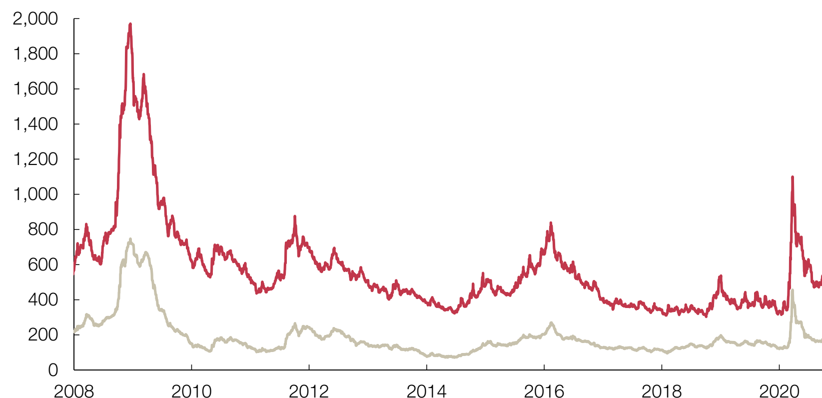


Figure 11
Corporate bond spreads in the US (basis points)
Source: Bloomberg.

Complacency in financial markets is mainly driven by strong policy responses, particularly from monetary policy. While governments have quickly reacted to the economic downturn with unprecedented fiscal policy measures, central banks have also shown a strong policy reaction to a tightening of financial conditions in March. As a result, the tightening of financial conditions that had reached the highest levels since the global financial crisis, receded quickly. Spreads in both interbank markets as well as corporate bond markets fell sharply, resulting in loosening credit conditions for both the financial market and the real economy (Figure 12).

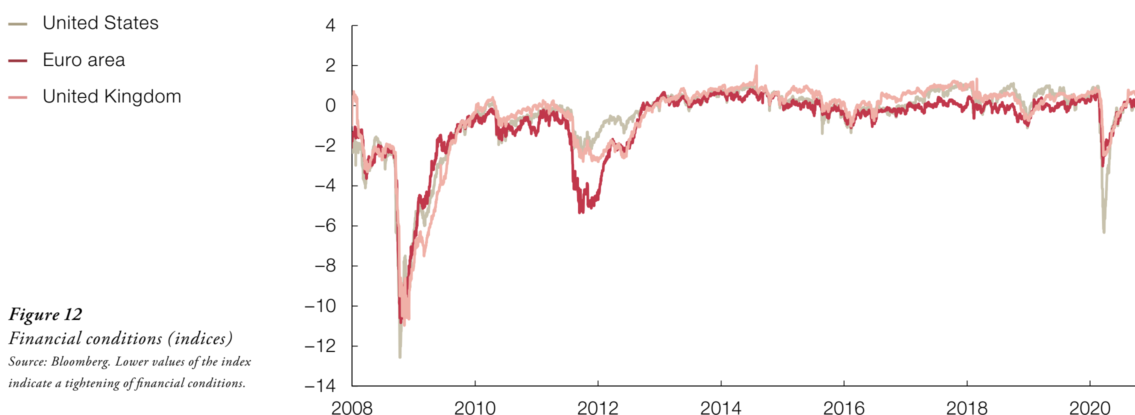


Figure 12
Financial conditions (indices)
Source: Bloomberg. Lower values of the index indicate a tightening of financial conditions.

Central banks' balance sheets have expanded at an unprecedented pace since March. With the exception of the Federal Reserve, which lowered short-term interest rates by 1.5 percentage points to 0–0.25% in March within a few days, the other major central banks had only limited policy space left with regard to conventional monetary policy measures, i.e. through interest rate cuts. To counteract the tightening of financial conditions, central banks have responded with unprecedented measures in the context of the current economic downturn. The Fed reacted quickly to the dry-up in interbank markets by offering virtually unlimited amounts of liquidity to the markets. As a result, the Fed's balance sheet expanded by approximately USD 3 trillion in a couple of weeks – i.e. by the same amount that included three rounds of quantitative easing following the global financial crisis from 2009–2015 (Figure 13). The ECB also reacted with additional bond purchasing (Pandemic Emergency Purchase Programme, PEPP) and a range of additional measures to facilitate funding of the real economy. The strong policy response by central banks around the world have supported the recovery in financial markets, with credit markets recovering with narrowing spreads and higher issuance levels despite of the risks of increasing defaults due to the current recession. This divergence has once again given rise to perceptions that financial market developments might be disconnecting from fundamentals both in stock and bond markets.

Yield curves have shifted further downwards, and the low-interest rate environment is expected to remain for years to come. In Germany and Switzerland, the entire yield curve (up to 30 years) has remained in negative territory, and the US yield

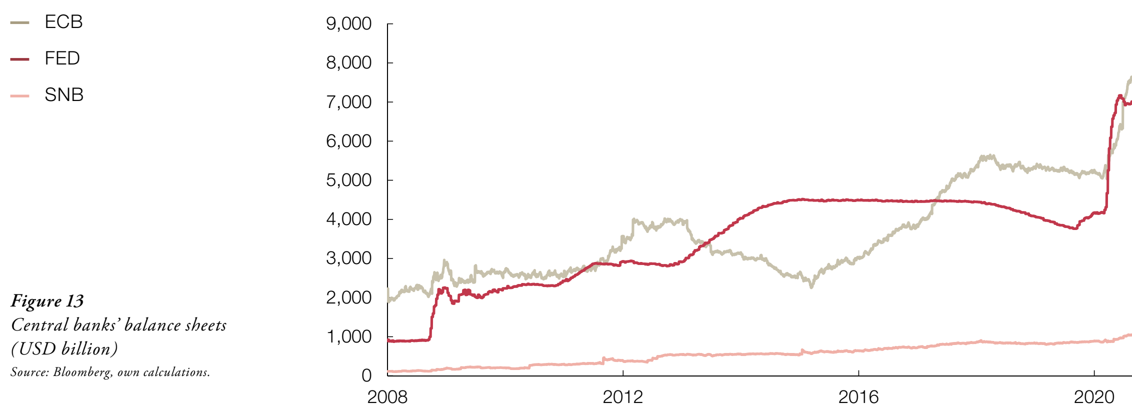


Figure 13
Central banks' balance sheets (USD billion)
Source: Bloomberg, own calculations.

curve has shifted downwards by roughly 1.5 percentage points since the end of 2019. In essence, according to current market expectations, investors expect the low-interest rate environment to become a more or less permanent feature of economic reality.

Monetary policy may stand at a turning point, following a steady downward trend in real (and nominal) interest rates for about 35 years. Against the background of a flattening Phillips curve, i.e. low inflation even during periods of strong labor markets, as observed in the United States prior to the Covid-19 related downturn, major central banks have entered a discussion about revising their monetary policy strategies. While the ECB and also the SNB have never left the "crisis mode" after the global financial crisis, the Fed has temporarily increased interest rates during the recovery phase. Nevertheless, central banks in advanced economies – not only in Japan – may be stuck at the effective zero lower bound for years to come, raising important questions about future strategies in monetary policy. The Fed has recently hinted at possibilities to move towards a so-called "price level targeting", i.e. allowing for temporarily higher inflation rates after periods of undershooting the inflation target and vice versa. In a similar vein, the ECB has been discussing a revision of its monetary policy strategy since the start of the year, and is expected to announce the result of the internal consultation in the course of next year. In any case, it seems clear that the natural real interest rate has declined sharply in recent decades, and that the downward trend in interest rates that have prevailed for more than 30 years will not continue further into negative territory. With the end of this long-term trend, which has significantly boosted stock market valuations in the past decades, and the reworking of monetary policy strategies of some major central banks, the outlook for interest rates and inflation may be more uncertain than currently envisaged by financial markets.

LIECHTENSTEIN'S NON-FINANCIAL SECTOR

Overview and international comparison

Total indebtedness of Liechtenstein's non-financial sector has remained low. The total debt ratio – defined as the sum of the indebtedness of both the (non-financial) private and public sector to GDP – is relatively low in Liechtenstein, estimated at around 158% of GDP at the end of 2019 (Figure 14). In contrast to the very detailed public sector accounts, data on private indebtedness – both for non-financial corporations (NFCs) and private households – do not exist in its usual consolidated form for Liechtenstein. The following analysis is thus based on various data sources, including tax statistics, cross-border claims and liabilities as reported in the BIS Locational Banking Statistics (see Box 4) and the FMA's internal supervisory statistics. While the overall indebtedness for Liechtenstein has changed little from last year's Financial Stability report, the composition has changed somewhat. Newly available data point to slightly lower indebtedness of the household sector, while the NFC's debt is now estimated moderately higher by considering cross-border claims and liabilities.

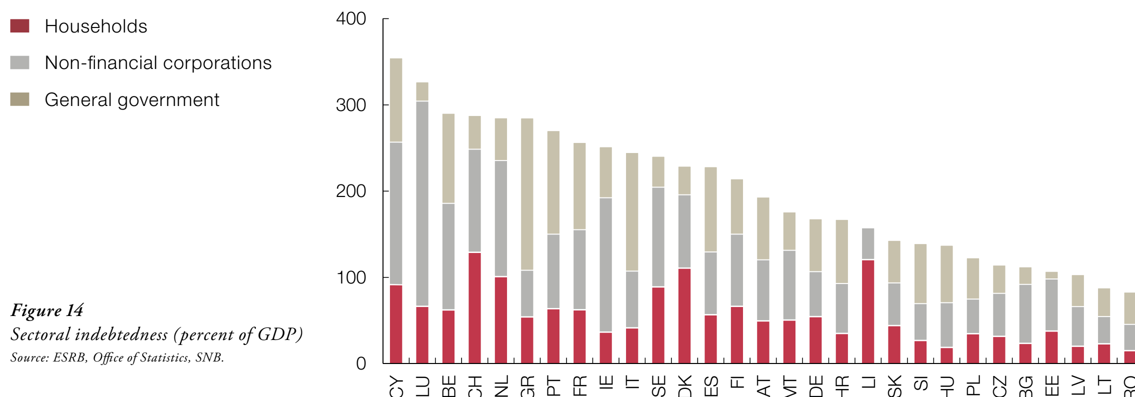


Figure 14
Sectoral indebtedness (percent of GDP)
Source: ESRB, Office of Statistics, SNB.

Private indebtedness is, however, highly concentrated in the household sector. New data from tax authorities that have been adjusted to give a better estimate of private household debt (as explained below) show a high indebtedness of private households, amounting to approximately 121% of GDP at end-2019. While this is the highest number among all EEA countries, only Switzerland shows a slightly higher figure, with private households' indebtedness amounting to 129% of GDP. Denmark (111%) and the Netherlands (102%) also report high numbers in this context, not least because of corresponding tax provisions disincentivizing the amortization of private debt. Although the high headline number in Liechtenstein is not directly comparable to other countries, as explained in detail below, the high stock of household debt is nevertheless one of the main risks in the banking sector and thus has remained a strong focus of macroprudential supervision and policy.

On the contrary, low debt ratios in the non-financial corporate (NFC) sector and virtually zero debt of the public sector contribute to the overall stability of the economy. The NFC sector is characterized by high equity and low debts, also due to corresponding tax incentives. In total, the NFC debt-to-GDP ratio is estimated at approximately 37% of GDP at the end of 2019. The estimate now includes cross-border liabilities of Liechtenstein NFCs towards foreign banks, and is therefore higher than in last year's Financial Stability Report. Importantly, the higher number cannot be interpreted as a rise in debt, but rather an improvement in data quality relative to last year. Still, the indebtedness of NFCs is low compared to other countries, as shown in Figure 14. The public sector has virtually zero debt, as public finances are characterized by a very prudent fiscal policy approach. Following a remarkable fiscal consolidation package after the global financial crisis, the public sector recorded considerable budget surpluses over the last few years. As a result, the public sector has relatively large liquid financial reserves, which is an important factor of stability for the financial sector and the economy as a whole.

When considering Liechtenstein's high level of economic development, the overall indebtedness of the non-financial sector is remarkably low. The economic literature on the finance-growth nexus suggests a strong and robust positive relationship between financial development (i.e. financial deepening which is associated with higher debt levels) and economic growth.[4] As a result, countries with higher levels of economic development, as typically measured by GDP per capita (p.c.) levels, usually exhibit higher levels of debt, as their financial sector is more developed. Correspondingly, higher incomes are typically associated with elevated levels of debt. This empirical relationship is shown for the EEA member countries (and Switzerland) in Figure 15, with the magnitude of the circles corresponding to the size of the respective economy. While the positive correlation between overall indebtedness of the non-financial sector and GDP p.c. is clearly visible, some countries exhibit relatively high levels of debt relative to their economic development (including, for instance, Cyprus, Greece, and Portugal). Liechtenstein, on the contrary, is an outlier in the opposite direction, i.e. the high level of economic development (GDP p.c.) is accompanied by a relatively low indebtedness of the non-financial sector. This is an important result, as the literature has shown that rising levels of financial development and debt are not only associated with higher growth rates, but also with higher costs in the case of a banking crisis.[5] Higher levels of debt thus do not only lead to higher prosperity, but also increase the risk of financial crises.

4 *For an overview of this strand of literature, see Levine, R. (2005). Finance and growth: Theory and evidence. In: Aghion, P., Durlauf, S. (Eds.): Handbook of Economic Growth, pp. 865–934.*

5 *See Breitenlechner, M., Gächter, M. and Sindermann, F. (2015). The finance-growth nexus in crisis. Economics Letters, 132, 31–33.*

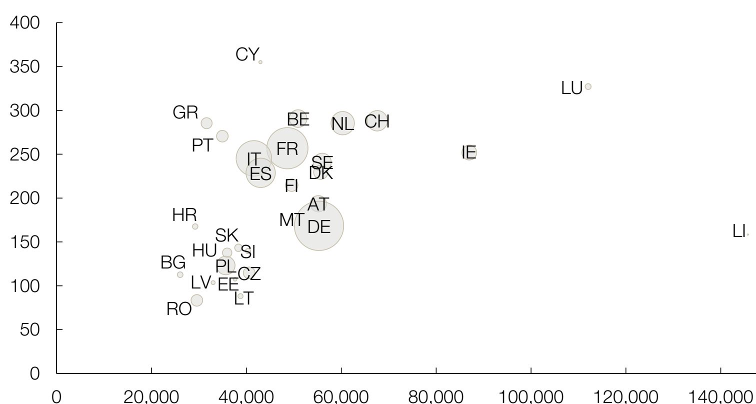


Figure 15
Indebtedness and economic development (x-axis: GDP p.c. (PPP); y-axis: total debt of the non-financial sector in percent of GDP)
Source: ESRB, BIS, Office of Statistics, FMA, SNB, BFS, IMF. The diameter of the circle is proportional to the size of the respective economy (i.e. GDP).

Private households

Newly available data facilitates a more precise estimation of household indebtedness in Liechtenstein. In previous versions of the Financial Stability Report, household debt was estimated based on publicly available data from the tax statistics. This data included households with limited tax liability in Liechtenstein, i.e. persons who do not have their permanent residency in Liechtenstein. New data from the Office of Statistics are adjusted by excluding these households[6], resulting in a more precise estimate of household debt. According to this revised data, supplemented by additional data from banks' regulatory reporting for the last two years, we estimate household indebtedness at around CHF 7.9 billion at the end of 2019, corresponding to about 121% of GDP. It is important to emphasize that the available numbers from tax statistics is likely to slightly overestimate household debt, as the definition is broader than standard definitions in other countries, e.g. in Eurostat data. More precisely, household debt statistics are typically calculated on a consolidated basis (i.e. credit within the household sector is not considered). On the contrary, debt statistics in Liechtenstein are based on tax statements, and credit within the household sector (even within a family) is recognized as a liability. Still, the numbers can be verified, at least in in terms of magnitude, by considering banks' loans to private households in Liechtenstein (amounting to CHF 6.1 billion) and the cross-border claims of foreign banks towards Liechtenstein households according to BIS statistics (CHF 0.6 billion). The remaining gap of roughly CHF 1.2 billion is, on the one hand, due to incomplete data regarding cross-border claims, as Liechtenstein is not always reported as a separate counterparty in the BIS statistics, and liabilities within the household sector in Liechtenstein. Notwithstanding the slightly lower estimate of household debt based on the revised data, the new numbers still suggest a high indebtedness of more than CHF 200,000 per inhabitant potentially raising concerns about the sustainability of household debt.

6 *Additionally, we exclude households/persons who move away from Liechtenstein in the respective year.*

On the back of the low interest rate environment, household debt has followed an increasing trend in recent years. The low interest rates – including negative base rates – in recent years imply strong incentives for households to take up credit. While the decrease in interest rates implied some windfall gains particularly for the household sector, the large majority of credits (and mortgages) exhibit fixed interest rates, leading to a gradual pass-through of interest rate changes over time. Household indebtedness has continuously increased in the past two decades, from around 79% in 2000 to 121% of GDP in 2019 (Figure 16). The steady rise in debt ratios must be monitored closely in the near future, also in light of the elevated level of the stock of household debt.

While total mortgage growth has diminished in recent years, credit growth in residential real estate has remained somewhat more elevated (see Box 3). Against the backdrop of structurally high household indebtedness, a profound analysis on the underlying risks is important, so that macroprudential policy is able to react in a timely manner if deemed necessary. In this context, the FMA has conducted an in-depth risk analysis related to household indebtedness based on a new data set including granular data at the household level. While the complete report – including the risk analysis and proposed measures to address the identified risks – will be published in the first half of 2021, some preliminary findings are presented in Box 3.

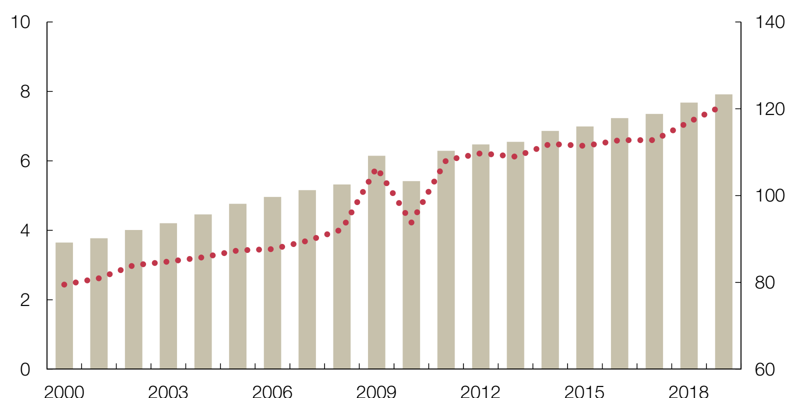


Figure 16
Household debt in Liechtenstein (CHF billion; percent of GDP)
Source: ESRB, Office of Statistics, SNB.

Some structural characteristics and legal restrictions imply that risks may be lower than suggested by the reported headline debt figures. First, high job security and continuously low unemployment rates over the past decades lead to high planning certainty for the household sector in Liechtenstein in terms of household income, implying that the sustainable level of household debt is higher than in other countries. Second, relatively low taxation on household income leads to higher disposable income thus further improving the sustainability of household debt relative to countries with higher tax rates. Third, banks follow relatively prudent lending standards in terms of loan-to-value (LTV) ratios and asset quality has continued to be favorable, with non-performing loan (NPL) ratios remaining at very low levels. Furthermore, some specific characteristics – such as legal restrictions on the purchase of real estate or severe immigration restrictions – imply that any materialization of risks in the housing market

could be targeted with specific relaxations of the corresponding limitations, i.e. giving policymakers additional room of maneuver in the case of a crisis relative to other countries.

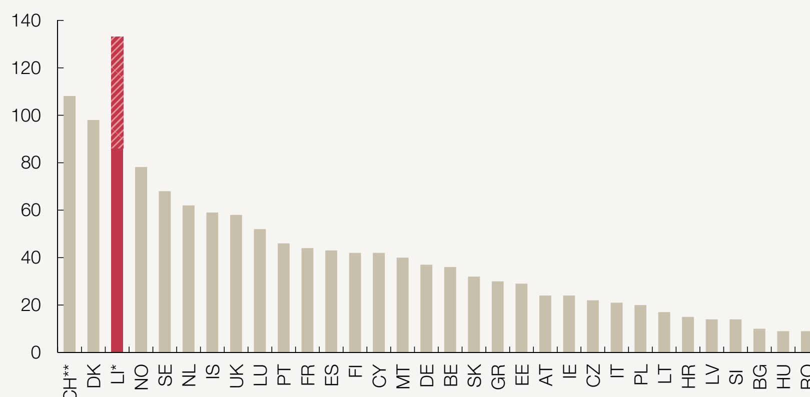
While the high indebtedness of households implies certain vulnerabilities to an abrupt interest rate increase, the direct impact on the economy would likely be limited. The large share of fixed interest rate mortgages implies that an abrupt interest rate increase – e.g. due to a repricing of global risk premia or a faster monetary tightening than currently envisaged by financial markets – would not affect Liechtenstein's households immediately, but only gradually over time. Such additional time for adjustment, both for the household sector and the banks facing the corresponding credit risk, is an important risk mitigating factor in the case of Liechtenstein, as the impact would take full effect only gradually with the renewal of expiring mortgages. Furthermore, domestic demand plays a relatively minor role in Liechtenstein's small and open economy, dampening any procyclical effects of a downturn in the financial cycle. Thus, even a marked increase of the households' saving rate would have negligible demand effects, thus limiting the impact on the broader economy. The very low debt ratio of NFCs and the non-existence of public debt (but large public reserves) further contribute to the overall stability of the financial sector.

