FMA

Financial Market Authority

23

# FINANCIAL STABILITY REPORT 2023

## BOXES

# PREFACE

In this publication, the Liechtenstein Financial Market Authority (FMA) presents its sixth annual Financial Stability Report, offering an insightful overview of Liechtenstein's financial sector. Given that Liechtenstein lacks a national central bank, the FMA holds the legal mandate to safeguard financial stability in accordance with the Financial Market Supervision Act (FMA Act, Article 4).

The past year was characterised by persistently high inflation, surging interest rates, and weakening economic activity at the global level. While the financial sector, in general, and the banking sector, in particular, have thus far reaped the benefits of the financial market recovery and rising interest rates, significant challenges persist. Financial markets currently reflect a relatively optimistic scenario, anticipating only a mild economic slowdown, a swift decline in inflation, and a forthcoming lowering of interest rates. Against this background, financial markets remain vulnerable to adverse surprises, as inflation may prove more persistent than projected, and economic fragility might deepen beyond expectations. While the Liechtenstein financial sector appears well-equipped to confront forthcoming challenges, it is imperative to sustain ongoing efforts to ensure stability, not only within the financial sector but across the whole economy.

In this context, the recent tightening of borrower-based measures represents a critical response to mitigate the identified risks within Liechtenstein's housing market, a recurring concern recognised as a key systemic risk in the country's financial sector. The strong collaboration between regulatory authorities and the banking sector in formulating these measures underscores the full commitment of the financial industry to preserving long-run financial stability.

In conclusion, our analysis affirms the continued stability and soundness of Liechtenstein's financial sector, with systemic risks remaining limited. Nonetheless, amid mounting global uncertainties, geopolitical tensions, and financial turbulence, maintaining high capitalisation and resilience within the financial sector is essential. For this purpose, we have at our disposal a range of macroprudential instruments that we will continue to deploy as deemed necessary.

Mario Gassner
Chief Executive Officer

Martin Gächter
Head of the Financial Stability Division

# EXECUTIVE SUMMARY

## MAIN FINDINGS AND RISK MAP

**At the international level, financial stability risks remain elevated in light of persistent price pressures and weakening growth prospects.** Global business activity has weakened over the past year on the back of a strong rise in interest rates, with inflation declining only gradually. The slowdown is particularly pronounced in the industrial sector, translating into subdued global merchandise trade. Despite these headwinds, labour markets remain tight, with unemployment rates at very low levels. While tight labour markets lower the risks associated with the slowdown, it also introduces other risks in the form of potential wage-price spirals. Addressing these concerns may necessitate a longer period of tight monetary policy than currently anticipated.

**Liechtenstein's economy is hit by weak export growth, as both cyclical and structural factors dampen external demand.** Liechtenstein generally exhibits a very sensitive and early response to the global business cycle. While the weakness in the domestic economy is currently driven by the slump in the global industrial sector and weak global trade, structural factors are also at play. In particular, globalisation has experienced a notable slowdown since the global financial crisis, with the global trade-to-GDP ratio stagnating. Additionally, rising geopolitical tensions and the increasing fragmentation of the global economy pose significant challenges for Liechtenstein's economic prospects. These factors can create uncertainties and barriers to trade, making it more difficult for small, export-oriented economies to thrive in the global marketplace.

**Financial markets remain vulnerable to corrections.** Equity valuations have remained elevated, and the recovery since the start of the year rests on a rather narrow foundation. In addition, financial markets maintain an optimistic outlook regarding future earnings, growth, and inflation, which exposes them to potential disappointments. While risk premia have remained low, there is the possibility for abrupt increases in the event of adverse developments. This could bring concerns about public debt sustainability back into focus, especially if interest rates remain high for an extended period.

**The financial cycle has turned, with real estate markets undergoing an orderly correction phase in many countries.** Although the financial strain among borrowers in the Swiss franc currency area has stayed relatively low on the back of moderate interest rate rises, the financial cycle has eventually turned. The correction in real estate markets in many European countries has remained orderly so far. Risks nevertheless continue to be elevated, as it takes time before the full impact of higher borrowing costs materialises.

**Effectively addressing institutional and reputational risks remains key for Liechtenstein's financial centre.** The strong EU and Swiss integration of Liechtenstein is a key strength of the economy, but also implies certain risks going forward. Ensuring the smooth functioning of the financial market requires close collaboration with both Swiss and EU authorities to address institutional challenges at an early stage. Furthermore, the monetary arrangement with Switzerland with the Swiss franc being used as a legal tender also implies that Liechtenstein lacks an institutionalised lender of last resort. Liechtenstein's planned accession to the International Monetary Fund (IMF) offers part of the solution and is therefore highly welcome, as the country gains access to additional financial resources under certain circumstances. In a similar vein, the importance of compliance with international standards cannot be overstated. Against the background of the prevailing business model in the financial sector, which mainly focuses on private banking and international wealth management, a close monitoring of – and, if necessary, addressing – reputational risks remains indispensable.

**The transition towards a low-carbon economy continues to be challenging.** Assessing the impact of physical and transition risks on financial institutions is complex. Although banks in Liechtenstein have limited exposures to high-emitting firms, some banks might be exposed to climate-related risks through their mortgage loans. Similarly, the insurance sector is also confronted with rising climate risks, driven by the increasing frequency and unpredictability of natural catastrophe events. Although data availability remains an issue at the international level, the monitoring of climate-related risks has to be improved going forward, in particular to be able to assess climate risks in an appropriate manner.

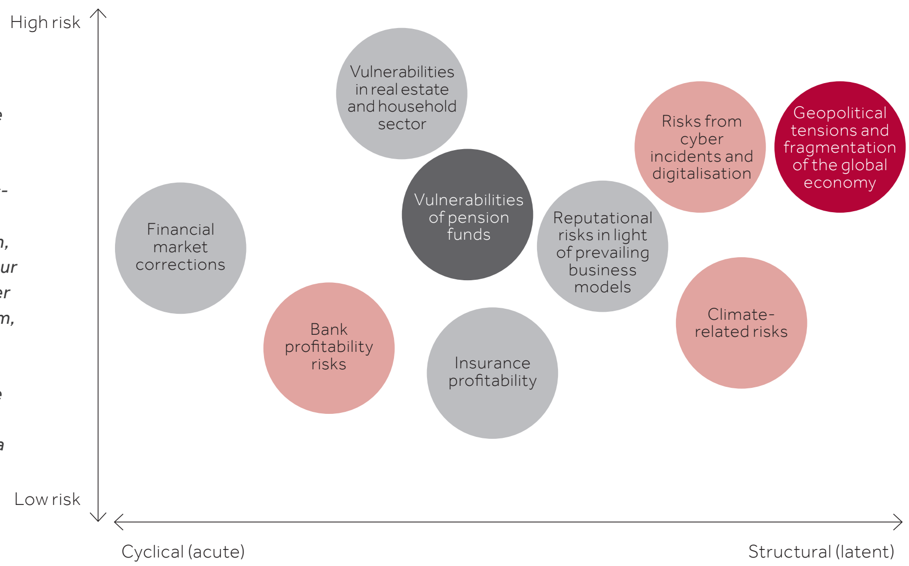
**The Liechtenstein banking sector has remained remarkably stable during the turmoil in the US and Swiss banking sectors.** Despite the crucial role of Credit Suisse in providing various financial services to domestic banks, an FMA analysis indicates that, even in the event of a failure of Credit Suisse, the impact on Liechtenstein banks would have been minimal due to limited exposures and collateralisation. While global concerns about bank runs have risen due to both cyclical and technological factors, risks in Liechtenstein remain low in light of the banking sector's strong fundamentals.

**Profitability in the banking sector has improved in light of higher interest rates, but the sector may face renewed challenges ahead.** Although profitability has improved on the back of the reversal in interest rates, profitability in the Liechtenstein banking sector – as measured by return on equity (RoE) – continues to lag significantly behind their peers in the EU and the US. While the high capitalisation is part of the explanation, a closer analysis shows that, in contrast to other countries, costs increased in lockstep with income, limiting the increase in the RoE compared to other countries. At the same time, banks may be confronted with rising funding costs and increased credit risks going forward. While this puts an additional challenge for the banking sector, the effects are likely to be less pronounced than in other countries, thanks to lower inflationary pressures and a moderate increase in interest rates in the Swiss franc

*Figure 1*
*Risk Map 2023*

*Notes: The x-axis defines the time frame of the risk, i.e. whether the risk is acute / cyclical or more latent / structural. The y-axis denotes the probability of materialisation, i.e. high vs. low risk. The colour of the circles reflects whether viewed over the medium term, a risk will likely sharply increase (red), moderately increase (light red), decrease (light grey) or remain unchanged (dark grey) from a current perspective.*

*Source: FMA.*



currency area. In addition, business model risks have materialised over the last years, and continue to pose a challenge, especially for smaller banks.

**In the non-bank financial sector, risks remain relatively limited.** Although profitability of the insurance sector is lower compared to the EU average, the sector maintains a robust solvency level, contributing significantly to the sector's stability. At the same time, the uncertainties in the insurance sector continue to be significant, as the rise in inflation may directly increase costs for loss events and may thus negatively affect margins and profits in the future. While the public pension system has weathered the market-related losses in 2022 relatively well and remains stable, the occupational pension system experienced a noteworthy decline in coverage ratios throughout 2022, primarily driven by poor market performance. This decline reinforced existing vulnerabilities in some pension funds. Concurrently, investment funds generally face rather low risks. Identified risks in the area of consumer protection and supervisory limits are not Liechtenstein-specific. Additionally, potential profitability risks for some (mostly smaller) domestic funds highlight the crucial need for regulatory oversight to ensure the resilience of the non-bank financial sector.

## RECOMMENDATIONS

In light of the high level of uncertainty both in terms of macrofinancial and geopolitical developments and the identified cross-sectional systemic risks, the FMA recommends taking the following actions:

- Liechtenstein authorities should continue their close collaboration with both Swiss and EU authorities to address institutional and reputational risks;
- The government should finalise the accession negotiations with the IMF as soon as possible;
- Financial institutions should regularly conduct assessments of their governance and internal control standards to consistently uphold compliance with European and international standards, including the sanctions against Russia;
- The whole financial sector should continue to enhance and execute strategies for addressing challenges posed by emerging digitalisation, heightened cyber risks, and climate change, while also preparing for future regulatory initiatives in this context.

Given the recent trends of elevated inflation and rising interest rates, the FMA advises to the banking sector to address the identified risks by prioritising the following actions:

- Ensure sustainable lending standards, while promoting risk awareness among borrowers, in particular for real estate lending;
- Improve and maintain a solid capital base, while also ensuring sufficient MREL and subordinated liabilities;
- Continue addressing cost inefficiencies and strengthening structural efficiency to ensure strong profitability in the longer term;
- Make sure that credit and interest rate risk management practices adequately reflect the changes in the risk environment, given the end of the prolonged low interest rate period.

In light of financial markets remaining vulnerable to corrections, the FMA recommends to the non-banking sector to take the following actions:

- Insurance companies should focus on sustaining a reasonable level of profitability and solvency in order to weather financial market risks in the long term; furthermore, insurance companies are expected to consider new developments and supervisory expectations in terms of conduct and product regulation;
- Pension schemes should ensure their long-term viability and should therefore increase the equalisation reserve ("Wertschwankungsreserve") in a first step in order to protect their coverage ratio;
- Investment funds should continue further building up liquidity buffers to be able to fulfil clients redemption needs in market downturns. Furthermore, they should also continuously address greenwashing risks.

In light of the systemic risks in the Liechtenstein financial sector, the FMA recommends to relevant authorities to take the following actions:

- Continue the monitoring of vulnerabilities in the real estate sector and assess the effectiveness and efficiency of the adapted borrower-based measures in combination with the existing capital-based measures;
- Promote systemic risk identification and adapt the risk monitoring framework to new risks emerging in the financial system;
- Further improve stress test scenarios and develop comprehensive liquidity stress tests;
- Keep up the efforts in banking resolution by further improving resolution plans and resolution strategies;
- Maintain the adherence to international and European standards in the ongoing regulatory work.

# MACRO-FINANCIAL ENVIRONMENT

## INTERNATIONAL DEVELOPMENTS

**The economic outlook has worsened over the past year on the back of high inflation and a strong rise in interest rates.** In the euro area, GDP growth almost came to a standstill in the first half of the year, with near zero growth rates amounting to 0.1% (q-o-q) in both the first and the second quarter. In a similar vein, Switzerland recorded a stagnation in the second quarter, following relatively weak growth (0.3%) in the first quarter. As an exception, growth in the United States remained solid (Figure 2), with GDP expanding by 0.5% in both the first and the second quarter of 2023. Overall, the global economy has lost steam over the course of the year in light of tightening monetary policy around the world. In its latest projections, the International Monetary Fund (IMF) expects global growth in 2023 amounting to 3.0%, down from 3.5% in 2022. At the global level, the manufacturing sector is more affected by interest rate rises than the services sector. Against this background, Germany is particularly strongly affected by the downturn, as the industrial sector plays a more important role than in other countries.

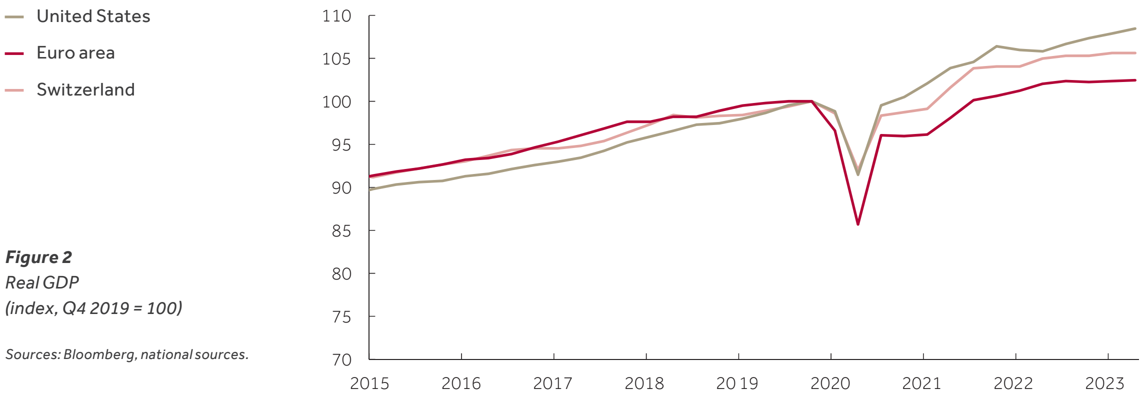



***Figure 2***
*Real GDP*
*(index, Q4 2019 = 100)*

*Sources: Bloomberg, national sources.*

**Global trade has remained subdued.** Global merchandise import growth has remained in negative territory throughout the first half of the year on the back of a very weak manufacturing sector, with global trade momentum remaining slightly negative in mid-2023 (Figure 3). Correspondingly, purchasing manager indices (PMI) in the manufacturing sector remained below the threshold of 50 in recent months, signalling negative growth in the industrial sector.

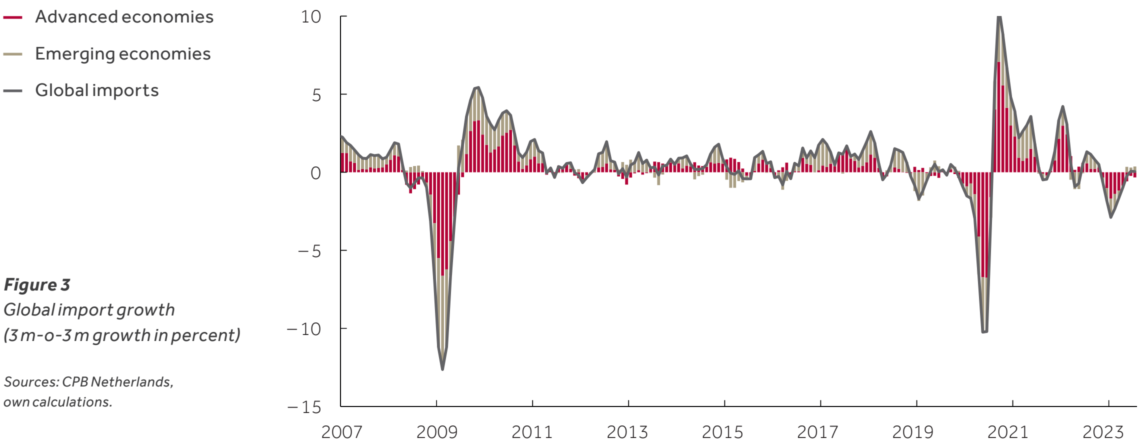



***Figure 3***
*Global import growth (3 m-o-3 m growth in percent)*

*Sources: CPB Netherlands, own calculations.*

**Notwithstanding the recent economic slowdown, labour markets have remained tight.** Following skyrocketing unemployment rates at the start of the COVID-19 pandemic, labour markets have recovered strongly. While business activity has diminished significantly in recent quarters, particularly in Europe, labour markets are characterised by skills shortage and adverse demographic developments. Unemployment rates currently fluctuate around their lowest values since the global financial crisis (Figure 4). Similarly, unemployment rates remained at very low levels in Switzerland and Liechtenstein. Tight labour markets further add to the risk of wage-price spirals, especially in an environment of high and persistent inflation.

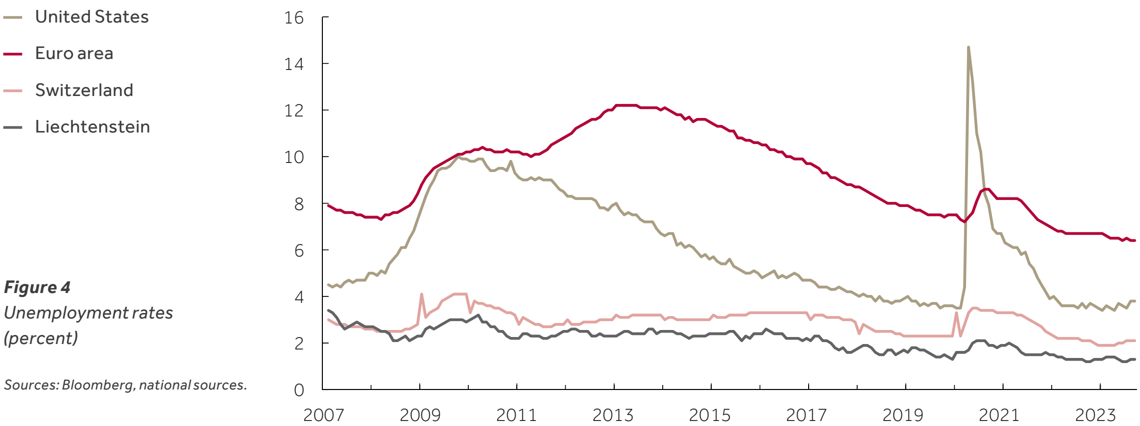



***Figure 4***
*Unemployment rates (percent)*

*Sources: Bloomberg, national sources.*

**Fiscal policy has remained expansionary, with public debt levels staying at very high levels.** According to the IMF, the average budget deficit in advanced economies is expected to amount to –5.2% of GDP in 2023, with the upward trend in public debt levels expected to continue in the next years. In light of high inflation pressures, the sustained expansionary fiscal policy stance somewhat counteracts the substantial efforts by central banks around the world to bring down inflation. Furthermore, on the back of rapidly rising interest rates, cost of interest payments will rise significantly for highly indebted countries going forward.

**While headline inflation has diminished in the past year, price pressures remain high.** On the back of negative base effects, particularly from commodity and energy prices, headline inflation rates have declined significantly in the course of the year. Annual inflation in September amounted to 3.7% in the United States and 4.3% in the euro area, a significant drop from their peaks in the second half of 2022. Nevertheless, underlying price pressures remain high. In particular, core inflation rates have remained at very high levels, significantly above the respective inflation targets in the United States and the euro area (Figure 5). In Switzerland, also thanks to a continuously appreciating Swiss franc, both headline (1.7% in September) and core inflation (1.3%) have returned to a level consistent with the SNB definition of price stability between 0% and 2%.

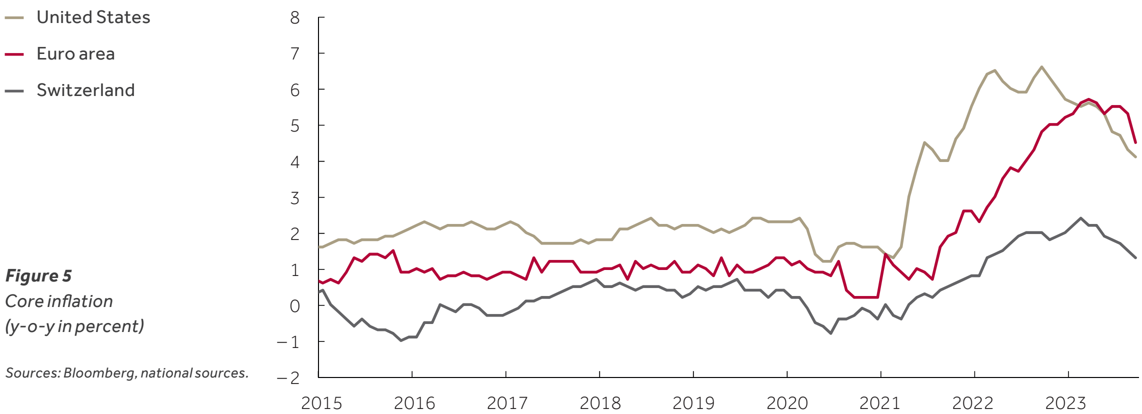



***Figure 5***
*Core inflation*
*(y-o-y in percent)*

*Sources: Bloomberg, national sources.*

BOX 1

## What we know about Liechtenstein's international investment position (IIP) – and what we do not (yet) know

**A country's external sector assessment is crucial from a stability perspective, as it is an important indicator for the overall health and resilience of the economy.** The external sector refers to a country's interactions with the rest of the world in terms of trade, finance, and investment. It includes the balance of payments (BOP, i.e. all transactions between residents and non-residents, including foreign trade), and the international investment position (the stock of foreign assets and liabilities). A persistent trade deficit (i.e. the country's imports exceed its exports) or a current account deficit (which additionally considers net income from investments and net transfers) may indicate that a country is living beyond its means, leading to a buildup of external debt and making the country vulnerable to external shocks and economic crises. Against this background, a country's external sector assessment is crucial for monitoring its economic stability and identifying potential vulnerabilities. Governments, policy-makers, and international financial institutions use this analysis to design appropriate policy measures and interventions to maintain a stable and resilient economy.

**Data availability on Liechtenstein's external sector is limited.** The SNB's numbers on the Swiss BOP and IIP statistics include Liechtenstein, as the country has been part of its currency area since 1924. With some exceptions, data on Liechtenstein's BOP is therefore not officially available, as Liechtenstein, due to its customs union with Switzerland, currently does not track its cross-border flows of investment and financial assets.

**While more detailed information on Liechtenstein's external sector will become available in the next few years, the data presented in this box is based on publicly available data on the IIP.** Liechtenstein is covered in the database "The External Wealth of Nations", which is the most comprehensive data collection of the external wealth of countries (Lane and Milesi-Ferretti, 2018). It is based on various data sources and covers more than 200 countries. The latest edition (including data until 2021) of this database includes approximate figures for Liechtenstein's external wealth (i.e. gross assets and liabilities), compiled from a range of national agencies and international organisations such as the International Monetary Fund (IMF) and the World Bank.[1] To ensure data accuracy, we cross-checked the information for Liechtenstein using the Coordinated Direct Investment Survey (CDIS) provided by the IMF and various national sources. For Liechtenstein, several important findings stand out.

**First, the pattern of Liechtenstein's gross assets and liabilities resembles that of other industrial and OECD countries.** Figure B1.1 shows (gross) total assets and total liabilities relative to GDP for a sample of countries. In terms of magnitude, Liechtenstein has relatively large gross external assets (approx. 12 times its GDP), while it clearly falls short of the scale typically associated with small offshore financial centres such as the British Virgin Islands (1,232 times its GDP) or Cayman Islands (972 times its GDP). Those countries are characterised by a disproportionally large financial sector, implying that they manage significant volumes of foreign wealth, leading to large gross amounts of assets and liabilities relative to their GDP. Instead, Liechtenstein's economy is characterised by a strong industrial and manufacturing sector, and its external position

1 *Liechtenstein is included in the database as the country appears as a counterpart in the statistics of most of its trading partners, allowing for the tracking of its investments (and other parts of the BOP and IIP) in other countries and vice versa. Still, the data on Liechtenstein has to be treated with caution, as mirror data may be incomplete and Switzerland – probably the most important trading partner of Liechtenstein – is missing, because Swiss counterparts classify transactions between Switzerland and Liechtenstein as domestic.*

BOX 1

is therefore more akin to other OECD countries with asset surpluses (see Figure B1.2), such as Switzerland (8 times its GDP), the Netherlands (12 times its GDP), or Norway (6 times its GDP). It is important to acknowledge that the data is incomplete in some dimensions to calculate a comprehensive net international investment position (net IIP) for Liechtenstein, e.g. because gross assets and liabilities in "other investment" are likely to be underestimated in the data base. In particular, the Liechtenstein banking sector is strongly interconnected with Switzerland, and exposures between Liechtenstein and Switzerland are not captured in the data.

