FMA

Financial Market Authority
Liechtenstein

22

FINANCIAL STABILITY REPORT 2022

BOXES

PREFACE

In this publication, the Liechtenstein Financial Market Authority (FMA) presents its fifth annual Financial Stability Report on the financial sector in Liechtenstein. Since Liechtenstein does not have a national central bank, the FMA is legally responsible to contribute to the stability of the financial system in accordance with the Financial Market Supervision Act (FMA Act, Art. 4).

Following the fundamental work and analysis carried out over the last few years in the area of financial stability, this year's Financial Stability Report was strongly revised and streamlined. Instead of analysing developments in different sectors – financial as well as non-financial – separately, we now put a stronger focus on a comprehensive evaluation of systemic risks across the financial sector as well as the implemented policies addressing them. As a result, the new report includes a more extensive risk-based financial stability assessment. At the same time, the report avoids to repeat structural characteristics of the economy or the financial sector which have already been explained in-depth in past publications.

The global outlook has worsened substantially in recent months, both for the real economy and financial markets. These developments are associated with a deterioration of the financial stability outlook compared to last year. Inflation has increased sharply across major economies on the back of pandemic-related supply bottlenecks, a buoyant economy accompanied by record-low unemployment rates and sharply rising energy prices. The Russian aggression against Ukraine has further reinforced these developments. While central banks were initially hesitant to tighten monetary policy, pointing to "transitory" inflation developments, it became clear in the course of the year that a strong monetary policy response is necessary to fight the strong rise in inflation. The abrupt increase in interest rates will likely be associated with a global recession, further corrections in both bond and stock markets, and increasing vulnerabilities and credit risks in housing markets.

Overall, our analysis concludes that Liechtenstein's financial sector has remained sound and stable, with systemic risks assessed to be limited. At the same time, global risks and vulnerabilities have increased substantially in an environment of rising geopolitical tensions and financial turbulence. In times of elevated uncertainty, high capitalisation and resilience in the financial sector is crucial, while the build-up of vulnerabilities has to be addressed with targeted instruments in a timely manner.

Mario Gassner
Chief Executive Officer

Martin Gächter
Head of the Financial Stability Division

EXECUTIVE SUMMARY

MAIN FINDINGS AND RISK MAP

The financial stability outlook has deteriorated in light of a jump in inflation, rising interest rates and a slowdown in economic growth. Current developments may mark an abrupt end to the long-run downward trend to both nominal and real interest rates that started around 40 years ago. The tightening in financial conditions is not only associated with increasing risks in financial markets, but also strongly affects non-financial corporations (NFC), private households and financial intermediaries.

The high sensitivity of the Liechtenstein economy to the global business cycle suggests a pronounced impact in the case of a global recession. Amidst its high openness, early indicators already point to a slowdown in Liechtenstein's economy in light of weakening global trade. Liechtenstein's NFC sector will also face headwinds from high input prices, particularly in energy-intensive sectors, tighter financial conditions and lower sales. While the high sensitivity of the domestic economy to global developments gives reason to expect an adverse effect on exports and GDP, various risk-mitigating factors – such as the low indebtedness of the NFC sector – alleviate the effect on corporates' balance sheet vulnerabilities in Liechtenstein. Against this background, a broad-based impairment of debt servicing capacity in the NFC sector seems unlikely.

Despite the sharp decline in asset prices since the start of the year, financial markets still remain vulnerable to further corrections. Some risks highlighted in last year's financial stability report have materialised since the turn of the year, as the rise in inflation has turned out not to be "transitory", with the abrupt increase in interest rates hitting financial markets at full tilt. Central banks around the world have reacted to the strong rise in inflation by tightening monetary policy, leading to plummeting stock and bond markets, a broad-based increase in risk premiums and strong fluctuations in foreign exchange markets. Nevertheless, valuations remain vulnerable to various negative surprises. In particular, markets currently price in a scenario of rapidly declining inflation, a relatively mild economic slowdown and limited monetary policy tightening. In light of high uncertainty regarding near-term inflation and interest rate developments, as well as continued high valuations of stock markets compared to historical standards, financial markets remain vulnerable to repricing in case of more persistent inflation or less robust corporate earnings than currently anticipated.

Risks in the real estate sector have also increased. The high and rising level of household indebtedness continues to pose a systemic risk to the domestic financial sector. Current cyclical developments could be associated with an impairment of debt servicing capacities of households. However, acute risks of a materialisation of vulnerabilities in the household sector are assessed to be more contained than in other countries, due to less buoyant house price growth over recent years, a large share of fixed-interest loans, a standard procedure to ensure affordability of mortgages at loan origination and strong resilience in the banking sector. In the medium to long term, however, vulnerabilities are higher than in other countries, as indebtedness of the private household sector is among the highest across Europe, which can be hazardous in case of persistently elevated interest rates going forward.