BOX 3

Liechtenstein's real estate sector and private household indebtedness

The total volume of domestic residential real estate loans amounted to CHF 5.7 billion at the end of 2019, corresponding to roughly 86% of GDP. In comparison to other countries, Liechtenstein exhibits one of the highest figures with respect to this indicator, even when only considering domestic residential mortgages. More precisely, only Switzerland (108% of GDP) and Denmark (98%) show higher numbers among European countries (Figure B3.1). If residential mortgages of domestic banks for properties abroad (mainly in Switzerland) are also included, Liechtenstein shows the highest number of all European countries, totalling 133% of GDP, implying significant vulnerabilities for banks due to the corresponding concentration risks in real estate loans.

Figure B3.1
Residential real estate (RRE) loans (percent of GDP)
Source: ESRB, SNB, Office of Statistics, FMA.
**In the case of Liechtenstein, the solid column represents domestic RRE loans while the hatched part are RRE loans abroad, mainly properties in Switzerland. **For Switzerland, the numbers were approximated with total mortgages, as RRE loans are not available.*



At the same time, it is important to emphasize that Liechtenstein's banking sector is very large relative to GDP, with the assets of the banking sector corresponding to roughly 14 times the country's GDP. Against this backdrop, it becomes obvious that the total volume of mortgages relative to banks' balance sheets is less of a cause for concern. Although mortgage loans are an important income source for some of the Liechtenstein banks, they do not constitute the main determinant for profitability, as banks mainly focus on private banking services. Nevertheless, the presented data imply considerable exposures of the banking sector towards the domestic real estate sector. It is therefore important to regularly monitor and assess the underlying risks and developments.

Liechtenstein's real estate sector is characterized by some structural specifics complicating a comprehensive comparison with other countries. Legal restrictions on the purchase of real estate – in absence of a legitimate interest, e.g. in case of already existing property within the family – lead to relatively low market activity. In 2019, a total of 881 real estate transfers took place (2018: 776), of which only 423 (around 48%) were purchases. As a transfer of property within the family or an "equivalent" barter of property is not subject to approval, many real estate transactions are not purchases, but transfers by barter, donation or heritage. In light of methodological difficulties associated with the very low number of purchase transactions, there are no price indices available, neither for house purchases nor rents. The risk assessment of the real estate sector in Liechten-

BOX 3

stein therefore focuses on available data on building activity, mortgage growth, household indebtedness and banks' lending standards.

Building activity has remained stable in 2019, with a slight decrease in construction costs accompanied by a small increase in the number of new apartments. The total number of construction projects has peaked at 921 in 2009, and has followed a downward trend in recent years, with 490 new projects in 2019 (up from 439 in the previous year, see Figure B3.2). While the majority of these projects concerns changes in existing buildings, 151 new projects were recorded (up from 142 in 2018). The annual number of approved new apartments – 326 in 2019 – has also followed a downward trend in recent years, although the number increased slightly relative to 2018 (303 new apartments). Total construction costs declined somewhat in 2019, from CHF 462 million to CHF 445 million.

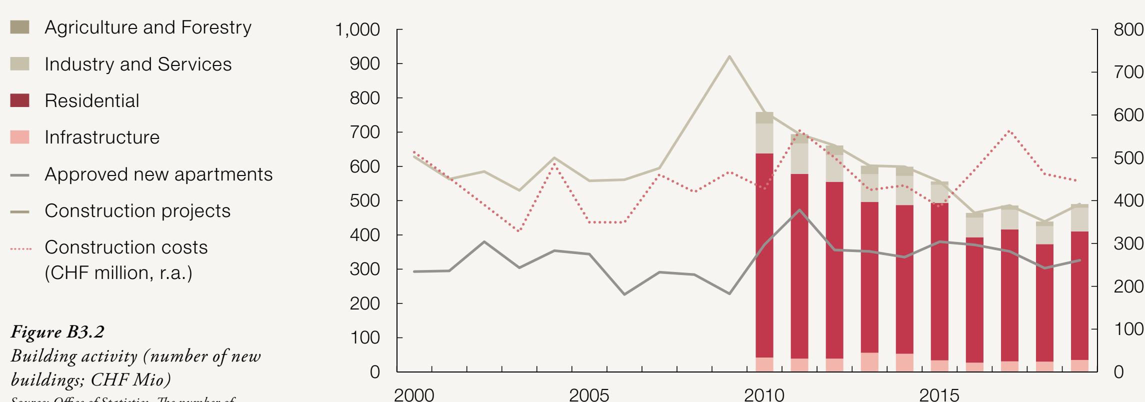


Figure B3.2
Building activity (number of new buildings; CHF Mio)
Source: Office of Statistics. The number of buildings is recorded in the year of approval.

Although building activity has led to an increasing number of residential units since 2010, the vacancy rate has remained broadly stable in the past few years. By the end of 2019, a total of 10,796 residential buildings were reported, with the majority being either single family homes (6,288) or two-family homes (1,362). When also including the 1,080 multi-family homes, the total number of residential units increased from 18,509 in 2010 to 21,067 in 2019. Since 2014, both the number of not permanently inhabited residential units (including old houses and holiday homes) as well as vacant residential units (i.e. apartments available for sale/rent) has remained relatively stable. The number of vacant (available) apartments decreased slightly from 849 to 830 in 2019, with the vacancy rate hovering around 4% in the last few years (Figure B3.3). While the vacancy rate is quite high compared to other countries, this is once again likely due to structural particularities. Anecdotal evidence suggests, for instance, that rent prices are quite sticky even in the case of long vacancy periods. One reason is the low interest rate environment, resulting in low debt-service-to-income ratios and a high sustainability of the respective mortgage loan. As a result, landlords are not dependent on rental income to service their debt.

BOX 3

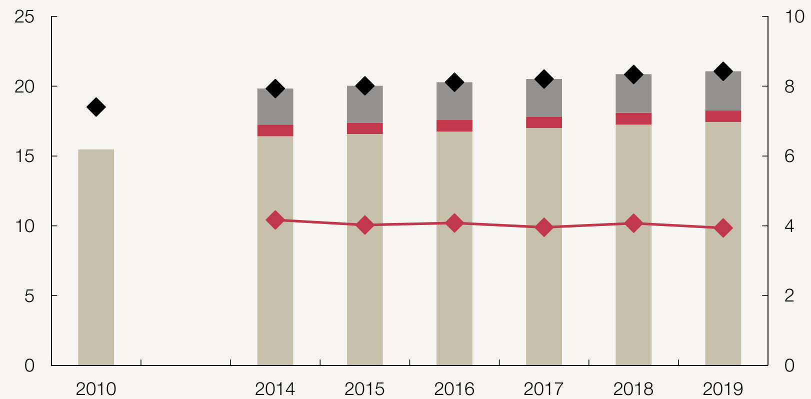


Figure B3.3
Number of apartments and vacancy rate (number of apartments in thousands; vacancy rate in percent)
Source: Office of Statistics, own calculations.

Total mortgage growth has remained low, with slightly higher growth in residential real estate loans. Historical time series of mortgage debt include cross-border credit to Switzerland (i.e. loans of Liechtenstein banks to the whole Swiss franc currency area), while Liechtenstein and Switzerland are reported separately since 2016. Headline numbers show that mortgage growth has declined markedly from 8.8% in 2010 to 0.7% in 2019 (Figure B3.4). While cross-border mortgages to Switzerland continued their decline, decreasing by –0.7% on an annual basis, domestic mortgages (including residential real estate and other real estate) continued to grow at a moderate pace of 1.5%. Mortgage growth of residential real estate in Liechtenstein showed more dynamic growth, amounting to 3.1% in 2019, declining from 4.4% in the previous year.

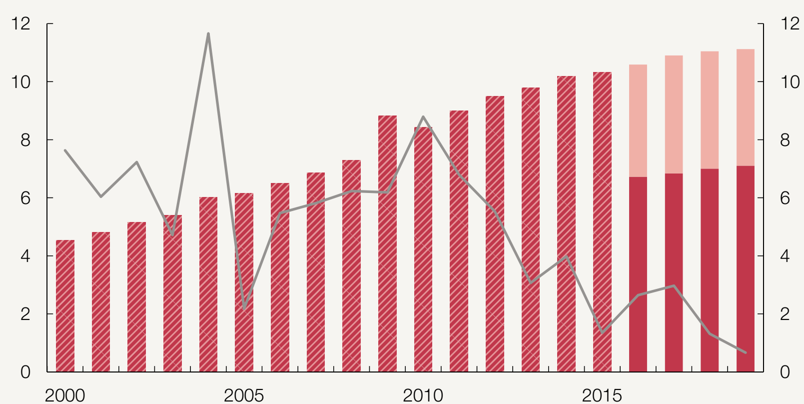


Figure B3.4
Mortgage volume and growth (CHF billion; percent)
Source: Office of Statistics, FMA.

BOX 3

While mortgage growth has diminished in recent years, the stock of household debt has remained high, also relative to disposable income. Private household indebtedness relative to disposable income is an important indicator for the sustainability of household debt. On average, this ratio stands at 105% across all EEA countries, with particularly high figures in Luxembourg, Sweden, the Netherlands, Norway and Denmark, i.e. countries with varying forms of tax incentives in the context of tax deductibility of mortgage interest rates. As shown in Figure B3.5, Liechtenstein ranks second among all European countries. In Liechtenstein, the ratio stands at 226%[7], on equal terms with Denmark (227%). This simple international comparison also identifies vulnerabilities of households as one of the main risks in Liechtenstein's residential real estate market.

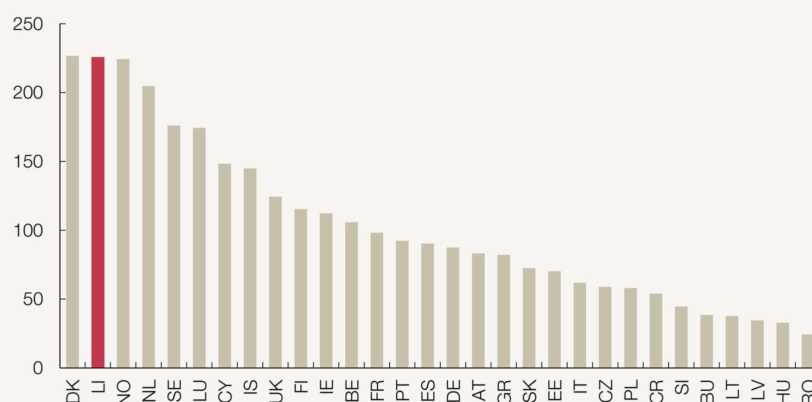
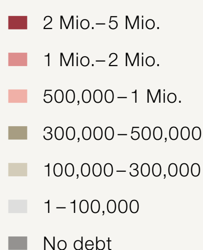


Figure B3.5
Private household debt relative to disposable income (percent of disposable income)
Source: ESRB, Office of Statistics, own calculations. Numbers for Liechtenstein are only approximatively comparable. The disposable income in Liechtenstein was calculated as the difference between total taxable income and the wealth and income tax.

A special analysis based on data from tax statistics shows that household indebtedness varies significantly across households. About 42% of households have no debt (Figure B3.6), with another 13% exhibiting debt lower than CHF 100,000. At the top of the distribution, 14% of households report debt between CHF 500,000 and CHF 1 million, with still 9% of households – or almost 1,500 households in absolute terms – have debt exceeding CHF 1 million. Furthermore, preliminary analysis suggests that the share of households with high debt relative to taxable income (i.e. with a debt-to-income ratio higher than five) is comparatively high, suggesting that high household debt is not always accompanied by high household income.

7 *The definition of disposable income differs slightly from other countries (as explained in the notes of the respective figures), but the numbers are comparable in terms of magnitude.*

BOX 3



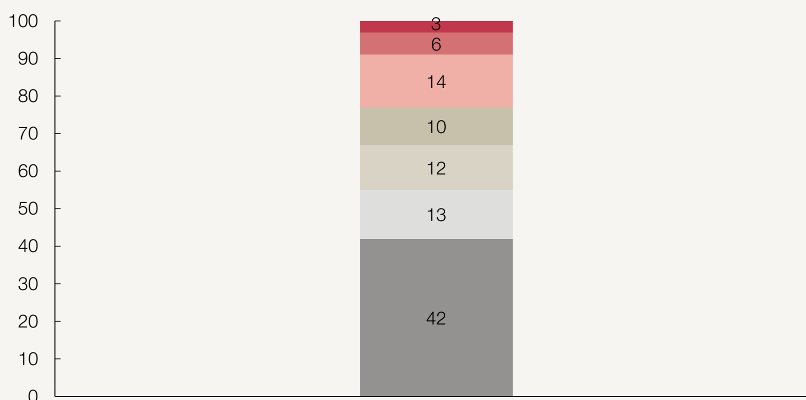


Figure B3.6
Distribution of debt across private households (CHF, percent of households)
Source: Office of Statistics, own calculations.

Lending standards in terms of loan-to-value (LTV) ratios of Liechtenstein banks have remained relatively prudent. The majority of RRE loans – about 61.1% – exhibit an LTV ratio of below 66 2/3%. A further 37.9%[8] of the total volume of RRE mortgages has an LTV ratio of between 66 2/3% and 80%, with less than 1% exceeding an LTV ratio of 80%. Overall, the average LTV of all RRE mortgages in Liechtenstein amounted to 48.6% at the end of 2019, a slight increase from the previous year. The share of new RRE mortgages exceeding an LTV ratio of 80% is virtually zero, standing at 0.1% in 2019.

To stabilize the real estate market, targeted policy measures have been in place since 2015. To counter the boom in real estate and an increase in mortgage growth following the global financial crisis, the legal framework regarding owner's equity, affordability and amortization was adjusted in 2015. In general, the LTV ratio for mortgages for residential real estate and income property must not exceed 80%. In exceptional cases ("exceptions-to-policy", ETP), where the LTV ratio exceeds 80%, banks have substantially higher reporting requirements on the corresponding loans. Additionally, at loan origination, a long-term imputed interest rates (usually amounting to between 4.5% and 5%) aims at ensuring affordability of new loans, and new mortgages have to be amortized to a maximum LTV ratio of 66 2/3% within 20 years. Furthermore, the risk weights for RRE loans are slightly more restrictive than in the "standard" CRR framework. For mortgages with an LTV between 66 2/3% and 80%, risk weights amount to 50% (instead of 35%), while mortgages with an LTV larger than 80% lead to risk weights of 100% (in line with the CRR).

While lending standards in terms of LTV have remained relatively cautious, current data on mortgage affordability suggests significant household vulnerabilities. As explained above, banks have to report loans as ETP in case of limited affordability. While there are no exact quantitative legal guidelines for such internal restrictions, banks usually verify whether an interest rate increase to 4.5% or 5%

8 *An internal data revision at one of the large banks has led to a significant increase in the volume of credits exhibiting an LTV between 66 2/3% and 80% relative to last year.*

BOX 3

would imply a debt service burden exceeding a third of household income. While the assumptions of such a "mini stress test" are quite severe in light of the current low interest rate environment and a long history of low interest rates in Swiss francs, it is nevertheless remarkable that around 23% of total RRE loans in Liechtenstein belong to this ETP category. Although LTV ratios are relatively low, this number implies that a significant share of Liechtenstein households could be vulnerable to an abrupt increase in interest rates or any other unexpected macroeconomic shock.

While risks in Liechtenstein's residential real estate market are still assessed to be limited, the high indebtedness of households is a cause of concern. Current data on building activity, mortgage growth and lending standards do not indicate a credit boom in Liechtenstein. Since the space that is available in Liechtenstein is quite limited, demand for real estate that is available for sale has remained continuously high. At the same time, legal restrictions on the purchase of real estate are associated with quite low market activity. Furthermore, the number of persons that are allowed to establish their main residence in Liechtenstein is severely limited. Demand for such approvals would be substantial due to the relatively moderate taxation in Liechtenstein. Both the legal restrictions on the purchase of real estate as well as immigration restrictions imply that any materialization of risks in the housing market could be targeted with specific relaxations of the corresponding limitations. This implies additional room of maneuver in the case of a crisis relative to other countries. While the underlying risks in the real estate market therefore seem limited, also because of special characteristics of the small market, the high indebtedness of the household sector will remain an important priority of macroprudential policy and must be regularly monitored. In case of an increase in risks, e.g. a further rise in debt or surging imbalances in the real estate sector, additional risk-mitigation policy measures could be discussed and proposed by the Financial Stability Council.

An in-depth analysis of the high household indebtedness is currently being discussed in the Financial Stability Council. Based on a recommendation in last year's Financial Stability Report, the FMA has conducted an in-depth analysis of vulnerabilities related to Liechtenstein's high household indebtedness. The report does not only shed light on risks and vulnerabilities, but also evaluates the current macroprudential policy stance and discusses possibilities how to address the associated risks. Possible measures include additional reporting requirements for banks, also related to the respective ESRB Recommendation ESRB/2016/14, and a discussion on the appropriateness and sufficiency of currently activated macroprudential instruments in the context of sustainable lending policies in the banking sector. The final report is expected to be discussed in the Financial Stability Council in December and will presumably be published in the first half of 2021.

Non-financial corporations

In terms of GDP contributions, the manufacturing and industrial sector is more than twice as large as the financial sector, which differentiates Liechtenstein from other financial centers. The economy is well diversified, with the manufacturing and industrial sector's share in GDP amounting to 47%, dominated by the globally competitive machinery industry (machinery, engines, tool building) which contributes more than 18% to GDP. The financial services sector, even when including legal and tax advice as well as auditing, contributed less than 20% to GDP, and is thus less than half the size of the industrial sector according to the 2017 national accounts.

Tax incentives contribute to a low debt-to-GDP ratio of the non-financial corporate (NFC) sector in Liechtenstein. While no consolidated debt statistics is available (similar to the household sector), leverage in the corporate sector can be estimated based on supervisory statistics (i.e. exposures of Liechtenstein banks to the domestic corporate sector), complemented by the volume of issued bonds by NFCs and cross-border claims from foreign banks towards Liechtenstein NFCs. Total exposures of Liechtenstein banks to the domestic NFC sector amounted to CHF 1.1 billion at end-2019. Additionally, the debt securities statistics by the BIS[9] include approximately CHF 300 million of outstanding debt securities by NFCs in Liechtenstein. While last year's Financial Stability Report pointed to an underestimation of the overall indebtedness of the NFC sector in Liechtenstein, because cross-border credits were not considered so far, the new numbers also consider data from the BIS Locational Banking Statistics.[10] According to this new data, foreign banks reported cross-border claims of CHF 1.1 billion towards Liechtenstein NFCs. Summing up, total NFC debt is therefore estimated at CHF 2.4 billion at the end of 2019, corresponding to roughly 37% of GDP. While this number is somewhat higher than last year's estimate due to the consideration of cross-border credits, NFC indebtedness is still low in international comparison. The low indebtedness of the NFC sector is mainly due to specific tax incentives, as equity costs of (currently) up to 4% are tax-deductible. Since high equity reduces the corporate tax on profits, companies have strong incentives to keep their leverage low, i.e. balance sheets of the corporate sector typically feature high equity shares and relatively low debt.

9 *Bank for International Settlements (BIS), see https://www.bis.org/statistics/secstats.htm?m=6%7C33%7C615.*

10 *See BIS, https://www.bis.org/statistics/bankstats.htm?m=6%7C31%7C69.*

BOX 4

Insights from the BIS Locational Banking Statistics

The Locational Banking Statistics (LBS), published quarterly by the Bank for International Settlements (BIS), offers valuable insights into the cross-border interconnectedness of global banking. In summary, the LBS provides an insight into aggregate international claims and liabilities of all banks resident in 43 reporting countries broken down by instrument, currency, sector, country of residence of counterparty, as well as nationality of reporting banks. Both domestic and foreign-owned banking offices in the reporting countries report their positions on a gross basis (except for derivative contracts for which a master netting agreement is in place) and on an unconsolidated basis, including those vis-à-vis own affiliates, which is consistent with the principles of national accounts, money and banking, balance of payments and external debt statistics. Liechtenstein companies and banks do not report data to the BIS, implying that the presented data for Liechtenstein originates from foreign banks reporting Liechtenstein as their counterparty. The picture for Liechtenstein is likely to be incomplete, not only because some countries are not included in the dataset, but also because not all countries report Liechtenstein as a separate counterparty (e.g. including it in the Swiss aggregate). This report takes an external perspective on claims and liabilities from the foreign banks' perspective, i.e. claims are always to be considered a financial asset that has a counterpart liability in Liechtenstein and vice versa. For Liechtenstein, the LBS is an interesting source to analyse cross-border claims and liabilities of both the financial sector and the real economy, thereby getting a more precise picture of total (i.e. domestic and foreign) sectoral liabilities.

Global cross border claims on all financial and non-financial sectors have continuously increased over the last years, driven by both advanced economies and offshore financial centres. On the global level, the increase in claims towards the non-bank sector is mainly driven by large players. Expansion of global cross-border lending continued at the beginning of 2019 before being negatively impacted by the economic distortions created by Covid-19. The annual growth rate of cross-border bank claims equalled 6% at the end of 2019. As in previous quarters, growth in cross-border lending was supported by increasing claims on advanced economies and offshore financial centres. In the last quarter of 2019, global claims contracted by USD 703 billion, leaving the outstanding stock of total claims at a valuation of USD 31 trillion. The stock of total claims towards Liechtenstein amounted to USD 10.3 billion by end-December 2019, representing a year-on-year increase of 9.5%. Thereof, 79.3% of total claims were towards Liechtenstein's banking sector, confirming the strong cross-border interconnectedness of domestic banks. In this box, however, we particularly focus on claims towards the non-financial sector, totalling USD 1.69 billion at the end of 2019.