*Figure B1.1*
*Gross IIP assets and liabilities (x-axis: liabilities; y-axis: assets; in multiples of GDP)*

*Sources: Lane and Milesi-Ferretti (2022), own calculations.*

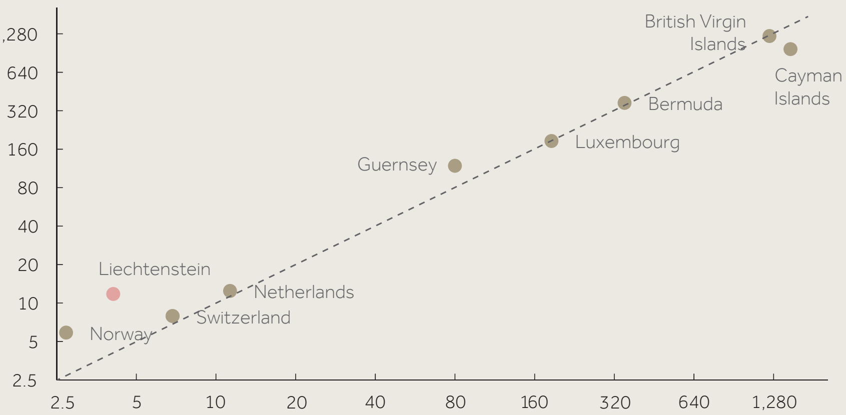
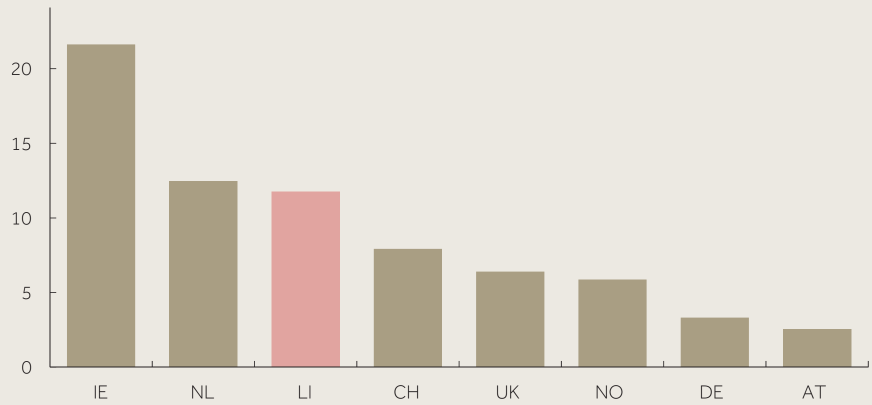



*Figure B1.2*
*Gross IIP assets (multiples of GDP)*

*Sources: Lane and Milesi-Ferretti (2022), own calculations.*




**Second, foreign direct investments (FDI) play a particularly important role for Liechtenstein's strong external position.** Upon closer analysis of the data, Liechtenstein's assets and liabilities can be classified into three main categories: (1) Debt, (2) Foreign Direct Investment (FDI) and (3) Portfolio equity.[2] Figure B1.3 provides a breakdown of Liechtenstein's total assets across these three categories. According to the Lane and Milesi-Ferretti database, approximately 50 % of all assets held abroad by Liechtenstein citizens, government, and companies consist of FDI. While internal estimations based on non-public information confirm the important role of FDI, higher estimates for both other investment and

*2 The definitions broadly follow the BPM6. For the exact definition see Lane and Milesi-Ferretti (2018).*

BOX 1

portfolio investment assets lead to a somewhat lower share of FDI in total gross assets. Still, the magnitude of FDI assets is confirmed, amounting to around 7 times the GDP, thus verifying the importance of FDI in Liechtenstein's external assets. This finding is consistent with the employment structure of the major industrial companies in Liechtenstein. According to the Liechtenstein Chamber of Commerce and Industry (LIHK), their member companies employed 10,630 people in Liechtenstein at the end of 2022 and 52,927 people in foreign subsidiaries across 69 countries.[3] Inward FDI is significantly lower, although the numbers in the database at hand are, once again, likely to underestimate inward FDI for several reasons (e.g. by not considering Switzerland). Nevertheless, internal estimates based on additional data sources confirm the strong role of outward FDI in Liechtenstein's gross external assets, and also show that inward FDI is significantly lower.

**Third, Liechtenstein's outward FDI destinations resemble the patterns of other peer countries, such as Germany, Austria or the UK.** Given the strategic nature of FDI, it warrants closer examination. The IMF's Coordinated Direct Investment Survey (CDIS) database provides FDI assets and liabilities data for participating countries, including their financial exchanges with Liechtenstein. This counterpart data sheds light on the external connections of Liechtenstein. By comparing the top four FDI destinations of Liechtenstein, we gain valuable insights about Liechtenstein's international interdependencies. It is important to note that Switzerland, one of Liechtenstein's key partners in various aspects, is once again not included in this analysis, resulting in an overestimation of the calculated shares. Figure B1.4 shows the shares of Liechtenstein's top four FDI destinations and compares them to the shares of other OECD members, such as Switzerland, Germany, Austria, and

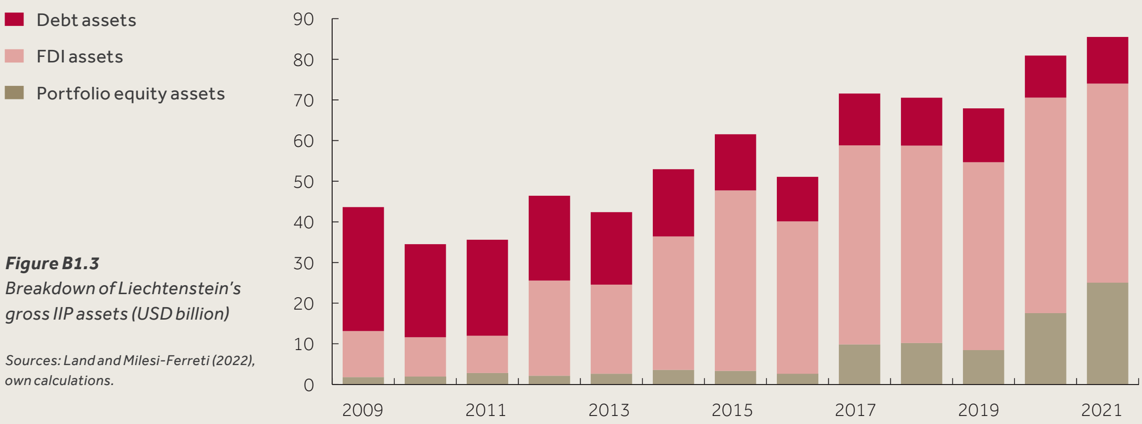



***Figure B1.3***
*Breakdown of Liechtenstein's gross IIP assets (USD billion)*

*Sources: Land and Milesi-Ferreti (2022), own calculations.*

the United Kingdom. Investment hubs like the Netherlands and Luxembourg typically account for a large share of FDIs, as reported by Di Nino (2018) and Eurostat (2022). Liechtenstein's FDI to Germany are broadly in line with the other German speaking countries. In the case of Singapore, the reference countries exhibit lower exposures, but the substantial share of Liechtenstein is not surprising. It can be attributed to the presence of subsidiaries and branches of Liechtenstein-based financial intermediaries in Singapore, leading to significant investments in foreign stocks. Moreover, Singapore ranks among the top ten recipients of FDI globally, as reported by Sánchez-Muñoz et al. (2021).

*3 Liechtensteinische Industrie- und Handelskammer (2023). Jahresbericht 2022, https://www.lihk.li/wp-content/uploads/Jahresbericht_LIHK_2022_Web.pdf.*

BOX 1

**While this simple analysis shows that Liechtenstein's IIP is comparable in many aspects to other – much larger – peer countries, more work is needed to fully understand Liechtenstein's external position and its interdependencies across countries and sectors.** Liechtenstein's cross-border stocks of investments and financial assets can be summarised as "surprisingly unremarkable" given the small size of its economy and the strong role of the financial sector. It clearly does not show similar patterns associated with small offshore financial centres and is more comparable to countries like the UK, Switzerland, the Netherlands or Singapore. To fully understand the pattern of Liechtenstein's cross-border exposures and interactions, further analysis is needed. Some additional data on Liechtenstein's external sector is already available, mainly based on Swiss customs data (trade in goods to / from the rest of the world, excluding Switzerland) and data by the SNB's BOP survey (not public) from Liechtenstein respondents.

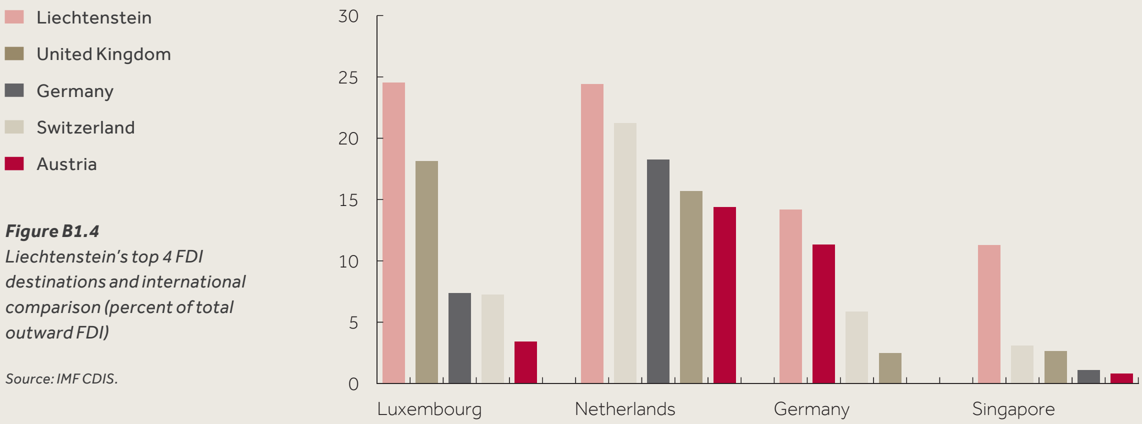



***Figure B1.4***
*Liechtenstein's top 4 FDI destinations and international comparison (percent of total outward FDI)*

*Source: IMF CDIS.*

**Liechtenstein authorities have recently intensified their efforts on improving data availability with regard to the country's external sector, also in light of the planned accession to IMF.** International rating agencies and other important stakeholders have repeatedly emphasised the importance of reliable data on Liechtenstein's external sector in recent years. Liechtenstein authorities have discussed potential approaches to estimate parts of Liechtenstein's BOP statistics with the SNB for several years, and the efforts to compile external sector statistics have recently intensified in the context of the planned accession of Liechtenstein to the IMF. More precisely, in the course of accession negotiations, IMF staff requires certain indicators on cross-border transactions. Trade openness and the variability of capital flows are important determinants of the so-called country-specific IMF quota. Against this background, Liechtenstein authorities have recently estimated and compiled BOP (and IIP) statistics for Liechtenstein covering the last few years. As those estimations are based on non-public data sources and do not fully comply with international standards, the results / figures are not yet publicly available. In line with the IMF's Articles of Agreement, Liechtenstein is however fully committed to build up a fully-fledged BOP statistics according to international standards in collaboration with the SNB and the IMF, as soon as the membership process is finalised.

***References***

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*Di Nino, V. (2019). Euro area foreign direct investment since 2018: the role of special purpose entities. Economic Bulletin Boxes, 9.*

*Eurostat. (2022). Foreign direct investment-stocks. Statistics Explained. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Foreign_direct_investment_-_stocks&oldid=574160#FDI_positions_in_the_EU_Member_States*

*Sánchez-Muñoz, C., Matei, S., Howell, K. (2021). The World's Top Recipients of Foreign Direct Investment. IMF Blog. https://www.imf.org/en/Blogs/Articles/2021/12/16/the-worlds-top-recipients-of-foreign-direct-investment*

## DOMESTIC ECONOMY

**After a contraction phase beginning in mid-2021 and a temporary upswing around the turn of the year 2022 / 2023, the business cycle outlook for Liechtenstein's economy has recently worsened again.** Liechtenstein's economy benefited from the international economic recovery from the COVID-19 recession of the first half of 2020 and profited from catch-up effects, especially in exports of investment and intermediate goods, which are highly important for the domestic economy. Liechtenstein's estimated quarterly real GDP (seasonally / calendar adjusted, Figure 6) reached the pre-crisis level very early in international comparison, already in the first quarter of 2021. However, these catch-up effects gradually receded, as the international economy normalised its pace.

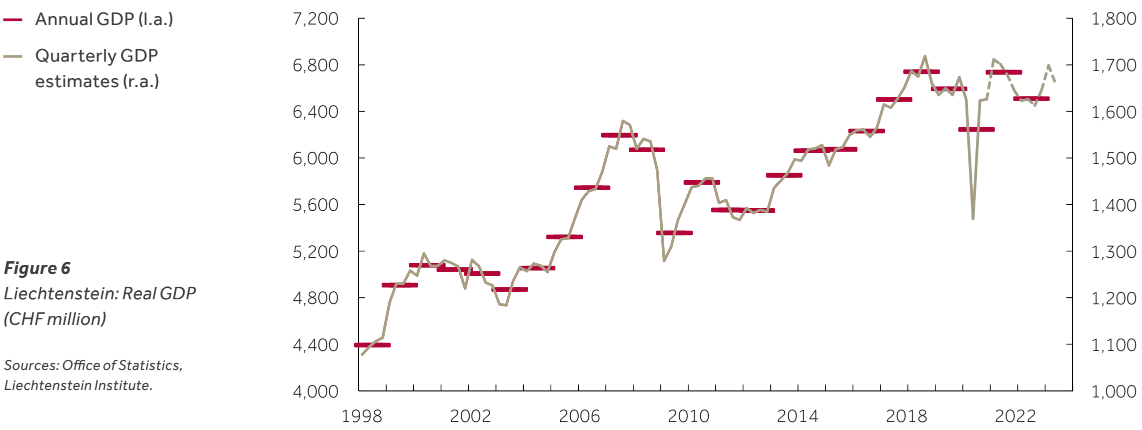


*Figure 6*
*Liechtenstein: Real GDP (CHF million)*

*Sources: Office of Statistics, Liechtenstein Institute.*

**Liechtenstein's strong recovery after the COVID-19 recession was supported by targeted policy measures, although the fiscal response remained small by international standards.** In international comparison, the Liechtenstein government spent relatively little on support measures for the economy, with total uptakes of policy measures being limited to around 2.2 % of GDP throughout the entire pandemic (see Box 2). The main pillar of the economic crisis response in Liechtenstein was the short-time work program. These measures were primarily aimed at preserving production capacity during shut-down periods, and effectively stabilised employment and prevented bankruptcies.

**Towards the turn of the year 2021 / 2022, ongoing supply chain issues exacerbated the global slow-down.** The start of the Russian war against Ukraine in February 2022 represented a further obstacle for the world economy and thus also for Liechtenstein's export industry and its economy as a whole. These factors led to a gradual decline of Liechtenstein's GDP until the third quarter of 2022. The international economic sentiment gradually decoupled from the Russian invasion over the course of 2022. At the same time, however, global monetary tightening has gained traction. The recent economic slowdown of the world economy, especially in Liechtenstein's important export destinations (such as Germany or China),

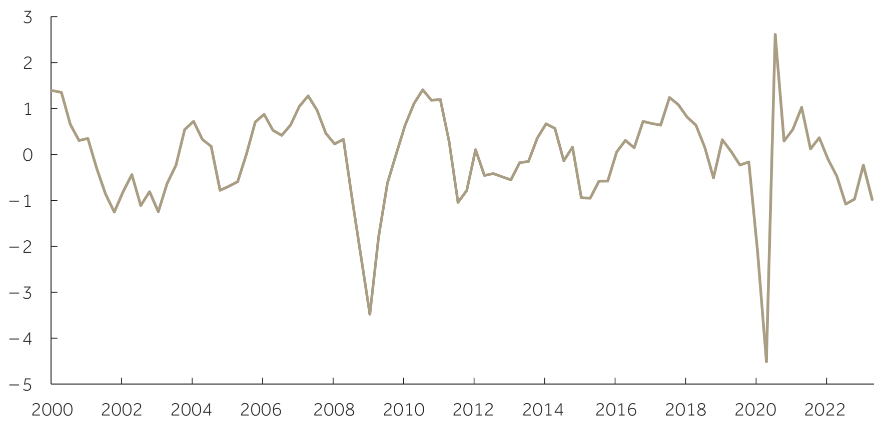


***Figure 7***
*Cyclical indicator "KonSens" (index)*

*Source: Liechtenstein Institute.*

interrupted the swift but short real GDP upswing. The strong GDP growth in the fourth quarter of 2022 and the first quarter of 2023 was followed by a renewed decrease in the second quarter of 2023.

**Recent cyclical indicators feature heterogeneous business cycle signals with strong employment data, robust business sentiment, but a decrease in goods exports and imports.** The KonSens (Figure 7), a quarterly index that summarises 16 data series, which are indicative for domestic business cycle developments, has remained negative in the second quarter of 2023, indicating economic growth below historical average. Yet, Liechtenstein's economy has remained relatively resilient in light of the global challenges. While employment figures showed a strong development and the business sentiment survey data turned out robust in the second quarter, goods exports and imports featured significant decreases compared with the first quarter after the short recovery period throughout 2022 and early 2023.

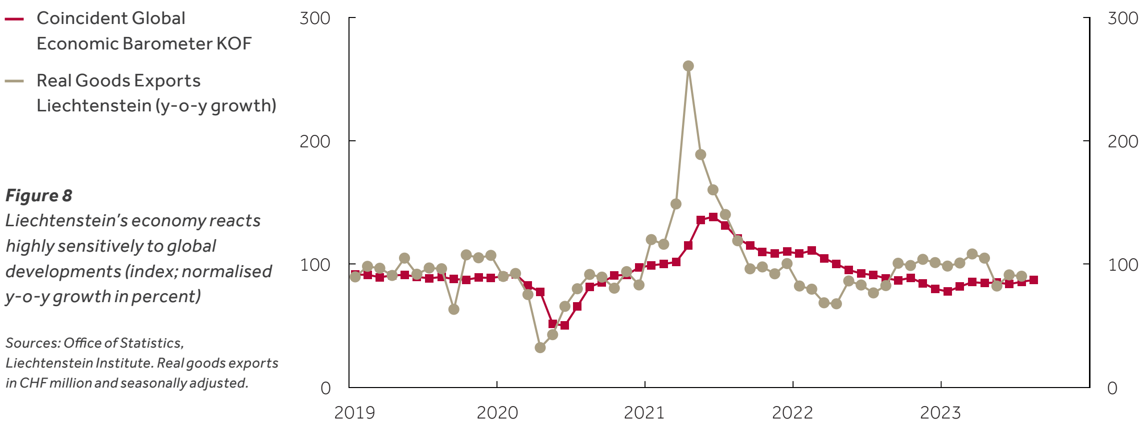


***Figure 8***
*Liechtenstein's economy reacts highly sensitively to global developments (index; normalised y-o-y growth in percent)*

*Sources: Office of Statistics, Liechtenstein Institute. Real goods exports in CHF million and seasonally adjusted.*

**Liechtenstein generally exhibits a very sensitive and early response to the global business cycle.** For Liechtenstein, goods exports are the most important indicator for GDP development, while business activity in financial services is also relevant. Against this background, Liechtenstein's economy is very dependent on global economic developments, because domestic demand can only provide a small buffer against international economic shocks in comparison to larger economies. Figure 8 shows Liechtenstein's real goods exports as normalised growth rates against the same month of the previous year. The export figures are thus directly comparable with the metric of the Coincident Global Economic Barometer (KOF), an index of global economic sentiment consisting of over 1,000 data series. When comparing the two data series, the volatility of the Liechtenstein economy becomes evident. Liechtenstein's goods exports and hence Liechtenstein's GDP react very sensitively to changes in global economic sentiment. In addition, it appears that Liechtenstein's exports are highly responsive to global developments, as can be seen from the earlier turning points in spring 2020, spring 2021 or early summer 2022.

**While Liechtenstein exhibits a high amplitude of business cycle volatility, employment and business activity remained remarkably resilient over the past decades.** Thanks to a highly competitive economy, total employment (42,514 employees at end-2022) exceeds the number of inhabitants (39,677) in Liechtenstein. More than half of the employees are inward-commuters, mostly living in Switzerland or Austria. Liechtenstein's labour market is highly resilient, with unemployment rates and employment growth hardly related to the business cycle. This general observation was again confirmed in the COVID-19-related recession in 2020. Furthermore, other structural characteristics of Liechtenstein render the real economy resilient vis-à-vis macroeconomic shocks. First, Liechtenstein's industrial sector is remarkably innovative, also in light of extremely high private spending on research and development, and comprises highly successful niche players in global markets. Against the background of the small domestic market, companies are used to compete against global market leaders. The corporate sector has to remain flexible to adjust to new structural circumstances and navigate Swiss franc appreciations. Second, high equity ratios among non-financial corporations (NFC), partly due to respective tax incentives, as well as zero debt (and high financial reserves) in the public sector contribute to a high level of resilience of the economy. Third, the highly specialised economy benefits from its strong international integration, including full access to the European Single Market through Liechtenstein's membership in the European Economic Area (EEA), as well as to Switzerland, via a customs union, established in 1923. The currency treaty 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 income are very high, with Liechtenstein's Gross National Income (GNI) per capita being among the highest in the world. High income and wealth increase the resilience of private households and the economy, as temporary shocks can be better cushioned. Strong capital and liquidity indicators in the banking sector also support the economy's stability, as unexpected adverse developments can be absorbed by the financial sector without large negative implications for credit supply or financial stability.

**While adverse financial market developments in 2022 led to the first budget deficit in a decade, public finances in Liechtenstein remain remarkably sound.** Liechtenstein's public finances are characterised by virtually zero debt and large financial reserves. Sound public finances and the preservation of high financial reserves, to cushion for unforeseen shocks to the economy and to stay independent from international debt markets, are uncontroversial among all political parties in parliament. Following an ambitious structural reform package after the global financial crisis, Liechtenstein has reported budget surpluses since 2014, with budget balances remaining significantly positive in the pandemic-related years of 2020 and 2021. In contrast, due to the adverse investment performance in light of financial market corrections in 2022, the budget balance turned negative in 2022. While numbers for the general government level are not yet available for 2022, the central government reported a budget deficit of CHF 203 million (i.e. about 3% of GDP). The primary balance – i.e. in the case of Liechtenstein without the losses on financial investments and interest income from reserves – has remained significantly positive, reporting a surplus of CHF 112 million (i.e. about 1.7% of GDP). Notwithstanding the negative performance in 2022, financial reserves of the public sector remain high. Net assets of the public sector amounted to CHF 9.8 billion (i.e. about 149% of GDP) at the end of 2021, of which CHF 3.6 billion were held at the state level, CHF 4.1 billion by social insurances and the remaining CHF 2.1 billion at the community level. Against this background, public finances remain well-equipped for future challenges.

BOX 2

## Economic policy response to the COVID-19 pandemic

**The pandemic caused a particularly severe, swift, and globally synchronised recession that heavily affected the Liechtenstein economy through various channels.** Widespread lockdowns and disruptions in supply chains gave rise to shortfalls in production (Bonadio et al., 2021). At the same time, lockdowns resulted in income shortfalls and limited consumption opportunities, dampening aggregate demand (Eichenbaum, Rebelo, and Trabandt, 2021). Moreover, due to its unprecedented nature, the pandemic increased uncertainty, which potentially induced consumers and firms to postpone spending and investment (Breitenlechner et al., 2023).

**Driven by the dramatic economic downturn caused by the COVID-19 pandemic, the Liechtenstein government set up a range of measures to preserve the production capacity of the domestic economy.** Within one week after implementing regulatory shutdown measures, the Liechtenstein government launched support measures comparable to other German speaking countries. These measures comprised short-time work compensation and other direct grants to support firms to cover fixed costs, public guarantees for targeted bank loans, and tax deferrals. While other countries extended the set of economic measures to stimulate demand during the course of the pandemic, the Liechtenstein government limited the policy response to supply side-oriented measures.

**The main pillar of the economic crisis response in Liechtenstein was the short-time work program.** Figure B2.1 shows granted volumes of support measures for which firms were eligible to apply for until the second quarter of 2022. The stacked bars refer to the uptake per measure and quarter, while the black line represents the cumulated sum of the total uptake. In line with the chronology of the pandemic, the bulk of the uptake took place in the second quarter of 2020. Amounting to almost 72 million CHF, a large share of the total economic response measures (CHF 156 million) was spent in the form of short-time work compensation. Beginning with the fourth quarter of 2020, the Liechtenstein government extended the set of measures to support for economic hardship cases in sectors that were persistently affected by the pandemic (food service industry, catering, travel and tourism, cultural sector), making up the majority of the uptake in the later phase of the pandemic.