Overall, claims towards Liechtenstein's non-bank sector[11], which additionally includes non-bank financial institutions, have remained relatively stable over the past years. The lowest claims in the non-bank sector are attributed to the public sector (government), which is unsurprising considering that Liechtenstein has virtually no public debt.

11 The non-bank sector is defined as all sectors excluding banks, i.e. the non-financial sector plus non-bank financial institutions.

BOX 4

Between 2014 and 2018, claims on private households in Liechtenstein were relatively stable, before rising from just above USD 200 million to USD 612 million by the end of 2019.[12] Claims towards non-financial corporations amounted to just below USD 1.1 billion at the end of last year. Overall, total claims towards the non-bank sector have remained remarkably stable over the last few years, hovering around USD 2 billion (Figure B4.1).

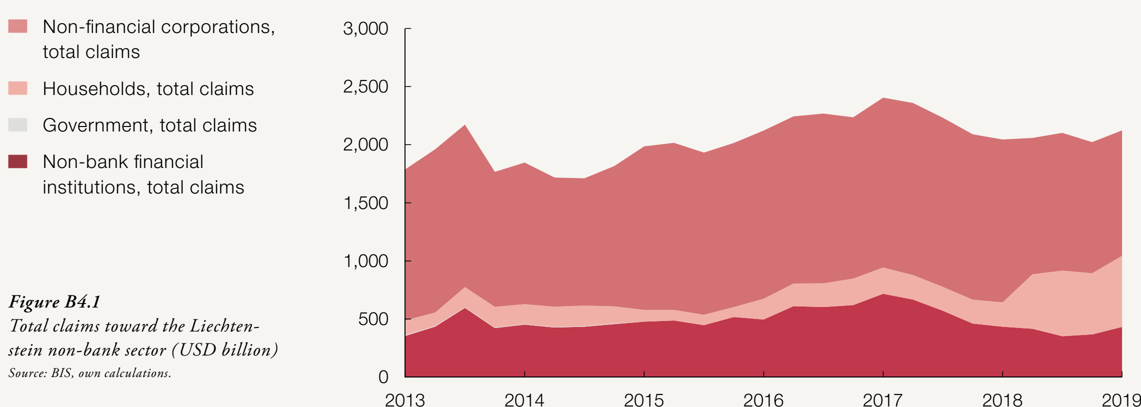


Figure B4.1
Total claims toward the Liechtenstein non-bank sector (USD billion)
Source: BIS, own calculations.

The LBS dataset facilitates analyses on a wide range of topics. Cross-border claims and liabilities can be used, for instance, to estimate total sectoral indebtedness in Liechtenstein. In this context, the cross-border claims from the LBS on the Liechtenstein non-financial corporate sector are considered when estimating the indebtedness of Liechtenstein's corporate sector. The following paragraphs include a simple application of the LBS data by showing a comparison of countries regarding claims on their non-bank sector, giving some interesting and surprising insights into global financial exposures.

Claims towards Liechtenstein's non-bank sector are only a small fraction in comparison to large international players, also when calculated relative to the country's GDP. Accumulated claims on the Liechtenstein non-bank sector equalled USD 2.1 billion by the end of 2019; i.e. approx. 32% of GDP. Unsurprisingly, total claims towards the non-bank sector are relatively small compared to large global players. The United States, on the contrary, accumulated total claims towards its non-bank sector of USD 3,191 billion (about 15% of GDP). As can be seen in Figure B4.2, the Cayman Islands – a geographically and economically small jurisdiction – are also among the heavy weights in absolute numbers, facing total claims towards its non-bank sector of USD 1,696 billion (more than 300 times the country's GDP), ranking even ahead of the United Kingdom which stands at USD 1,443 billion (around 50% of GDP). When taking a more detailed look

12 *The reason for this sharp increase is unclear, but could be due to a structural break in the time series, e.g. because additional banks reported Liechtenstein as a separate counterparty.*

into the total claims towards the Cayman Islands, it becomes apparent that the largest part of total claims is towards the non-bank financial sector. The non-bank financial sector, as defined by the BIS, incorporates Special Purpose Vehicles, Hedge Funds, Security Brokers, Money Market Funds, Pension Funds, Insurance Companies, Financial Leasing Corporations, Central Counter Parties, Unit Trusts, other financial auxiliaries and other captive financial Institutions (incl. public financial institutions, e.g. development banks and export credit agencies). In the Cayman Islands, non-bank financial institutions make up USD 1,262 billion of claims, significantly more than the non-financial sector at USD 413 billion. In the case of the Cayman Islands, its large exposure towards financial vehicles is likely to explain the extremely large volume of claims towards the geographically small jurisdiction.

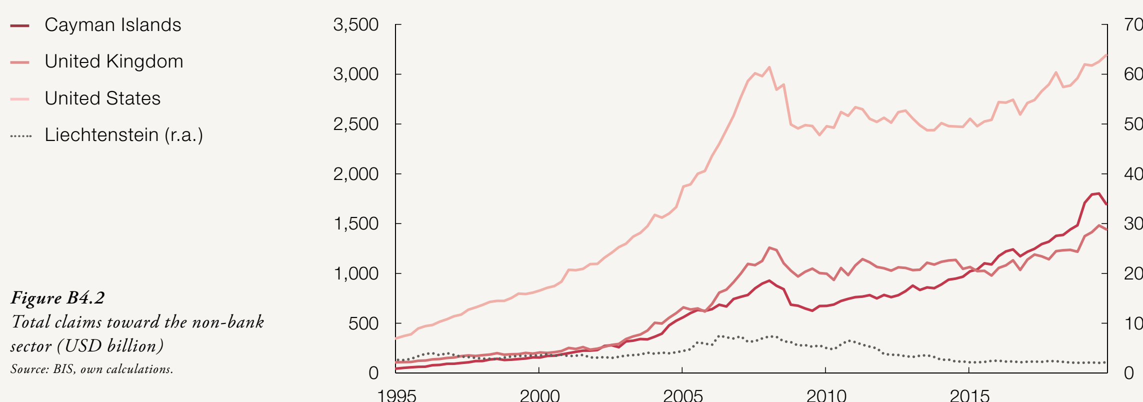


Figure B4.2
Total claims toward the non-bank sector (USD billion)
Source: BIS, own calculations.

Applying a similar detailed view on the United States paints a different picture with claims towards non-bank financial institutions standing at USD 1,497 billion, less than the claims towards the non-financial sector (USD 1,664 billion). The non-financial sector incorporates non-financial corporations, general government and households. For Liechtenstein, the extremely small volume in claims against the non-bank (and non-financial) sector reflects the large size of Liechtenstein's banking sector relative to GDP on the one hand, and its small exposure – particularly relative to the Cayman Islands – to financial vehicles (as defined as a part of the non-bank financial sector) on the other hand.

In this sense, the pattern of cross-border interdependencies of the non-bank sector in Liechtenstein resembles countries like the United States and the United Kingdom, rather than the Cayman Islands, where claims towards the non-bank sector are extremely high relative to GDP and mainly driven by claims towards the non-bank financial sector. This short application points out that the LBS dataset offers various interesting insights into global banks' cross-border claims and liabilities, and therefore allows us to gain a better understanding of prevailing focus areas and business models of financial centres across the globe.

Public sector

Notwithstanding the extra fiscal expenditures in light of the Covid-19 pandemic, public finances remain in very good shape. Liechtenstein's public finances continue to be remarkably sound. To cushion the economic consequences of the Covid-19 pandemic, the government, in conjunction with parliament, adopted a package of measures amounting to CHF 100 million in March 2020, which was further extended by municipalities' budget, resulting in fiscal stimulus measures totaling CHF 130 million, around 2% of GDP. The primary objective of the support measures has been the safeguarding of jobs, securing livelihoods and mitigating the consequences for the economy. The fiscal package includes a bridging loan facility to avoid possible liquidity shortages, a comprehensive furlough scheme to dampen the effects of the recession on the labor market, direct support for self-employed people and small enterprises, as well as the possibility to defer tax and social security payments. Despite of these extra expenditures in light of the global pandemic, the budget balance is expected to remain positive in 2020, also due to a one-off profit tax revenue of more than CHF 200 million in the current fiscal year, which more than offsets the fiscal cost of the government's support packages to fight the economic consequences of the pandemic.

Public finances are characterized by virtually zero debt and large financial reserves. Following an ambitious structural reform package after the global financial crisis, the Liechtenstein government successfully cut government expenditures while gradually increasing revenues. As a result, Liechtenstein has reported budget surpluses since 2014 (Figure 17). Furthermore, Liechtenstein has regularly outperformed its budgetary plans in recent years, confirming the sound fiscal policy approach. The public sector has virtually zero debt (in 2018, total gross debt amounted to CHF 32 million or 0.5% of GDP), but large financial reserves. At end-2018, net financial reserves amounted to CHF 6.0 billion (about 92% of GDP) at the general government level, a slight decrease from the previous year despite of the budget surplus in 2018. This shows that total government assets do not only depend on the performance of the budget, but also on returns achieved on assets in

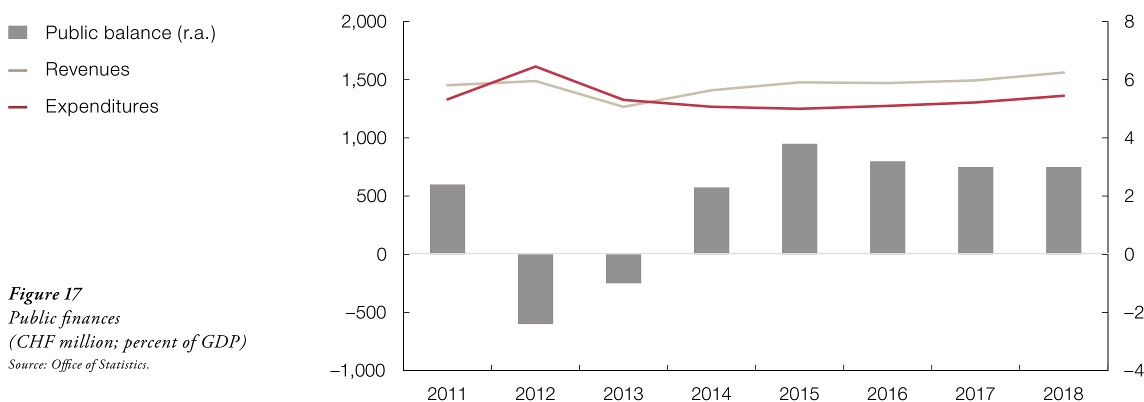


Figure 17
Public finances
(CHF million; percent of GDP)
Source: Office of Statistics.

financial markets, which turned negative in 2018 due to the financial market downturn at the end of the year. Total net financial reserves at the general government level are distributed among the state level (CHF 2.2 billion), the community level (CHF 0.7 billion) and social insurances (CHF 3.2 billion).

Sound public finances reflect a fast and decisive implementation of necessary structural reforms and an efficient decision-making in economic policy. Following budget deficits in the years after the global financial crisis, the government implemented a wide range of structural reforms, including efficiency gains in public administration, cuts in the redistribution of revenues to the community level and a reform of the state pension system. The public sector has once again confirmed its flexibility to adapt to new circumstances and its high political effectiveness in implementing structural reforms. As a result, Liechtenstein has returned to budget surpluses in recent years, with the budget surplus amounting to 3.0% in 2018, unchanged from the previous year. Preliminary data for 2019 at the state level[13] point to a significant increase in the budget surplus, which is both due to an increase in the primary budget surplus[14] (up from CHF 61 million in 2018 to CHF 100 million in 2019) as well as substantial positive returns on financial reserves (amounting to CHF 228 million in 2019, after a decrease by CHF 11 million in 2018). Data on the general government level are not yet available for 2019, but preliminary data point to further improvements, also in light of the strong financial market performance in the same year. Also, on the back of ambitious structural reforms in the last few years, the level of public expenditures amounted to only 20.3% of GDP in 2018, the lowest level among European countries.

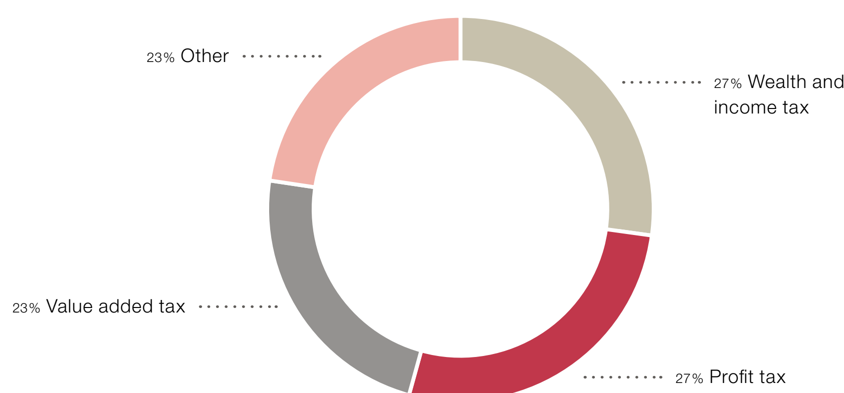


Figure 18
Revenues by tax type (percent of total tax revenues in 2019)
Source: Office of Statistics.

13 *Data for the general government level (including communities and social insurances) are not yet available for 2019.*

14 *Defined as revenues minus expenditures, excluding interest payments and revenues from financial assets.*

Contrary to other parts of the economy, data on public finances are widely available and very detailed. Public expenditures are very transparent in Liechtenstein, both at the state and community level. Main sources of revenues are the wealth and income tax (27%), the profit tax (27%) and the value added tax (23%), pointing to a quite diversified revenue side of the public budget (Figure 18). The comprehensive reporting combined with strong elements of direct democracy in the political system lead to a close surveillance of public finances by the public. Against the background of the comprehensive data sources and the very sound fiscal policy approach in the past few years, an in-depth analysis of the public sector seems unnecessary in the context of this report.

The focus of fiscal policy differs from other countries, as countercyclical policy would be mostly ineffective in light of the extremely small and open economy. While the soundness of public finances is largely beyond dispute in light of the presented numbers, the special focus of fiscal policy in Liechtenstein should be emphasized in this context. While fiscal policy in other countries typically focuses on countercyclical policy measures and, thus, acts hand-in-hand with monetary policy to stabilize the business cycle, the role of fiscal policy in Liechtenstein is somewhat different. Since domestic demand plays only a minor role in the extremely small and open economy, any growth-enhancing fiscal policies – both at the revenue or expenditure side – have very limited effects on the demand side, i.e. the multiplier effect would be extremely small. Recent fiscal policy measures in light of the global pandemic are a remarkable exception, but mainly focus on the safeguarding of jobs and the support of the corporate sector as well as the mitigation of the consequences of the recession (and the pandemic-related lockdown) for the worst affected. In general, fiscal policy in Liechtenstein focuses on very sound public finances on the one hand, also to remain independent from global debt markets, and on structural reforms on the other hand, to create the best possible conditions facilitating growth in the private corporate sector. The remarkable strong asset position of the public sector, at the state and community level as well as in social insurances, implies ample room of maneuver in the case of external shocks. In this regard, the very sound public finances are an important stability anchor for the whole economy.

LIECHTENSTEIN'S BANKING SECTOR

The impact of Covid-19 on the banking sector

The Liechtenstein banking sector has weathered the Covid-19 related economic downturn remarkably well so far. Against the backdrop of a remarkably resilient economy and a stable labor market, with local unemployment only marginally increasing to 1.9% by September, Liechtenstein's banking sector has overcome the global recession very well thus far.

While assets under management (AuM) decreased substantially in the first quarter, banks' profits did not suffer, and AuM recovered substantially in the second quarter (Figure 19). Compared to the previous year, Liechtenstein's banking sector could even increase its profitability in the first half of the year, also related to increased trading activity of customers during the period of financial market turbulence. Furthermore, against the international trend, the banking sector recorded a rise in the capitalization level. As of June 2020, the banking sector reported a CET1 ratio of 21.2% on the consolidated level, up from 19.8% at the end of 2019.

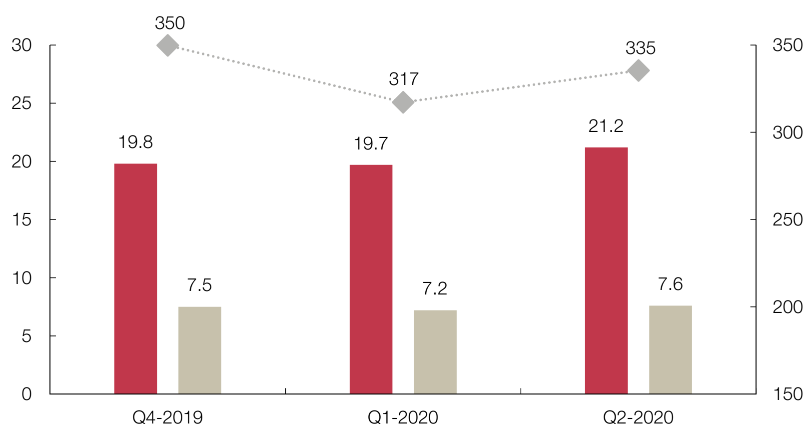


Figure 19
Key indicators of the banking sector on the consolidated level (CHF billion; percent)
Source: FMA.

Nevertheless, the FMA is continuously monitoring the financial stability implications of the global pandemic. The main impact of the recession on the banking sectors is yet to come as the collapse in economic activity takes time to manifest itself in losses that may increase non-performing loans (NPLs) and erode banks' capital position. The NPL ratio has increased in the first half of the year, albeit from very low levels, from 0.6% to 0.9%. While it seems likely that the Liechtenstein banking sector is less affected by the global setback in economic activity than banks in other countries, it is still important to keep the high levels of loss-absorption capacity to be prepared for any unexpected adverse developments in the bumpy recovery phase ahead.

Structural features

Since the banking sector is very large relative to Liechtenstein's GDP, a strong focus on macroprudential supervision and policy is indispensable. Total assets of Liechtenstein's banking sector amounted to CHF 92.8 billion at end-2019 at the consolidated level, corresponding to roughly 14 times the country's GDP. As the lion's share of Liechtenstein's banking sector is under domestic ownership[15], the FMA needs to address the related "too-big-to-fail" (TBTF) problem at the national level in order to mitigate risks for Liechtenstein's economy. Furthermore, the large banking sector is highly concentrated, with the three domestic systemically important institutions representing 92% of total assets of the consolidated banking sector. As a result, the three systemically important institutions in Liechtenstein's banking sector are not only extremely large relative to Liechtenstein's economy, but also the three largest institutions relative to the respective headquarter country's GDP in the entire EEA (Figure 20). Against this background, stability of the banking sector is key for the whole economy, even though total assets of the three largest banks remain relatively small in comparison to large European banks (as indicated by the small size of the circles). Fortunately, the large relative size of the three institutions is also accompanied by above-average capitalizations in terms of CET1 ratios, with most of the largest banks in the EEA countries exhibiting substantially lower capital ratios. Nevertheless, both the large banking sector as well as the dominating role of these three institutions has to be considered when designing and applying macroprudential instruments.

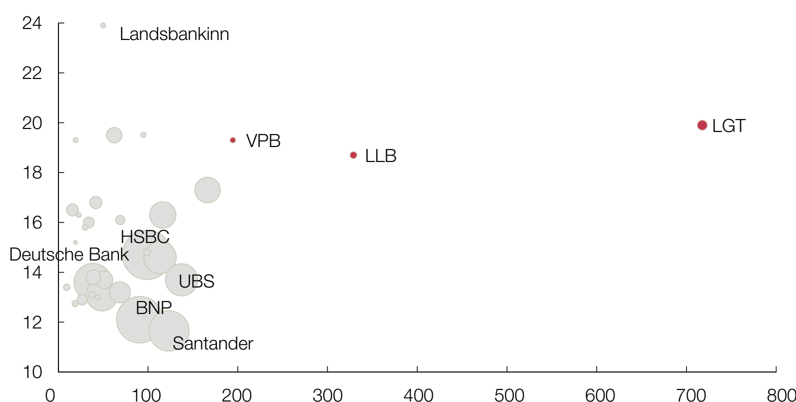


Figure 20
Banks' capitalization and size (y-axis: CET1 ratio; x-axis: assets as percent of the country's GDP)
Source: Bloomberg, banks' annual reports, FMA, Eurostat. Sample: Besides Liechtenstein (where all three O-SIIs are shown), only the biggest G-SII or O-SII in each EEA country and Switzerland is considered, respectively. The size of the circle is proportional to total assets. Data is based on 2019-Q4 or latest available.