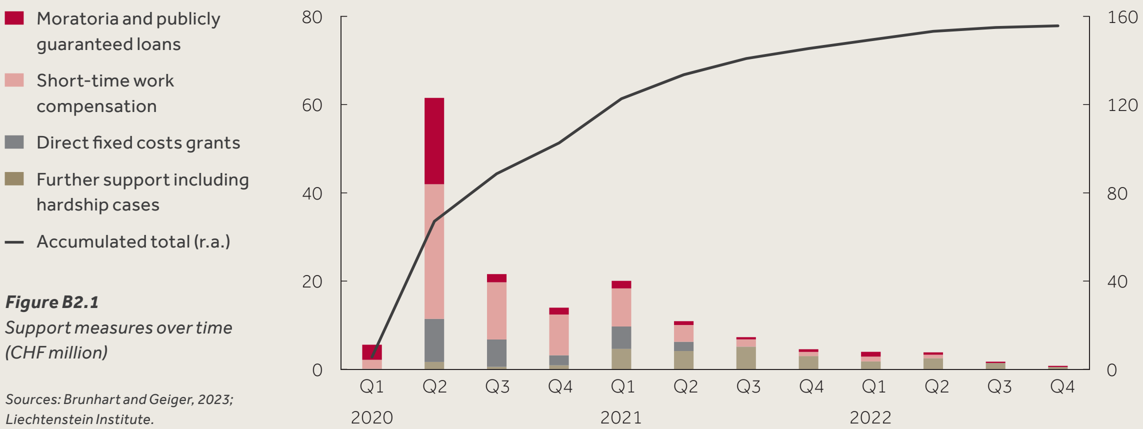


***Figure B2.1***
*Support measures over time (CHF million)*

*Sources: Brunhart and Geiger, 2023; Liechtenstein Institute.*

BOX 2

**The uptake of the measures is tightly linked to Liechtenstein's business cycle dynamics in the course of the COVID-19 recession.** Figure B2.2 shows an estimate of quarterly GDP (real, seasonally adjusted) indexed to 2019Q4 together with employment and the support uptake. While the Liechtenstein economy experienced a massive contraction during the first two quarters of 2020, a swift recovery beginning in the third quarter can be observed. Liechtenstein's real GDP reached pre-crisis levels already in the first quarter of 2021, which is very early in international comparison. Employment remained very stable throughout the recession, which is remarkable given the extent of the downturn even when considering the fact that the business cycle sensitivity of employment is traditionally low or even absent in Liechtenstein (Brunhart and Lehmann, 2021). Stable employment and absent firm closures suggest that the production capacity of the Liechtenstein economy was preserved in the recession so that the recovery could unfold at full pace.

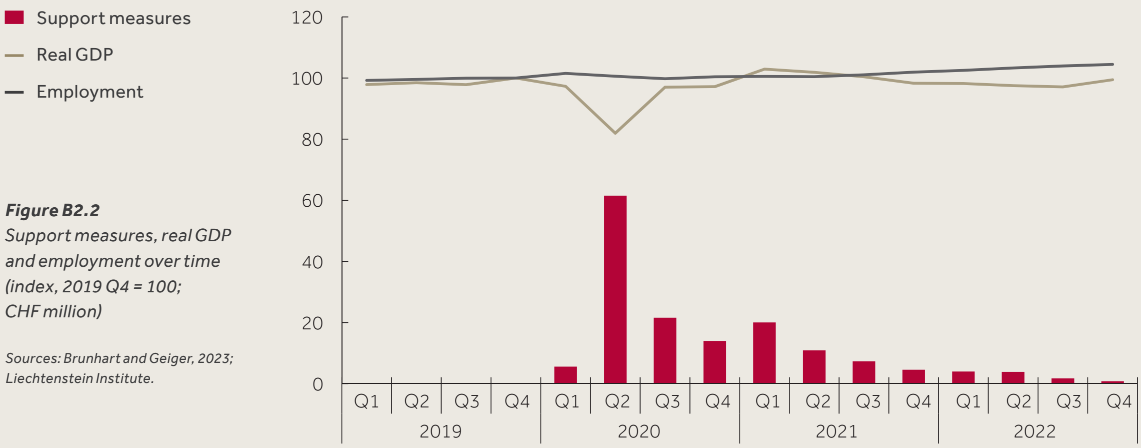


***Figure B2.2***
*Support measures, real GDP and employment over time (index, 2019 Q4 = 100; CHF million)*

*Sources: Brunhart and Geiger, 2023; Liechtenstein Institute.*

**Real GDP contracted by –5.3 % in 2020 and thus to a substantially lower extent compared to the global financial crisis (–0.6 % in 2008 and –11.4 % in 2009).** Against the background of the typically high business cycle volatility in Liechtenstein, the economic decline during the COVID-19 recession turned out to be moderate. In particular, this can be explained by the sectoral composition of Liechtenstein's economy, which heavily depends on the industrial and financial services sectors. Both sectors remained relatively stable in the recent crisis. By contrast, sectors that primarily serve domestic demand – i.e. sectors that are less important in a small state like Liechtenstein – were directly and more persistently affected by the pandemic (Brunhart, Geiger and Ritter, 2022). However, the supporting measures that were tightly linked to the business cycle dynamics contributed to preserving the production capacity and to the swift recovery.

BOX 2

***Table B2.1***
*Uptake of economic support measures in small European economies (CHF million)*

*Explanations: The data for economic aid was provided by the European Systemic Risk Board (ESRB) upon request. Some (minor) economic aid measures were not included in the ESRB database and the time coverage is up to the second quarter of 2022. For the calculation of the percentages / ratios, the respective national nominal GDP of the year 2019 is used in the denominator (UN database).*

*Source: Brunhart and Geiger, 2023; Liechtenstein Institute.*

| | Support Measures (in % of GDP) | | | | |
|---|---|---|---|---|---|
| | Moratoria and tax deferrals | Public loans and guarantees | Direct grants | Tax reliefs | Sum of uptake |
| Estonia | 0.0% | 2.0% | 1.9% | 0.1% | 3.9% |
| Iceland | 0.4% | 1.0% | 2.2% | 1.0% | 4.5% |
| Liechtenstein | 0.1% | 0.4% | 1.8% | 0.0% | 2.2% |
| Luxembourg | 0.8% | 0.6% | 1.8% | 0.0% | 3.1% |
| Latvia | 0.8% | 0.7% | 3.9% | 0.0% | 5.4% |
| Malta | 1.0% | 3.4% | 0.0% | 0.0% | 4.4% |
| Slovakia | 0.6% | 1.1% | 3.1% | 0.0% | 4.7% |

**By international comparison, the Liechtenstein government spent relatively little on support measures for the economy.** Larger countries such as Germany and Austria spent substantially higher amounts – calculated as a ratio of GDP – on support measures. This outcome is unsurprising, considering the sectoral exposure, substantial share of the domestic economy, and the implementation of demand-side measures. However, also relative to other very small open economies, the volume of the fiscal response was limited in Liechtenstein, as shown in Table B2.1.

**Support measures in Liechtenstein were overall timely, targeted, and temporary.** Given the sequence and depth of the recession, it appears that the support measures were proportional and warranted. Moreover, as these measures were primarily geared towards preserving the production capacity throughout shutdown periods, the scope of the measures was limited while effective in stabilising employment and preventing the closure of firms. Furthermore, the prompt disbursement of payouts and loans under the various measures reflects a high level of efficiency (Brunhart and Geiger, 2020; 2023). The rather low quantitative value of the (supply side) support measures in Liechtenstein can also be justified by the low GDP share of domestic demand. At the same time, demand side measures abroad and the swift international recovery served as important stimulus for Liechtenstein's export-oriented economy.

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## FINANCIAL MARKET DEVELOPMENTS

**Central banks worldwide have continued to implement monetary policy tightening measures in response to persistent inflationary pressures.** Strong inflationary pressures prompted central banks globally to aggressively raise interest rates (Figure 9). This surge in interest rates comes after an extended period of historically low, and even negative, interest rates following the global financial crisis. Notably, the pace and synchronicity of interest rate hikes have been more rapid than the period preceding the global financial crisis. Since March 2022, the Federal Reserve, the US central bank, has elevated interest rates from virtually zero to a range of 5.25% to 5.5%. Similarly, the Bank of England has pursued a comparable path, with interest rates reaching 5.25% in recent times. In the euro area, the ECB's market-relevant deposit rate reached 4.0% by September. In contrast, Switzerland witnessed a more measured increase in interest rates, reflecting lower inflationary pressures, with the SNB policy rate standing at 1.75% at the close of September.

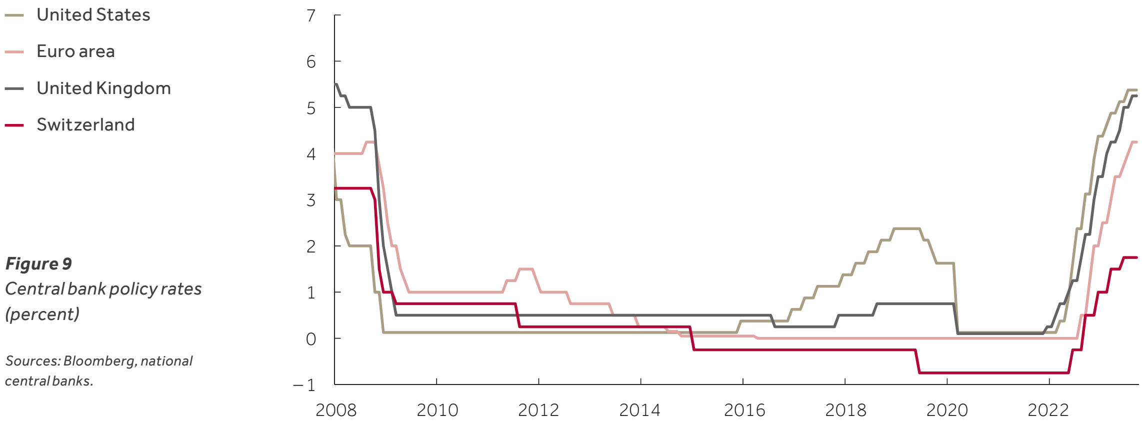


***Figure 9***
*Central bank policy rates (percent)*

*Sources: Bloomberg, national central banks.*

**Financial conditions have deteriorated across various market segments.** Consistent with the rise in interest rates, financial conditions have tightened in advanced economies, with the most pronounced impacts seen in the euro area. In this context, the tightening of financial conditions is attributed not only to the increased interest rates but also to the gradual reduction of central banks' balance sheets. This reduction is achieved by only partially reinvesting maturing bonds (Figure 10).

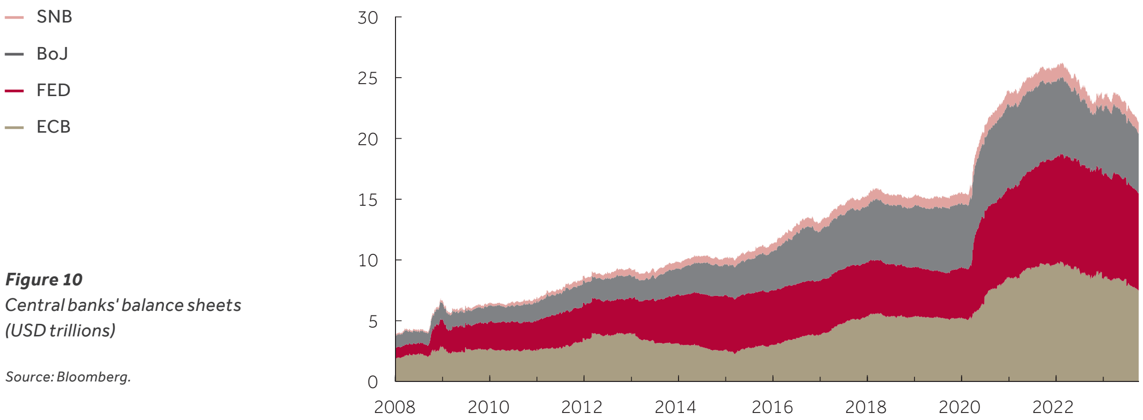


***Figure 10***
*Central banks' balance sheets (USD trillions)*

*Source: Bloomberg.*

**Financial markets are anticipating a peak in interest rates by the end of the year.** This expectation is grounded in the context of a significant decrease in headline inflation rates. Both the euro area and the United States are currently expected to reach their interest rate peaks before the year's end. While this scenario appears plausible, given that the effects of previous rate hikes have not fully played out, there remains a high degree of uncertainty regarding the future trajectory of interest rates. In particular, the speed at which potential expansionary monetary policy measures might be introduced hinges strongly on the future course of inflation. Additionally, central banks also have to take into consideration that a premature loosening of monetary policy may be associated with unintended side effects in the longer run (see Box 3).

**Long-term interest rates have stabilised in recent months, with global stock markets recovering part of their losses from the previous year.** Following the market correction in both bond and stock markets in 2022, long-term interest rates have stabilised in 2023. In most advanced economies, yield curves have inverted, mirroring market expectations of loosening monetary policy over the next few years. Stock markets have recovered since the start of the year, particularly in the United States, on the back of investors increasingly expecting a "soft landing" for the global economy. Valuations remain vulnerable to changing interest expectations or a more than expected slowdown of the economy, which would also translate to lower corporate earnings.

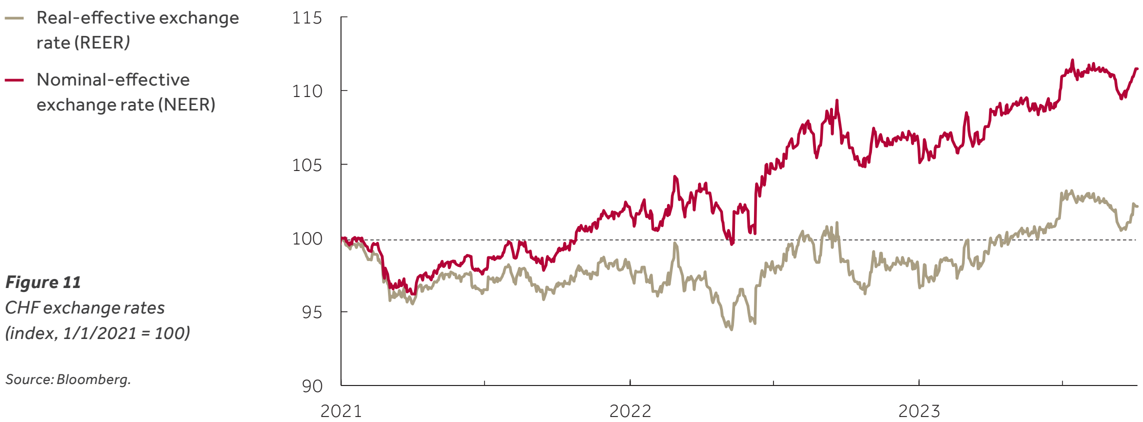


***Figure 11***
*CHF exchange rates (index, 1/1/2021 = 100)*

*Source: Bloomberg.*

**The Swiss franc (CHF) has continued its nominal appreciation, broadly in line with purchasing power theory.** In Switzerland, lower inflation rates can be traced back to the fact that energy expenditures have a lower weight in the consumer price index (CPI) basket, and the strong Swiss franc, which ensured that high inflation rates abroad were not transmitted to Switzerland through more expensive imports. Since the beginning of 2021, the Swiss franc has appreciated by approximately 11% in nominal-effective terms. As shown by the real-effective exchange rate (Figure 11), the nominal appreciation has roughly compensated the inflation differential between Switzerland and other countries, with the real exchange rate remaining broadly stable over the past two or three years.

**While the SNB's recent monetary policy decision caught market participants by surprise, the central bank remains well-prepared to maintain control over inflation.** In September, the SNB opted to retain the current interest rates at 1.75%, a move that surprised observers, evident in the Swiss franc's depreciation relative to other currencies. While a moderately weaker CHF could potentially trigger inflationary pressures due to costlier imports, the SNB possesses an array of tools to ensure price stability. Specifically, the SNB has underscored its readiness to intervene in the foreign exchange (FX) market, primarily by selling assets denominated in foreign currencies (aiming to bolster the CHF exchange rate). Employing this monetary policy instrument not only supports domestic economic growth by averting further interest rate hikes but also aligns with the SNB's objective of gradually reducing its balance sheet, thereby alleviating excess liquidity in financial markets.

BOX 3

## Financial stress, credit growth and the time structure of risk mitigation

**Recent research sheds light on the challenging trade-off faced by policymakers when addressing increased financial stress.** Although policymakers have achieved notable success in mitigating the immediate threats to economic growth arising from financial stress, certain strategies employed may result in unintended long-term consequences.[4] The heightened provision of liquidity and an accommodating monetary policy stance in response to financial stress contribute to increased credit growth, effectively reducing short-term growth risks.[5] However, these short-term benefits of rapid credit expansion come at the cost of an extended period of heightened economic growth risks. This finding is particularly relevant in the aftermath of loose monetary policy before and during the COVID-19 recession. In the current environment of rising interest rates and borrowing costs, vigilant monitoring of economic growth risks associated with credit is essential.

**Risks to economic growth can be quantified in the growth-at-risk (GaR) framework.** Originating from the pioneering efforts of the IMF[6], this framework has garnered widespread adoption within both academic and policy circles. The GaR is essentially an estimate of a worst-case scenario of future GDP growth, triggered by episodes of financial stress or rapid credit growth. To assess whether the relationship between GaR and financial stress or credit growth has changed over time, possibly due to more active policy intervention, current research takes a closer look at historical U.S. data, with the sample spanning over 130 years.

**Recent research suggests that policymakers have become increasingly concerned with managing financial stress, with its impact now predominantly limited to the short term.** Specifically, financial stress exerted a more pronounced and prolonged adverse effect on growth risks before World War II (WWII). Conversely, the post-war period has witnessed the growing significance of high credit growth. In this

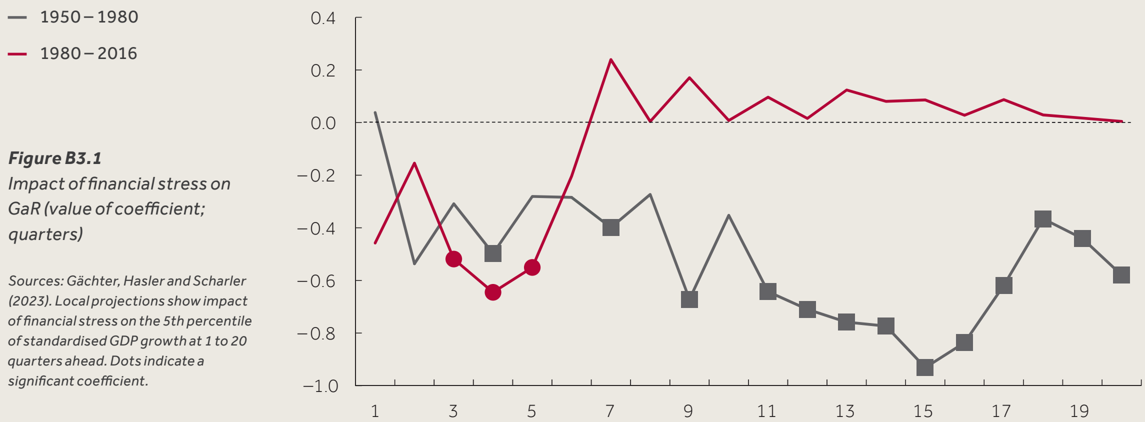


***Figure B3.1***
*Impact of financial stress on GaR (value of coefficient; quarters)*

*Sources: Gächter, Hasler and Scharler (2023). Local projections show impact of financial stress on the 5th percentile of standardised GDP growth at 1 to 20 quarters ahead. Dots indicate a significant coefficient.*

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4 *According to the literature, this phenomenon results in a "kicking the can down the road" approach, as the policy intervention is successful in mitigating the risks in the short-term, while at the same time increasing long-term risks (see, for instance, Drehmann, Borio and Tsatsaronis, 2012; Gächter, Hasler and Scharler, 2023).*

5 *Credit growth in this box is defined as the 3-year average credit-to-GDP growth rate. Hence, we only refer to credit growth when credit grows faster than the economy over a certain period.*

6 *See Adrian, Boyarchenko and Giannone (2019) for more details about the methodological approach.*

BOX 3

context, episodes of elevated credit growth are typically associated with looming downside risks, particularly in the medium and long term, as detailed in the work of Gächter, Geiger, and Hasler (2023).

**A closer examination of the post-WWII era unveils a remarkable shift in the dynamics among financial stress, credit growth, and growth-at-risk after the end of the Bretton-Woods era.** Figures B3.1 and B3.2 show the effect of increased financial stress and credit growth on downside risks to growth over the following 20 quarters (i.e. 5 years). Prior to 1980, financial stress exerts a negative influence in the short, medium, and, to some extent, the long term. However, in the post-Bretton Woods era, the adverse effect of financial stress is limited to the short term. This shorter-term negative impact may stem from more proactive policymaking and an increased emphasis on mitigating financial stress. Nevertheless, the reduction of downside risks associated with financial stress is not without consequences. In particular, heightened liquidity provision may unintentionally foster excessive credit growth, thereby amplifying long-term downside risks to economic growth (see Drehmann, Borio and Tsatsaronis, 2012). Consequently, policymakers find themselves facing a challenging trade-off, often opting for short-term gains at the expense of postponing potential issues (see Gächter, Hasler and Scharler, 2023).

**These findings are highly relevant from a policy perspective.** Although we are currently in a different policy environment, with central banks around the world tightening monetary policy to fight the sharp increase in inflation, the findings nevertheless remain highly relevant for policy-makers. In particular, the high persistence in inflationary pressures can also be seen as a result of (too) high liquidity responses in the past to fight episodes of high financial turbulences, which, in turn, led to higher credit growth. For instance, the pandemic marked the highest year-on-year change in the credit-to-GDP ratio in the United States since WWII. The current environment, in which central banks have to increase borrowing costs to dampen the business cycle and economic growth, can also be seen as a materialisation of the long-term risks of elevated credit growth in the past. Going forward, policy-makers should therefore carefully evaluate the consequences of their measures, not only in the short term, but also in the long term.

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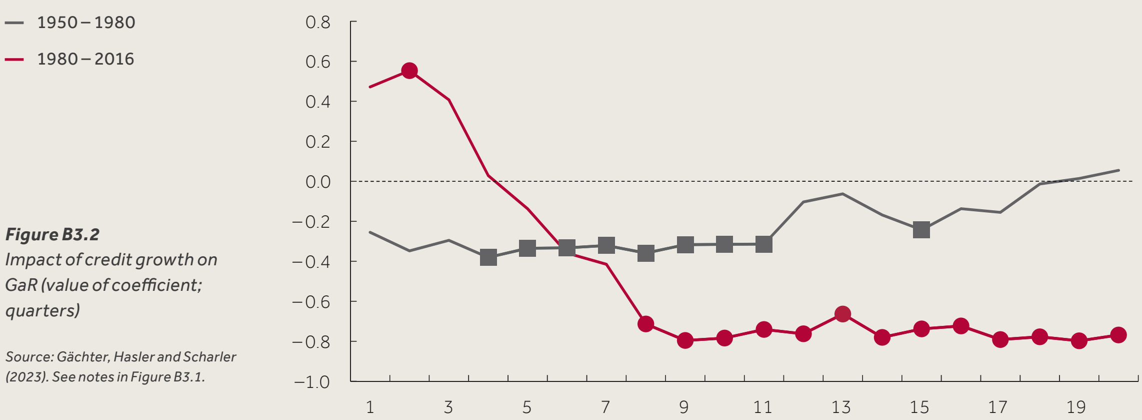



***Figure B3.2***
*Impact of credit growth on GaR (value of coefficient; quarters)*

*Source: Gächter, Hasler and Scharler (2023). See notes in Figure B3.1.*

## REAL ESTATE MARKET DEVELOPMENTS

**The current environment of high inflation and lower economic growth has led to a slowdown in real estate markets in most EEA countries.** Following the increase in interest rates starting in 2022, real estate markets have cooled down significantly in 2023. Although an orderly correction in house prices and stagnating volumes of new mortgage loans decrease the flow risks in the majority of EEA countries, the level of stock vulnerabilities remains significant, also in Liechtenstein. While mortgage growth has been decreasing or even turned negative in recent quarters on the European level, a decrease of similar magnitude cannot (yet) be observed in Liechtenstein. Although for a significant portion of domestic borrowers adhering to the bank-specific affordability requirements is already a challenge, the increased interest rates for mortgage loans is unlikely to lead to broad-based issues in terms of households' ability to pay back their loans, as banks typically calculate their affordability assessment based on an imputed interest rate of at least 4.5%. Nevertheless, credit risks are likely to increase going forward, and a slowdown of the real estate market also seems likely.

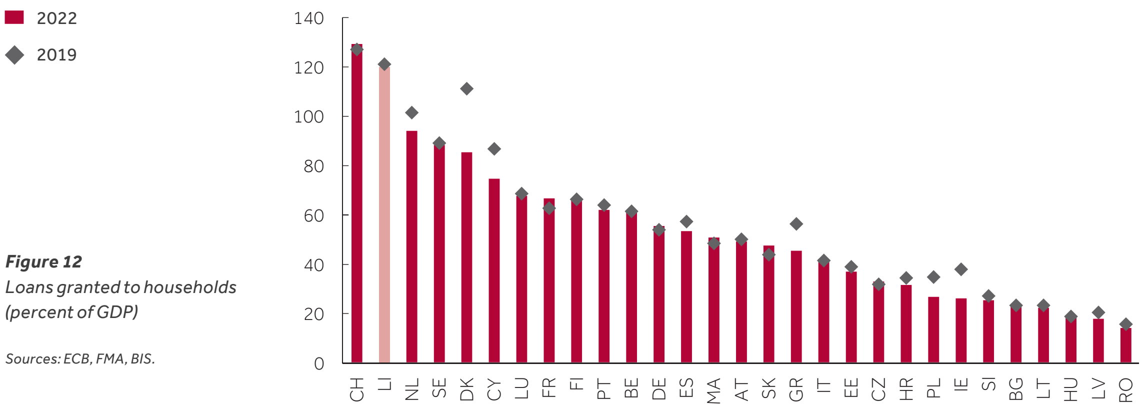



***Figure 12***
*Loans granted to households (percent of GDP)*

*Sources: ECB, FMA, BIS.*

**The key vulnerability in Liechtenstein's real estate sector remains the high household indebtedness.** The macroprudential risk analysis conducted by the FMA identifies a high vulnerability of Liechtenstein households, primarily due to their high levels of indebtedness. Household indebtedness has increased over the past 20 years and is estimated at around 119% of GDP by the end of 2022, putting Liechtenstein among the countries with the highest household indebtedness in the EEA (Figure 12). Against this background, the sector is vulnerable to unexpected macroeconomic shocks. The primary factor for the high debt levels is that in Liechtenstein a significant portion of housing loans follow an amortisation requirement only for the portion exceeding a 66% loan-to-value (LTV) ratio. This leads to a substantial part of the loans remaining on the balance sheets of banks. As indicated in the real estate report of the FMA[7], there is a substantial

7 *The report was published by the FMA in October 2021 (available in German only): "Immobilien- und Hypothekarrisiken in Liechtenstein: Risiken aus Sicht der Finanzstabilität". A summary of the main findings of the report can be found in Box 4 of the 2021 Financial Stability Report.*

proportion of households with a debt-to-income (DTI) ratio higher than 5. This implies that elevated household debt levels do not necessarily correspond to high household incomes, exacerbating the systemic risks in the sector.

**Since 2022, the FMA receives more detailed data on lending standards for loans secured by real estate property.** The new reporting framework in line with ESRB Recommendation ESRB/2016/14[8] closes existing data gaps in the area of real estate financing in Liechtenstein. Since 2022, the three O-SIIs report detailed information on loans secured by real estate property in Liechtenstein and Switzerland on a quarterly basis. These banks cover more than 90% of total mortgage lending in Liechtenstein. The reported data encompasses details on both the existing loan portfolio and new mortgage loans, including information on loan-to-value (LTV), loan-to-income (LTI), loan-service-to-income (LSTI), interest coverage ratio (ICR) etc. Additionally, this data is categorised into buy-to-let and owner-occupied loans. Less detailed data are also reported on commercial real estate (CRE) loans, in particular on non-performing loans (NPL), provisions etc. With this data collection, a build-up of real estate related vulnerabilities and the development of lending standards can be monitored, which enables a regular and adequate risk assessment by the FMA.

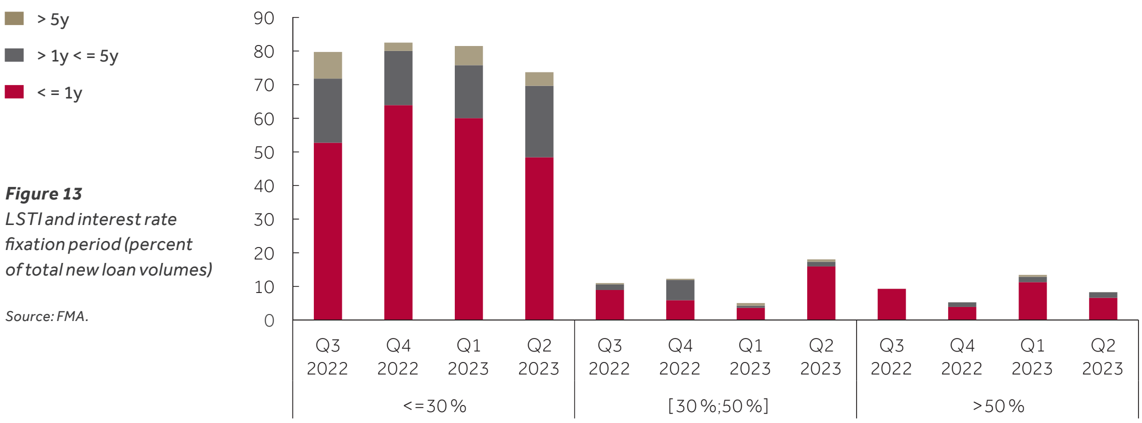



*Figure 13*
*LSTI and interest rate fixation period (percent of total new loan volumes)*

*Source: FMA.*

**With monetary policy tightening, new borrowers in Liechtenstein have shown a preference for loans with floating rates and short-term fixed rates.** Interest rates in the Swiss franc currency area are also on the rise, albeit considerably lower than those observed in other European countries, due to lower inflation rates. Rising rates are increasing borrowing costs of mortgages in Liechtenstein. While the lion's share of existing loans is on a fixed rate basis, with the effect of increasing interest rates only taking effect gradually over time, the patterns have changed for new mortgage lending. For some quarters, in light of a steep yield curve with markets expecting further interest rate rises, variable rates or short-term fixed

8 *Recommendation of 31 October 2016 on closing real estate data gaps (Recommendation ESRB/2016/14 and ESRB/2019/3).*

rates were considerably lower than fixed interest rates. This led to an increase in variable loans and short-term fixed rates at loan origination, with the share increasing to around 75 %. This pattern is expected to reverse, as longer fixations are currently available at cheaper rates than variable loans in an environment of inverted yield curves.

**In recent quarters, an increase in the proportion of loans with high LSTI ratios can be observed.** The new data reported shows that the LSTI ratio of new loans based on effective interest rates has significantly increased both in the owner-occupied and buy-to-let segment in recent quarters (Figure 13), negatively affecting affordability. The share of loans with an LSTI ratio above 30 % at loan origination increased from 20 % in Q3 2022 to 26 % in Q2 2023, an increase by 30 %. Moreover, the share of mortgages with an LSTI > 50 % and an initial fixed-interest period of less than one year increased from 9 % to 11 % between end-2022 and the first quarter 2023. The reason behind these changes could be attributed to households' anticipations regarding the future path of interest rates. While individuals with variable rate loans might find advantages in flexible rates if monetary policy is eased early in light of lower costs for these loans, such loans carry higher risk in the case of higher-than-expected (or higher for longer) interest rates.

**Several risk-mitigating factors dampen the (immediate) effects of higher interest rates on households in Liechtenstein.** There are various factors mitigating the impact of higher interest rates on households, as Liechtenstein's real estate market is characterised by certain specifics. First, the high resilience of the labour market with virtually zero correlation between GDP growth and employment coupled with high job security increase planning certainty for households with regard to their income. In addition, conservative lending standards in terms of LTV at loan origination and the high asset quality, the lower increase in monetary policy rates compared to many European countries, given lower inflation rates, as well as the relatively high share of fixed mortgage loans in the mortgage portfolio of domestic banks are additional risk-mitigating factors which reduce the immediate effects of higher interest rates on households and the banking sector. While these factors increase the room of manoeuvre in case of a crisis, it is nonetheless without dispute that the high household indebtedness needs to be addressed in the medium term. Against this background, the Financial Stability Council (FSC) issued a recommendation in July to adjust the existing borrower-based measures to address the risks of high household indebtedness with LSTI limits combined with tighter amortisation requirements[9] (see chapter 5).

9 *Ausschuss für Finanzmarktstabilität (2023), Medienmitteilung Nr. 17a, 5 July 2023.*

# RECENT DEVELOPMENTS IN THE FINANCIAL SECTOR

## BANKING SECTOR

**Liechtenstein's banking sector, while modest in scale in the global context, distinguishes itself through its high capitalisation and large size relative to the country's GDP.** Total assets of Liechtenstein's banking sector, which is mainly under domestic ownership, decreased slightly from its record high at the end of September 2022 (CHF 107.5 billion) to CHF 104.7 billion at the end of June 2023 on a consolidated level (compared to CHF 83.4 billion on the individual bank level). The consolidated total assets correspond to roughly 16 times the country's GDP. Furthermore, the large banking sector is highly concentrated, with three domestic ("other") systemically important institutions (O-SIIs) representing over 90% of total assets of the sector, which encompasses 11 banks in total. At the same time, their level of capitalisation and leverage has remained well above the average of the largest global institutions, and the largest Liechtenstein banks remain small in comparison to large global banks (Figure 14). Still, both the large banking sector and the dominating role of these three institutions has to be considered in the design and application of macroprudential instruments.

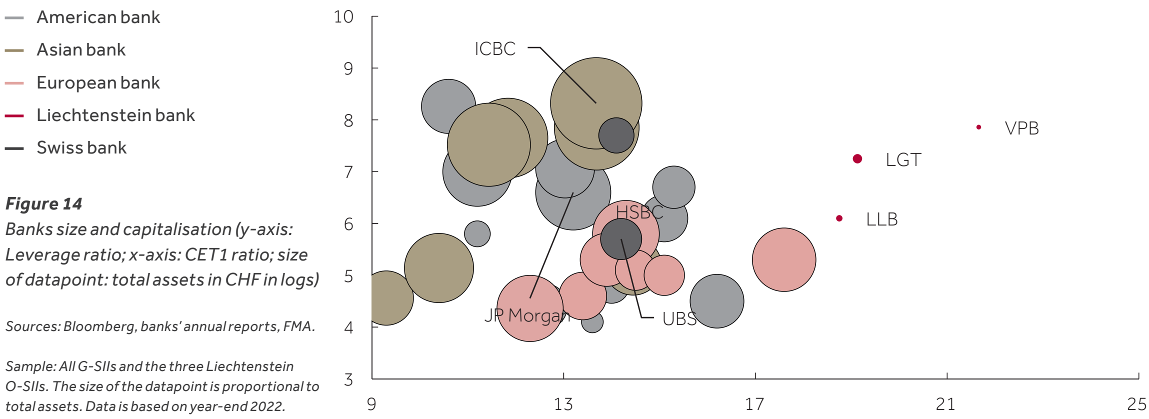



*Figure 14*
*Banks size and capitalisation (y-axis: Leverage ratio; x-axis: CET1 ratio; size of datapoint: total assets in CHF in logs)*

*Sources: Bloomberg, banks' annual reports, FMA.*

*Sample: All G-SIIs and the three Liechtenstein O-SIIs. The size of the datapoint is proportional to total assets. Data is based on year-end 2022.*

**Liechtenstein banks' business model mainly focuses on private banking and wealth management services.** The specificities of the business model of Liechtenstein banks are clearly visible when taking a look at their income statements. For banks focusing on private banking activities, fee and commission income plays a significantly larger role in their income composition. In 2022, 64% of total revenues of the O-SIIs in Liechtenstein were attributed to fee and commission income, while only 35% were attributed to interest income. These figures underline that private banking and wealth management services are the most important source of earnings for Liechtenstein's banking sector. Over the course of 2023, due to interest rate hikes of central banks, the income distribution of the three O-SII has changed significantly, with interest income now making up 54%, thereby exceeding fee and commission income at 46% of total income, as can be seen in Figure 15. Interest income increased by 197% from CHF 423 million in the first semester of 2022 to CHF 1.26 billion in the first semester of 2023, while fee and commission income declined slightly by 6% over the same period. Interest income for the first half of 2023 has nearly reached the total interest income of CHF 1.37 billion recorded in 2022.

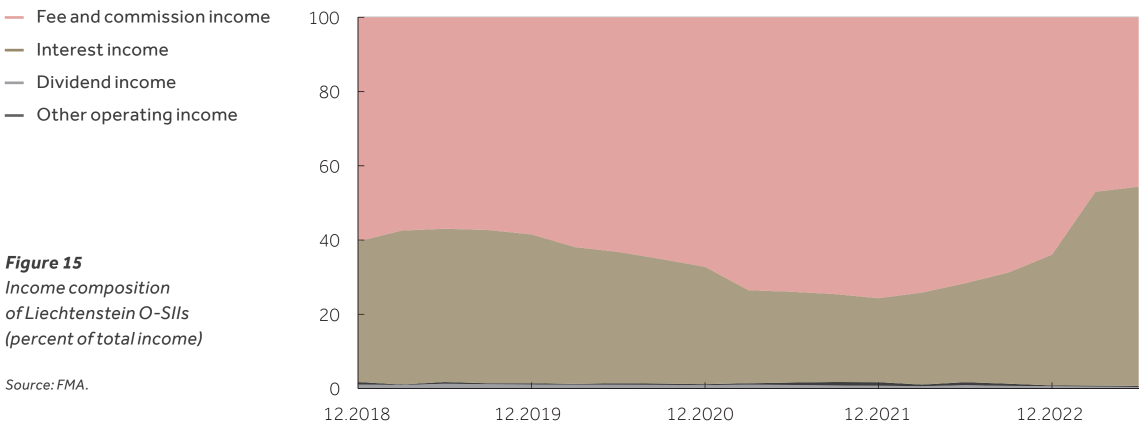



***Figure 15***
*Income composition of Liechtenstein O-SIIs (percent of total income)*

*Source: FMA.*

**Against the backdrop of increasing interest rates, with deposit rates remaining low, profits have further increased in the first half of the year.** While earnings before tax (EBT) decreased by approx. 15% from 2019 to 2020, EBT recovered in the subsequent years. EBT of the consolidated banking sector increased by 9% last year to CHF 732 million and earnings in the first semester of 2023 recorded a 17% y-o-y increase, which can primarily be attributed to the increase in interest income. An in-depth analysis explaining the increase in interest income both at the European level and in Switzerland can be found in Box 4. While profitability of domestic banks has recovered substantially in the past years following a major decrease in 2008, the contribution of foreign group companies has become increasingly important for the banking sector, making up 60.7% of total EBT in 2022. Over the first half of 2023 that trend reversed, with domestic group companies contributing 71.1% of EBT. The reversal in this trend can be attributed to two key factors. First, the difference in the accounting treatment of banks' bond portfolios (IFRS vs. Local GAAP) that led to a decrease in domestic RoE in 2022. Second, the income generated from higher interest rates is mainly recorded domestically rather than within foreign subsidiaries.

BOX 4

## The limited pass-through of interest rate hikes to deposit rates

**In 2022, short-term interest rates witnessed a substantial upswing driven by rigorous monetary policy tightening aimed at addressing rising inflation.** Data from selected European economies sheds light on the pass-through rates for household sight deposits. Despite of substantial hikes in benchmark rates, deposit rates remained notably low and stable, as shown in Figure B4.1.

**Excess liquidity and market concentration emerge as key factors influencing the pass-through to deposit rates.** Ferrer et. al (2023) show that excessive liquidity within the banking sector dampens pass-through rates by reducing the need for external deposit funding, thereby diminishing incentives for rate adjustments. Additionally, they highlight the detrimental impact of market concentration on pass-through rates. In market environments dominated by a few powerful banks, pricing power couples with diminished competitive pressures, resulting in limited responsiveness to benchmark rate changes and restricted pass-through to deposit rates. This observation emphasises the pivotal role of market dynamics and competition in shaping the effectiveness of pass-through mechanisms.

**Despite the significant increase in short-term market rates (such as the EURIBOR and SARON), the pass-through rates observed during this period are notably lower than those projected and seen in previous instances of rate hikes.** There is a significant disparity between projected pass-through rates derived from historical data and the actual pass-through rates observed during the recent surge in short-term rates. This dissonance is reflected in both household and non-financial corporate deposits, including sight and term deposits. This leads to markedly decreased deposit costs for banks in contrast to initial forecasts. Similarly, a high degree of cross-country heterogeneity can be observed, mirroring the divergences within and across sectors and deposit classifications.

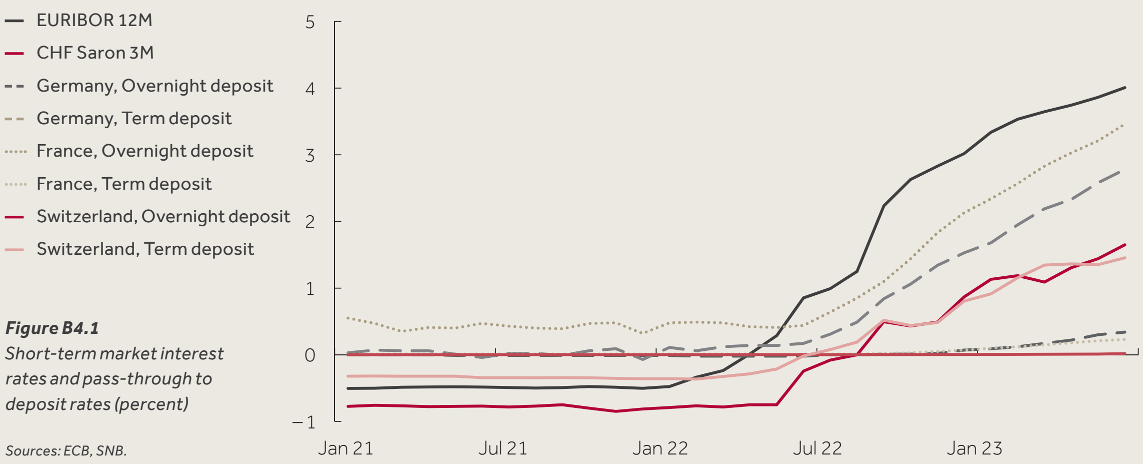



***Figure B4.1***
*Short-term market interest rates and pass-through to deposit rates (percent)*

*Sources: ECB, SNB.*

BOX 4

**Deposit portfolio rebalancing amplifies the dynamic nature of banks' responses to interest rate changes, extending beyond simple rate modifications.** Deposit portfolio rebalancing plays an important role in the transmission process. This mechanism does not only impact rate adjustments, as private customers and NFCs also rebalance their deposit portfolios, but also leads to shifts in the composition of different deposit types. As shown by Ferrer et. al (2023), term deposits react faster and more intensely to changes of the EURIBOR as households take advantage of the higher yield offered by term deposits and shift the weights of their deposit portfolio towards term deposits. An analysis of Swiss franc rates reveals similar trends to those observed with short-term market rates in the euro area (see Figure B4.1). While the SNB's interest rate hikes were not as pronounced as those of the ECB, term deposit rates generally kept pace with the rise of the SARON benchmark. However, much like in the euro area, overnight deposit rates barely saw any significant increase.

**In summary, various factors have driven the observed disparities between projected and realised pass-through rates amid the surge of short-term market rates.** The identified disparities between anticipated and realised pass-through rates during increases in short-term rates emphasise the complexity involved in accurate pass-through forecasting. Factors encompassing excess liquidity and market concentration contribute to explaining diminished pass-through rates, while deposit portfolio rebalancing underscores banks' holistic approach when adapting deposit rates. Understanding these dynamics is indispensable in assessing the implications of interest rate adjustments on deposit costs and general market behaviour.

***References***

*Ferrer, A., Ganics, G., Molina, A. and Serena, J. M. (2023). "The EURIBOR surge and bank deposit costs: an investigation of interest rate pass-through and deposit portfolio rebalancing", Revista de Estabilidad Financiera, Banco de España, May.*

**Following the COVID-19 pandemic, assets under management (AuM) have consistently shown an upward trend.** Thanks to 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. After some difficult years following the global financial crisis, AuM have followed an upward path over the last few years, which is driven by net money inflows, acquisitions abroad and positive market developments. AuM of Liechtenstein banks are well diversified across the globe, highlighting the international interconnectedness of the domestic banking sector. Given the safe haven nature of the Swiss franc and the trusted Liechtenstein financial sector, net money inflows have been positive throughout 2022, resulting in a total inflow of CHF 38.2 billion (up from CHF 37.5 billion in 2021). In the first two quarters of 2023, net new money inflows amounted to CHF 16.6 billion, with AuM standing at a record level of CHF 434 billion in June 2023, a considerable increase from year-end 2022 (CHF 411 billion).

**Profitability indicators of Liechtenstein banks lack behind EU banks.** Liechtenstein banks do not rank among the most profitable ones in Europe, with profitability indicators falling further behind the EU average over the course of 2023 (Figure 16). While high equity ratios may dampen key profitability indicators such as the return on equity (RoE), lower profitability is also driven by a different business model. Due to the specialised business models of Liechtenstein banks, RoE is very stable even in times of crisis. RoE for the domestic banking sector increased over the past year, standing at 6.8 % in June 2023. Return on assets (RoA), equally considering a four-quarter rolling average, stood at 0.6 % at the end of the first semester of 2023.

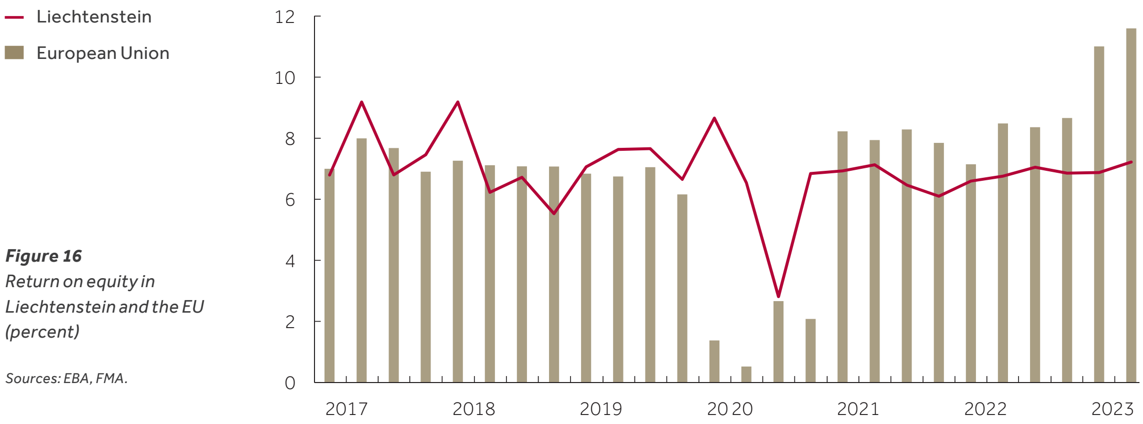



***Figure 16***
*Return on equity in Liechtenstein and the EU (percent)*

*Sources: EBA, FMA.*

**Efficiency indicators do not only reflect the high regulatory pressure, but also point to further room for improvement.** The cost-income ratio (CIR), which stands at 68.5 % by mid-2023 on a consolidated level, has remained broadly stable over the last years. The structurally high value of the CIR must be put into perspective, as private banking and wealth management are very staff-intensive businesses and, thus, associated with high labour costs. The high regulatory pressure has been extremely challenging, in particular, for smaller 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 as well as risk management have increased significantly over the last years. Global competition will remain challenging and efficiency indicators suggests further room for improvement. A sustained reduction of the

CIR and a strengthening of the structural efficiency in the banking sector will remain a key challenge for the coming years. While the increase in interest rates, which is associated with an increase in the respective interest rate margins, could have offered banks a window of opportunity to lower their CIR, their total costs increased in lock step, as explained in chapter 4.

**In the initial three quarters of 2022, CET1 capital ratios declined, but have since rebounded, underscoring the robust capitalisation of Liechtenstein's banks.** On the consolidated level, the Common Equity Tier 1 (CET1) capital ratio stood at 20.2% at the end of the first semester of 2023. This marks a 1.2 percentage points increase over the last year. Following the decline over the first three quarters of 2022, due to temporarily lower capital levels (mainly because of valuation effects on bond portfolios due to the rise in interest rates, higher dividend pay-outs and acquisitions)[10] and an increase in risk weighted assets[11], the CET1 ratio has recovered in the first semester of 2023, both due to decreasing RWA and increasing CET1 capital. The capitalisation of Liechtenstein banks remains substantially higher than the EU average, which stood at 160% at the end of the second quarter of 2023 (Figure 17).

**The high capitalisation of the banking sector is also confirmed by a high leverage ratio.** Since domestic banks apply the standardised approach (SA) to measure credit risks, risk density (i.e. the ratio of RWA to total assets) is relatively high, amounting to 39.6% in June 2023. The application of the SA for calculating the risk inherent in the banks' exposures may imply that the banking sector's capitalisation may be underestimated in cross-country comparisons, in particular, relative to banks using the internal ratings-based approach. Thus, the difference to EU and Swiss banks is even more pronounced when comparing the corresponding leverage ratios. In Liechtenstein, the average leverage ratio in the banking sector amounted to 7.6% at the end of June 2023, with all three O-SIIs exceeding a leverage ratio of 6%, while the EU average stood at 5.6%.

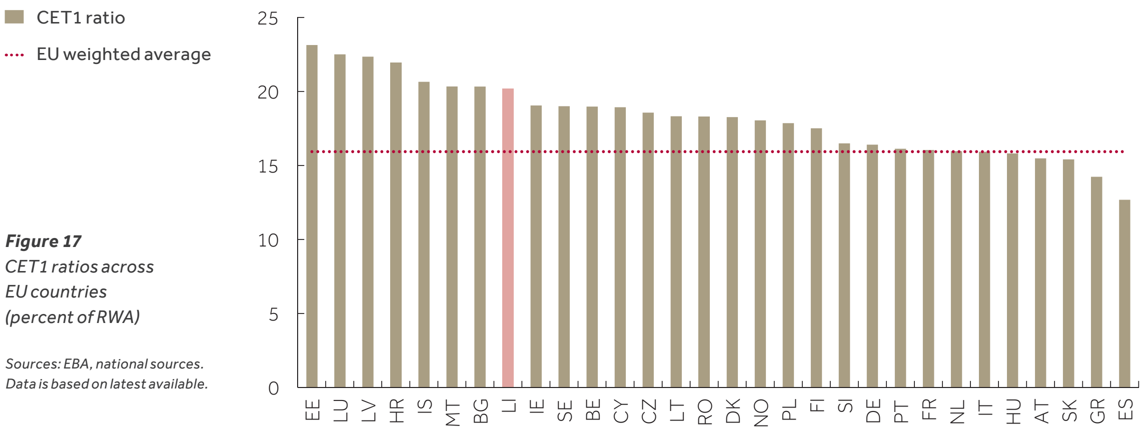



***Figure 17***
*CET1 ratios across EU countries (percent of RWA)*

*Sources: EBA, national sources. Data is based on latest available.*

10 *LGT, the largest bank in Liechtenstein, has taken over Australian-based Crestone Wealth Management, while the Liechtensteinische Landesbank AG took over the remaining shares of Bank Linth in Switzerland.*

11 *Besides organic growth and acquisitions, regulatory changes associated with the implementation of the CRR II have also led to an increase in RWA.*

**Asset quality has remained stable despite the increase in interest rates, with non-performing loans (NPLs) remaining at low levels.** In mid-2023, the NPL ratio of the banking sector on a consolidated level amounted to 0.95%, placing it among the lowest values across European countries. The low level has to be seen in light of the stable development of Liechtenstein's economy in the past few decades despite the global financial crisis, the COVID-19 pandemic and the recent hike in interest rates. While Liechtenstein's GDP features significant volatility in light of the tiny size of the economy, Liechtenstein never experienced a severe economic crisis, with the housing market even remaining stable during the housing crisis in Switzerland at the beginning of the 1990s. Nevertheless, the FMA continues to regularly monitor the asset quality as the adverse effects of higher interest rates may become visible with a delay.