15 *In terms of size, Luxembourg's banking sector is even bigger than Liechtenstein's, with total assets amounting to more than 15 times its GDP. In contrast to Liechtenstein, however, an overwhelming share of bank assets are from foreign controlled branches and subsidiaries, i.e. these banks are not domestically owned.*

The business model of Liechtenstein banks primarily focuses on private banking and wealth management services. Based on reported income sources (from the individual bank perspective), private banking and wealth management services are the most important source of earnings for Liechtenstein's banking sector, with a contribution of almost half of total income (40%). While private banking activities are increasingly conducted at an international scale, with large local banks also expanding into Asian markets, the lion's share of bank lending is regional business within the Swiss franc currency area. Net interest income represents 32% of total income of Liechtenstein banks. Income from financial transactions (mainly foreign exchange and derivative transactions for customers) – another traditional retail banking service – makes up 20% of the total income structure. In comparison to the previous year, income from financial transactions increased by 22% in light of increased trading activity during the financial market downturn in March and April. Income from real estate (1%) and income from securities (2%) remains inconsiderable due to the prevailing business model of Liechtenstein banks. Other ordinary income contributes 5% to total income, confirming that banks follow specialized business models besides the conventional banking activities, including the launch and management of investment funds or trading activities. Liechtenstein banks have traditionally relied on their business model of private banking and wealth management, but have avoided the riskier field of investment banking. A certain degree of diversification with regard to banks' income sources is welcome from a regulatory point of view. Income levels in the first half of 2020 have remained stable despite the volatile market environment.

Profitability

In light of strong growth in foreign markets, profits have surged in recent years. The banking sector was severely hit by the global developments of 2008, with plummeting profits in light of a steep decline of assets under management (AuM). Profitability remained subdued for some years in light of a sluggish global recovery on the one hand and increasing international regulatory pressure on the other hand, which was associated with significant additional expenses. As a result, business strategies have been adapted, with foreign activities of Liechtenstein banks increasing in recent years. In the context of Liechtenstein's membership in the European Economic Area (EEA), banks enjoy full access to the European single market. Some banks are additionally active outside the EEA with subsidiaries and branches in Switzerland, the Middle East and Asia. The recovery in profits in the last few years is strongly linked to the successful operations abroad, with the contributions of foreign entities continuously increasing both in terms of AuM (Figure 21) and in profits.

Figure 21
Assets under management (AuM) of the banking sector (CHF billion)
Source: FMA.

The positive development of AuM over the last few years is driven by net money inflows, positive market developments and acquisitions abroad. The AuM are well diversified across the globe, highlighting the international interconnectedness of Liechtenstein's banking sector. While the AuM declined by CHF 14.4 billion the first two quarters of 2020 on the back of the Covid-19 related market shift, Liechtenstein banks still recorded net new money inflows (amounting to CHF 4.1 billion), once again confirming the safe-haven nature of the Liechtenstein banking sector.

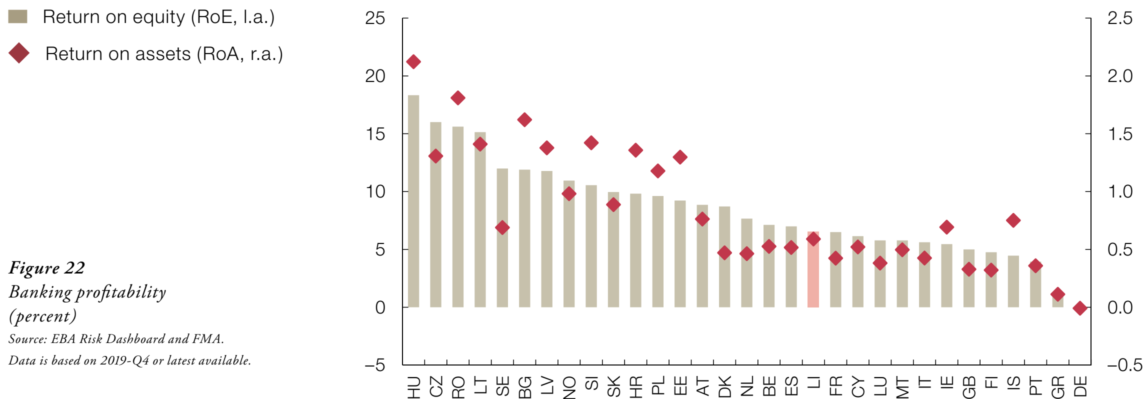


Figure 22
Banking profitability (percent)
Source: EBA Risk Dashboard and FMA.
Data is based on 2019-Q4 or latest available.

Profitability indicators of the Liechtenstein banking sector do not stand out among its European peers. Liechtenstein banks do not rank among the most profitable ones in comparison to other European countries (Figure 22). Both the business model, which is dependent on a prime reputation, and the tax system incentivize high equity rates, resulting in capitalization levels far exceeding regulatory buffer requirements. At the same time, however, high equity ratios dampen key profitability figures such as return on equity (RoE). In this context, the RoE amounted to 6.7% on a consolidated basis

in 2019, with the return on assets (RoA) standing at 0.6%. While the profitability indicators are around the EU average in this international comparison, the business model of Liechtenstein banks implies that banks are not as vulnerable to the decline in interest rate margins as in other countries, as commission fees and income from trading transactions (on behalf of clients) are far more important than net interest income as a source of income. Nevertheless, the “lower for longer” environment still implies a very challenging business environment going forward, also in the context of asset management.

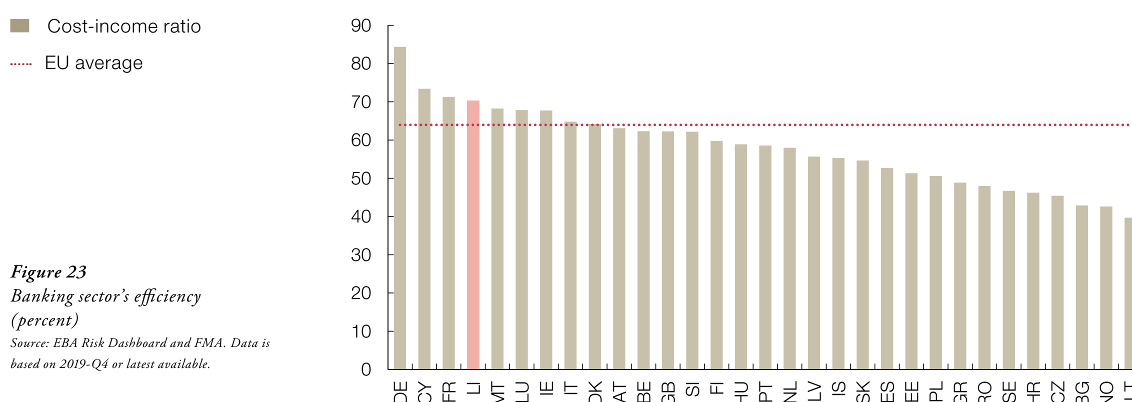


Figure 23
Banking sector’s efficiency (percent)
Source: EBA Risk Dashboard and FMA. Data is based on 2019-Q4 or latest available.

Notwithstanding the positive developments in recent quarters, efficiency indicators still point to further room for improvement. The relatively high cost-income ratio (CIR, Figure 23) in Liechtenstein must be put into perspective, as private banking and wealth management are very staff-intensive businesses and, thus, associated with relatively high labor costs. The high regulatory pressure has been extremely challenging for small banks and related expenses – e.g. compliance costs – have pushed the CIR upwards. Staff costs in compliance, especially in the anti-money-laundering and regulatory units, internal audit and risk management have increased significantly over the last years. The global competition will remain challenging, and a below-average value in this specific efficiency indicator suggests further room for improvement in certain key areas in the banking sector. Relative to last year, however, the indicator has improved somewhat, from 72.1% in 2018 to 70.3% in 2019. Mainly driven by higher income, the CIR dropped further in the first half of 2020, to 66.6% in June 2020. Overall, despite some heterogeneity across individual banks, Liechtenstein’s banking sector has remained fairly profitable in recent years. Considering the mix of income sources as well as net new money inflows, the Liechtenstein banking sector has also responded well to the volatile economic environment caused by Covid-19. Further efforts are necessary, however, to sustainably reduce the CIR and the banking sector’s structural efficiency.

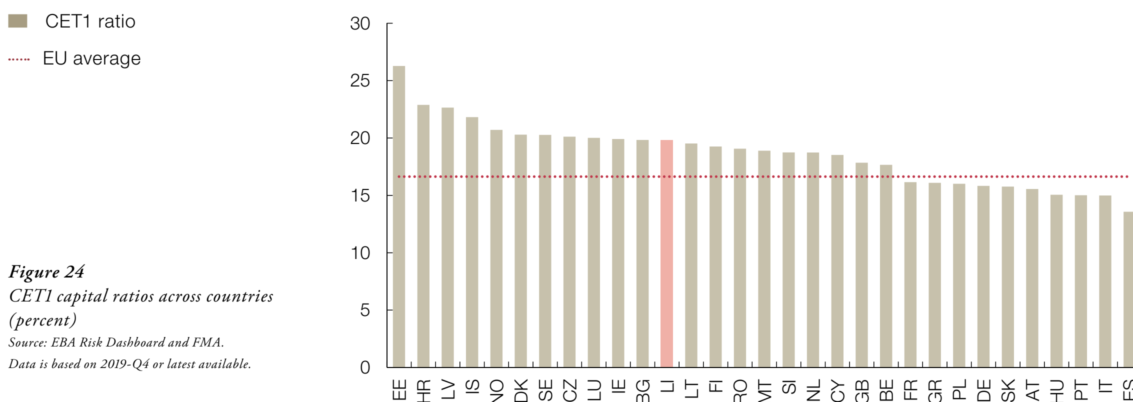


Figure 24
CET1 capital ratios across countries (percent)
Source: EBA Risk Dashboard and FMA. Data is based on 2019-Q4 or latest available.

Capitalization and asset quality

Despite of strong asset growth, Liechtenstein's banking sector has remained well capitalized. On the consolidated level, the weighted Tier 1 capital ratio stood at 19.8% at the end of 2019, solely consisting of Common Equity Tier 1 (CET1) capital. The capitalization is substantially higher than the EU average, although Liechtenstein has lost some ground in a ranking of EEA countries in the last few years (Figure 24). Following a downward trend of capitalization rates from 2016 to 2018, mainly on the back of strong growth of assets and total risk exposures, partly because of acquisitions abroad, CET1 ratios have considerably recovered again in 2019 and in the first half of 2020. An in-depth analysis of the capitalization of the banking sector and its underlying drivers over time can be found in Box 5.

The high capitalization of the banking sector is also confirmed by the leverage ratio. As mentioned above, the banking sector in Liechtenstein is highly concentrated, with the balance sheets of the three O-SIIs contributing more than 90% to the total size of the banking sector. While the three O-SIIs are rather small on an international scale, it is nevertheless interesting to compare the capitalization of Liechtenstein's systemically relevant institutions to their peers in other countries. Liechtenstein's O-SIIs do not only stand out with their relatively high CET1 ratios, but also based on their leverage ratios. Since the banks apply the standardized approach (StA) to measure credit risks, the ratio of risk-weighted assets (RWA) to total assets is relatively high, amounting to 39% at end-2019. The application of the StA for calculating the risk inherent in the banks' exposures implies that the banking sector's capitalization may be underestimated in

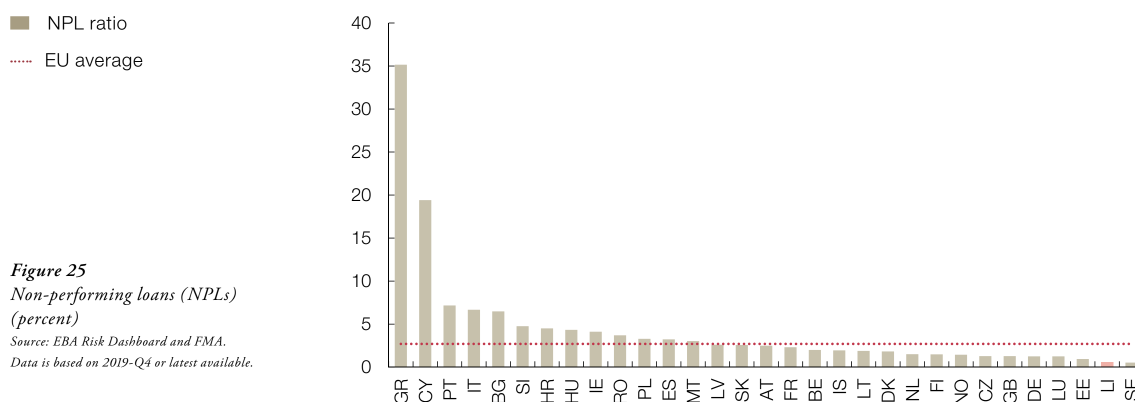


Figure 25
Non-performing loans (NPLs) (percent)
Source: EBA Risk Dashboard and FMA.
Data is based on 2019-Q4 or latest available.

cross-country comparisons.[16] Thus, the difference to EU and Swiss banks is even more pronounced when comparing the corresponding leverage ratios. In Liechtenstein, all three O-SIIs exceed a leverage ratio of 7%, which is significantly higher than the minimum ratio of 3% envisaged by Basel III.

Asset quality has also remained favorable. At end-2019, the NPL ratio of the banking sector amounted to a mere 0.6%, among the lowest values across European countries (Figure 25). The low level has to be seen in light of the stable development of Liechtenstein's economy in the past few decades. While Liechtenstein's GDP features significant volatility in light of the tiny size of the economy, Liechtenstein never experienced a severe economic crisis after the Second World War, with the housing market even remaining stable during the housing crisis in Switzerland at the beginning of the 1990s. While the Covid-19 related economic downturn caused the NPL ratio in Liechtenstein to increase to 0.9% by mid-2020, the ratio still remains far below the EU average. Nevertheless, asset quality in general and the NPL ratio more specifically have to be monitored regularly in the next year, as the adverse effects of the recession are likely to become visible with a significant delay.

16 *Last year's Financial Stability Report (2019) included an in-depth analysis on this issue, i.e. on the differences between the StA and internal-ratings based (IRB) approach in measuring credit risks.*

BOX 5

Capitalization of Liechtenstein's banking sector over time

The Liechtenstein banking sector has remained highly capitalized compared to its peers, despite some downward trend in capital ratios in recent years. Considering a time series of 12 quarters, the aggregate CET1 capital ratio of Liechtenstein's banking sector amounted to 20.4% on average across the time series (Figure B5.1). In comparison, the EU-27 aggregate reached a maximum CET1 capital ratio of 16.6%. While the capitalization of Liechtenstein banks significantly exceeded capital ratios in Austria (averaging 14.8%) and Norway (17.6%) in the respective time period, capital ratios in Luxembourg and Iceland were even higher, with CET1 capital ratios averaging 21.8% and 21.9%, respectively. Nevertheless, Liechtenstein's banking sector has remained, despite its continued growth, very well capitalized over time.

The capital stock, mainly consisting of retained earnings, has gradually increased over time. To better understand the underlying drivers of the capital ratios in the Liechtenstein banking sector, one has to take a closer look on the developments of the capital stock on the one hand, and the risk exposures on the other. Concerning the capital stock, Figure B5.2 shows that the CET1 capital in Liechtenstein consists mostly of retained earnings, with accumulated other comprehensive income and capital instruments which are eligible as CET1 capital also playing an important role. CRR Article 36 specifies that certain items shall be, due to the restriction and availability criteria, deducted. For the Liechtenstein banking sector, the two relevant deductible items are goodwill and other intangible assets. In total, the eligible CET1 capital has increased from CHF 6.1 to 7.2 billion from 2016 to 2019, an increase of 16.7%.

The second variable determining the CET1 ratio are risk exposures, which have shown an even steeper increase than the capital stock. Figure B5.3 shows that the total risk exposure amount is mainly affected by risk weighted exposures for credit, counterparty credit, dilution and free delivery risk (79.3%). All banks in Liechtenstein apply the standardized approach for measuring credit risks, i.e. the internal ratings based (IRB) methodology is not applied. Operational risk (13.6%), foreign exchange and commodities risk (6.5%) and credit valuation risk (0.6%) make up the additional risk weighted exposure. The relatively small risk attribute to the position foreign exchange and commodities risk is mainly due to the focus of Liechtenstein's banking sector on private banking, rather than on investment

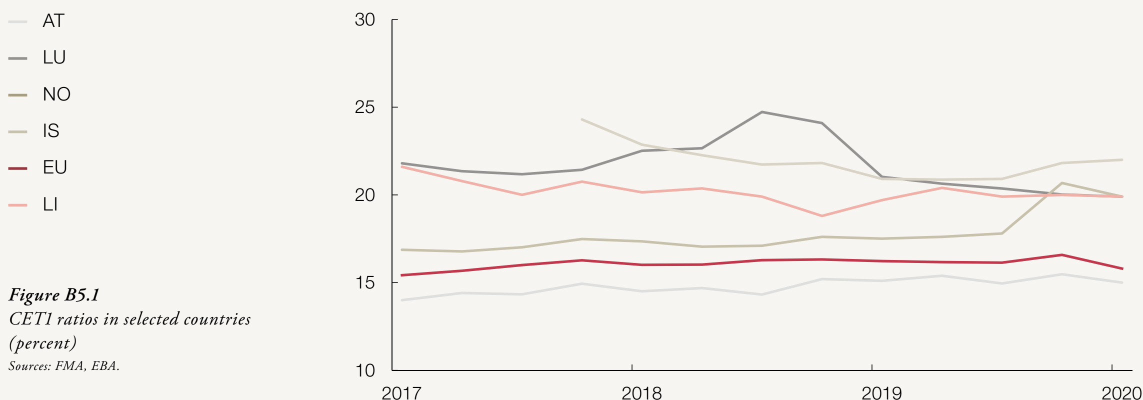


Figure B5.1
CET1 ratios in selected countries (percent)
Sources: FMA, EBA.

BOX 5

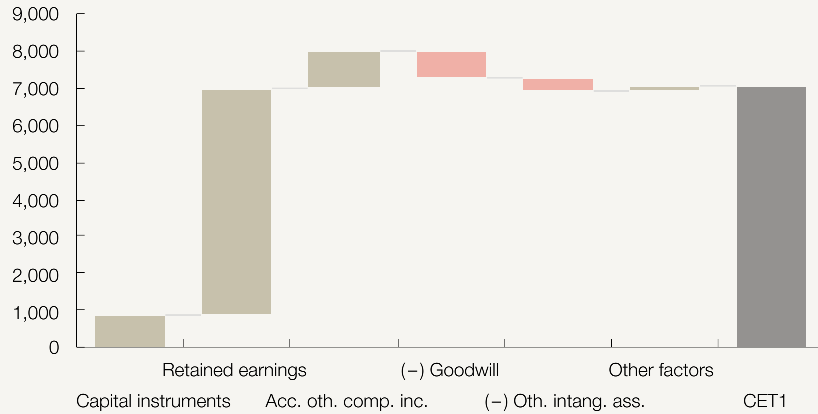


Figure B5.2
CET1 capital composition (Q1-2020 in CHF million)
Source: FMA.

banking or other higher-risk business models. Additionally, the operational risk is calculated based on the basic indicator approach, which states that a bank must hold capital for operational risk equaling 15% of average positive annual gross income over the previous three years (CRR articles 315 and 316). A deep dive into the risk weighted exposure for credit, counterparty credit, dilution and free delivery risk shows that the largest exposures are secured by mortgages on immovable properties, corporate and retail exposures, which together account for 62.4% of the sub-category. It is important to note that the composition part stating the exposure risk which is secured by mortgages on immovable property includes both credits to corporate and retail customers. Since 2016, total risk exposures have grown from CHF 28.4 to CHF 36.1 billion by year-end 2019, representing an increase of 27.2%, partly also due to some acquisitions of domestic banks abroad. Growth was mainly driven by an increase in the risk weighted exposure for credit, counterparty credit, dilution and free delivery risk. Foreign exchange risk and

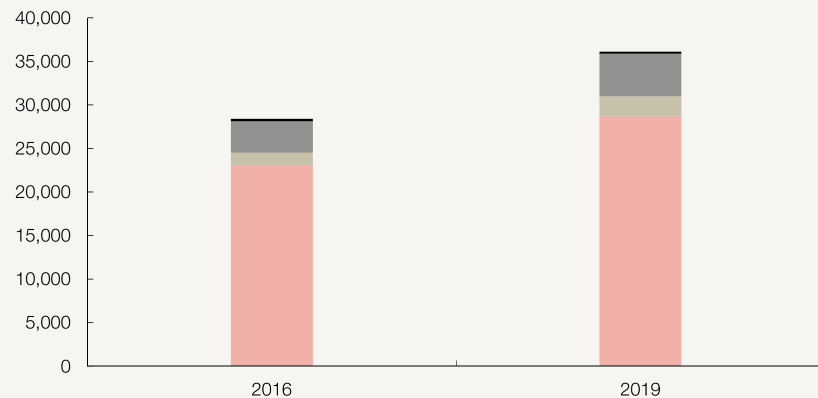


Figure B5.3
Composition of risk exposures (Q1-2020 in CHF million)
Source: FMA.

BOX 5

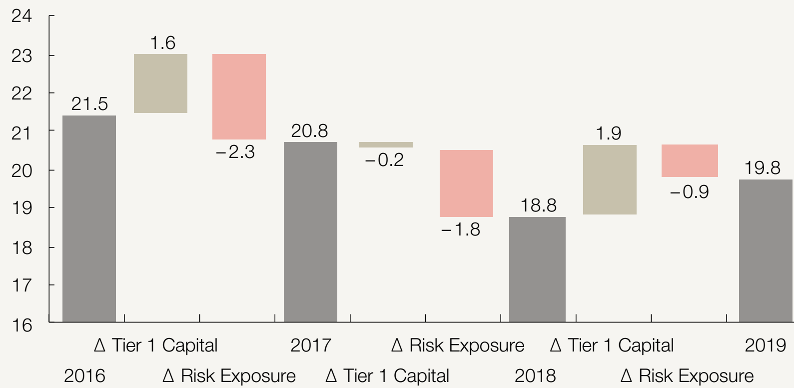


Figure B5.4
Contributions of capital and asset growth to changes in CET1 ratios (percent; percentage points)
Source: FMA.

operational risk have increased relatively marginally, with the risk weighted exposure amount for credit valuation adjustment declining slightly.

From 2016 to 2019, the aggregate CET1 ratio fell from 21.5% to 19.8% on the back of a strong build-up of capital, but even stronger asset growth. The decrease can be ascribed to the continued strong growth of the Liechtenstein banking sector, whereas risk weighted exposures have grown more strongly than banks' capital stock. Between 2016 and 2019, accumulated total assets of all Liechtenstein banks have grown from CHF 72.9 to 92.8 billion, corresponding to an increase of 27.1%. Along with the growth of the banking sector, risk weighted exposures have grown by 27.2%, while the capital stock, eligible as CET1 capital, has grown by 16.7% in the same period. In 2016, the leverage ratio, defined as the CET1 eligible capital as a percentage of total assets, stood at 8.4%, with the leverage ratio decreasing to 7.5% by year-end 2019. It is important to note that the capital stock did not decline over time, but rather grew less strongly in comparison to the total risk exposure resulting from strong growth in the Liechtenstein banking sector (Figure B5.4).

Notwithstanding the pandemic-related turbulences in financial markets in the first half of the year, the Liechtenstein banking sector reported an increase in its CET1 ratio to 21.2% by mid-2020. While the CET1 ratio of the Liechtenstein banking sector declined over the last years on the back of strong growth of the banking sector, solvency indicators improved markedly in the first months of the year – a somewhat surprising development in light of global developments associated with the Covid-19 pandemic. Considering the trend growth of both the total risk exposure and CET1 eligible capital, we expect the Liechtenstein banking sector to uphold its high capitalization in comparison to its European peers.

Liquidity and funding

In light of banks' focus on private banking activities, Liechtenstein's banking sector is relatively abundant with deposits. The liability side of the balance sheet of Liechtenstein banks primarily relies on deposits. Total deposits of the banking sector amounted to more than CHF 71.4 billion at the end of 2019 on a consolidated basis (i.e. 78% of total assets). On the other hand, market-based funding plays a minor role in Liechtenstein, representing only 5% of total liabilities. As a result, the loan-to-deposit ratio amounted to approximately 69% at end-2019, which is very low compared to other European countries (Figure 26), generally indicating low funding risks for the banking sector.

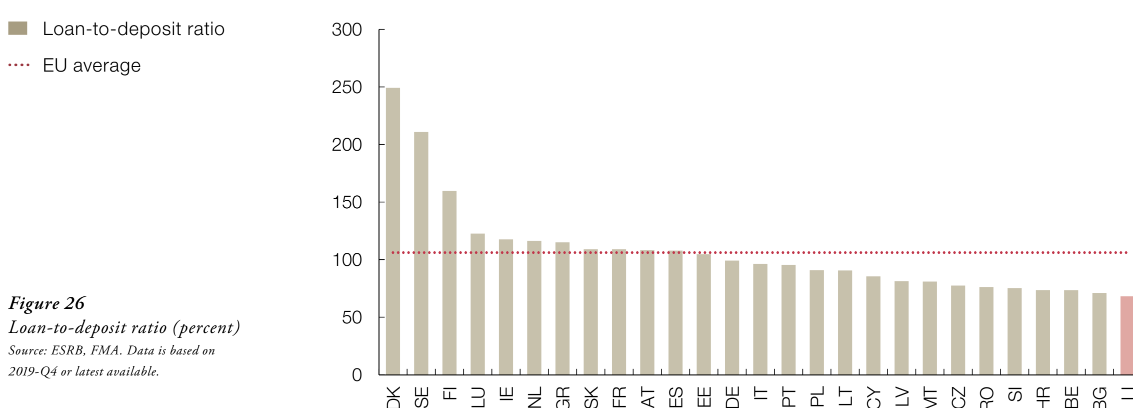


Figure 26
Loan-to-deposit ratio (percent)
Source: ESRB, FMA. Data is based on 2019-Q4 or latest available.

Standard liquidity indicators also point to a stable banking sector. Liquidity indicators also reflect the strong funding base of Liechtenstein banks, with the average (weighted) Liquidity Coverage Ratio (LCR) amounting to 202% at end-2019 (Figure 27). Since 2016, the LCR in Liechtenstein has remained relatively stable at a comparatively high level. Box 6 includes a detailed analysis on the banks' liquidity positions, as well as the underlying drivers of the main indicators, such as the LCR and the Net Stable Funding Ratio (NSFR).

Furthermore, the currency treaty between Liechtenstein and Switzerland ensures equivalence of Liechtenstein and Swiss banks in terms of central bank funding from the Swiss National Bank (SNB). Notwithstanding the comfortable liquidity position of Liechtenstein banks, it is important to ensure access to liquidity even in the unlikely case of a crisis. Since Liechtenstein is part of the Swiss franc currency area based on an intergovernmental state treaty, monetary policy is conducted by the Swiss National Bank (SNB). The SNB has defined five Swiss banking groups as systemically important by decree, and Liechtenstein's institutions are too small to qualify when considering the Swiss currency area as a whole. Additionally, the SNB guidelines on monetary policy instruments state explicitly that the emergency liquidity assistance by the SNB requires certain conditions, including that the bank or banking group seeking credit must be of importance for the stability of the financial system. While Liechtenstein banks have access to SNB funding on the same terms as their Swiss counterparts, including

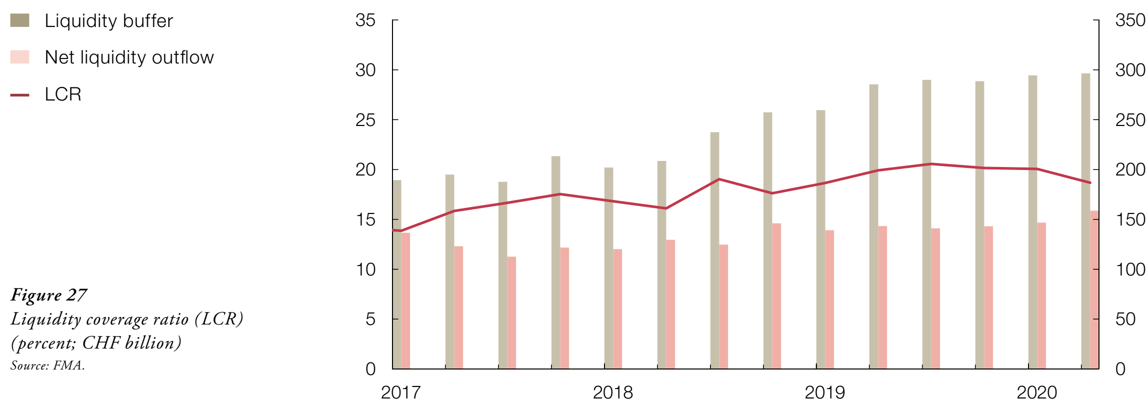


Figure 27
Liquidity coverage ratio (LCR)
(percent; CHF billion)
Source: FMA.

the liquidity-shortage financing facility, the SNB guidelines imply that access to emergency liquidity assistance could be limited to some extent for Liechtenstein institutions, at least in comparison to the biggest banks or banking groups in Switzerland. The availability of highly rated securities in banks' balance sheets that can be used as collateral in monetary policy transactions is therefore essential for ensuring banks' liquidity in the unlikely case of a crisis. At the same time, along with their Swiss peers, Liechtenstein banks could make use of the SNB's liquidity-shortage facility and the emergency deposit depot in the case of a crisis, which ensures access to liquidity even in periods of severe liquidity shortage. The banking sector therefore benefits from being part of one of the most stable currency areas in the world, with access to central bank funding guaranteed by a corresponding intergovernmental state treaty.

BOX 6

Liquidity in Liechtenstein's banking sector

The global financial crisis of 2007 to 2009 unveiled specific weaknesses of the functioning of financial markets and the risk management of its most crucial participants, particularly related to liquidity. The drying up of unsecured interbank lending markets disclosed the strong mutual dependence and interconnectedness of financial institutions, implying risks of contagion and potential domino-effects in global financial markets. As a main reaction to the financial market turbulences, the BCBS[17] published two proposals concerning the implementation of new quantitative binding Liquidity Standards, the Liquidity Coverage Ratio ("LCR") and the Net Stable Funding Ratio ("NSFR"). Besides this, a set of additional liquidity monitoring metrics ("ALMM") serve as supplementary instruments in order to identify and monitor banks' liquidity risk profiles. Since February 2015, the LCR has been a binding requirement for banks in Liechtenstein. The binding force of the NSFR shall be launched by June 2021.

With respect to the LCR, the counterbalancing capacity in Liechtenstein largely consists of high-quality liquid assets. Fundamentally, the LCR aims at ensuring that institutions always hold sufficient high-quality liquid assets (HQLA) to meet their liabilities, manifested by netted outflows (defined as stressed gross outflows minus stressed gross inflows) during a 30-day stress horizon. Thereby, the LCR depicts the short-term resilience of the banks' liquidity risk profile. It is crucial to mention that the LCR "stress scenario" is indeed adverse, but does not reflect a "worst case scenario", such as a bank run. Yet, the LCR of Liechtenstein banks has also remained high and stable in times of economic and financial turbulence (e.g. over the time horizon of the first and second quarter of 2020 facing the Covid-19-pandemic). On average, the LCR-eligible liquidity buffer amounts to over one third of the total assets in Liechtenstein banks. Furthermore, the LCR buffer of Liechtenstein banks is of high quality: 92% of the so called "Counterbalancing Capacity" (which could be defined as the

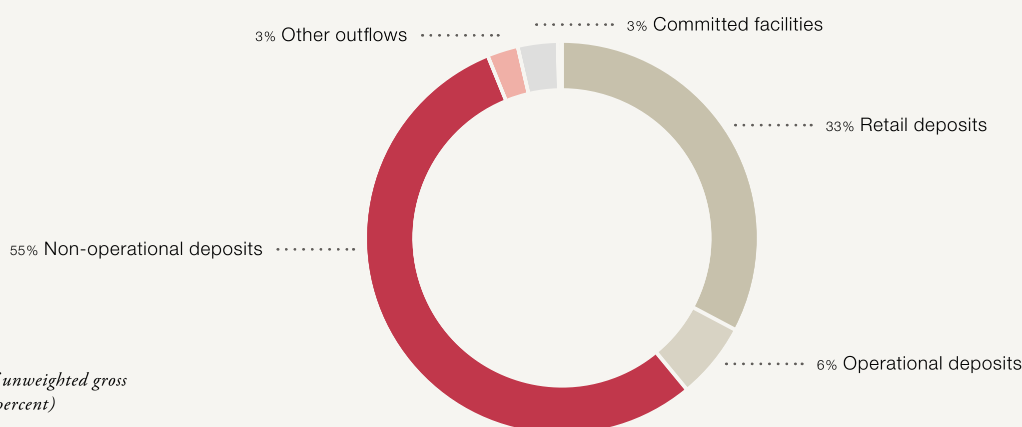


Figure B6.1
Composition of unweighted gross cash outflows (percent)
Source: FMA.

17 *Basel Committee on Banking Supervision.*

BOX 6

banks' additional capacity to generate liquidity and funding) consists of LCR-eligible high-quality liquid assets (HQLA), e.g. cash, central bank reserves, sovereign bonds and high liquid corporates. On the contrary, only 8% are classified as "Non-HQLA".

In general, LCR liquidity outflows are driven by non-operational (i.e. deposits by financial institutions and non-financial corporates) and retail deposits (e.g. deposits by natural persons) rather than by committed facilities, derivatives or specialized products. As a general regulatory premise, the LCR "privileges" outflows to entities not involved in professional financial business (e.g. retail clients, SME) or outflows in connection with a specific established relationship or increased service dependence ("operational deposits", e.g. clearing, custody or cash management). For example, most liquidity outflows to retail clients shall be calculated in the LCR by low run-off-factors of 5% (stable deposits, e.g. protected by a deposit guarantee scheme), 10% (less-stable deposits, e.g. deposits exceeding the CHF 100,000 protected by the deposit guarantee scheme) or (minimum) 15% ("deposits subject to higher outflows", e.g. deposits exceeding the amount of EUR 500,000). Liquidity run-off to non-financial wholesale clients are generally weighted with 40%, while outflows to financial institutions are set with up to 100% (non-operational deposits, such as unsecured, i.e. interbank funding).

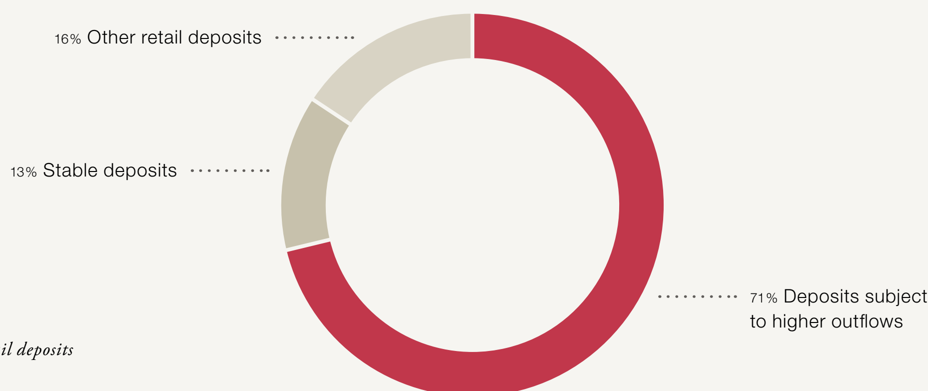


Figure B6.2
Composition of retail deposits (percent)
Source: FMA.

However, a more granular view on the categorization of retail deposits shows that most deposits in Liechtenstein banks (on average) are classified as "deposits subject to higher outflows" (Figure B6.2). This is due to the private banking and wealth management business model of domestic banks. In contrast to "classic" retail or universal banks, the funding of private banks is supported by high-wealthy-individuals, whose deposits commonly exceeds the regulatory limit for "stable deposits" of EUR 500,000.

LCR inflows are mainly dominated by interbank deposits. On average, the LCR inflows are mainly driven by interbank deposits (70% of total inflows within 30 days), which banks may withdraw within a 30-day-stress-horizon (e.g. interbank sight deposits). Inflows from loan business (corporates and retailers), on the contrary, play a minor role from a 30 days LCR-inflow-perspective.

BOX 6

Figure B6.3
Development of the NSFR across all currencies over time (percent)
Source: FMA.

Besides the LCR, the Net Stable Funding Ratio (NSFR) is another important global liquidity standard. The NSFR calculates the stress situation concerning medium and long-term funding of assets and banking activities by comparing available stable funding (ASF) with the requirement of stable funding (RSF) in a one-year stressed time-horizon. Until the NSFR will be launched as a binding requirement in the EEA, the FMA monitors the NSFR under the assumptions of the Basel standard ("NSFR-proxy"). The results may slightly differ from the future European NSFR according to CRR II. In consequence of (particularly) high-liquidity buffers, short-term financing, high capital bases and the vast independence from money market-funding of Liechtenstein banks, the average NSFR of Liechtenstein banks is very high, as shown in Figure B6.3. This predicts a stable funding base in ordinary as well as in times of stressed funding markets.

In essence, the liquidity risk profile of Liechtenstein banks is low and stable. High quality liquidity buffers may guarantee the performance of Liechtenstein banks over a long stress time horizon. In combination with a high-quality capital base, Liechtenstein banks may also endure long lasting structural funding stress scenarios, as also indicated by a range of standard liquidity risk indicators, such as the LCR, the NSFR or the loan-to-deposit ratio.

LIECHTENSTEIN'S NON-BANK FINANCIAL SECTOR

Insurance sector

Premium income of insurances in Liechtenstein increased by 2.4% in 2019. While Liechtenstein's insurance sector was dominated by life insurances until a few years ago, business models are now more diversified across the sector. At the end of 2019, 20 life, 14 non-life and three reinsurers operated from Liechtenstein. In 2019, premium income of insurance undertakings amounted to CHF 5.55 billion, an increase of 2.4% from the previous year. More than half of revenues originated from non-life insurance (55%), with life insurances also playing an important role (43% of premium income). Reinsurance only accounted for CHF 65 million (or slightly more than 1%) of premium income. All three subsectors – life, non-life and reinsurance – recorded positive premium growth in 2019 (Figure 28).

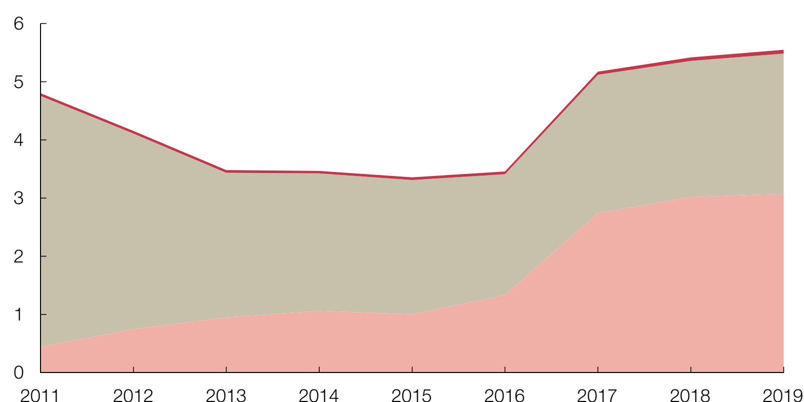


Figure 28
Premium income of insurances (2019 in CHF billion)
Source: FMA.

Liechtenstein's insurance sector benefits from direct market access to the countries of the EEA and to Switzerland. Besides Liechtenstein's EEA membership that ensures market access to the Single Market, the Direct Insurance Agreement with Switzerland permits Liechtenstein insurers to offer their services also in Switzerland (and vice-versa).

Also because of the small domestic market, cross-border provision of services represents the lion's share of insurance revenues. The main markets for Liechtenstein insurance undertakings in 2018 were Switzerland (15% of total premium income), the United States (14%), Ireland (13%), Germany (13%) and Italy (11%). International activities, which are strongly diversified across countries (Figure 29), highlight the attractiveness of Liechtenstein as a location for insurance companies seeking access to both the EEA and Switzerland.

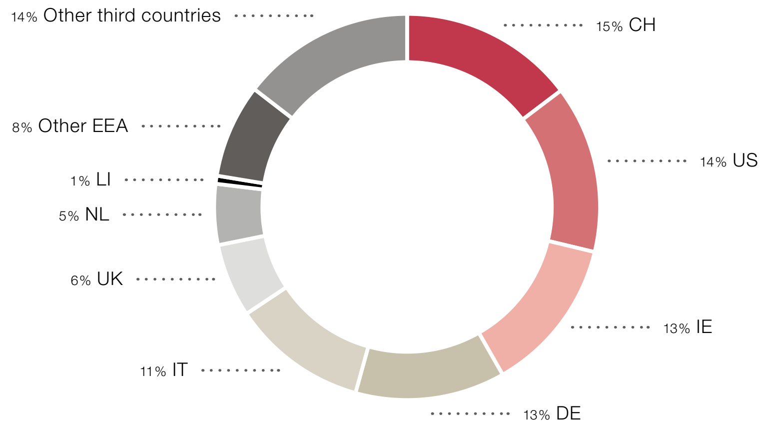


Figure 29
Premium income by country (2018 in percent)
Source: FMA.

Systemic risks in the insurance sector are assessed to be limited. Under the risk-based Solvency II supervisory system, insurance undertakings in the EEA must meet high requirements in terms of capital adequacy to ensure that companies can meet their obligations vis-à-vis policy holders even in extraordinary situations. At the end of June 2020, the median solvency ratio amounted to 227%, almost unchanged from the end of 2019 (226%) and 2018 (232%). Figure 30 gives an illustration of solvency ratios across the distribution of insurance undertakings in Liechtenstein. With the exception of one company, all insurance undertakings fulfilled the solvency capital requirements. In contrast to other countries, life insurances in Liechtenstein hardly suffer from the low interest environment, as guaranteed products are rare in Liechtenstein and the bulk of capital investments is attributable to investments managed for the account and risk of policy holders as part of unit-linked (i.e. fund-linked) life insurance.

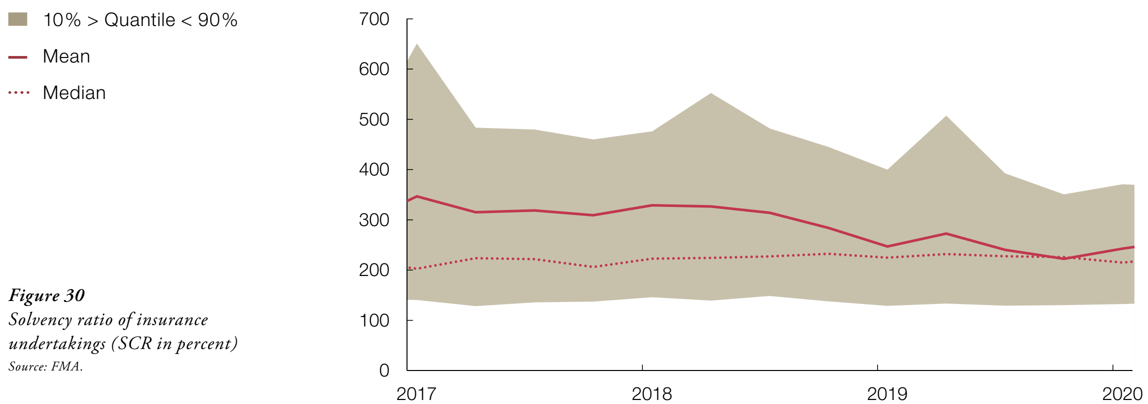


Figure 30
Solvency ratio of insurance undertakings (SCR in percent)
Source: FMA.