**Standard liquidity indicators also highlight the strong funding base of domestic banks.** Liquidity indicators reflect the strong funding base of Liechtenstein banks, with the average (weighted) liquidity coverage ratio (LCR) amounting to 202% in June 2023. In recent years, the LCR in Liechtenstein has remained relatively stable at a high level. Besides the LCR, the net stable funding ratio (NSFR) is another important liquidity indicator. As a consequence of the vast independence from money market-funding of Liechtenstein banks, the average NSFR of Liechtenstein banks is high, averaging at about 174%, with a range across banks from 123% to 419%. Total deposits of the banking sector amounted to more than CHF 80 billion in June 2023 on a consolidated basis (which corresponds to 84% of total liabilities). Thus, market-based funding plays a minor role in Liechtenstein. The remarkably stable funding is also confirmed by the loan-to-deposit ratio, amounting to approximately 68% in June 2023. This predicts a stable funding base in ordinary as well as in times of stressed funding markets, minimising the risks of bank runs as is further described in Box 5.

**The Liechtenstein banking sector was largely unaffected by the financial turmoil in the US and Swiss banking sectors.** Amidst the recent financial turmoil, marked by the collapse of four medium-sized banks in the US and the shotgun merger of CS with UBS, the FMA undertook an impact assessment of this financial stress on the Liechtenstein financial market. Despite Liechtenstein banks having certain exposures to both the US banks and Credit Suisse, financial stability in Liechtenstein was never put into question. In particular, even in the case of a failure of Credit Suisse, balance sheet losses would have been low among Liechtenstein banks in light of limited exposures and collateralisation. However, it is noteworthy that the failure of Credit Suisse would nevertheless have incurred substantial operational costs for Liechtenstein's financial centre. This is due to the significant role of Credit Suisse in providing a multitude of financial services to intermediaries in Liechtenstein. While these services could be substituted, such a transition would be associated with additional costs. Against this background, the takeover of Credit Suisse by UBS was a favourable outcome not only for global financial stability, but also for the Liechtenstein banking sector.

## NON-BANK FINANCIAL SECTOR

### Insurance sector

**Over the past few years, the insurance sector witnessed divergent trends in its non-life and life segments.** In 2022, gross written premiums (GWP) in the life insurance sector continued their decrease of previous years. In contrast to the non-life segment, the life sector faced challenges during the low interest rate environment, and has not yet fully recovered. Gross written premiums are now totalling CHF 1.8 billion, a 6.1% year-on-year decrease. Growth in the non-life insurance sector has slowed down in 2022 compared to the dynamic growth in recent years, with gross written premiums standing at CHF 3.7 billion, only a marginal increase compared to the previous year (+1.2% y-o-y). In Liechtenstein, the reinsurance sector plays only a minor role, as reinsurance GWP only make up 1.1% of the total market (Figure 18). In total, gross written premiums and claims in the Liechtenstein insurance sector remained broadly stable, while the decrease in premiums in the life insurance segment reflects the ongoing diversification of the insurance market.

**The insurance sector in Liechtenstein is highly concentrated.** In Liechtenstein, there are a total of 32 insurance companies, one less compared to the previous year. These companies operate across the three insurance sectors as follows: 15 in life insurance, 14 in non-life insurance, and 3 in reinsurance. The insurance market in Liechtenstein exhibits a high level of concentration, with four insurance companies accounting for 63% of premium income. This concentration is even more pronounced in the non-life sector, where three insurance companies generate 81% of premiums.

**While premiums of unit-linked products are experiencing a significant decline in Liechtenstein, the European trend is moving into the opposite direction.** The non-life business in Liechtenstein is primarily driven by fire and other damage to property insurance, medical expense insurance, and general liability insurance, while the life business is dominated by index-linked and unit-linked insurance, and other life insurance. The proportion of premiums generated by unit-linked products in Liechtenstein has been consistently declining since 2016, dropping from over 80% to 44% in 2022, while in Europe, the market share for these products reached a record high of 39% in 2021. The prevailing uncertainties in recent years have increased the demand for unit-linked products in the European market.[12]

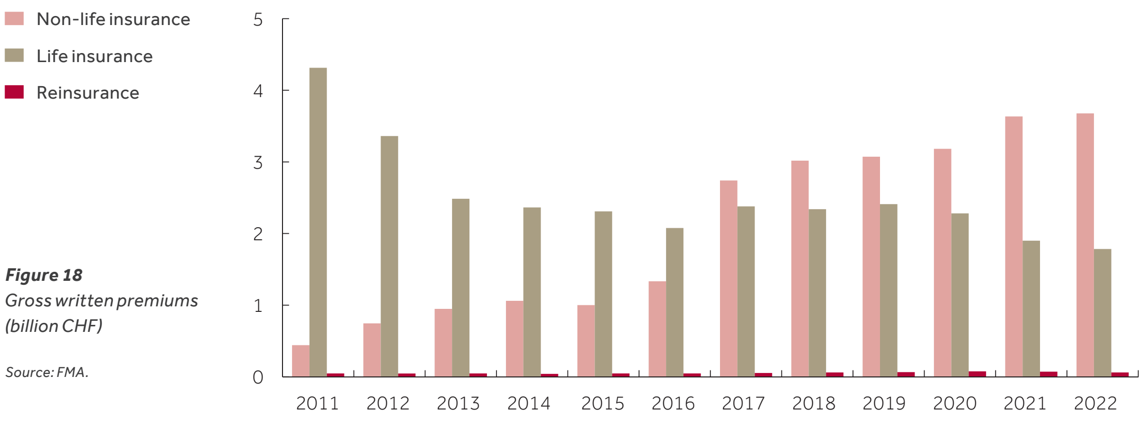



*Figure 18*
*Gross written premiums (billion CHF)*

*Source: FMA.*

12 *EIOPA (2022), Financial stability report. December 2022.*

**A substantial share of premium income originates from international markets thanks to direct market access to EEA countries and Switzerland.** Similar to 2021, the most important markets for Liechtenstein remain Switzerland, Germany, Ireland and the United States. In 2022, the Swiss market emerged as the most significant, accounting for 18.7% of total premium income (compared to 18.4% in 2021). Germany followed closely with a market share of 17.3% (unchanged from 2021), while Ireland contributed 15.6% (up from 15.1% in 2021). Notably, the United States, which held the top position in the preceding two years entirely based on non-life business, experienced a significant decline in premium volume by CHF 0.8 billion, resulting in a new market share of 13.9% (down from 18.4% in 2021).

**Profitability indicators of Liechtenstein's insurance companies show ambivalent signs relative to their European peers.** In Liechtenstein, return on equity (RoE) across the whole insurance industry decreased to 3.9% as of end-2022, down from 6.1% in 2021, indicating relatively low profitability of the sector in comparison with European insurers (Figure 19). In the non-life sector, conversely, there was notable improvement in the net combined ratio, which is calculated as the sum of net claims and expenses incurred divided by net earned premiums. This ratio decreased from 66.1% to 57.9% last year. This improvement is mainly driven by a decrease in the net loss ratio of insurances. A more detailed analysis of the individual lines of business highlights the notable strength of Liechtenstein's insurance sector, as it exhibits favourable combined ratios within the European context.

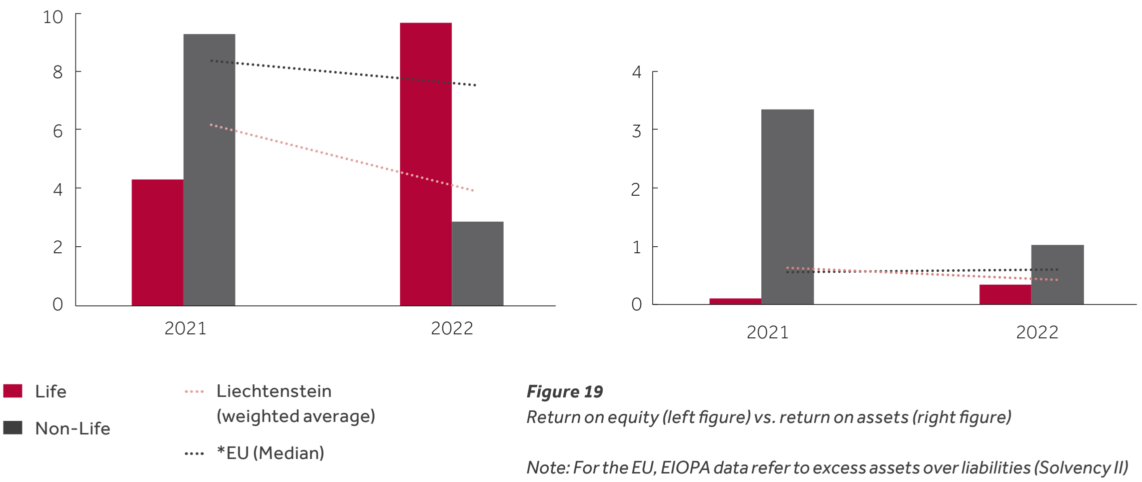



***Figure 19***
*Return on equity (left figure) vs. return on assets (right figure)*

*Note: For the EU, EIOPA data refer to excess assets over liabilities (Solvency II) for calculating return on equity, while for Liechtenstein statutory data are used. Reinsurance is not shown separately in light of its limited market share, but the numbers are included in the respective (total) profitability indicators.*

*Sources: EIOPA, FMA.*

**In recent years, domestic insurers have maintained a high solvency ratio.** After the decrease of the overall solvency capital requirement (SCR) ratio during the COVID-19 pandemic, the ratio surpassed the 200 % threshold in 2022 and stands at 206.6 % by the end of the year. In particular, a decrease in market risks by more than 25 % has resulted in lower requirements and, consequently, improved solvency ratios of insurance companies. Notably, life insurers have experienced improvements, whereas non-life insurers have seen a slight decline. The reason for this development is that life insurers, due to their business model, are more exposed to market risk and have therefore higher capital requirements linked to those risks. Looking at the SCR at the individual level, only four insurance companies have a SCR ratio below 150 %. This distribution aligns closely with the trends observed across Europe.[13]

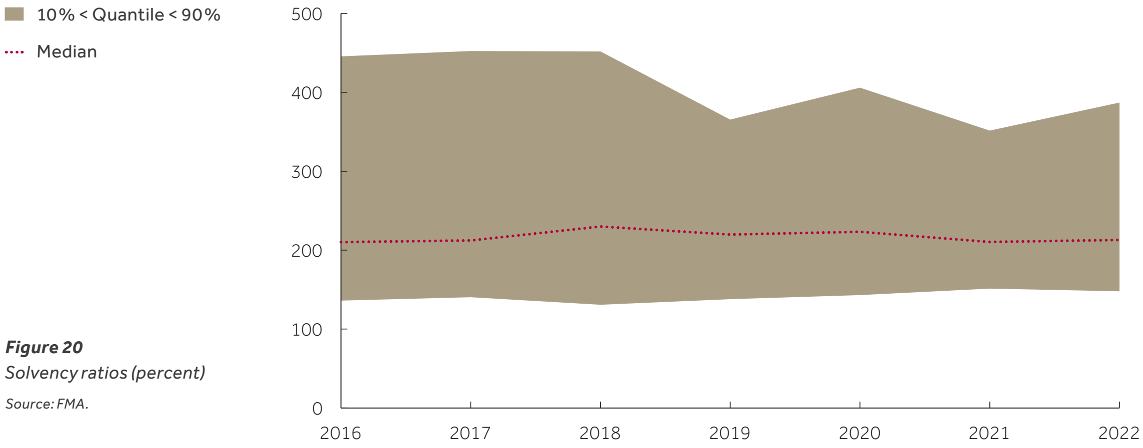



***Figure 20***
*Solvency ratios (percent)*
*Source: FMA.*

## Pension schemes

**Liechtenstein's pension system is structured upon three fundamental pillars.** The first pillar encompasses old age, disability, and survivors' insurance (AHV / IV) and is administered by the state. This public program is complemented by mandatory occupational pension provisions (pillar two) and voluntary private pension arrangements (pillar three). The primary objective of the first pillar is to ensure the financial well-being of the insured individual and their family members in the event of old age, disability, or death. Meanwhile, the second pillar is designed to maintain the accustomed standard of living post-retirement, and the third pillar serves as an individual, voluntary pension provision aimed at bridging any gaps in financial security that may arise and cannot be adequately addressed by the first and second pillars.

**On the back of adverse developments in both bond and stock markets in 2022, the public pension system (AHV) reported one of the worst annual performances since its establishment.** The return on financial reserves reported a negative performance of –11.5 % in 2022, the worst result since the global financial crisis in 2008 (–15.5 %). While contributions remained broadly stable (–0.5 % to CHF 271.6 million), expenditures increased by 2.6 % to CHF 329.8 million.

*13 EIOPA (2023), Financial stability report, June 2023.*

The structural reform of the public pension system in 2013 lowered the state contribution to the public pension system (CHF 30.4 million in 2022), implying that positive returns from investment income have to be generated to keep financial reserves stable. In 2022, this income-expenditure gap (excluding the profit / loss from financial investments, but including the annual ordinary state contribution) amounted to approx. CHF −27.8 million. Additionally, the negative financial market developments led to a negative financial result of CHF −392.7 million, resulting in a total loss of CHF −420.5 million.

**Notwithstanding the negative developments in 2022, large financial reserves accumulated in the past guarantee a stable public pension system.** The public pension system remains on a stable footing in light of the large financial reserves of CHF 3.23 billion at end-2022, approximately 50 % of GDP. As a result, financial reserves could still cover pension payments for approximately 9.78 years (down from 11.35 in the previous year). 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. A more detailed analysis is available in the annual report published by the public pension's administration office (AHV).[14]

**The second pillar of Liechtenstein's pension system, known as occupational pension provision, plays a vital role in preserving one's standard of living after retirement.** This component comprises autonomous legal entities in the form of foundations, which are subject to the Occupational Pensions Act (BPVG) and are under the supervision of the FMA. Funding for occupational pension provision is derived from contributions made by both employers and employees. Over the past years, there has been a consolidation trend, with the number of such entities decreasing from 33 in 2010 to 16 foundations in 2022. This trend is expected to persist in the near future, as larger pension funds benefit from scale effects. The substantial pension capital within the second pillar relative to Liechtenstein's GDP underscores the scheme's immense economic significance. As of year-end 2022, total assets in the pension scheme amounted to CHF 7.87 billion, approximately 121 % of Liechtenstein's GDP. This figure not only reflects the robustness of Liechtenstein's retirement system but also underscores the pivotal role of the second pillar in pension provision.

**The sharp financial market correction in 2022 was associated with negative investment returns and led to a significant decrease in coverage ratios.** Following a positive investment return of 6.6 % in 2021, the returns turned significantly negative in 2022, with the median investment return standing at −12.5 % on the back of global financial market turbulences. In conjunction with the negative investment return, the median coverage ratio – i.e. the ratio of available assets to liabilities – stood at 105.1 % at the end of 2022, decreasing from 119.9 % in the previous year. Coverage ratios of the 16 pension schemes ranged from 90.0 % to 111.3 % at end-2022. For a more detailed risk assessment on the occupational pension system, please see the annually published report on pension schemes by the FMA.[15]

*14 The annual report is available on the AHV website.*

*15 The report is available on the FMA website*

## Investment funds and asset management companies

**The investment funds sector is closely linked to the banking sector.** In Liechtenstein, 16 management companies (ManCos) are authorised to manage investment funds. The ManCos of the three largest banks jointly manage the lion's share of Assets under Management (AuM), with the remaining independent ManCos being significantly smaller. The largest sub-funds are managed by ManCos tied to Liechtenstein's three largest banking groups, i.e. the sector mainly acts as a complement to the banking sector.

**Although AuM stagnated in 2022 in light of adverse financial market developments, the investment funds sector continued its growth during 2022.** The investment funds sector has shown a dynamic development over the past few years, with both the volume and the number of funds increasing steadily. After strong growth in 2021 with AuM growing by nearly 19 %, the past year was characterised by a sideward movement, with AuM declining slightly by 1.7 % to CHF 69.1 billion at year-end 2022 (2021: CHF 70.3 billion). Alternative Investment Funds (AIF) continued growing in terms of volume (+4.7 % to CHF 37.5 billion), while UCITS ("Undertakings for Collective Investments in Transferable Securities", –8.3 % to CHF 31.2 billion) and IU ("Investmentunternehmen", –6.3 % to CHF 0.5 billion), a domestic fund regime, registered negative growth rates in 2022. In contrast, the number of sub-funds increased by 35 to a total number of 847 at the end of 2022. Overall, notwithstanding the negative market environment, the domestic investment funds sector has shown strong resilience during 2022 (Figure 21). Following the market-related stagnation in terms of AuM in 2022, the sector has also resumed its growth in the first half of 2023, reaching a new record high of CHF 71.8 billion by mid-2023.

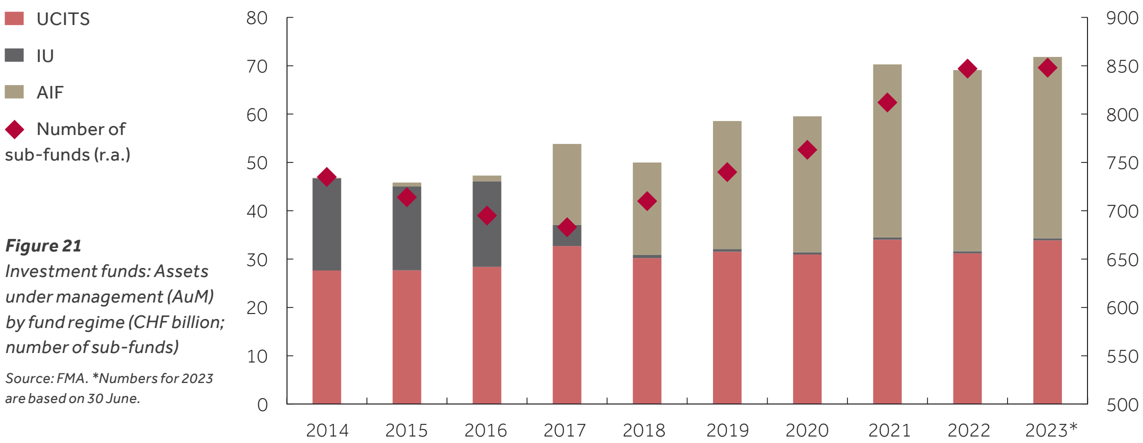



***Figure 21***
*Investment funds: Assets under management (AuM) by fund regime (CHF billion; number of sub-funds)*

*Source: FMA. *Numbers for 2023 are based on 30 June.*

**Asset management companies (i.e. MiFID investment firms) also play a significant role in Liechtenstein.** From 2021 to 2022, the 95 asset management companies (AMCs) reported a mostly market-related decrease of AuM by CHF 5.3 billion to a total of CHF 54.2 billion, of which almost CHF 45.6 billion were portfolio investments. Roughly half of total assets were held at domestic banks. The number of client relationship also decreased by approx. 1% to 10,379 in 2022.

## Fiduciary sector

**The fiduciary sector continues to play an important role in Liechtenstein's financial sector.** The number of Trust or Company Service Providers (TCSP) has continued its decrease. Following a 5% decline in 2021, the number of TCSP has decreased further by 3% over the course of 2022 to a total number of 557, likely due to the increase in regulatory requirements. In light of a continued downward trend in the total number of foundations and trusts as well as in the total number of business relationships, this finding is not surprising. The revision of the Professional Trustees Act (TrHG) in 2021 has extended the FMA's supervisory responsibilities in the fiduciary sector and increased customer protection. Nevertheless, the supervisory remit for the FMA still lacks significantly behind other financial intermediaries – such as banks, insurance companies or investment funds. While fiduciary companies and trustees are subject to the duty of care, recent cases of fiduciary companies and individuals licenced under the TrHG listed on the US Treasury's Office of Foreign Assets Control (OFAC) sanctions list has called to mind the inherent reputational risks that are associated with the services provided in the sector (see chapter 4 on the associated risks). Furthermore, data availability also remains an open issue in the fiduciary sector.

## Token economy

**Both the number of entities as well as the number of services registered under the Tokens and Trusted Technologies Act (TVTG) has demonstrated consistent growth over the last year.** The TVTG, entering into force in 2020, defined a legal framework for all applications of the token economy in order to ensure legal certainty for new business models. In contrast to other countries, the FMA registers service providers such as token generators or people who verify the legal capacity and the requirements for the disposal of a token. Besides the registration process, supervision activities based on the TVTG are limited to anti-money laundering and occasion- related supervision activities. In the meantime, 63 companies have applied for a registration according to the TVTG, of which 29 companies have so far successfully registered. Three companies gave up their registration, with the remaining 26 companies being registered for 60 services. The registered entities include both classic financial intermediaries (e.g. banks, fiduciaries etc.) as well as "new" players (e.g. cryptocurrency exchanges) in the financial market. With the planned European legislation (Regulation (EU) 2023/1114 on Markets in Crypto-Assets, MiCA), some service providers currently covered by the TVTG will be comprehensively regulated across the Single Market. Further, the OECD Committee on Fiscal Affairs approved over the course of 2022/2023 the Crypto-Asset Reporting Framework (CARF). The CARF provides for the automatic exchange of tax relevant-information on crypto-assets and was developed to address the rapid growth of the crypto-asset market and to ensure that recent gains in global tax transparency are not gradually eroded.

# SYSTEMIC RISKS IN THE FINANCIAL SECTOR

## CROSS-SECTORAL SYSTEMIC RISKS

### Macro-financial risks

**For the Liechtenstein economy, external demand is currently weak, influenced by both cyclical and structural factors.** The global economic slowdown is primarily driven by the industrial and manufacturing sector, which presents a significant challenge for Liechtenstein. With the industrial sector contributing 42 % to its GDP, Liechtenstein stands out as one of the most industrialised countries globally, making it particularly vulnerable to the decline in external demand. While Liechtenstein's overall economy and labour market have demonstrated remarkable resilience during cyclical downturns in the past, the weakness in global trade is evolving into a more persistent structural issue. In the three decades leading up to the global financial crisis, the global economy witnessed an unprecedented wave of globalisation, marked by global trade growing at roughly twice the rate of global GDP. This rapid expansion has resulted in a considerable increase in the global trade-to-GDP ratio (Figure 22). Since the global financial crisis, globalisation has experienced a notable slowdown, with the global trade-to-GDP ratio stagnating. This trend is underscored by the significant decline in global foreign direct investment (FDI) volume, which now stands at a fraction of its previous levels. As a small and open economy, Liechtenstein heavily relies on a rules-based international order and access to global markets. The rising geopolitical tensions, exemplified not only by the conflicts in Ukraine and Israel but also by the growing controversies between the US and China, could potentially pose a significant challenge to Liechtenstein's future economic development.

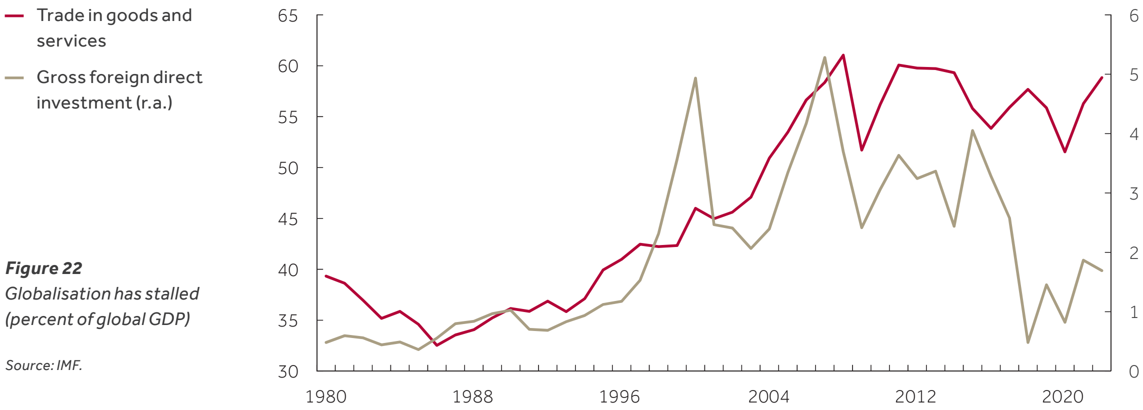



***Figure 22***
*Globalisation has stalled (percent of global GDP)*

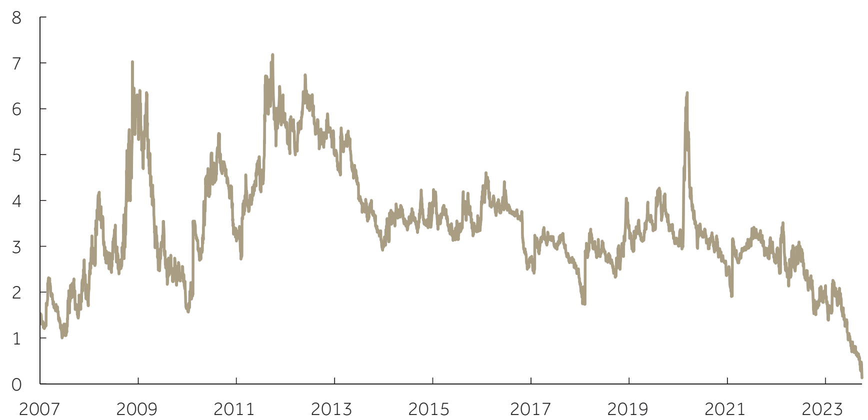
*Source: IMF.*

**While markets are anticipating a soft landing for the global economy, uncertainty remains high.** Macroeconomic data in Europe continues to disappoint, with rising recession probabilities and inflation declining only gradually. Although markets express optimism about a soft economic landing, it is important to note that inflation pressures could persist longer than currently expected. These pressures may remain elevated not only due to the excess demand stimulus during the pandemic that has yet to be fully absorbed but also because of structural factors. Factors such as demographic changes, the transition to decarbonisation to combat climate change, and the growing divergence between China and the US, which contributes to the fragmentation of the global economy, are expected to drive price pressures going forward. Consequently, we may find ourselves in a "higher-for-longer" interest rate environment, which will test the resilience of highly indebted non-financial sectors to higher interest rates.