Pension schemes

Liechtenstein's pension system is built on three pillars. Pillar one includes old age, disability and survivors' insurance and is administered by the state (AHV/IV). This public scheme is complemented by a mandatory occupational pension provision (pillar two), and private pension provision on a supplementary basis (pillar three). The first pillar aims at securing the subsistence level of the insured person and family members in the event of old age, disability, and death. The second pillar is geared towards maintaining the accustomed standard of living after retirement, while the third pillar is an individual, voluntary pension provision, serving to close provision gaps that cannot be covered by the first and second pillars.

Following a turbulent year 2018, the public pension system (AHV/IV) recorded strong investment income in 2019. Financial market turbulences in December 2018 had resulted in significantly negative returns in the same year, with financial reserves declining by 4.1% at the end of 2018. On the contrary, positive financial market developments led to a very successful year 2019. The total return of financial reserves amounted to more than 9% in annual terms, with total financial reserves increasing by 8.2% to CHF 3.29 billion. The positive performance was also a result of an increase in contributions (+6.8% to CHF 267.6 Mio.), but mainly due to strong investment income (CHF 255.9 Mio.). With a state contribution of CHF 30.3 Mio. and total expenditures of CHF 304.4 Mio., the public pension (AHV) recorded a total surplus of CHF 249.4 Mio., following a deficit of CHF 131.3 Mio. in the previous year.

Structural reforms in previous years may imply deficits in the public pension system in the years ahead. As part of the fiscal consolidation package following the public budget deficits in 2012 and 2013, a pension reform was enacted in Liechtenstein. This reform increased the retirement age by one year to 65 and raised the contributions from employers and employees. At the same time, however, it also decreased the state contribution to the public pension system significantly. It is therefore expected that the expenditures of the public pension system will exceed revenues in the next years. As expenditures for pensions will exceed the sum of contributions from employees, employers and the state, the structural legal framework implies that the public pension system has to generate positive returns from its investment income to keep financial reserves stable. In 2019, this income-expenditure gap (excluding the profit/loss from financial investments) amounted to approx. CHF –6.5 Mio. (2018: –16.9 million).

While the Covid-19 pandemic is associated with increased challenges also for the pension system, large financial reserves accumulated in the past guarantee a stable public pension system. While the Covid-19 related financial market turbulences in February and March led to a decrease in financial reserves by roughly 10% (by end of March 2020), it can be assumed that the subsequent recovery in financial markets is also associated with a respective recovery in financial reserves in the public pension system. In any case, the large financial reserves, amounting to approximately 50%[18] of GDP, guar-

18 *Since there are no GDP data available for 2019, we calculate the ratio based on internal estimations of potential GDP for 2019.*

antee a stable public pension system. At the end of 2019, financial reserves could cover pension payments for approximately 10.8 years (up from 10.2 years at the end of 2018). Current projections assume that the income-expenditure gap (excluding investment income) will further widen in the next 20 years, as the share of pensioners will increase relative to the total number of insured individuals. As a result, the political discussions on how to guarantee the stability of public pensions in the next few decades have already started in Liechtenstein, which is very welcome from a financial stability perspective. A more detailed analysis is available in the annual report published by the public pension's administration office (AHV).[19]

The occupational pension provision, i.e. the second pillar of the pension system, plays an important role in Liechtenstein. The autonomous legal entities in the form of foundations are subject to the Occupational Pensions Act (BPVG) and are supervised by the FMA. Occupational pension provision is funded by employer and employee contributions. The number of entities has decreased over the past few years, from 33 in 2010 to 17 foundations in 2019. This consolidation trend is both due to the challenging financial market environment (i.e. low-interest rate environment) and increased regulatory requirements, leading to higher administration costs. We expect that this consolidation trend will continue in the near future, as larger pension funds can benefit from scale effects. The large pension capital in the second pillar relative to Liechtenstein's GDP underscores the great overall economic importance of the occupational pension scheme. Total assets of the pension scheme amounted to CHF 7.46 billion at the end of 2019, corresponding to approx. 114% of Liechtenstein's GDP. This figure does not only show the overall well-positioned retirement system in Liechtenstein, but it also emphasizes the significance of Pillar two for the provision of pensions.

Notwithstanding some variance across the 17 pension schemes, indicators point to an overall stable occupational pension system. At the end of 2019, the median cover ratio – i.e. the ratio of available assets to liabilities – stood at 113.5%, up from 104.4% in the previous year. The positive financial market development in 2019 positively affected the key risk indicators in the market, with the cover ratios of the 17 pension schemes ranging from 97.9% to 125.3% at the end of the year. Following a negative median return of –4.2% in 2018, the median return on assets increased to 9.7% in 2019, with none of the pension schemes reporting negative returns. Unsurprisingly, the pension schemes experienced turbulent times in the first half of the year, with strong declines in cover ratios in the first quarter. In the meantime, however, cover ratios have recovered again. Nevertheless, similar to other countries, the low interest environment will continue to pose a major challenge to the occupational system in Liechtenstein. With lower returns on assets compared to some years ago, the decreasing trend in conversion rates is set to continue in the years ahead. Since a detailed risk assessment report on the occupational pension system is published annually by the FMA, a more detailed analysis of pension schemes is not necessary in the context of this Financial Stability Report.[20]

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19 Available on the AHV website, see https://www.ahv.li./ueber-uns/jahresberichte.

20 The report is available on the FMA website, see https://www.fma-li.li/de/fma/publikationen/betriebliche-personalvorsorge-in-liechtenstein.html

Investment funds and asset management companies

The fund sector has shown a dynamic development over the past few years, with both the volume as well as the number of funds increasing. In light of positive financial market developments, total assets held by investment funds increased significantly in 2019. Following the market related dip in assets under management (AuM) in the previous year, assets have increased to CHF 58.5 billion at the end of 2019 (Figure 31), an increase of 17% from 2018. The large majority of funds are now set up as either UCITS ("Undertakings for Collective Investments in Transferable Securities", 54% of net assets) or AIF ("Alternative Investment Funds", 45% of net assets), while IU ("Investmentunternehmen"), a domestic fund regime, now plays a subordinated role. The number of subfunds also increased by 30 to a total number of 740 at the end of last year.

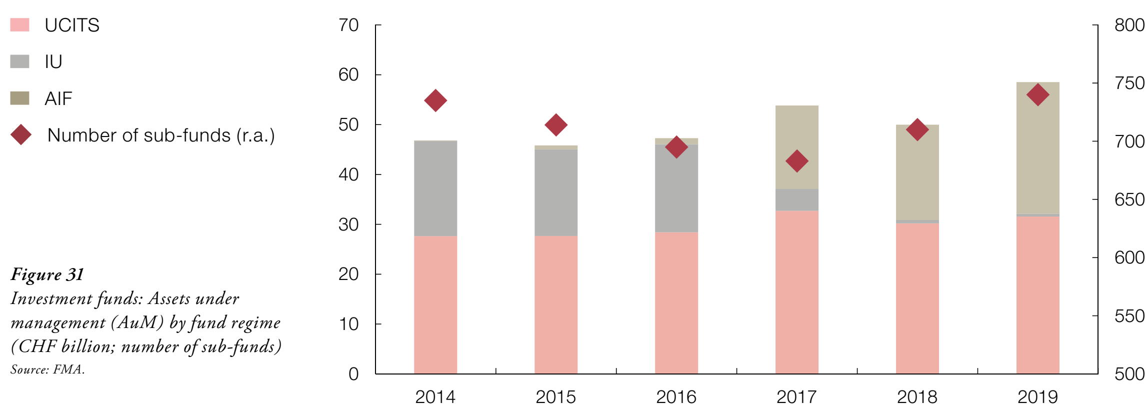

Figure 31
Investment funds: Assets under management (AuM) by fund regime (CHF billion; number of sub-funds)
Source: FMA.

Liechtenstein's funds sector has remained remarkably resilient during the financial market turbulences in light of the Covid-19 pandemic. While many investment funds at the European level were suffering from liquidity shortages due to a high level of redemption requests, the Liechtenstein funds sector was relatively little affected by the high volatility episode. In total, 10 subfunds increased their respective swing factor. In some occasions, trading was temporarily suspended or borrowing temporarily increased the 10% threshold of net assets to bridge the short-term liquidity squeeze. While one fund was liquidated due to the market turbulences in the first half of the year, the domestic investment funds sector has proved remarkably resilient from an overall perspective relative to other countries.

The investment fund sector is closely linked to the banking sector. In Liechtenstein, 16 management companies (ManCos) are authorized to manage investment funds. The ManCos of the three largest banks, i.e. LGT Group, LLB Group and VPB Group, jointly manage approximately 78% of the assets under management, with the remaining independent ManCos being significantly smaller. While the number of employees has further increased to a total of 238 employees in 2019, the sector has

remained small relative to the remaining financial services sector in Liechtenstein.

Also because of its strong links to the banking sector, the investment funds sector is relatively low-risk compared to other parts of the financial industry. Unsurprisingly, the largest subfunds are managed by ManCos tied to Liechtenstein's three largest banking groups. It is therefore obvious that the sector mainly acts as a complement to the banking sector, with risks remaining relatively limited. During the turbulent times of high financial market volatility in early 2020, investment funds had to report additional information (i.e. in terms of liquidity positions etc.) to the FMA. Further risk-based indicators will be available in the near future, allowing us to monitor liquidity risks in the sector more closely. While such additional information is welcome to monitor some key risk indicators on a regular basis, we do not expect to detect major risks in terms of liquidity.

Asset management companies (i.e. MiFID investment firms) play an important role in Liechtenstein's financial sector, also in terms of employment. At the end of 2019, asset management companies (AMCs) reported CHF 43.10 billion in assets under management (AuM), an increase of 11% from the previous year (Figure 32). AMCs employed 671 people at the end of the year, a slight decrease from the previous year (2018: 676). Nevertheless, the strong increase in employees by approximately 80% since 2009 illustrates the significance of asset management in Liechtenstein's financial sector.

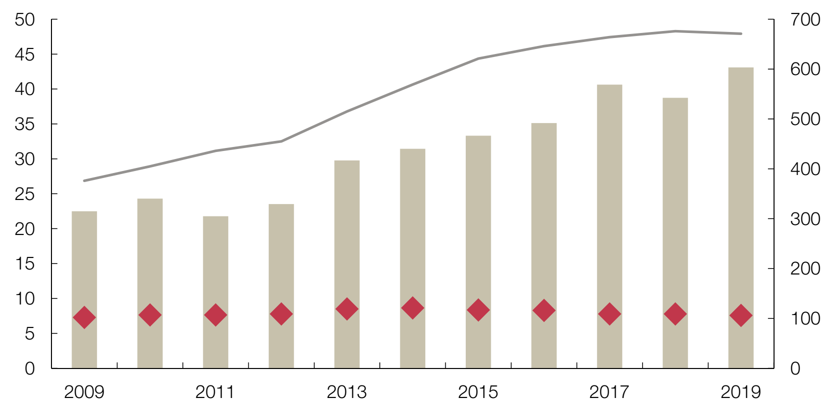

Figure 32
Asset management companies (AMCs): Assets under management (AuM) (CHF billion; number of sub-funds)
Source: FMA.

Fiduciary sector

While publicly available data still lacks detailed information about the sector, available numbers point to a changing business environment in the fiduciary sector. The number of fiduciaries and fiduciary companies has remained quite stable in the past few years, with a slight increase in 2019 to a total number of 396. This is insofar surprising to some extent, as the total number of foundations and trusts in Liechtenstein has continued its downward trend in 2019, decreasing to less than 12,000 entities by the end of the year – a decline by more than three quarters since 2009. Newly submitted data since 2018, based on a revision of the Due Diligence Act entering into force in 2017, also indicate a continuous decrease in the total number of business relationships in the Trust and Company Services Providers sector. The stable number of fiduciaries and fiduciary companies, combined with the decreasing number of foundations and business relationships, suggests the assumption that the business environment is changing structurally. While the business environment may have become more competitive, the increase in regulatory requirements is probably associated with extra effort – and thus revenues – from existing client relationships, i.e. the fiduciary sector may have become more specialized in recent years. In this context, the well-developed financial center in Liechtenstein – including banks, insurances, investment funds, asset management companies and the fiduciary sector – may enjoy a competitive advantage in certain areas due to its "one-stop-shop" approach, particularly in the area of wealth structuring.

A number of reforms, both in terms of legal revisions and organizational changes in the FMA, have significantly strengthened the AML/CFT[21] supervision framework in Liechtenstein. Following a revision of the Due Diligence Act in 2017, financial intermediaries – including fiduciary companies – have the obligation to submit risk data to the FMA, including the number of business relationships with politically exposed persons, with beneficial owners from third countries with strategic deficiencies or with simplified due diligence. The introduction of these risk-based elements has substantially strengthened the accuracy and efficiency of the respective supervisory tasks in the context of AML/CFT. While the legal changes in principle concern all parts of the financial sector, the implications are particularly important in the fiduciary sector, where the FMA's prudential supervision competences are less pronounced than in other parts of the financial industry. In early 2019, the FMA has strengthened its AML/CFT supervision by concentrating the respective efforts in a single division. The FMA's anti-money laundering mechanism, which previously had been spread out among the four supervisory divisions, is now being concentrated with the Anti-Money Laundering and Designated Non-Financial Businesses and Professions (AML/DNFBP) Division. The division has been strengthened in terms of personnel and performs risk-based money laundering supervision in all financial sectors. This reorganization has enhanced the effectiveness and efficiency of money laundering supervision within the FMA. The FMA verifies compliance with anti-money laundering legal provisions by financial intermediaries, also based on its own due diligence inspections, and takes rigorous action against violations.

21 AML/CFT stands for anti-money laundering and combating the financing of terrorism.

Furthermore, a revision of the Professional Trustees Act (TrHG) has recently entered into force, extending the FMA's supervisory responsibilities regarding the fiduciary sector. Although the FMA's competence was significantly strengthened through a revision of the Professional Trustees Act (TrHG) in 2014, the FMA still had only limited legal authority to supervise the corresponding companies economically and prudentially, with the responsibility of the FMA mainly limited to AML/CFT issues in the fiduciary sector. In this context, the FMA has repeatedly suggested to revise the supervision framework in the fiduciary sector to address the revealed weaknesses in light of a few large discovered cases of fraud in the last couple of years. While the fiduciary sector remains largely self-regulated, with the Liechtenstein Institute of Professional Trustees and Fiduciaries (THK) supervising the duties of the trustees, the new legal provisions indeed imply a significant extension of the FMA's responsibilities and aim at facilitating the prevention of abuse and fraud. The legislation amendment entered into force on 1 July 2020. Box 7 outlines the most important changes and the implications for the fiduciary sector.

The revision of the Trustee Act (TrHG)

The Liechtenstein fiduciary sector is still an important part of the country's financial sector. Liechtenstein is one of the few financial centers which regulates and supervises its trust sector. Protecting the clients' confidence resulting thereof is not only a task of the trustee and trust companies, but it is also of paramount interest to the country. Trust in the integrity of the financial market, combined with a high level of service quality, are basic conditions for economic success, particularly in the context of private banking, wealth management and structuring. A modern, internationally recognized legal system, an efficient supervision, transparency, the effective and credible combat against the abuse of the system as well as the protection of the client are crucial for the future success of Liechtenstein's financial center by ensuring its integrity and quality.

The amendment of the Trustee Act (TrHG), entering into force on 1 July 2020, aims at resolving identified weaknesses and closing legal loopholes. The specific purpose of the Trustee Act (TrHG) is to protect clients, to maintain confidence in Liechtenstein as a financial center, to promote accessibility to international markets and to further improve the competitiveness of the trust sector. The amendment of the TrHG was necessary to achieve these goals. Several provisions in the existing law were amended to meet these requirements and fulfill international standards. Identified weaknesses are remedied and legal loopholes are closed. Important and effective instruments are introduced in order to avoid abuses and address harmful developments in the trust sector. The revision of the law was discussed quite exten-

BOX 7

sively in the Liechtenstein parliament at the turn of the year 2020, with the final version entering into force in mid-2020.

The identified weaknesses in current regulations and in supervisory activities are amended by the introduction of an adequate and effective supervisory system. So far, the supervision of the fiduciary sector was largely restricted to Due Diligence and AML/CFT-matters, respectively. The intention of the revision of the TrHG is to increase the confidence in the trust sector and improve the reputation of the financial center in a sustainable way. In addition, it promotes international recognition, positive long-term development and quality assurance of the trust sector.

Governance is a key focus of the revision. In this context, provisions for the prevention of conflicts of interest were introduced in the new law. Governance within the trust business is strengthened. The law also defines the principles of an effective corporate management system. The need for these new regulations has become evident as most of the criminal offences committed by market participants in the last few years were due to weaknesses in their business management. In addition to an effective internal control system, the trustees and trustee companies must have an effective and adequate risk management.

The new law ensures the solvency of trustees and trust companies, but also considers the needs of smaller firms by allowing the outsourcing of services to specialized service providers. The law provides for the outsourcing of certain activities to third parties, so that especially smaller trust companies may benefit from a reduction of their administrative burden and focus their resources on their main business activities. Increased attention is paid to the solvency of the trustees and trust companies. Accordingly, a legal obligation of maintaining sufficient financial means is being established.

The supervisory competences of the FMA in the fiduciary sector are strengthened. A further important priority is the mandatory observation of determined principles of accounting according to the Liechtenstein company law (PGR), mandatory external audits (so-called final examinations) as well as the supervisory examination of all trustees and trust companies. In this context, the audit report has to be submitted to the FMA on an annual basis. Further elements for the winding-up of trustee companies are included in the law, in order to close existing loopholes. In addition, provisions for the winding-up/termination of client relationships were added, based on the experiences made by the ethics commission.

Internal administrative cooperation is improved. A strict sanctions regime is necessary for an internationally recognized and effective supervision. Penalty provisions were also added based on the new legal obligations. With these amendments, standardization will be reached with other financial markets' laws regarding the qualification of an offence as misdemeanor or infringement as well as the criminal liability of legal persons.

Finally, compliance with recognized international standards is key for the sector's international reputation. A considerable improvement of international recognition is to be achieved by the adherence to internationally recognized standards in the regulation of Trust and Company Services Providers (TCSPs). Thereby, the amendment will also promote the competitiveness of the trustees.

MACROPRUDENTIAL POLICY IN LIECHTENSTEIN

Policy framework

Liechtenstein has established a well-designed macroprudential policy framework, with a transparent division of responsibilities among the FMA, the Financial Stability Council (FSC) and the government. In light of the large financial sector and its significance for the economy as a whole, macroprudential supervision and policy plays a key role in Liechtenstein. In absence of a national central bank, ensuring financial stability is legally defined as part of the FMA's mandate according to Article 4 FMA Act. While the FMA honors this commitment with regular analyses on financial stability issues, the conduct of macroprudential policy is a joint responsibility of the FMA, the FSC and the government. Depending on the respective measure, either the government or the FMA can decide on the introduction and calibration of the corresponding macroprudential instrument, in many cases based on a respective recommendation by the FSC.

The Financial Stability Council (FSC) has become well-established in Liechtenstein's revised macroprudential policy framework. Since its establishment in May 2019, the FSC has held six quarterly meetings discussing a broad range of topics related to financial stability. As intended, the creation of the FSC has further strengthened the collaboration between the FMA and the government on financial stability issues. The regular exchange of views on current systemic risks additionally promotes financial stability in Liechtenstein. In its first 18 months of existence, the FSC handled an ambitious and intensive work program, including regular discussions about structural and cyclical systemic risks in Liechtenstein's financial sector, the development of a macroprudential policy strategy, the revision of the capital buffer framework in the banking sector, an in-depth analysis of systemic risks related to the high indebtedness of private households, and the implementation of a range of recommendations by the European Systemic Risk Board (ESRB). In the course of its activities, the FSC has issued six recommendations for the application of macroprudential instruments to either the FMA or the government. Further details of the FSC's activities are described in Box 8.

The FMA is the competent authority for macroprudential supervision and honors its financial stability commitment with analyses and studies on financial stability issues. An important insight from the global financial crisis is the need to supplement microprudential supervision, which aims at the stability of individual financial institutions, with a macroprudential perspective. Financial stability is an important prerequisite for securing lending in an economy and, as a consequence, for enabling sustainable growth of the real economy. Thereby, macroprudential supervision and policy contributes to the stability of the financial system by reducing the accumulation of systemic risks and by strengthening the resilience of the financial system. The FMA regularly publishes reports on international economic and financial market developments and calls attention to emerging systemic risks in Liechtenstein. Based on the findings of the FMA's financial stability analyses and the subsequent discussions between the FMA and the government, the FSC proposes and publishes macroprudential measures, recommendations and warnings. In this context, the FMA serves as Secretariat to the FSC and is responsible for providing background analyses and studies for the decisions of the FSC. Thereby, the FMA meets its legal mandate to preserve financial stability and, thus, assumes functions in the area of financial stability that are typically assigned to the central bank in other countries.

The government defines the operating framework of macroprudential supervision in Liechtenstein and decides on the introduction of a range of macroprudential instruments within the framework of existing legislation. The conduct of macroprudential policy is a joint responsibility of the FMA and the government. While some instruments can be activated and calibrated by the FMA (e.g. the capital buffer for O-SII, i.e. other systemically important institutions), other instruments are set by the government based on a recommendation by the FSC (e.g. the countercyclical capital buffer and the systemic risk buffer). In this context, the newly established FSC has further strengthened the cooperation between the FMA and the government and has helped to increasingly turn the spotlight on financial stability issues.

The Ministry of General Government Affairs and Finance and the FMA, i.e. the two institutions contributing to the work of the FSC, are also represented in the European Systemic Risk Board (ESRB). Since 2017, representatives from Liechtenstein participate in various ESRB committees. While both the government and the FMA are represented in the ESRB General Board as non-voting members, FMA staff is in charge of participating in the work of the remaining committees of the ESRB, in line with the FMA's mandate to ensure financial stability and the institution's role as the competent authority for macroprudential supervision in Liechtenstein. Despite its small size and limited resources in terms of staff, Liechtenstein aims at participating actively in the ESRB's policy work and implements the respective standards and recommendations as fast as possible.

Discussions and decisions of the Financial Stability Council (FSC)

The Financial Stability Council (FSC) is the central body for macroprudential supervision in Liechtenstein. It was legally established in 2019 to promote financial market stability in Liechtenstein. The Council's members are representatives of the Ministry of General Government Affairs and Finance (MPF) and the FMA. Current members of the FSC are Markus Biedermann (Chairman) and Patrick Brunhart (both MPF), as well as Mario Gassner and Martin Gächter (both FMA). The FSC holds meetings at least four times a year.

Since 2019, the FSC has discussed a broad range of financial stability issues. The key task of the FSC is to address systemic and procyclical risks to financial stability in Liechtenstein's financial sector in a transparent and comprehensive process, as identified by the FMA in the scope of its monitoring activities. In line with its legal mandate, the FSC has discussed issues relevant to financial stability and issued recommendations to the government and the FMA related to the use of macroprudential instruments. During the past year, the FSC particularly focused on the publication of a macroprudential strategy, the revision of the capital buffer framework in the banking sector, regular discussions about structural and cyclical systemic risks in Liechtenstein's financial sector, an in-depth analysis of systemic risks related to the high indebtedness of private households, and the implementation of a range of recommendations by the European Systemic Risk Board (ESRB).

BOX 8

Periodical tasks of the FSC include a discussion of current systemic risks and the setting of various macroprudential capital buffers in the banking sector. In this context, the FSC has discussed appropriate levels of the Countercyclical Capital Buffer (CCyB), the Capital Buffer for Systemically Important Institutions (O-SII), and the Systemic Risk Buffer (SyRB), on a quarterly, annual or biannual basis, respectively.

The Countercyclical Capital Buffer (CCyB), which is set on a quarterly basis, has remained at 0%. The CCyB aims at building up an additional capital reserve in times of excessive credit growth by financial institutions to cushion losses in the event of a crisis. The basis for the buffer decision is the so-called credit gap, i.e. the deviation of the private sector debt ratio relative to GDP from its long-term trend. The main estimate of the credit gap, which is calculated on the basis of household debt and mortgage loans, turned positive at the turn of the year, thus implying that an increase in the buffer should be taken into consideration from a purely technical, rules-based perspective. A closer analysis shows, however, that the increase in the credit gap is also due to the expected decline in GDP, with little signs of excessive credit growth in Liechtenstein. Against the background of the current global recession, and considering other indicators linked to the development of cyclical risks in Liechtenstein, the FSC therefore concluded that the countercyclical capital buffer should not be increased for the time being. A respective recommendation to keep the CCyB unchanged was communicated to the government (recommendation FSC/2020/1).

The Capital Buffer for Systemically Relevant Institutions (O-SII) has remained unchanged for the three identified systemically relevant institutions. Based on the annual review of the O-SII buffer by the FMA, the FSC recommended in June 2020 to maintain the buffer at 2% of the total risk amount (recommendation FSC/2020/2). The calculations and calibrations are based on the guidelines of the European Banking Authority (EBA[22]). O-SIIs are identified annually on the basis of ten indicators. Based on the indicators, a point score is calculated for all institutions at the highest consolidation level. The indicators reflect the systemic relevance of the institution and include the size, the importance for the economy of the relevant member state and the substitutability/infrastructure of the financial institution, the complexity, which also includes the additional complexity arising from cross-border activities, and the institution's links with the financial system. Additionally, a supervisory assessment is conducted by the national authority, in which additional optional indicators are used to assess systemic relevance. The three O-SIIs are systemically relevant to the Liechtenstein banking sector. The banking sector is highly concentrated around the three systemically important banks, as can be seen from the total points value (aggregated over the three big banks) of 9,046 (out of a possible 10,000 basis points). Since all three identified O-SIIs have a total point value far above the threshold of 350 basis points set for the identification of a systemically important bank, the FSC recommended that the FMA retains the O-SII buffer rate of 2% of the total risk amount for all three institutions.

22 *Guidelines on criteria for determining the conditions of application of Article 131(3) of Directive 2013/36/EU (CRD) as regards the assessment of other systemically important institutions (O-SII) (EBA/GL/2014/10).*

BOX 8

The Systemic Risk Buffer (SyRB) mitigates long-term non-cyclical systemic or macroprudential risks whose materialization seriously affects the financial system or the real economy. Based on the FMA's analysis of existing systemic risks for the Liechtenstein banking sector, the recommendation of the FSC (FSC/2019/3) addresses two significant systemic risk sources: Systemic vulnerability and systemic concentration risk. The level of the SyRB is calibrated using different methodological approaches, considering historical crises costs, potential costs due to the materialization of specific systemic risks, and a comparison of macroprudential capital buffer requirements in countries with similar banking systems. The calibration exercise resulted in a buffer size of a maximum of 2% of risk-weighted assets. The scope of the SyRB was extended, with the systemic risk analysis identifying a higher number of banks that are particularly exposed to the identified structural risks. While the maximum SyRB of 2% now applies to the three systemically important institutions in Liechtenstein, a SyRB of 1% applies to three other (smaller) banks in Liechtenstein. The SyRB is applied on both the consolidated and the individual level. When both the SyRB and the O-SII buffer applies to an individual institution, only the higher of the two must be applied. Consequently, the risk-based calibration approach currently does not consider potential overlaps between the O-SII buffer and the systemic risk buffer. A detailed explanation of the calibration of the SyRB is presented in Box 9.

Non-periodical items on the agenda of the FSC in 2020 included a special focus on household indebtedness, the implementation of various ESRB Recommendations, and policy-actions in the context of the Covid-19 crisis. Following a recommendation in last year's Financial Stability Report, the FMA has conducted an in-depth analysis of the indebtedness of private households in Liechtenstein. Thanks to a fruitful cooperation with the Office of Statistics, the vulnerability of households can be analyzed in more detail. In line with the established methodologies of the ESRB, the risk assessment is based on three main categories: collateral (i.e. price indicators), funding (i.e. credit indicators) and household stretch (i.e. vulnerabilities of household balance sheets). While some first results of this analysis are already included in the current Financial Stability Report (see Box 3 in particular), the review has also shown the necessity to look deeper into certain aspects of household vulnerability. The progress of the work, which is conducted by the FMA, is regularly discussed in the meetings of the FSC. The full report on household indebtedness in Liechtenstein is expected to be presented in the first half of 2021, also including proposals on how to address both the identified risks and current data gaps that hamper the associate risk monitoring by the FMA. Furthermore, the FMA has continued its work on the implementation of ESRB Recommendations, as suggested by the FSC. With respect to ESRB Recommendation 2015/1, the FSC endorsed the proposed methodology by the FMA to identify material third countries for the Liechtenstein banking sector. In this context, the FSC recognized the materiality for the following jurisdictions: Hong Kong, Singapore, Switzerland, and the United States. With regard to ESRB Recommendation 2015/2, the FSC acknowledged that macroprudential measures in other countries are not to be reciprocated in Liechtenstein, as the relevant exposures in the Liechtenstein banking sector are below the respective de minimis levels. After the initial implementation of the two ESRB Recommendations, the FMA will report both the list of material third countries as well as the reciprocated macroprudential measures to the ESRB on an annual basis.

BOX 8

The FSC meetings in the first half of the year 2020 mainly focused on the Covid-19 crisis and its implications for the Liechtenstein financial sector. At the beginning of the downturn, the economic outlook was characterized by a high degree of uncertainty, both for the real economy and the financial sector. The FMA has reacted quickly to the crisis (see Box 10), conducting ad-hoc surveys in all financial sectors and introducing additional high-frequency reporting in the banking sector to closely monitor the implications of both the disruptions caused by the lockdowns as well as the financial consequences of the crisis. As explained in detail in section 2, the Liechtenstein economy is strongly hit by the global recession, but the financial sector has proved to be resilient to both the turbulences in the real economy and in financial markets. Also due to the highly specialized business models, bank profitability was virtually unaffected by the crisis, with CET1 ratios even increasing in the first half of the year. It is also expected that the unemployment rate will remain low, despite of the marked decline in GDP. In this context, the FSC also dealt with the implementation of current ESRB Recommendations issued in the context of the Covid-19 pandemic and recommended that the FMA implements them accordingly, with consideration of the particular situation in Liechtenstein. The ESRB Recommendation 2020/6 deals with liquidity risks due to margin calls, which may occur to a greater extent, especially in the event of financial market turbulence. The ESRB Recommendation 2020/7 provides for a restriction of dividend distributions, share buybacks, and payments of variable salary components for banks, insurance undertakings, reinsurers, and central counterparties until the end of the year in order to strengthen the equity capital of financial intermediaries in the context of the Covid-19 pandemic. In principle, the FSC supports the objectives of the recommendation that the spillover of the crisis to the financial sector should be prevented, so that the financial sector can fulfil its important role in the recovery of the real economy. However, considering the special characteristics of the financial sector in Liechtenstein, especially the significantly above-average capitalization of the Liechtenstein banking and insurance sectors and the legal framework, a general prohibition of dividend distributions, share buybacks, and the payment of variable salary components is not considered proportional in light of the objectives of the recommendation. Therefore, an implementation of the proposed measures is not recommended in Liechtenstein. The ESRB Recommendation 2020/8 requires national macroprudential authorities to monitor the financial stability aspects of the fiscal measures taken to support the real economy in the context of the Covid-19 pandemic. With regard to the latter recommendation, the FSC recommended to the FMA to report the relevant numbers and developments to the ESRB, with the government providing the necessary statistics on the fiscal measures. In short, the FSC has recommended the FMA to fully implement ESRB Recommendations ESRB/2020/6 and ESRB/2020/8, while the implementation of ESRB/2020/7 is not considered being proportional in light of the current situation in Liechtenstein.

Current policy stance

Liechtenstein has introduced a comprehensive policy-mix composed of capital buffers as well as lender- and borrower-based measures to improve the systemic resilience of its financial sector and to reduce the build-up of systemic risks. Depending on the aggregate risk level, macroprudential capital requirements can be adjusted in line with European regulations. The CRD IV framework requires banks to hold sufficient capital against unexpected losses in order to remain solvent in the event of a crisis. The capital framework includes both Pillar 1 and Pillar 2 requirements, the capital conservation buffer and macroprudential capital buffers, namely the countercyclical capital buffer, the other systemically important institutions (O-SII) buffer and the systemic risk buffer. National authorities can also incentivize banks to tighten credit standards by increasing risk weights for real estate loans. Other instruments, such as restrictions on the leverage ratio or borrower-based measures are in principle available outside the framework of European regulation. The comprehensive set of instruments allows policymakers to react to the build-up of systemic risks and introduce corresponding risk-mitigating policy measures.

In 2019, Liechtenstein has revised its macroprudential capital framework, thereby also recalibrating the systemic risk buffer (SyRB). According to the Banking Ordinance, the SyRB serves to mitigate long-term non-cyclical systemic or macroprudential risks, the realization of which has serious negative consequences for the financial system or the real economy. While the SyRB automatically applied to certain institutions based on their relative size to the banking sector until 2019, the FMA has recalibrated the systemic risk buffer to be more risk-sensitive to structural systemic risks in line with the CRD IV. The SyRB is used to strengthen the resilience of the banking sector to possible shocks stemming from structural systemic risks through raising the institutions' loss-absorption capacity. The buffer shifts risks to equity holders and raises solvency, thereby decreasing the likelihood of the materialization of structural systemic risk. In the course of the calibration, the scope of the SyRB was extended, now applying to six banks with a rate of 1–2% of risk-weighted assets. The methodology of the calibration of the SyRB is described in detail in Box 9. The new SyRB rates entered into force on 1 January 2020.

In the course of the revision of the buffer framework, the FMA has also increased the O-SII buffer from 0% to 2% for the three systemically important institutions (O-SII) in Liechtenstein. In their efforts to maximize profits, O-SIIs take decisions which may cause market distortions and create risks to financial stability. Such "too-big-to-fail" problems arise from the assumption of implicit government guarantees given to these systemically important institutions, thereby stimulating excessive risk taking. As O-SIIs can therefore cause negative externalities to the broader financial system, identified O-SIIs may require an O-SII buffer of up to 2% of risk-weighted assets. The methodology for identifying an O-SII is based on the EBA guideline.[23] Based on the score of the O-SII identification exercise, and additional indicators as explained in last year's Financial Stability Report, the FMA increased the O-SII buffer from 0% to 2% for the three largest banks in Liechtenstein. As the systemic risk buffer

23 *The calibration of the O-SII buffer was explained in detail in last year's Financial Stability Report 2019 in Box 7.*

and the O-SII buffer do not take effect cumulatively (i.e. only the higher of the two buffers applies), the cumulative buffer requirement for the three O-SIIs in Liechtenstein amounts to 4.5% (i.e. the sum of the capital conservation buffer and either the SyRB or the O-SII buffer), without taking into consideration the institution-specific countercyclical capital buffer.

As credit growth has faded in the last few years, the countercyclical buffer (CCyB) rate has remained at 0%. The CCyB aims at counteracting excessive credit growth and reducing the procyclicality of the financial system. In line with the in-depth analysis of vulnerabilities in the household sector, as briefly explained in section 3, the calibration of the CCyB now considers revised data regarding household indebtedness, i.e. excluding persons and households with limited tax liability in Liechtenstein (i.e. persons without a permanent residency in Liechtenstein). As a result, the calculations regarding the credit gap were also revised, now showing a slightly positive credit gap for Liechtenstein (Figure 33).

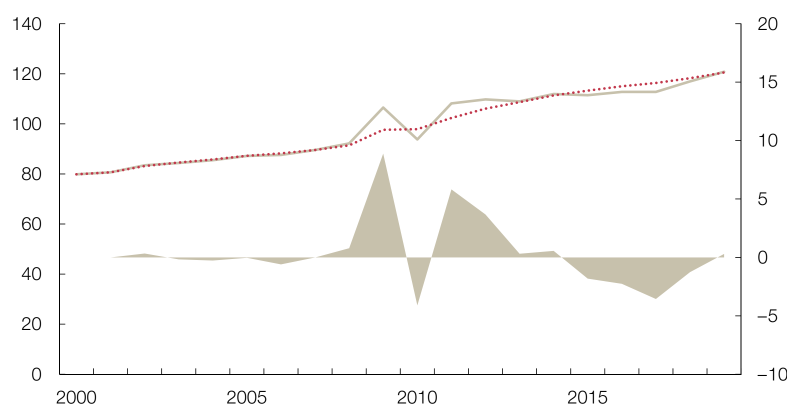

Figure 33
Household indebtedness and resulting credit gap in Liechtenstein (percent of GDP)
Source: Office of Statistics, FMA.

Although the credit-to-GDP gap is the main indicator for the calibration of the CCyB, this rule-based approach is only partly applicable for the Liechtenstein economy and its special features and should, therefore, not be adopted without considering additional indicators.[24] In this context, the ESRB suggests complementing the rule-based approach with additional quantitative and qualitative indicators to account for various cyclical systemic risks. As these indicators do not indicate excessive credit growth in Liechtenstein, the FSC has accordingly recommended to the government to leave the CCyB unchanged at a rate of 0% of risk-weighted assets. In light of the high household indebtedness, the FMA and the FSC will continuously monitor the development of cyclical risks in the financial sector and will adapt the recommendation regarding the level of the CCyB if deemed necessary.

24 *The calibration methodology for the CCyB for Liechtenstein was explained in detail in the Financial Stability Report 2018 (see Box 7).*

Furthermore, the FMA may also require banks to hold additional capital under the Pillar 2 requirement. Risks at the individual bank level are also regularly assessed in the framework of the annual Supervisory Review and Evaluation Process (SREP). The SREP summarizes all supervisory activities performed on an institution to a comprehensive supervisory overview. Regular monitoring of key indicators is used to identify material changes in the risk profile to support the SREP framework, with the individual elements of the SREP framework assessed and scored. The outcome of this SREP assessment represents the up-to-date supervisory view of the institution's risks and viability, forming the basis for supervisory measures and dialogue with the institution. Tailored to the individual bank, the supervisor may ask the bank to hold additional capital, liquidity and/or set qualitative requirements. The SREP process and decision is not a macroprudential measure, but supports other supervisory activities and contribute to a thorough and continuous monitoring of banks.

With the revision in 2019, Liechtenstein has introduced an effective and transparent macroprudential capital framework for the banking sector (Figure 34). Besides the mandatory Pillar 1 capital requirements, all banks have to hold the capital conservation buffer amounting to 2.5% of risk-weighted assets. Additionally, some banks are required to hold additional Pillar 2 capital requirements, depending on the institution-specific risk assessment in the SREP framework. While the CCyB rate is set at 0% of RWA for exposures in Liechtenstein, the institution-specific CCyB may be somewhat higher in case of existing exposures in a country that has already set a positive CCyB rate.

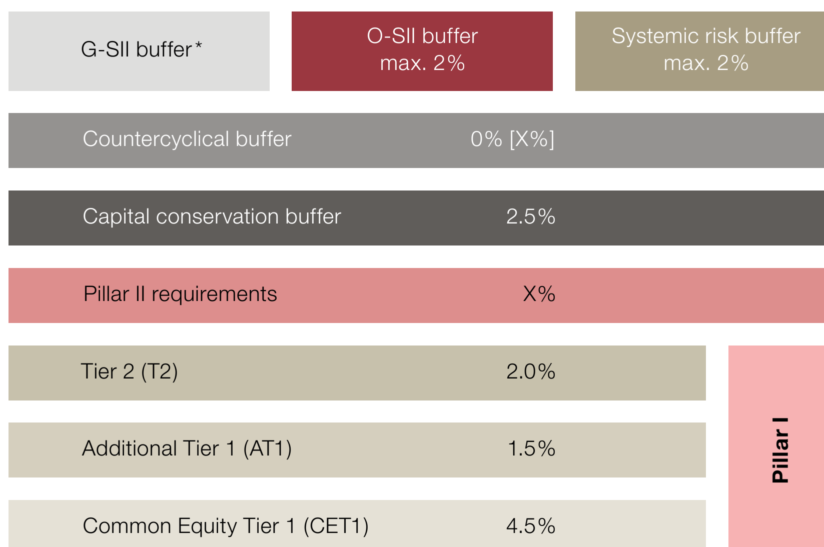

Figure 34
Current capital requirements and buffers for Liechtenstein's banks (percent of risk-weighted assets)
Source: FMA. If both the systemic risk buffer (SyRB) and the capital buffer for other systemically importation institutions (O-SII) are imposed on the same institute, the higher of the two applies.
**not applicable in Liechtenstein*

The SyRB is applied to six banks: For the three O-SIIs, the government has imposed a SyRB rate of 2% of RWA, while for three other banks a rate of 1% of RWA is applied. Finally, the O-SII buffer is set at 2% for the three O-SIIs. As the three respective institutions have to hold a SyRB amounting to two percent, however, the O-SII buffer does not further increase the total combined buffer requirement.

In light of the vulnerabilities related to the high indebtedness of private households, the policy-mix also includes various instruments to mitigate risks in the real estate sector. The policy objectives particularly focus on preventing excessive credit growth and leverage in the household sector, with both borrower- and lender-based measures being implemented. Currently activated macroprudential instruments include an effective cap on the loan-to-value (LTV) ratio for new mortgage loans at 80%, an amortization requirement to bring the mortgage to a maximum LTV of two thirds after 20 years, and increased risk weights for mortgages on residential properties with an LTV between 66 2/3% and 80%. The measures are intended to make vulnerable households more resilient and will likely have some dampening effect on total borrowing and house prices. The policy mix has already shown its effectiveness in recent years, particularly with regard to the decline in mortgage lending growth in Liechtenstein (see also Box 3).

In light of the regular monitoring of risks to financial stability, the macroprudential policy stance is considered being largely appropriate to mitigate the identified systemic risks in Liechtenstein's banking sector. Liechtenstein's banking sector is not only well capitalized relative to its European peers, but it has also shown remarkable resilience in the current crisis related to the Covid-19 pandemic, with profitability and capitalization indicators even increasing in the first half of 2020. Against the backdrop of strong key risk indicators and a very comprehensive policy mix, Standard and Poor's has yet again ranked the Liechtenstein banking sector among the most stable in the world in 2020. Some fine tuning in the macroprudential policy mix may still be necessary, as briefly explained in the following section.