**Real estate markets in many European economies are undergoing an orderly correction.** Over the past few quarters, there has been a substantial drop in housing transactions across Europe, accompanied by negative credit growth and nominal house price declines in some countries. This cooling of the financial cycle is primarily attributed to weaker economic growth and higher interest rates. While the corrections in these markets have, thus far, remained orderly, it is important to note that it takes time before the full impact of higher borrowing costs and elevated inflation becomes apparent. Despite the challenges posed by tight financial conditions and high inflation, households continue to benefit from robust labor markets, as unemployment rates remain low.

*Figure 23*
*Equity premium in the United States (percentage points)*

*Sources: Bloomberg, own calculations.*




**Financial markets continue to exhibit vulnerability to negative surprises, particularly in the United States.** Equity valuations have remained elevated. The equity premium in the United States, which is defined as the difference between the current earnings yield in the S&P 500 index and the 10-year Treasury rate, has recently reached a historic low (see Figure 23). Furthermore, the robust performance of the S&P500 in 2023 rests on a rather narrow foundation, primarily driven by a small number of successful stocks. In general, financial markets maintain an optimistic outlook regarding future earnings, growth, and inflation, which exposes them to potential disappointments. Additionally, the full impact of monetary tightening on the economy is yet to be realised, and concerns about Chinese economic growth could have spillover effects on the global economy and financial markets.

**Risk premia have remained low, but there is the potential for abrupt increases in the event of adverse developments.** On the back of low equity volatility and low corporate bond issuance, corporate risk premia have remained at very low levels. This is somewhat unexpected given the heightened risks associated with slowing economic growth and a rising number of defaults. This trend is also noticeable in sovereign debt markets, where spreads for periphery countries have surprisingly contracted, even at higher interest rate levels (see Figure 24). Within this context, the issue of public debt sustainability may reemerge, particularly in the event of an extended period of higher interest rates. Vulnerabilities in sovereign debt markets could intensify as public spending ratios rise, indebtedness levels remain high, growth prospects weaken, central bank balance sheets contract, and, consequently, sovereign refinancing costs increase.

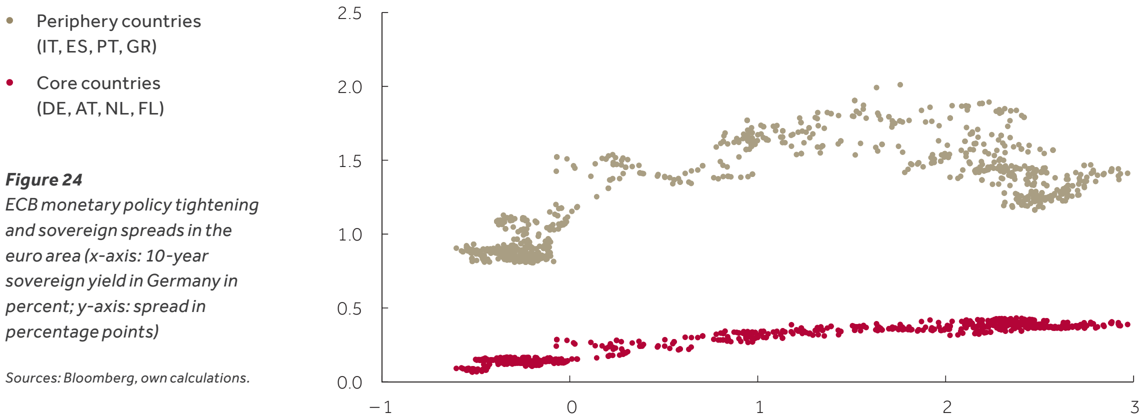



***Figure 24***
*ECB monetary policy tightening and sovereign spreads in the euro area (x-axis: 10-year sovereign yield in Germany in percent; y-axis: spread in percentage points)*

*Sources: Bloomberg, own calculations.*

## Institutional risks

**As a small country, Liechtenstein's economy is dependent on a rules-based international order.** The escalating geopolitical tensions and the growing fragmentation in the global economy are significant concerns for Liechtenstein as a small and open economy. Liechtenstein's economic strength lies in its robust integration into the global market, which includes its EEA membership and close ties to Switzerland via a customs treaty. At the same time, the increasing fragmentation at the global level could complicate market access for key players in both Liechtenstein's real economy and the financial sector. Liechtenstein has a commendable track record as a reliable international partner, demonstrated through its compliance with international standards and tax-information exchange agreements. Strong international cooperation is a prerequisite for ensuring market access at both the European and global level. At the same time, small countries like Liechtenstein depend on a rules-based international order because their internal markets are too small to sustain successful global niche players. From this perspective, the growing global fragmentation, both economically and politically, represents a latent risk for the economy.

**Liechtenstein's economy strongly benefits from its close ties to the EEA and Switzerland, but is simultaneously exposed to certain risks going forward.** Thanks to Liechtenstein's membership in the European Economic Area (EEA) and its customs union with Switzerland, companies headquartered in Liechtenstein benefit from unhindered access to both the European Single Market and Switzerland, a critical factor in driving economic success. However, this deep integration into two distinct economic areas also implies certain legal challenges. For instance, while Liechtenstein's banking sector is fully integrated into the Swiss financial market infrastructure (FMI) through the Currency Treaty, Switzerland is considered a third country by the EU in terms of financial market regulations. This divergence can lead to legal complexities affecting Liechtenstein's access to the Swiss FMI, potentially even jeopardising the foundations of the monetary arrangement with Switzerland. To date, close collaboration with Swiss authorities and the European Commission has facilitated pragmatic solutions, as demonstrated in the recent extension of the transition period for access to central securities depositories until 2030. Nonetheless a lasting solution, particularly from a political standpoint, hinges on the institutional framework agreement between the EU and Switzerland, making it a subject fraught with uncertainty.

**Liechtenstein lacks a central bank, and thus, a lender of last resort.** Although Liechtenstein's currency treaty with Switzerland allows Liechtenstein banks access to SNB funding on the same terms as Swiss banks, SNB guidelines suggest that access to Emergency Liquidity Assistance (ELA) may be limited for Liechtenstein institutions, particularly when compared to larger Swiss banks or banking groups. Consequently, Liechtenstein finds itself without a fully-fledged lender of last resort, as it lacks its own central bank. To mitigate the associated risks stemming from this institutional framework, Liechtenstein's accession to the International Monetary Fund (IMF) offers a potential solution, as the country gains access to additional financial resources under certain circumstances. Additionally, further steps to address these risks, such as the SNB's current initiative to accept mortgage credit as collateral in central bank funding, if necessary, are crucial for ensuring liquidity access for domestic banks, even in the unlikely event of a crisis.

## Reputational risks

**While reputational risks have decreased in recent years, as shown by favourable peer reviews, the importance of compliance with international standards cannot be overstated.** It is crucial to note that, as an EEA member, Liechtenstein is obliged to adopt all EU legal acts related to financial services into national law. In essence, this means that Liechtenstein operates under a similar legal framework as EU countries, with the FMA Liechtenstein playing an active role in the European financial supervision structure. Regarding Liechtenstein's commitment to international standards, it is essential to highlight two recent assessments. First, in June 2022, MONEYVAL – the Council of Europe's Committee of experts on the evaluation of anti-money laundering measures and combating the financing of terrorism – published its fifth country report on Liechtenstein, commending the effectiveness of the FMA's supervisory system in combating money laundering and terrorist financing. This report awarded Liechtenstein's authorities high marks for their efforts in these areas and explicitly recognised the progress made by the country. Second, in November 2022, the OECD Global Forum recognised Liechtenstein's exemplary performance in tax transparency. Liechtenstein received the highest rating of "in place" for its implementation and compliance with the global standard for the Automatic Exchange of Information (AEOI) in tax matters. These recent accomplishments underscore the priority Liechtenstein places on adhering to international standards, both within its government bodies and private sector participants. Nevertheless, sustaining consistent compliance with these standards remains imperative for Liechtenstein to uphold its reputation as a reliable international partner in cooperation matters, as international reputation and recognition are crucial for the stability of the entire financial centre.

**Reputational risks in Liechtenstein may also stem from the fiduciary sector.** As outlined in last year's Financial Stability Report, the FMA's supervisory authority over the fiduciary sector is more limited compared to other financial intermediaries because prudential supervision is not included in the regulation. While the FMA oversees due diligence, it remains challenging to monitor the interconnectedness between the fiduciary and banking sectors due to data limitations. Instead, the sector largely relies on self-regulation through the Liechtenstein Institute of Professional Trustees and Fiduciaries (THK). Recent developments have highlighted potential risks within the sector. The inclusion of Liechtenstein fiduciary firms and individuals licensed under the Fiduciary Act on the OFAC sanctions list, with accusations of enabling violating US sanctions, has brought attention to these latent risks. However, it is worth noting that these cases have not resulted in spill-over effects affecting other parts of the financial sector. This demonstrates the strong reputation of Liechtenstein authorities in their interactions with international counterparts.

**Elevated reputational risks in the FinTech sector demand vigilant monitoring.** Within the Trusted Technology sector, which encompasses Blockchain technology, the FMA's prudential supervision competences under the Token and Trusted Technology Service Providers Act (TVTG) are comparatively less robust than in other segments of the financial industry. Recent legal actions taken by the US Securities and Exchange Commission (SEC) against Bittrex, a cryptocurrency exchange operating in Liechtenstein, have once again shown the substantial regulatory uncertainty prevalent in the FinTech sector, a factor closely linked to reputational risks. Furthermore, certain business models, such as cryptocurrency exchanges, involve a high number of client relationships. This presents a significant challenge in achieving full compliance with all regulatory requirements, particularly regarding due diligence. It also raises questions about the compatibility of large crypto players with the small size of the country and its regulatory authorities.

## Climate-related risks

**Climate-related risks may pose challenges to financial stability in two different ways.** First, physical risks, such as an increase in the frequency and severity of extreme weather events, for instance hurricanes, floods, wildfires, sea-level rise, extreme temperatures, or water scarcity, can damage financial institutions' physical assets like real estate, production facilities, infrastructure, or agricultural land. This can lead to a decline in asset values, potentially causing losses for investors, lenders, and insurers. Second, there are transition risks, which arise from the shift towards a low-carbon and circular economy through policies, technological advancements, and market sentiments favouring renewable energy sources. Industries with high carbon emissions or institutions heavily invested in fossil fuels may face assets that lose value due to sudden shifts in demand. Transition and physical risks usually go hand in hand: More intense policy action may increase the impact of transition risks, but at the same time reduce physical risks in later decades.

**Assessing the impact of physical and transition risks on financial institutions is complex.** To determine physical risks, assets, industries, and sectors that are exposed to climate-related hazards have to be identified, and expected losses have to be calculated based on both the physical location as well as the nature of the assets (e.g. coastal real estate, agricultural land, energy infrastructure). Factors that determine transition risks are regulatory changes by national and international authorities, carbon prices, disruptive technologies with the potential to transform industries (such as advances in renewable energies or energy efficiency), adaptation capacity of industries, as well as investor preferences for sustainable products. In addition, interaction between the two types of risks, as well as interlinkages across financial institutions and real economy firms need to be considered. Assessing direct and indirect (e.g. through supply chain linkages) climate-related risks requires extensive and detailed data on a granular level which is often not available, even less so in Liechtenstein. Furthermore, consistent and comparable assessment methods, risk metrics, and modelling scenarios across countries are not yet established but would be highly necessary, also from a financial stability perspective.

**International authorities are developing definitions, reporting systems and methodologies to collect the necessary data for a robust assessment of climate risks.** The EU has emphasised the transition to a more sustainable economy as a key priority. In this context, European institutions are determining their contribution to reach set goals and evaluating the economic implications of climate change. The European Commission (EC), for instance, introduced a taxonomy for sustainable economic activities, a classification system to assess economic activities' contributions to climate change mitigation and the responsible use of the earth's resources. In recent years, the ESRB began to analyse systemic risks from climate change and its impact on financial stability.[16] It attempts to map climate exposure of financial institutions and examines systemic amplifiers like concentration risks with the objective of developing adequate macroprudential instruments to address climate-related systemic risks. In 2022, the ECB for the first time conducted a climate stress test with major euro area banks to evaluate how different climate scenarios could affect the stability, resilience, and performance of financial entities.[17] On the international level, the Network for Greening the Financial System (NGFS), of which the FMA is a member since 2022, develops and explores a range of severe but plausible future climate scenarios to help central banks, regulators, supervisors and academic researchers explore the possible impacts on the economy and financial system.[18] Finally, the International Monetary Fund (IMF) and the Basel Committee on Banking Supervision (BCBS) publish empirical research and guiding principles with the aim to address climate-related financial risks to the global banking system, and to improve banks' risk management as well as supervisors' practices. The FMA is following the various developments on the international level, and is committed to advance its reporting and assessment of climate-related risks, in particular with regard to the domestic banking, insurance, investment funds and pension funds sector.

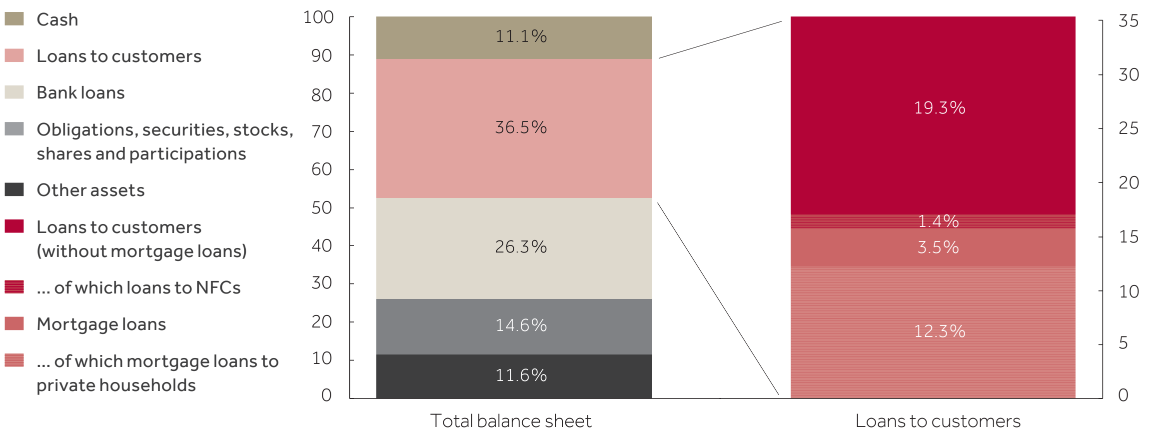



***Figure 25***
*Balance sheet composition of Liechtenstein banks (percent of total assets)*

*Source: FMA.*

16 *ESRB (2021). Climate-related risk and financial stability, July 2021.*
*ESRB (2022). The macroprudential challenge of climate, July 2022.*

17 *ECB (2022). 2022 climate risk stress test, July 2022.*

18 *NGFS (2022). NGFS Scenarios for central banks and supervisors, September 2022.*

**Although banks in Liechtenstein are not heavily involved in lending to high-emitting firms, some banks might be exposed to climate-related risks through their mortgage loans.** Domestic banks are primarily engaged in private banking activities, and thus, may be less affected by climate-related risks than more traditional banks specialised in granting loans to (large) firms and industries. Loans to NFCs presumably pose a limited threat to domestic banks given that they constitute a relatively small portion (1.4 %) of domestic banks' balance sheets (Figure 25). However, climate risks may also affect mortgage loans, which are an important income source for some Liechtenstein banks. Across domestic banks, mortgages make up around 16 % of total balance sheet exposure. A decrease in the value of the collateral through multiplied occurrence and severity of climate-related hazards might negatively affect the respective banks, and thus, potentially threaten financial stability in Liechtenstein. A risk-mitigating factor in this regard is that Liechtenstein participates in the Swiss natural hazard insurance system which provides mandatory insurance coverage for buildings to natural catastrophes, excluding earthquakes. Although this mandatory insurance reduces the exposure of banks to physical risk through their mortgage loans, the overlapping portfolio risk between insurers and banks may pose a risk to financial institutions in addition to the concentration risk. Given that severe data gaps continue to exist both related to NFC and household loans in Liechtenstein, a thorough assessment of climate risks in the banking sector is currently not possible.

**The insurance sector is confronted with escalating climate risks, driven by the increasing frequency and unpredictability of natural catastrophe events.** Insurance companies are mainly exposed to climate-related risks in the non-life business lines through motor vehicle liability as well as fire and other damages to property. These lines of business constitute around 15 % of total net written premium of the domestic insurance sector. As Liechtenstein has a mandatory property insurance coverage for buildings against natural catastrophes (excl. earthquakes), Liechtenstein's insurance protection gap[19] is smaller compared to other European countries, as can be seen in Figure 26.[20] Besides the high share of insured economic losses, immediate losses from climate threats are also reduced relative to other countries, as reinsurers, which in case of damage carry large parts of the losses, are mostly located abroad.

**The investment funds and pension funds sectors also face physical and transition risks in their investment portfolios, while greenwashing risks must also be tackled appropriately.** The financial landscape is undergoing a transformative shift as the awareness of climate-related risks rises and investors increasingly demand sustainable products. In this context, environmental, social, and governance (ESG) factors are crucial to assess the value and returns of investments as they reveal information on assets' direct and indirect exposures to climate risks, as well as their contribution to a sustainable economic and financial system. Simultaneously, the growing focus on ESG

*19 The insurance protection gap is a measure of exposure to risk and insurance penetration of a certain hazard. The EIOPA classifies the protection gap between 0 (natural hazard does not occur or is fully covered) and 4 (high exposure to the natural hazard and / or low insurance penetration) for the most common hazards (wildfire, earthquake, windstorm, river flood, and costal flood).*

*20 There is a protection gap against earthquakes as this risk is currently not covered in the domestic mandatory insurance system, an issue which is currently discussed in parliament.*

opens the door for greenwashing where unsubstantiated claims of sustainability can be misleading for stakeholders. Regulators across countries are enhancing investor protection by promoting reliable ESG integration. Through the enforcement of standardised reporting and effective supervision of funds, transparency can be increased while greenwashing practices can be reduced. In the years to come, the FMA will promote ESG disclosure and portfolio evaluation for domestic banks, insurance companies, investment and pension funds in order to not only enhance the stability of the Liechtenstein financial system, but also with regard to companies' international competitiveness.

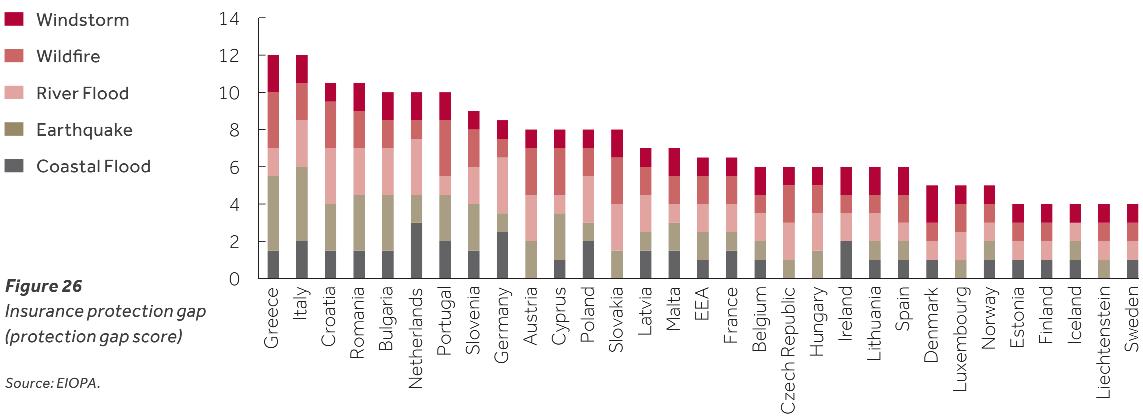



***Figure 26***
*Insurance protection gap (protection gap score)*

*Source: EIOPA.*

**The FMA is committed to advancing sustainable finance by enhancing its assessment of climate-related risks across all financial sectors in a robust manner.** The FMA is dedicated to promoting the shift towards a sustainable financial centre aligned with the UN's Sustainable Development Goals (SDGs). As part of its prudential supervisory efforts, the FMA supports that sustainability factors and risks are integrated into the strategies of financial market participants. This includes compliance with transparency requirements for effective investor protection, disclosure of relevant metrics, reliable assessment of future scenarios, and inclusion of climate-related factors into risk management practices. Despite the limited data availability, the FMA will continue to actively incorporate climate risks into its supervisory analyses and stress tests. A key focus is placed on reliable ESG disclosure and prevention of greenwashing practices by all means to limit the impact of climate risks on the financial systems' reputation and thus financial stability.

## Systemic cyber risks

**Cyber risks are increasingly important from a macroprudential perspective, as a cyber incident can erode the trust in the whole financial system.** Cyber risk is, based on an ESRB report[21], characterised by three key features that, when combined,

*21 ESRB (2020). Systemic cyber risk, February 2020.*

fundamentally distinguish it from other operational risks: (1) the speed, (2) scale of its propagation as well as (3) the potential intent of threat actors. The materialisation of cyber risks can, firstly, cause the financial system to lose its ability to provide critical functions to the real economy and, secondly, inflict financial losses at a level where the system is no longer able to absorb them. Besides the technical aspects of a cyber incident, the ESRB report notes that a coordination failure between national and European institutions could support the amplification of an individual cyber event to a systemic event.

**Cyber risks are present in Liechtenstein but did not yet have a systemic impact.** Financial intermediaries in Liechtenstein are required to report any serious or operationally disruptive cyber incidents to the FMA based on an FMA Communication[22], which outlines minimum standards with respect to cyber risks. In addition, the FMA has initiated the establishment of an internal coordination centre to handle supervisory aspects by proactively managing cyber threats. This centre will facilitate coordination within Liechtenstein and with international partners in accordance with the newly introduced Cyber Security Act[23] to ensure preparedness in the event of a cyber incident. The FMA has not observed an increase or spike in cyber incidents in Liechtenstein in recent years. While offering an increased defensive mechanism, a lack of IT security personnel and increased regulatory requirements pose challenges to financial intermediaries. In addition, to mitigate risks from cyber incidents, only few insurance companies in Liechtenstein actively offer cyber insurance policies to its customers, although cyber incidents might be covered in a variety of insurance policies implicitly.

## RISKS IN THE BANKING SECTOR

**Profitability in the Liechtenstein banking sector continues to be a key concern, even as earnings have risen due to increased interest rate income.** The profitability of the Liechtenstein banking sector, as measured by return on equity, has consistently lagged behind that of the US and EU. This disparity can be attributed to the unique characteristics of the private banking business model in Liechtenstein, which is founded on stability and reputation. This necessitates both a high capitalisation and substantial personnel resources, intensifying pressure for consolidation especially for smaller banks, as they lack economies of scale. The recent increase in interest rate income would have offered banks in Liechtenstein the opportunity to lower their cost-income-ratio (CIR) and increase their RoE. However, as shown in Figure 27, costs increased in lockstep with income, leading only to a 0.8 percentage point increase of the RoE y-o-y (and a 1% decrease in the CIR, respectively). Hence, banks were not able to increase their RoE in similar magnitudes as their EU competitors, which entered double digit RoE for the first time since the global financial crisis. While net interest income has increased for both EU and Liechtenstein banks, RoE in Liechtenstein is hampered by high and rising staff expenses and other administrative costs, mainly relating to IT expenses and increased consulting costs partly stemming from the recent closure of acquisitions. Furthermore, Liechtenstein's banks did not substantially raise their provisions and impairments in response to the COVID-19 pandemic and subsequent recovery. Consequently, unlike their counterparts in the

*22 FMA (2018). FMA Communication 2018/3 – Dealing with cyber risks.*

*23 Cyber-Sicherheitsgesetz (CSG) (2023). https://www.gesetze.li/konso/2023269000.*

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EU, they are unable to release these provisions, (temporarily) boosting RoE in the EU. Subdued lending due to higher interest rates, increased regulatory requirements as well as complex sanctions regimes will continue putting pressure on profitability indicators in Liechtenstein.

**The strong rise in interest rates may lead to higher credit risks and funding costs for banks.** While credit risks have risen across Europe in the non-financial sector, commercial loans are expected to be less of an issue in Liechtenstein in light of the low indebtedness of the non-financial corporate (NFC) sector. The elevated indebtedness of private households, primarily stemming from substantial residential real estate loans, may hamper their capacity to adapt to rising interest rates, consequently elevating credit risk in banks' balance sheet. However, the low unemployment rate in Liechtenstein, high job security and the application of a (higher) imputed interest rate to assess households' affordability in the lending process act as mitigating factors in this context (see also chapter 2). Particular attention should be directed towards consumer loans, as a rise in interest rates has the most pronounced impact on households with limited savings or modest financial reserves. Until now, however, non-performing loans in Liechtenstein have shown a relatively stable trend, with a slight y-o-y increase from 0.78 % to 0.95 % on a consolidated basis. The increase in credit risk is also noticeable in the overall volume of impaired claims, which grew from CHF 251 million in the second quarter of 2022 to CHF 445 million by mid-2023, representing slightly over 0.9 % of total liabilities. Moreover, funding costs for banks have risen in line with market developments. In this context, however, current MREL and subordination requirements for domestic banks do not indicate a shortfall in MREL, resulting in limited funding needs for banks going forward.

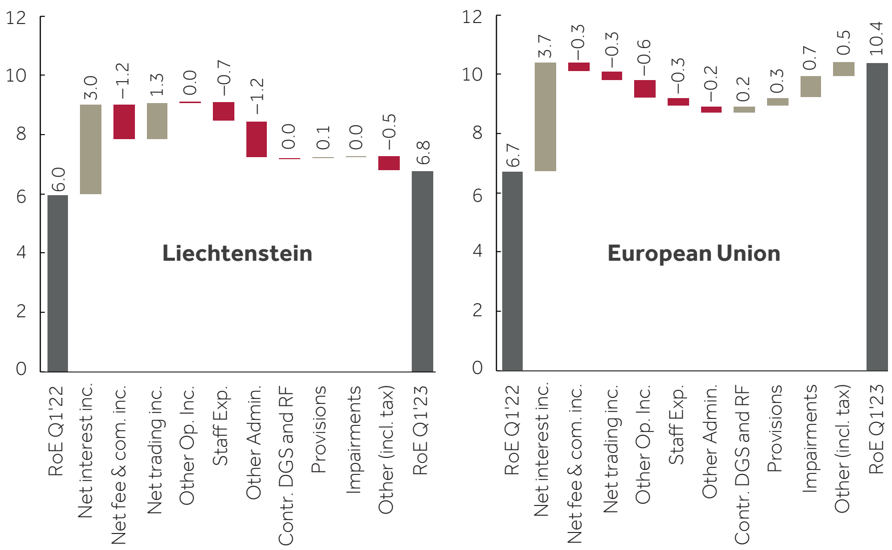


***Figure 27***
*RoE in Liechtenstein and the EU (RoE in percent)*

*Sources: FMA, EBA.*

**Business model risks have materialised over the last years, and continue to pose a challenge, specifically for smaller banks.** Over the past years, the banking landscape, focusing primarily on private banking and wealth management, has witnessed substantial transformation including a merger and the decision of three banks to return their banking licenses. Private banking, in contrast to conventional retail banking, confronts heightened operational, cross-border, and legal risks due to its primary focus on serving (ultra) high-net-worth clients, politically exposed individuals, and engaging in cross-border transactions spanning multiple jurisdictions. Amidst rising regulatory requirements, a challenging market environment, quality staff shortages and the introduction of complex sanction regimes, profitable private banking niches disappeared, challenging the business model of very small banks. This combination of factors has reshaped the private banking and wealth management industry in the country, prompting a re-evaluation of strategies and operations. Overall, the response of Liechtenstein's banks to these developments underscores their resilience and determination to adapt to an evolving landscape, where traditional paradigms are being redefined. The considerable increase in AuMs, not only market-driven but also given the net-new-money inflows, provide evidence for the adaptability of the domestic banking sector.

**Liquidity risks in the Liechtenstein banking sector have remained low.** While Credit Suisse plays a significant role for domestic banks in providing a multitude of financial services, an analysis by the FMA shows that even in the case of a failure of Credit Suisse, balance sheet losses would have been low among Liechtenstein banks, as the corresponding exposures were limited and/or collateralised. While the risk of bank runs may have increased globally on the back of cyclical developments and technological advances, risks in Liechtenstein remain low in light of strong fundamentals (see Box 5).

BOX 5

## The changing nature of bank runs

**As intermediaries between depositors and borrowers, banks play a crucial role in facilitating economic activities, but also face liquidity risks due to the nature of the fractional reserve banking system.** The core task for intermediaries lies in the balance between deposits received and loans extended. The classic banking business typically involves term transformation, i.e. banks' balance sheet consists of short-term liabilities (i.e. deposits, which can be withdrawn quickly), while assets are usually more long-term (e.g. loans / mortgages typically have a longer duration). Against this background, banks are generally susceptible to sudden shifts in depositor sentiment or financial conditions. Among the challenges they face, a bank run – a phenomenon where a significant number of clients withdraw their funds from a bank simultaneously, driven by apprehensions about its future viability – may destabilise banks. This sequence of events not only heightens the risk of default but also sets in motion a chain reaction of additional withdrawals, further exacerbating the situation. This scenario can push a bank into illiquidity (and, as a result, into insolvency), irrespective of its prior financial robustness.

**While government interventions, such as deposit insurance, have significantly reduced the frequency of bank runs since the 1930s, they continue to pose a risk to the stability of banks, and thus, to the financial system.** While traditional bank runs primarily entailed depositors physically withdrawing cash, the nature of these events has evolved in recent years. The rise of so-called silent bank runs, characterised by fund withdrawals through electronic transfers, has become more prevalent. Recent examples include the stress in the US banking sector and the takeover of Credit Suisse earlier this year.

**The bank runs that occurred in late 2022 and early 2023 were unprecedented in terms of scale and rapidity.** In the case of the Silicon Valley Bank (SVB), approximately a quarter of total liabilities were withdrawn within a mere span of two business days. Had government authorities not intervened, it is anticipated that the outflow of funds would have persisted even more extensively. In contrast, in prior instances of bank runs, only a fraction of this magnitude was withdrawn over a considerably longer period. For instance, during the most significant run of the financial crisis in 2008, customers of Washington Mutual (WAMU) withdrew roughly 10 % of deposits, but it took 16 days for this to unfold, as can be seen in Figure B5.1. Expected outflows in Figure B5.1 refer to outflows that were scheduled for the next business day, but did not materialise as regulators closed the respective banks.

**Recent research has identified three primary factors contributing to the evolving nature of bank runs over the past century (Rose, 2023; Cookson et al., 2023).** First, technological advancements have played a significant role in both facilitating and expediting the process of fund withdrawals. While technology undoubtedly accelerates the withdrawal process, it is not the sole driver behind the recent surge in rapid bank runs. The second factor revolves around the widespread adoption of social media and smartphones, enabling the rapid dissemination of

BOX 5

information. In the context of bank runs, this means that news (or possibly even unwarranted rumours) about a bank's potential failure can swiftly reach a vast audience within minutes, prompting concerned depositors to take immediate action. The third and most crucial factor pertains to the concentration of uninsured deposits among customers who maintain connections with each other.In the modern landscape, many banks are subject to a concentration of depositors. Companies operating within the same business segment are mutually influenced by economic factors and often engage in communication with one another. When these three factors converge, they create the perfect conditions for an extremely rapid bank run to unfold.

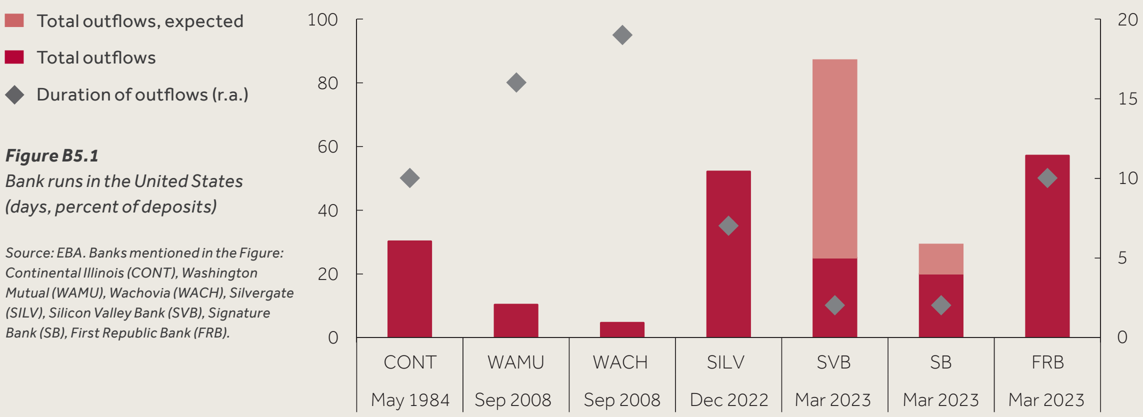


***Figure B5.1***
*Bank runs in the United States (days, percent of deposits)*

*Source: EBA. Banks mentioned in the Figure: Continental Illinois (CONT), Washington Mutual (WAMU), Wachovia (WACH), Silvergate (SILV), Silicon Valley Bank (SVB), Signature Bank (SB), First Republic Bank (FRB).*

**Current indicators suggest that liquidity risks within Liechtenstein's banking sector are limited, primarily due to the banks' robust capitalisation and conservative loan-to-deposit ratio.** The strong capitalisation of the Liechtenstein banking sector, in comparison to its European peers, is shown in Figure 17. In this context, the quality of capital is particularly important, as shown by the Credit Suisse incidence. In the case of the Liechtenstein banking sector, own funds solely consist of CET1 capital, i.e. the highest quality of regulatory capital, further enhancing investors' trust in the domestic banking sector. Additionally to its strong capitalisation, the loan-to-deposit ratio remains at low levels which limits reliance on interbank borrowing and market funding. The overall confidence in the stability of the banking sector in Liechtenstein is further enhanced by the steadily high liquidity coverage ratio (LCR) of Liechtenstein banks. As of 2023-Q2, an LCR of 202 % indicates high liquidity buffers (Figure B5.2), specifically when compared to EU banks with an LCR of 160 % in the same period.

BOX 5

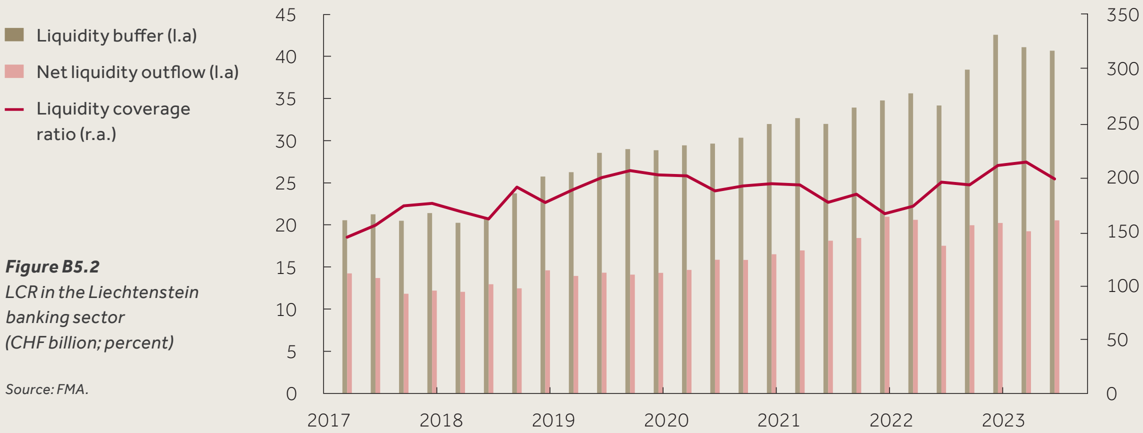


***Figure B5.2***
*LCR in the Liechtenstein banking sector (CHF billion; percent)*

*Source: FMA.*

**While the ongoing transformation of bank runs has caused global discussions about heightened risks going forward, the banking sector in Liechtenstein is less affected in light of strong fundamentals.** While technological advancements have certainly accelerated withdrawals, their impact on recent bank run trends is overshadowed by the pivotal roles played by social media and smartphones in swiftly disseminating information, along with the concentration of uninsured deposits among interconnected depositors. A comprehensive understanding of these evolving dynamics is important for regulators and financial institutions, equipping them to formulate effective strategies for mitigating the inherent risks associated with future bank runs. Against the background of these developments, strong fundamentals are a prerequisite for investors' and depositors' trust in the banking sector. Liechtenstein's banks – which are characterised by strong and high-quality capitalisation and liquidity indicators – are therefore less vulnerable to bank runs than their peers in other countries. At the same time, however, recent events also imply that maintaining strong fundamentals is crucial to ensure investors' trust and confidence, and thus, to guarantee financial stability.

***References***

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*Cookson, J. Anthony et al (2023) "Social Media as a Bank Run Catalyst". In: Université Paris-Dauphine Research Paper No. 4422754. SSRN: https://ssrn.com/abstract=4422754. DOI: http://dx.doi.org/10.2139/ssrn.4422754.*

## RISKS IN THE NON-BANK FINANCIAL SECTOR

### Insurance sector

**The transition from a low-yield environment to one marked by inflation and higher interest rates presents a dynamic landscape for insurance companies, both in the short term and long term.** The rise in interest rates and inflation significantly affects insurance companies across four key aspects: (1) profit and loss (P&L), (2) balance sheet, (3) protection gap, and (4) liquidity and solvency. First, insurance companies are experiencing declining profits due to a surge in claims and expenses attributed to inflation-driven increases in replacement costs and wages, while premium adjustments follow with a time lag. On the other hand, rising interest rates are affecting the investment income of insurance companies, positively impacting their profitability. Second, insurers, which typically have a negative duration gap on their balance sheet, tend to gain from increasing interest rates since their liabilities decrease more than their corresponding assets, as the net present value of future liabilities is discounted at a higher rate. Third, rising inflation and interest rates are expected to deepen existing protection gaps through substitution effects. Higher costs of living coupled with lower disposable real income could induce households to reduce expenditures, in particular, related to non-compulsory insurance coverages.[24] This may negatively impact financial stability, especially, when a significant number of households or corporates are faced with large losses at the same time. Forth, insurance undertakings may also face liquidity challenges in times of decreases in the purchasing power of policyholders incentivising them to surrender or lapse their insurance policies. This may pose a systemic risk if early redemptions or lapse rates increase. Furthermore, according to numerous local accounting standards, rising interest rates lead to unrealised losses instead of a revaluation of bonds. These unrealised losses can restrict the flexibility of these highly liquid assets for managerial decisions, prompting a shift towards less liquid components on the asset side. Given that insurance companies are substantial investors in fixed-income assets, a mutual need for early bond redemptions can lead to negative repercussions in both the bond and other asset markets.

**Rising interest rates present an opportunity for life insurance companies to enhance the value of their products, which have struggled during the low-interest-rate environment.** The recent shifts in the macroeconomic landscape have notably affected insurance products with savings components, especially promoting traditional endowment insurance and unit-linked offerings in light of rising interest rates. Thus, the current trend of increasing interest rates makes life insurance more attractive as a stable investment option with the potential for greater wealth accumulation, offering higher returns to policyholders compared to periods of lower rates. While the prolonged period of low rates raised concerns about the long-term viability of insurance products with savings features, the rise in interest rates has led to a renewed interest in savings-focused products.

*24 However, as described in the section on climate related financial stability risks, Liechtenstein is characterised by a very low protection gap, given the mandatory insurances.*

**The non-life insurance sector has remained resilient in the face of the current economic downturn.** In the non-life insurance sector, the onset of inflation brings about a counterbalancing effect, resulting in a higher claim ratio, consequently bolstering technical provisions. Moreover, higher inflation contributes to elevated premium rates and introduces uncertainties regarding future pricing strategies. Nonetheless, despite increasing inflation rates and weak economic growth, the insurance sector, in particular the non-life sector, exhibits remarkable resilience driven by the consistent necessity for non-life insurance products, particularly in specific business lines, ensuring a consistent demand independent from macroeconomic fluctuations.

**Given that the business framework of Liechtenstein insurance companies relies heavily on cross-border activities, persistent attention is directed towards business conduct supervision.** In light of the international focus of domestic insurance companies, the FMA has intensified its focus on the supervision of business conduct, fostering collaborative efforts with other national competent authorities (NCAs) in recent years. While room for improvement remains both on the European and domestic level, the diligent supervisory work accomplished thus far has mitigated the risk of inadequate conduct of business oversight.

**The market environment remains challenging for insurance companies.** The effects of rising interest rates and inflation on insurance companies are multifaceted. While they offer opportunities such as reduced long-term liabilities and improved net present value of future liabilities, they also introduce risks like liquidity constraints and unrealised losses. Insurers must navigate these challenges prudently to maintain financial stability and fulfill their important role in the market. In addition, the collective actions of insurers can have broader ramifications for financial markets, highlighting the need for careful consideration. As Liechtenstein insurance companies are characterised by high exposures towards the domestic banking sector relative to total investment (around 28 % by end-2022, while the EU average remains at 13 %)[25], this interconnectedness between financial sectors also needs to be closely monitored. Although the solvency position of the domestic insurance sector remained solid during the recent uncertainty episode, supervisory authorities will need to keep a close eye on both the life and non-life insurance segments to ensure financial stability also in the longer-run.

25 *EIOPA (2023), Financial stability report. June 2023.*

## Pension funds

**Rising interest rates have different effects on pension funds in the short and long-run.** Given the recent market developments related to increasing interest rates and decreasing stock prices, the coverage ratios for pension funds decreased during 2022. However, in the long run, it is reasonable to anticipate that pension funds can benefit from higher yields and consequently rebound from the initial drop in coverage ratios. Nevertheless, it is crucial for pension funds, particularly those that have consistently hovered around a coverage ratio of 100 % even before the 2022 drop, to contemplate potential restructuring measures in order to return to a viable economic path. Additionally, the decreasing number of in-house pension funds leads to a concentration of risks within competitive collective pension funds ("Sammelstiftung"). These risks need to be closely monitored from a supervision perspective.

## Investment funds

**In light of its strong links to the banking sector, the investment funds sector is relatively low-risk, with the remaining risks being concentrated around consumer protection, supervisory limitations and profitability.** Following EU Directive 2011/61/EU, national supervisory authorities conduct a risk assessment of alternative investment funds (AIFs) on a regular basis. In 2022, the FMA identified 24 AIFs which showed elevated risk to the financial system, following the methodology outlined by ESMA guidelines. In a second step, considering the categories (i) impact, (ii) fire sales, (iii) contagion and (iv) disruption of credit intermediation, the FMA concluded that none of the 24 identified AIFs is a risk to financial stability. This conclusion is drawn because AIFs' risk indicators do not significantly differ from those of their peer group. When considering their leverage, size, and liquidity management collectively, there are no indications of heightened risks. In general, risks for consumers in the investment funds industry are not Liechtenstein-specific, as they are mostly due to common regulatory limitations across EEA countries. Costumers are at risk from greenwashing as it is difficult to distinguish between minimal and proper ESG implementation. In addition, potential stability risks in Liechtenstein stem mainly from the dependency on Swiss market infrastructure, which would be costly to substitute, as well as cyber and reputational risk.

# POLICY DEVELOPMENTS

## MACROPRUDENTIAL POLICY AND REGULATORY FRAMEWORK

**The responsibilities for macroprudential policy and supervision in Liechtenstein are divided among the FMA, the Financial Stability Council (FSC) and the government.** In accordance with the recommendation of the European Systemic Risk Board[26], the primary aim of macroprudential supervision in Liechtenstein is to actively contribute to the overall stability of the financial system. Only a stable financial system can efficiently fulfil its macroeconomic functions and thus contribute sustainably to the economic development in Liechtenstein. Acting as the central body for macroprudential policy and supervision in Liechtenstein, the FSC is comprised of members from the Ministry of General Government Affairs and Finance (MPF) and the FMA. Quarterly meetings are held since its establishment in 2019 to discuss financial stability issues and to take necessary actions to safeguard the stability of the country's financial system. The FSC primarily aims to enhance collaboration on macroprudential issues among the institutions and regularly discusses matters crucial for financial market stability. The macroprudential strategy outlines essential aspects in implementing macroprudential supervision in Liechtenstein, serving to promote the decision-making process, communication, and accountability to the public. According to the ESRB, this strategy should be reviewed and updated at least every 3 years. In line with this recommendation, the strategy was revised at the end of 2022.

**The FMA, as the competent authority for macroprudential supervision, is legally mandated to ensure financial market stability according to Article 4 of the FMA Act.** The FMA can apply various macroprudential instruments for this purpose. Additionally, the FMA serves as the Secretariat to the FSC and provides financial stability analyses to support its work. Based on these assessments, the FSC proposes macroprudential measures by issuing recommendations and warnings to the government, the FMA or other domestic authorities. Decisions on implementing macroprudential instruments are made by the government or the FMA within the existing legislative framework.

**On the European level, both the FMA and the MPF are represented in the European Systemic Risk Board (ESRB).** Since 2017, Liechtenstein has been an active member of the ESRB. While both the MPF and the FMA are members of the General Board, the decision-making body of the ESRB, the technical work in its committees is carried out by FMA staff, in line with its role as the competent authority for macroprudential supervision in Liechtenstein. The ESRB can issue warnings and recommendations to member states or national supervisory authorities if significant risks to the financial system are identified. In this context, Liechtenstein's macroprudential authorities are diligently working on implementing the list of macroprudential recommendations and warnings to contribute to the financial system's stability both at the domestic and the European level.

*26 ESRB recommendation ESRB/2011/3.*

## RECENT (MACRO-)PRUDENTIAL POLICY DEVELOPMENTS IN LIECHTENSTEIN

**Liechtenstein's macroprudential authorities have further enhanced their policy-mix in recent years by employing various measures to reduce systemic risks, strengthening the resilience of the banking sector, and addressing real estate sector risks.** The existing macroprudential policy-mix comprises a comprehensive set of measures, including capital, lender-based, and borrower-based measures. The primary objective of these measures is to mitigate identified systemic risks and enhance the domestic financial sector's risk-bearing capacity. Capital-based measures aim to bolster the resilience of the domestic banking sector and reduce the likelihood of long-term structural risks materialising. On the other hand, borrower-based measures specifically target the real estate sector to address the build-up of systemic risks in that area. In addition, lender-based measures focus on the real estate sector by requiring banks to apply higher risk weights for riskier residential real estate exposures. These measures further reinforce the risk-bearing capacity of the domestic banking sector.

### Capital-based measures

**Following the implementation of the CRD V package in 2021, there have been no adjustments to the capital buffer requirements for the banking sector in Liechtenstein.** To prevent buffer requirements from increasing solely due to legal changes related to the revisions of the CRD V package, macroprudential capital-based measures were thoroughly re-evaluated and recalibrated in 2021. As part of this process, the FSC decided to revise the systemic risk buffer and the capital buffer for other systemically important institutions (O-SII), while keeping the ratio for the countercyclical capital buffer (CCyB) unchanged at 0 % of risk-weighted assets. As of September 2023, the domestic banking sector's capital and buffer requirements apply in accordance with Figure 28.

| Capital and buffer requirements as of September 2023 | | |
|---|---|---|
| Sectoral systemic risk buffer* | 1.0 % | |
| O-SII buffer | 2.0 % | |
| Countercyclical capital buffer | 0 % ** | |
| Capital conservation buffer | 2.5 % | |
| Pillar II requirements | X % | |
| Supplementary capital (Tier 2) | 2.0 % | Pillar I |
| Additional Tier 1 (AT1) | 1.5 % | Pillar I |
| Common Equity Tier 1 (CET1) | 4.5 % | Pillar I |

***Figure 28***
*Capital and buffer requirements for Liechtenstein's banks (in percent of risk-weighted assets)*

** applies to loans secured by mortgages on real estate in Liechtenstein*
*** for domestic exposures*

*Source: FMA.*

**In September 2023, the FSC reasserted its recommendation to maintain the countercyclical capital buffer (CCyB) for domestic exposures at 0% of risk-weighted assets, as there is currently no evidence of excessive credit growth in Liechtenstein.** The CCyB serves as an additional capital reserve during times of heightened credit expansion by financial institutions to absorb potential losses during crises. The decision is grounded on the credit gap (Figure 29), reflecting the private sector's debt-to-GDP ratio deviation from its long-term trend. The credit gap is calculated based on both tax and bank statistics data. Given the currently negative credit gap in Liechtenstein, indicating no need for a buffer rate increase under the rules-based approach, and additional indicators showing no signs of excessive credit lending, the FSC concluded that maintaining the CCyB at 0% is appropriate. The committee will regularly analyse and monitor cyclical risks in the financial sector and propose an increase in the CCyB if necessary.


*Figure 29*
*Credit gap in Liechtenstein (percentage points)*

*Source: FMA.*

**Regarding the O-SII buffer requirement, the FSC recommended to the FMA to maintain the O-SII buffer rate at 2% of risk-weighted assets for the three largest banks in Liechtenstein.** The O-SII buffer aims to reduce the likelihood of failure for systemically important institutions (SIIs) by requiring them to hold additional Common Equity Tier 1 (CET1) capital, compensating for implicit government support, and bolstering market confidence. This buffer also enhances identified banks' loss-absorption capacity. The identification of O-SIIs is conducted annually based on a scoring process using EBA guidelines (EBA/GL/2014/10), considering ten indicators across four criteria: size, importance, complexity/cross-border activity, and interconnectedness. In Liechtenstein, the three largest banks have been identified as O-SIIs due to their systemic relevance for the domestic banking sector, meeting all four criteria. The banking sector is heavily concentrated around these three banks, as indicated by a total point score of 9,379 out of a possible 10,000 points (aggregated for the major three banks). With each identified O-SII scoring over 1,000 points, significantly surpassing the identification threshold for an O-SII of 350 basis points, the FSC recommended setting the buffer rate at 2% of the total risk exposure amount, both on a consolidated and individual basis.