BOX 9

Recalibration of the Systemic risk buffer (SyRB) in Liechtenstein

The Systemic Risk Buffer (SyRB) aims at mitigating long-term non-cyclical systemic or macroprudential risks, the realization of which would be associated with serious negative consequences for the financial system or the real economy. In past banking crises, the costs of bank recapitalizations in other countries were often borne by the public sector in order to mitigate negative effects on the real economy. Hence, the objective of the SyRB is to decrease the probability of a crisis and to reduce potential crisis costs ex-ante by strengthening the resilience of the banking sector. The SyRB can be imposed to all or to some specific institutions, with the size of the buffer varying across institutions. The SyRB must be kept in common equity tier 1 (CET1) capital in addition to capital requirements (Pillar 1 and 2) and additional capital buffers (e.g. capital conservation buffer and the countercyclical capital buffer). A failure to meet the SyRB buffer requirement results in distribution restrictions and the creation of a capital conservation plan. According to the Banking Act (BankG), the SyRB has an upper limit of 5% of risk weighted assets (RWA).

In the context of the revision of the capital buffer framework in 2019, the FMA has also recalibrated the SyRB. While the European Banking Authority (EBA) does not pinpoint a guideline or indicators for adopting the SyRB, the European Systemic Risk Board (ESRB) lists several structural vulnerabilities and their origins to systemic risks that can serve as a general guide when calibrating the SyRB. In 2015, when the CRD IV entered into force in Liechtenstein, a SyRB for the three systemically important institutions of 2.5% of total risk-weighted assets was introduced, applicable both on the consolidated and individual basis.[25] In 2019, the FMA recalibrated the SyRB to be more risk-sensitive to structural systemic risks in line with the CRD IV. The SyRB intends to strengthen the resilience of the banking sector to possible shocks stemming from structural systemic risks through raising the institutions' loss-absorption capacity, thereby decreasing the likelihood of the materialization of structural systemic risk.

To calibrate the SyRB in Liechtenstein, a three-step approach is followed. First, a systemic risk analysis is conducted. In this context, the FMA proactively identifies the development of banks, their risk-taking capacity at the system level as well as structural, non-cyclical systemic risks in the financial system in line with its financial stability mandate. For Liechtenstein, the FMA has identified two main sources of systemic risks:

1. **Systemic vulnerabilities** are elevated levels of interdependencies and vulnerabilities of one or more financial institutions against disturbances in the financial system, e.g. due to the interconnectedness with other market participants, with the financial system in general or the real economy. As a consequence, the SyRB addresses risks that operate from the financial system to the institutions, the real economy and the public budget. In Liechtenstein, systemic vulnerabilities include, among others, similar cross-border exposures across financial intermediaries, conditional liabilities vis-à-vis the deposit guarantee scheme

25 *More precisely, the systemic risk buffer was applied to those banks and investment firms whose balance sheet exceeded 10% of the sum of total assets of all banks and investment firms located in Liechtenstein, such that the SyRB covered an important feature of the O-SII buffer.*

BOX 9

as well as systemic risks due to Liechtenstein's institutional specifics and the prevailing business models.

2. **Systemic correlation risks** and **systemic risk concentration** arise due to substantial similar exposures (direct and/or indirect) within the banking industry. These similarities across financial institutions can lead to disturbances and severe negative effects in the financial system and, as a consequence, to the real economy. The aim of the systemic risk buffer is to mitigate the identified concentration of direct and indirect exposures to decrease the vulnerabilities against similar shocks. One important correlation risk in Liechtenstein, for instance, results from the high amount of mortgage loans in banks' balance sheets and the associated high indebtedness of the private household sector.

In a second step, the size of the SyRB is calibrated. Based on the identified systemic risks, three different calibration methods are applied, which ensure multiple perspectives relating to the systemic risks and the resulting buffer rate. First, the **systemic approach** can be viewed as a *top-down approach* to identify the size of systemic vulnerabilities in Liechtenstein. The systemic approach aims at internalizing systemic crises costs by financial institutions, so that the public sector does not have to pay ex-post for a potential crisis. Therefore, average historical crises costs[26] in the European Union and European Economic Area are calculated and simulated for the case of the Liechtenstein economy. To verify the results, various case studies from other small countries are also considered, including the recent crises in Iceland, San Marino and Andorra. Second, the **synthetic approach** aims at strengthening the risk-bearing capacity of the financial institutions against specific risk categories. It can be viewed as a *bottom-up* approach as it addresses different systemic risks separately, before consolidating the individual risk categories at the systemic level. In this context, a systemic mortgage stress test is applied, where a faster than expected increase of interest rates and its impact on Liechtenstein banks is simulated. Finally, the **benchmarking approach** is applied as a consistency check, comparing the capital requirements of peer financial systems with similar systemic risks to Liechtenstein banks (i.e. small and open economies with a large banking sector relative to GDP in the European Economic Area). In addition, the calibration approach of the systemic risk buffer also considers risk-mitigating factors, such as the fact that Liechtenstein banks are characterized by a less complex balance sheet structure and a relatively conservative business model.

In a third step, the selection of banks is based on several quantitative indicators. In principle, all banks should be assigned with the systemic risk buffer, at least from a systemic vulnerability perspective. However, as not all banks in the Liechtenstein financial system are equally exposed to the identified risks, only those banks receive a systemic risk buffer that are especially exposed to these systemic risks. The quantitative indicators used to select the most exposed institutions consider both direct and indirect contagion indicators (such as network analyses, and indirect indicators based on the vulnerabilities through the institutions' business models) as well as a proportionality indicator.

26 *Leaven & Valencia (2012), Systemic banking crises database: an update. IMF Working paper, data accompany.*

BOX 9

The calibration exercise of the SyRB results in a buffer size of a maximum of 2% of risk-weighted assets. In the recalibration exercise, the scope of the SyRB was extended, with the systemic risk analysis identifying a higher number of banks that are particularly exposed against identified structural risks. While the maximum SyRB of 2% now applies to the three systemically relevant institutions in Liechtenstein, a SyRB of 1% applies to three other (smaller) banks in Liechtenstein. The SyRB is applied on both the consolidated and the individual basis. When both the SyRB and the O-SII buffer applies to an individual institution, only the higher of the two must be applied. Consequently, this risk-based calibration approach currently does not consider potential overlaps between the O-SII buffer and the systemic risk buffer. The revised Banking Ordinance as well as the newly calibrated systemic risk buffer entered into force on 1 January 2020.

An ex-ante impact assessment and cost-benefit analysis suggested negligible effects on the real economy from the recalibration of the SyRB. The newly calibrated SyRB does not lead to additional capital needs for the selected institutions, and thus is associated with negligible effects on the real economy. In the context of the revision of the capital buffer framework in 2019, the FMA recalibrated both the capital buffer for other systemically relevant institutions (O-SIIs) and the SyRB to align it with common practices as applicable in other member states of the EEA. The recalibration of the SyRB makes the buffer more flexible and also more risk-sensitive to structural systemic risks, as originally intended by European regulations. With the introduction of the CRD V/CRR II package in Liechtenstein, currently expected in early 2022, the SyRB and the O-SII capital buffer will take effect cumulatively in the combined buffer requirements for banks. Against this background, the SyRB will be recalibrated once again with the introduction of the CRD V package, thus considering any possible overlaps with the O-SII capital buffer.

Recent developments and possible areas for additional policy measures

Liechtenstein has reacted quickly to mitigate the consequences of the global Covid-19 pandemic. In Liechtenstein, the situation related to the new Corona virus was less dramatic than in other countries. Although only one Covid-19 related death has been reported during the first wave of the pandemic, the economic consequences are nevertheless severe against the backdrop of the small and open economy. In light of the public health emergency, businesses have been facing severe challenges related to various restrictions during lockdown periods, declining demand and elevated uncertainty in the business outlook. In this context, the government and the parliament have got a comprehensive fiscal package off the ground to mitigate the consequences of the global recession and to protect the labor market during the lockdown. The FMA has also reacted quickly to the unexpected developments, announcing a wide range of measures, as outlined in Box 10.

The reorganization of the AML/CFT supervision has enhanced the effectiveness and efficiency of money laundering supervision within the FMA. Money laundering incidents (or even suspicions) attract high media attention and are accompanied by a loss of trust on the part of customers and partners. Effective anti-money laundering measures are therefore a prerequisite for the reputation of the financial center as a whole, and eventually, also for market access. AML policy and supervision is thus also essential from a macroprudential perspective, as a loss of trust and reputation could have systemic effects in Liechtenstein due to the prevailing business model of domestic banks. In this context, the FMA reviewed its money laundering supervision and reorganized it in April 2019. The FMA's anti-money laundering mechanism, which previously had been spread out among the four supervisory divisions, is now being concentrated in the Anti-Money Laundering and Designated Non-Financial Business and Professions (AML/ DNFBP) division. The division has been strengthened in terms of personnel and performs risk-based money laundering supervision in all financial sectors. The FMA verifies compliance with anti-money laundering legal provisions by financial intermediaries, also based on its own due diligence inspections, and takes rigorous action against violations. As a result of the reorganization, AML supervisory actions have become even more focused and effective, which must be in the ultimate interest of the whole financial sector in Liechtenstein.

On 1 January 2020, the new legislation on service providers for Tokens and Trusted Technologies entered into force (TVTG). The new law aimed at defining a legal framework for all applications of the token economy in order to ensure legal certainty for new business models. As one major difference to legal approaches in other countries, the FMA registers service providers such as token generators or people who verify the legal capacity and the requirements for the disposal over a Token. Besides the registration process, supervision activities based on the TVTG are mostly limited to anti-money laundering. Importantly, the TVTG is applicable in parallel to classic financial market regulation.

So far, the number of registered entities has been relatively limited, but activity is expected to pick up before the end of the year. The TVTG offers a grandfathering period to persons that already carried out an activity that is regulated under the new law. Those service providers can continue to offer their services without registration until the end of the year

2020. Approximately 20 entities have contacted the FMA, stating that they will make use of this period. As of the end of the third quarter of 2020, two entities have already been registered as TT-Service-Providers while applications of nine additional entities are currently under review. In light of the approaching expiration of the grandfathering period, however, the FMA expects a significant number of applications before the end of the year. To ensure a smooth registration process, it is highly recommended that applicants seek qualified advice before entering an application.

In banking regulation, preparations for the implementation of the CRD V/CRR II package have started. The amendments in the Capital Requirements Regulation and Directive (CRR/CRD) also contain some significant revisions to macroprudential supervision and policy. With regard to the capital buffer for other systemically important institutions (O-SII buffer), the caps on the rates for institutions and subsidiaries of O-SIIs have been raised. The systemic risk buffer (SyRB) can be used more flexibly, as the buffer can now be applied to four separate sectors and specific subsets thereof, and flexibility has also been increased by no longer referring to long-term non-cyclical systemic risks. On the other hand, the scope has been narrowed to some extent, now excluding its application to risks that stem from systemically important institutions (to avoid overlaps with the G-SII/O-SII buffers). In return, the G-SII/O-SII buffer and the SyRB become additive, i.e. the "higher of" rule has been abolished. Also, an overall cap of 5% for cumulative SyRB and O-SII/G-SII buffer rates has been introduced, which can only be exceeded under specific circumstances. Additionally, the application of measures to address real estate risks has also been facilitated, while it is no longer possible to use Pillar 2 measures for macroprudential purposes. In Liechtenstein, the regulatory implementation process has started in recent months, and it is expected that the revised Banking Law will be discussed in parliament in the course of 2021, before entering into force in early 2022.

The FMA is continuously monitoring the dynamics of private household indebtedness and the vulnerabilities in the Liechtenstein real estate market. In light of the substantial exposure of domestic banks towards mortgage loans, high household indebtedness and vulnerabilities in the real estate sector, a risk-mitigating policy mix has been effective since 2015. To maximize the effectiveness of the policy instruments, both borrower-based and lender-based measures were introduced. Although the policy mix has shown its effectiveness in recent years, also with regard to the decrease of mortgage lending growth in Liechtenstein, the high and still rising household indebtedness implies certain financial stability risks for the financial sector in Liechtenstein. Against this backdrop, the FMA has conducted an in-depth analysis of this issue, which is currently discussed in the Financial Stability Council. The final report, along with a critical evaluation on policy appropriateness and policy sufficiency in light of the identified risks and vulnerabilities, is expected to be published in the first half of 2021.

BOX 10

Corona-related policy and supervision measures

In light of the global Covid-19 pandemic, financial intermediaries have been facing severe challenges both related to business continuity management and elevated uncertainty in the business outlook. The interruptions and restrictions in public life hit the European economy unexpectedly and at full tilt, including the financial sector. Financial market participants had to take measures as part of their business continuity management to ensure business operations even during the lockdown. The switch from offices to working from home, which became necessary in almost all areas of the financial sector, functioned surprisingly well when considering the sudden and unanticipated measures to safeguard public health. Besides the additional burden in this extraordinary situation related to business continuity management, banks, insurers and other market participants were confronted with high uncertainty related to the business outlook, as the global economy entered its strongest recession since the second world war.

The FMA has reacted quickly to the public health emergency by postponing some non-urgent reporting requirements, conducting ad-hoc surveys and introducing additional high-frequency reporting in the banking sector. In line with the statements of European Supervisory Authorities (ESAs), the FMA gave financial intermediaries under its supervision additional leeway by applying more flexibility and pragmatism in the application of the prudential framework and with regard to the remittance dates for some areas of supervisory reporting which were not assessed to be crucial under the given circumstances. In this context, non-urgent on-site inspections, management meetings and general consultations and enquiries were postponed whenever possible, unless they were required for the protection of market integrity or financial stability. While the FMA allowed financial intermediaries some postponement of deadlines related to some specific regulatory reporting requirements, the FMA has also assessed to which extent a delayed submission of supervisory data could support the financial intermediaries without putting at risk the access to crucial information needed to monitor institutions' financial and prudential situation. Reliable supervisory data is particularly crucial in times when the financial system faces turbulences caused by extraordinary situations. Considering the potential impact of the Covid-19 outbreak on the economy and the financial sector, the FMA has thus conducted surveys in all sectors of the financial market already in the second half of March 2020, and also introduced a high-frequency ad-hoc reporting for the banking sector to monitor some main variables of interest for financial stability on a more frequent basis. The surveys, which included questions on both the implementation of business continuity measures as well as on first experiences and expectations with regard to the business outlook, revealed that Liechtenstein's financial sector was able to adapt quickly to the new situation, with financial intermediaries neither reporting severe problems in the context of business continuity nor in terms of financial or prudential indicators.

From a macroprudential perspective, the FMA has regularly assessed potential risks to financial stability emerging from the economic downturn related to the global pandemic. Based on the surveys and the pandemic-related ad-hoc reporting, developments in the financial sector were regularly monitored to enable the FMA taking additional supervisory measures if deemed necessary. The financial sector, however, has shown remarkable resilience during the crisis, with banks' profitability

BOX 10

even increasing in the first six months of the year, and the whole financial sector – also including insurers, asset managers and investment funds – hardly reporting any serious issues neither in terms of business continuity nor liquidity. Looking ahead, the above average capitalization and abundant liquidity, also related to the prevailing business models, imply high levels of loss-absorption capacity and thus a very positive outlook for Liechtenstein's financial sector.

Furthermore, the FMA has reiterated and supported the proposal by European Supervisory Authorities (ESAs) to implement a cautious and prudent distribution policy. A spillover of the downturn of the real economy to the financial sector must be prevented, allowing the financial sector to play an important supportive role in the following economic recovery. Against the background of the current global recession, a prudent and cautious distribution policy in the financial sector, as suggested by the European Banking Authority (EBA) and the European Insurance and Occupational Pensions Authority (EIOPA), therefore remains essential. Considering the overall situation and the uncertain economic impact of the global pandemic, sufficient levels of capital and loss absorbing capacity are crucial to mitigate the impact of the current crisis.

The government and the parliament have quickly got a comprehensive fiscal package off the ground to support the local economy and to mitigate the consequences of the global downturn. To cushion the economic consequences of the Covid-19 pandemic, the government, in conjunction with parliament, adopted a package of measures amounting to CHF 100m on 19 March 2020. The primary objective of the support measures has been the safeguarding of jobs, securing livelihoods and mitigating the consequences for the economy. As a result of a further increase and additional grants from the municipalities, the total budget available for the fiscal package amounted to CHF 130m, around 2% of GDP. The fiscal package includes a bridging loan facility to avoid possible liquidity shortages, a comprehensive furlough scheme to dampen the effects of the recession on the labor market, direct support for self-employed people and small enterprises, as well as the possibility to defer tax and social security payments. As a result, the unemployment rate has remained remarkably low, recording only a slight increase from 1.7% to 1.9% between February and September.

The FMA continuously monitors and assesses the financial stability implications of the fiscal and supervisory measures, as well as the consequences of global developments for financial stability in Liechtenstein. Considering the scope and potential impact of the measures taken, it is of high importance to monitor the design features, the uptake as well as the possible implications for financial stability. Accordingly, the FMA has set up a monitoring framework, and regularly report both the data and the findings to the ESRB, as suggested in the respective ESRB Recommendations. In this context, the currently implemented monitoring scheme allows the relevant authorities to identify and mitigate systemic risks in a timely manner, making it possible to introduce additional measures if deemed necessary.

Recovery and resolution

The Liechtenstein Resolution Framework is based on international standards, with the EU's Banking Recovery and Resolution Directive (BRRD) being effective since 2017. In this context, the Liechtenstein resolution authority closely cooperates with European peers. In the framework of a resolution college, a resolution plan for an EU-based banking group with a subsidiary in Liechtenstein was decided upon during summer.

During 2020, the work of the Liechtenstein resolution authority (a separate unit within the FMA) has focused on the further development of resolution plans and resolution strategies for the major Liechtenstein banks. In this context, the reporting framework has been significantly expanded in order to strengthen the data landscape necessary for resolution planning. Furthermore, the work on the resolvability assessment for the banks under the remit of the FMA has been continued. In order to be able to properly address Liechtenstein banking sector specificities in resolution planning, the Liechtenstein resolution authority has further increased its exchange with the relevant banks.

The build-up phase of the resolution financing mechanism has continued. The total amount of funds, including irrevocable payment commitments, equals CHF 16 million by the end of 2020. The fund has a target sum of 1% of covered deposits and will be fully built up by the end of 2027.

As part of the Banking Reform Package (CRR II/CRD V, see previous section), the legal framework for resolution (BRRD) will also change in Liechtenstein. The Liechtenstein resolution authority has been involved in the preparatory work for the implementation of this framework in Liechtenstein. The amended BRRD will inter alia change the legal framework with regards to the calibration of the Minimum Requirement for Own Funds and Eligible Liabilities (MREL). The issuance of MREL decisions for the major Liechtenstein banks is envisaged for 2021 and is an important next step in the course of complementing the resolution framework.

APPENDIX

List of abbreviations

ALMM Additional liquidity monitoring metrics
AMC Asset Management Company
AML/CFT Anti-money laundering/Combating the financing of terrorism
AML/DNFBP Anti-money laundering/Designated non-financial businesses and professions
AHV/IV Public pension system
AuM Assets under management
BankG Banking Act
BCM Business Continuity Management
BFS Office of Statistics (Switzerland)
BIS Bank for International Settlements
BPVG Occupational Pension Act
BRRD Banking recovery and resolution directive
CCyB Countercyclical capital buffer
CET1 Common equity Tier 1
CHF Swiss franc
CIR Cost-income ratio
CRD Capital Requirements Directive
CRR Capital Requirements Regulation
ECB European Central Bank
EBA European Banking Authority
EEA European Economic Area
EIOPA European Insurance and Occupational Pensions Authority
ESAs European Supervisory Authorities
ESRB European Systemic Risk Board
ETP Exception-to-policy
FMA Financial Market Authority
FSC Financial Stability Council
GDP Gross domestic product
GNP Gross national product
G-SII Global systemically important institution
HQLA High-quality liquid assets
IMF International Monetary Fund
LCR Liquidity coverage ratio
IRB Internal ratings based
KOF KOF Swiss Economic Institute
LBS Locational Banking Statistics
LTV Loan-to-value
ManCos Management companies
MiFID Markets in Financial Instruments Directive
MPF Ministry for General Government Affairs and Finance
MREL Minimum requirements of own funds and eligible liabilities
NFC Non-financial corporations
NPL Non-performing loans
NSFR Net stable funding ratio
OECD Organisation for Economic Co-operation and Development
O-SII Other systemically important institution
P.C. Per capita
PEPP Pandemic emergency purchase programme
PGR Law on Persons and Companies
PMIs Purchasing manager indices
PPP Purchasing Power Parity
q-o-q Quarter-on-quarter
RoA Return on assets
RoE Return on equity
RRE Residential real estate
RWA Risk-weighted assets
StA Standardized approach
SECO State Secretariat for Economic Affairs (Switzerland)
SME Small & medium enterprises
SNB Swiss National Bank

S&P 500	Standard & Poor's 500
SREP	Supervisory review and evaluation process
SyRB	Systemic risk buffer
TBTF	To-big-to-fail
TCSP	Trust and corporate service providers
THK	Liechtenstein Institute of Professional Trustees and Fiduciaries
TrHG	Professional Trustees Act
TT	Trusted Technologies
TVTG	Tokens and Trusted Technologies Act
UCITS	Undertakings for collective investments in transferable securities
VIX	Volatility index
3m-o-3m	3-months-on-3-months

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