**Following a re-evaluation in September 2023, the FSC recommended maintaining the systemic risk buffer (SyRB) at 1% of risk-weighted exposures for loans secured by real estate property in Liechtenstein.** The SyRB is designed to prevent or mitigate systemic risks that could adversely impact the financial system and the real economy, not covered by the CCyB or O-SII buffer. Two sources of systemic risks were identified for the Liechtenstein banking sector: systemic vulnerability and concentration risk. The calibration considers historical crisis costs, potential costs from specific systemic risks, and comparisons with similar banking systems. It also accounts for overlaps with the O-SII buffer and factors such as the banking sector's conservative business model due to applying the standardised approach to calculate risk weights, proportionality criteria, and addressing idiosyncratic risks through the SREP or Pillar 2 requirements. The SyRB for Liechtenstein banks is set at 1 % of risk-weighted exposures for loans secured by domestic mortgages to enhance resilience against real estate risks. Effective since spring 2022, it applies on both the consolidated and individual levels, preventing arbitrage and ensuring fair competition. The buffer is considered effective and proportional based on stress scenarios and past crisis costs. If systemic risks, especially related to rising household indebtedness, continue to increase, and other targeted macroprudential instruments fail to address real estate risks adequately, the buffer rate may be adjusted in the future.

## Instruments targeting the real estate sector

**The real estate and mortgage report of the FMA[27] provides a comprehensive analysis of the residential real estate sector in Liechtenstein and assesses the risks to domestic financial stability.** The risk assessment of the residential real estate market is based on the proposed methodology for assessing residential real estate risks and macroprudential measures of the ESRB and is carried out using three different stretches. The macroprudential risk analysis of the FMA identifies a high vulnerability of Liechtenstein households, especially given the high level of debt, while the risks related to the collateral and the funding stretches are classified as low and moderate, respectively. Nevertheless, negative feedback effects on housing prices cannot be ruled out in the case of a materialisation of the identified risks. Thus, systemic risks have to be addressed by complementing the existing policy mix.

**The high and still increasing household debt over the past 20 years makes the real estate sector vulnerable to unexpected macroeconomic shocks.** A portion of borrowers already struggle to meet specific internal affordability requirements set by banks. If interest rates rise further or if unemployment increases, and / or household income decreases, servicing debt may become problematic for a rising share of households. Additionally, a sudden increase in loan defaults may lead to negative second-round effects on property prices in the case of increased foreclosures.

*27 The report was published by the FMA in October 2021 (available in German only): "Immobilien- und Hypothekarrisiken in Liechtenstein: Risiken aus Sicht der Finanzstabilität". A summary of the main findings of the report can be found in Box 4 of the Financial Stability Report 2021.*

**While banks in Liechtenstein apply conservative lending standards regarding loan-to-value (LTV) ratios, debt-to-income ratios are often high.** LTV ratios and related amortisation requirements for mortgage loans for owner-occupied residential properties and investment properties are quantitatively regulated in Liechtenstein's Banking Ordinance. A loan with an LTV ratio exceeding 80% at loan origination qualifies the corresponding loan as an exception-to-policy (ETP). Additionally, loans have to be amortised to an LTV level of 66.6%. Thus, LTV ratios in Liechtenstein are relatively conservative compared to international standards and are homogeneous across the market. In contrast, the lending standards vary significantly among banks in the context of affordability, as the Banking Ordinance does not provide a quantitative definition of sustainable affordability in the context of a corresponding exception-to-policy (ETP) definition. As a general rule, market participants in Liechtenstein – in line with the practice in Switzerland – often mention that debt service should not exceed around one-third of household income at a hypothetical interest rate of 4.5% to 5%. However, current lending standards of some banks in Liechtenstein deviate considerably from this general rule. The lack of specific affordability rules in the Banking Ordinance results in significant differences across banks in terms of income-related lending standards and ETP definitions.

**In 2021, the European Systemic Risk Board (ESRB) conducted a European-wide systematic and forward-looking assessment of medium-term risks in the residential real estate sector and issued a risk warning to Liechtenstein (ESRB / 2021 / 14) in light of high household indebtedness.** According to the ESRB, the main vulnerability from a macroprudential perspective is the high and increasing household indebtedness in the absence of income-related borrower-based measures to contain further accumulation of risks related to the residential real estate sector. The ESRB's risk assessment confirms earlier risk analyses by the FMA.

**Against this backdrop, a working group consisting of representatives from the FMA, the Liechtenstein Bankers Association and the three systemically important banks was established in early 2022 to develop measures for addressing the identified risks.** In the first step, the working group developed a common understanding of risks in the Liechtenstein real estate and mortgage market. Based on this assessment, measures were developed to address risks in the real estate and mortgage sectors effectively.

**In its meeting on 26 June 2023, the FSC recommended measures to the FMA and the government in three specific areas based on the results of the working group.** After intensive discussions on the financial stability risks as well as the various proposed solutions, the FSC recommended measures (1) to improve the data availability in the real estate sector, (2) to adjust the existing borrower-based measures to address the risks of high household indebtedness, and (3) to increase the risk awareness related to the high household indebtedness both among lenders and borrowers. Alongside mitigating systemic risks in the real estate sector, these measures also address important aspects of customer protection. In addition, the recommended measures of the FSC are also a policy response to the risk warning issued by the ESRB.

**First, as there are significant data gaps regarding the real estate and mortgage market in Liechtenstein, improved data availability is essential to assess the efficiency and adequacy of macroprudential measures in the future.** Therefore, the FSC recommended to continue the ongoing efforts to develop a nationwide residential real estate and rental price index and to adjust the existing FMA data collection to evaluate the effectiveness and efficiency of the adapted borrower-based measures. Real estate and rental price indices increase transparency regarding transaction prices, enhance international comparability of property price developments, and enable timely risk monitoring of the real estate market. Furthermore, adjusting macroprudential measures requires a well-founded impact analysis, necessitating modifications to the existing FMA data collection in the context of banks' regulatory reporting requirements.

**Second, to address the risks of high household indebtedness, the FSC proposes to adjust the existing borrower-based measures.** The overarching goal is to address the risks associated with high debt levels without unduly restricting or hindering access to mortgage credit for residential properties. The following definitions and borrower-based measures were developed considering the objective, the specifics of the Liechtenstein real estate market, the competition with Switzerland and the operational efforts for banks:

- **Definition of sustainable affordability:** A loan's affordability is defined as sustainable when the expenses for the residential property, based on the hypothetical interest rate of at least 4.5%, do not exceed 33% of the household's disposable income.

- **Harmonisation of the definition of ETP loans concerning affordability:** Similar to LTV ratios, market-wide minimum standards should also be established for defining exception-to-policy (ETP) loans concerning affordability. A loan is considered an ETP concerning affordability when the expenses for the residential property, taking into account the hypothetical interest rate and other significant non-property-related expenses, relative to the borrower's disposable income, exceed 37%. Expenses should include (stressed) interest payments, amortisation, and property maintenance costs.[28]

- **Adjustment of the amortisation period for mortgages with high LTV ratios ("second mortgages"):** Similar to Swiss lending standards, the second mortgage, which exceeds two-thirds of the LTV ratio for "buy-to-let" properties or owner-occupied residential properties, should be linearly amortised within 15 years. The minimum annual amortisation should be 1% of the total loan amount. This adjustment of the amortisation period for second mortgages from currently 20 years to 15 years enables a faster debt reduction without overly burdening the borrower.

- **Amortisation requirement based on affordability:** Affordability calculations should be performed at loan origination, regular loan reviews, and following certain trigger events.[29] For loans approved after the implementation of the new measures, if sustainable affordability (maximum of 33%) is not met, a minimum annual amortisation of 1% of the initial loan volume should be applied until the sustainable affordability level is reached. For existing loans, i.e. loans granted before the implementation date, if they qualify as ETP transactions during regular loan reviews or a review is triggered by the materialisation of certain risks (i.e. affordability exceeding 37%), a minimum amortisation is required until reaching sustainable affordability (maximum of 33%). Higher amortisation is always possible and desirable.

*28 In addition, anticipated reductions in borrower's income should be adequately considered in the affordability calculation in a forward-looking manner.*

*29 The "triggers" and the respective scope are outlined in FMA Communication 2023/1.*

**By providing a concrete quantitative definition for loan affordability and an additional amortisation requirement, the risks associated with high household indebtedness in Liechtenstein are considered to be effectively addressed without unduly restricting or hindering access to mortgage credit for residential properties.** These measures establish minimum standards for defining sustainable affordability and ETP transactions, while banks retain the flexibility to deviate from these standards in justified cases. Loans exceeding an affordability of 37 % should be classified as ETP transactions. Harmonising the ETP definitions regarding affordability fosters transparent market comparability and establishes a "level-playing field" for all Liechtenstein banks.

**Third, as an accompanying initiative, the FSC recommended fostering open and transparent communication regarding the risks associated with high household indebtedness, bolstering training programs within banks, and conducting more comprehensive consultations with borrowers.** Banks, which provide advice to borrowers, play a crucial role in this regard. This includes raising awareness about the risks of high indebtedness (e.g., in the case of rising interest rates) and the possibilities of a faster loan amortisation, which can be in the borrowers' best interests. During loan origination, the consequences and total costs of full or partial amortisation throughout the loan's duration compared to non-amortisation or minimum amortisation must be demonstrated to each borrower. This transparency allows borrowers to make an informed decision, potentially resulting in substantial cost saving for the borrower.

**The FSC also communicated its forward guidance approach.** As part of its legal responsibility to reduce systemic risks and strengthen financial market stability, the FSC will continue to carefully monitor the risks arising from high household indebtedness in Liechtenstein. If the risks are not adequately addressed by the implemented measures, the FSC will make further recommendations.

## Other recent macroprudential developments

**Liechtenstein's authorities continued their ambitious agenda by actively implementing the relevant recommendations and warnings from the ESRB.** Having been founded in 2019, the FSC has succeeded in largely addressing the recommendations that were put forth before Liechtenstein became an ESRB member in 2017. Since then, Liechtenstein authorities continued their extensive work to incorporate the warnings and recommendations addressed to the country on a continuous basis, including those related to the real estate sector, reciprocation of macroprudential measures, calibration of the domestic CCyB, the recognition and setting of CCyB rates for exposures to material third countries, and the COVID-19 pandemic. At the end of 2022, the ESRB also issued a new recommendation on identifying vulnerabilities in the commercial real estate (CRE) sector in the EEA given its systemic importance to the real economy and the financial system. The recommendation does not only aim at improving the monitoring of systemic risks stemming from the CRE market, but also at ensuring sound CRE financing practices while increasing the resilience of financial institutions. In addition, it is recommended that the European Commission develops activity-based tools for CRE, in particular by complementing the existing entity-specific macroprudential tools to help address CRE vulnerabilities effectively and to avoid regulatory arbitrage and the shifting of risks between banking and non-banking sectors. Liechtenstein authorities have timely addressed all recommendations and warnings, and they are engaged in a close collaboration with the ESRB Secretariat to effectively put in place the necessary measures as suggested by these

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recommendations and warnings. This collaboration aims to mitigate any potential significant adverse effects on Liechtenstein's real economy and the financial sector.

**In order to secure the long-term prosperity and stability of Liechtenstein, the government has put forth a proposal for Liechtenstein's membership in the IMF.** Given the absence of a central bank in Liechtenstein, the country lacks a lender of last resort. This implies that, during a crisis, local banks would likely not have access to emergency liquidity assistance (ELA) from the Swiss National Bank (SNB), as they are not deemed systematically significant for the Swiss franc currency area. In this context, becoming an IMF member would provide Liechtenstein's government with access to liquidity even in times of acute liquidity shortages. Such membership is of paramount importance from a financial stability perspective.

**Consequently, the FMA strongly supports the proposal for IMF accession and actively engages in aiding the government's preparatory efforts during the accession process.** In September 2022, the parliament endorsed the commencement of accession negotiations with the IMF, which are presently in progress. In May 2023, Liechtenstein officially applied for IMF membership. Currently, Liechtenstein authorities are ambitiously working on providing the necessary data and information to the IMF to calculate the IMF quota, and to discuss the form of payment of the subscription and other customary terms and conditions of membership, while preparing to meet all IMF membership criteria.

## BANK RESOLUTION

**In many cases in the past, taxpayers had to pay the bill for bailing-out banks.** Public funds have repeatedly been used to repay banks debt, to keep their financial operations running and to safeguard financial stability: a so called "bail-out". After the financial crisis of 2008 – 2009, the political motivation to avoid such "bailouts" was high. This is especially due to the tremendous financial burden on the taxpayer and the adverse incentives created for the shareholders and stakeholders of systemically important banks ("too big to fail"). This initiative paved the way to new "resolution" regimes for financial intermediaries. Such a framework aims at limiting the scope of public bail-outs while at the same time providing for losses to be borne by the owners and creditors of the bank – therefore also enhancing market discipline and reducing moral hazard.

**The "bail-in-instrument" is one of the key resolution tools to protect tax payers.** In case of bank failure, the resolution authority may write down liabilities of the institution or convert them into ordinary shares. The tool aims at recapitalising a failing bank of public interest in order to prepare it, for example, for a sale to a new investor. In contrast to a bail-out, a bail-in places the burden of a bank's failure on the owners and certain creditors of the bank. "Bail-in" avoids the taxpayer assuming risks associated with a bank's failure and minimises the impact of the bank's resolution on the economy and financial system.

**When operationalising the bail-in, there are three main principles to be considered by the Resolution Authority.** Firstly, shareholders have to bear losses first. Those responsible for the default are to be held liable. Secondly, creditors bear losses after the shareholders, according to the order of priority of their claims under normal insolvency proceedings. And thirdly, no creditor may incur greater losses they would have incurred during normal insolvency proceedings ("no creditor worse off principle").

**However, an effective "bail-in" requires a certain minimum amount of bail-in-able liabilities.** For this reason, credit institutions are obliged to comply with the minimum requirement for own funds and eligible liabilities (MREL, see Box 6) at all times. MREL requires institutions to hold funds of adequate quantity and quality that can be written off or transformed into capital in the case of a crisis. This allows to credibly implement the preferred resolution strategy, while placing the burden of loss absorption and recapitalisation on owners and certain creditors of the bank.

**In 2023, the FMA, in its role as Resolution Authority, disclosed further details on "bail-in execution" in order to increase legal certainty for shareholders and stakeholders in the case of a bail-in.** Using a simplified and hypothetical case study, the disclosure outlines the FMA's current proposed approach to implementing the bail-in tool for banks if necessary for resolution action. The publication is a further step towards safeguarding depositor and investor protection as well as transparency and predictability of the resolution framework.

**Furthermore, the Resolution Authority continued its work on resolution planning by putting a strong focus on improving resolvability.** In this regard, the Authority focuses on crucial preconditions for the effective implementation of transfer strategies, particularly the establishment of management information systems for valuations and transfer perimeters. In the forthcoming years, the Authority's assessment of resolvability will be based on a combination of banks' self-assessments ("Res-Q"; the Resolvability Questionnaire), internal and external audits, as well as more sophisticated methods of resolvability testing, such as crisis live simulations.

BOX 6

## MREL requirements in Liechtenstein

**Following the entry into force of the BRRD II in Liechtenstein in May 2023, the MREL requirements became binding for the domestic O-SIIs.** To date, all institutions hold a high level of own funds and eligible and / or subordinated liabilities. Therefore, all banks exceed both the MREL as well as the subordination requirement (including the combined buffer requirement, CBR).

**The level of MREL is obtained from the sum of the loss absorption amount (LAA) and the recapitalisation amount (RCA).**[30] The LAA reflects the losses that the bank should be capable of absorbing. It equals the bank's minimum capital requirement (total SREP capital requirement). The RCA is the amount necessary to recapitalise an institution in order to comply with regulatory requirements and carrying out the activities for which it is authorised, restoring market confidence. The recapitalisation amount equals the loss absorption amount, adjusted on an institution-specific basis by the Resolution Authority.[31] The adjustments, for instance, explicitly consider the resolution strategy as well as the resolvability assessment conducted by the Resolution Authority. This approach creates incentives for banks to improve their resolvability on an ongoing basis.

**The Resolution Authority requires institutions to meet a certain part of the MREL requirement with their own funds and subordinated eligible instruments.** The subordination requirement is designed to avoid a situation in which affected shareholders and creditors are worse off in resolution when compared to normal insolvency proceedings ("no creditor worse off principle"). In order to assess the NCWO risk, the Resolution Authority calculates the effects of a default from the perspective of implementing resolution instruments (write-down and conversion of eligible liabilities) on the one hand and the liquidation of the entity on the other. The assessment of the NCWO risk and the corresponding subordination requirement is obtained from a comparison of the effects on the creditor (claims) affected by the resolution / liquidation.

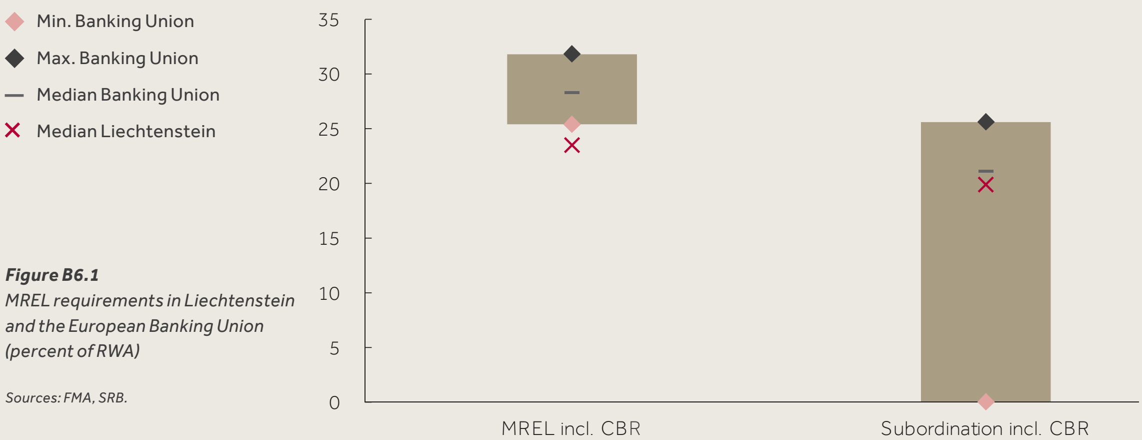


***Figure B6.1***
*MREL requirements in Liechtenstein and the European Banking Union (percent of RWA)*

*Sources: FMA, SRB.*

*30 For detailed information on the calibration of MREL we refer to the FMA Communication 2022 / 02: https: / / www.fma-li. li / files / list / fma-communication-2022-02-mrel-policy.pdf.*

*31 Adjustments according to the variables and criteria set out in the MREL Policy (section 5.2).*

BOX 6

**As can be seen in Figure B6.1, MREL requirements in Liechtenstein are set at a relatively moderate level in comparison to other European jurisdictions.** The national MREL policy explicitly considers the high capitalisation with CET1 capital and the stable ownership structure of the three systemically important banks. Due to these specifics, the main shareholder's stake represents a cluster risk for the shareholder as a large proportion of their assets is invested in the institution. Therefore, shareholders would also bear a major share of the costs if their strategy fails, significantly reducing disincentives compared to large banks with a more diverse shareholder structure. On the other hand, in order to maintain a high level of CET 1 capital (or the presence of other subordinated capital instruments), the subordination requirement is relatively strict in comparison.

## OTHER POLICY DEVELOPMENTS

**The FMA annually conducts risk assessments at the individual bank level within the framework of the Supervisory Review and Evaluation Process (SREP).** The SREP combines a wide array of findings from the supervisory process at the institution level, resulting in a comprehensive supervisory overview for each intermediary. In this context, supervisors focus on banks' business models, internal governance, risks to capital and risks to liquidity. Although all banks, e-money firms and payment providers operating in the domestic market are reviewed, the three O-SIIs are the main focus of the SREP in Liechtenstein given the size of the balance sheet, the number of clients and employees and the complexity of their business. Following the results of the SREP, the FMA may stipulate that specific intermediaries maintain additional capital under the Pillar 2 requirement to cover the risks they face. Considering the risks specific to each bank, which encompass vulnerabilities arising from the changing economic environment, cyber risks, AML / CFT and ESG risks, the FMA may mandate banks to maintain additional capital, liquidity, and / or impose qualitative requirements from a microprudential standpoint. This is aimed at bolstering capital, solvency and liquidity of individual institutions.

**The FMA has taken additional measures to fine-tune the stress test framework, evaluating the resilience of domestic banks in the face of financial and economic shocks.** Over the past years, the FMA has started using stress tests to assess how well banks can cope with financial and economic shocks, which should help supervisors to identify vulnerabilities and address them accordingly. At the beginning, the stress tests were performed only for the O-SIIs in Liechtenstein, while this year the entire banking sector is stressed based on diverse scenarios. The baseline scenario aims to depict a plausible projection of future economic developments. Meanwhile, other scenarios were designed to simulate adverse scenarios, such as a collapse in financial markets or a reputational crisis unique to Liechtenstein and its banking sector. The outcomes of the stress test indicate that the banking sector remains robust, and the stress scenarios would need to be exceptionally severe to yield a noteworthy impact on banks' capital and liquidity indicators.

# APPENDIX

## LIST OF ABBREVIATIONS

| | |
|---|---|
| AEOI | Automatic Exchange of Information |
| AHV/IV | Public pension system |
| AEOI | Automatic exchange of information |
| AIF | Alternative Investment Fund |
| AMC | Asset Management Company |
| AML/CFT | Anti-money laundering/Combating the financing of terrorism |
| AuM | Assets under management |
| BCBS | Basel Committee on Banking Supervision |
| BIS | Bank for International Settlements |
| BOP | Balance of Payments |
| BPVG | Occupational Pension Act |
| BRRD | Banking recovery and resolution directive |
| CCyB | Countercyclical capital buffer |
| CDIS | Coordinated Direct Investment Survey |
| CET1 | Common equity Tier 1 |
| CHF | Swiss franc |
| CIR | Cost-income ratio |
| CPI | Consumer price index |
| CRD | Capital Requirements Directive |
| CRE | Commercial real estate |
| CRR | Capital Requirements Regulation |
| EBA | European Banking Authority |
| EBT | Earnings before taxes |
| ECB | European Central Bank |
| EEA | European Economic Area |
| EIOPA | European Insurance and Occupational Pensions Authority |
| ELA | Emergency liquidity Assistance |
| ESG | Environmental, social and governance |
| ESMA | European Securities and Markets Authority |
| ESRB | European Systemic Risk Board |
| ETP | Exception-to-policy |
| EU | European Union |
| EURIBOR | Euro Interbank Offered Rate |
| FDI | foreign direct investment |
| FMA | Financial Market Authority |
| FMI | financial market infrastructure |
| FSC | Financial Stability Council |
| FX | foreign exchange |

| | |
|---|---|
| GaR | growth-at-risk |
| GDP | Gross domestic product |
| G-SII | Global systemically important institution |
| GWP | Gross written premium |
| IFRS | International Financial Reporting Standards |
| IIP | international investment position |
| IMF | International Monetary Fund |
| KOF | KOF Swiss Economic Institute |
| LAA | Loss absorption amount |
| LCR | Liquidity coverage ratio |
| LSTI | loan-service-to-income |
| LTI | loan-to-income |
| LTV | Loan-to-value |
| ManCos | Management companies |
| MiCA | Markets in Crypto-Assets |
| MiFID | Markets in Financial Instruments Directive |
| MPF | Ministry for General Government Affairs and Finance |
| MREL | Minimum requirements of own funds and eligible liabilities |
| NCA | National competent authority |
| NCWO | No creditor worse off |
| NFC | Non-financial corporations |
| NGFS | Network for Greening the Financial System |
| NPL | Non-performing loans |
| NSFR | Net stable funding ratio |
| OECD | Organisation for Economic Co-operation and Development |
| OFAC | US Treasury's Office of Foreign Assets Control |
| O-SII | Other systemically important institution |
| q-o-q | Quarter-on-quarter |
| RCA | recapitalisation amount |
| Res-Q | Resolvability Questionnaire |
| RoA | Return on assets |
| RoE | Return on equity |
| RRE | Residential real estate |
| RWA | Risk-weighted assets |
| S&P 500 | Standard & Poor's 500 |
| SA | Standardised approach |
| SCR | solvency capital requirement |

| | |
|---|---|
| SDGs | Sustainable development goals |
| SEC | US Securities and Exchange Commission |
| SNB | Swiss National Bank |
| SREP | Supervisory review and evaluation process |
| StA | Standardized approach |
| SVB | Silicon Valley Bank |
| SyRB | Systemic risk buffer |
| TCSP | Trust and corporate service providers |
| THK | Liechtenstein Institute of Professional Trustees and Fiduciaries |
| TrHG | Professional Trustees Act |
| TVTG | Tokens and Trusted Technologies Act |
| UCITS | Undertakings for collective investments in transferable securities |
| WAMU | Washington Mutual |
| y-o-y | year on year |

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