The strong international integration is one of the major strengths of the Liechtenstein economy, but the particular institutional setting faces increased challenges. The success of Liechtenstein's economy is based on its strong international integration, with strong ties to Switzerland – including a customs and currency union – and full access to the European Union's (EU) Single Market, thanks to Liechtenstein's membership in the EEA. At the same time, these institutional particularities imply systemic risks which need to be addressed with targeted measures. First, the country – as well as the banking sector – currently lack a lender of last resort, as Liechtenstein does not have an own central bank. Against this background, the current initiative by the government and the endorsement by parliament to start accession negotiations with the International Monetary Fund (IMF) is highly welcomed. Second, the strong dependence on the Swiss financial market infrastructure, which is located in a third country from an EU perspective, implies certain risks in light of increasing regulatory divergence. Finally, the escalating geopolitical tensions might lead to increased fragmentation and potentially also higher barriers to trade, which would be particularly costly for a small and open economy like Liechtenstein.

International reputation and recognition as well as the adherence to international standards remain crucial for the stability of the financial sector. While international assessments attest Liechtenstein to have a strong legal basis and an effective investigation and prosecution framework for all types of money laundering and terrorist financing, as e.g. pointed out in the recently published report by MONEYVAL, reputational risks remain substantial. As the business model of the financial sector is built on trust and reputation, even single incidences could undermine these values and may, in a worst-case scenario, lead to strong contagion effects in the entire financial sector. While addressing these risks has already been a strong focus of policy-making and supervision, continuous efforts are still necessary to ensure trust and reputation going forward.

Both the financial sector and the real economy are increasingly affected by climate change, as well as the transition towards a low-carbon economy. The materialisation of both physical and transition risks is reflected in various risk categories and typically implies numerous side effects which have to be dealt with by financial sector participants. While climate-related disclosures have improved in recent years, existing data gaps and data inconsistencies remain an important factor limiting the assessment of both physical and transition risks in the financial sector. In recent years, both the FMA and the domestic financial sector have shown their strong commitment to make progress in the area of sustainable finance and in terms of data availability. Notwithstanding these efforts, much work remains on a global, European and national level to ensure that the financial sector is well prepared for the various climate-related challenges ahead.

Risks from cyber-attacks and digitalisation have become more important in recent years, also from a macroprudential perspective. A systemic cyber incident could erode the trust in the entire financial system by either undermining its ability to provide critical functions to the real economy or by causing large financial losses. From a macroprudential perspective, a coordination failure between national and European institutions could support the amplification of an individual cyber event to a systemic event. While cyber incidents did not yet have a systemic impact in Liechtenstein, risks remain substantial, especially on the back of heightened geopolitical tensions. In addition, increasing digitalisation implies certain risks for the financial sector, as financial innovation has materialised in the form of new financial service providers, therefore increasing competition in certain areas of financial services. In general, the domestic financial sector appears to be well prepared for the challenges ahead, both due to its specialised business models and its high awareness and openness for financial innovation.

Profitability remains one of the key issues in the banking sector. While profitability indicators in the Liechtenstein banking sector have remained remarkably stable even during the global pandemic, important challenges remain. Liechtenstein banks do not rank among the most profitable ones in Europe, with profitability indicators remaining at around the EU average and substantially below their US peers. In light of the staff-intensive business model and continuously high regulatory pressure, efficiency indicators have remained relatively subdued in an international comparison. Strengthening the structural efficiency in the banking sector will remain one of the key challenges for the coming years. The increase in interest rates, which is expected to be associated with rising interest rate margins, may offer banks a window of opportunity to improve their cost-income ratios. At the same time, banks may also face headwinds from the higher interest rate environment, on the back of increasing credit risks and potentially rising funding costs. In addition, further corrections in financial markets, which do not seem unlikely in an environment of surging real interest rates, could lower their assets under management, and as a result, dampen profitability.

While the banking sector remains well capitalised, the recent decrease in the capital ratio may hamper further expansion ambitions. Despite the decline in CET1 ratios in the first half of the year, the capitalisation of Liechtenstein's banking sector remains above the EU average. Additionally, high leverage ratios as well as favourable asset quality and liquidity indicators point to a sound and stable banking sector. At the same time, capital ratios have decreased substantially in the first half of the year on the back of lower bond valuations, regulatory changes in the context of the CRR II implementation, acquisitions abroad and an increase in the pay-out of dividends relative to previous years. Notwithstanding the still favourable capitalisation indicators, capitalisation levels must be monitored closely going forward, as a high level of capitalisation remains key in the context of banks' business models. Furthermore, lower capital ratios may also complicate further business acquisitions as well as organic growth, with a high capitalisation also being necessary in light of increased global financial stability risks. Finally, a further decline in capital ratios could also go hand-in-hand with a deterioration in profitability, if banks would need to issue bonds in an environment of increasing funding costs to fulfil the respective MREL[1] requirements in the context of resolution planning.

The insurance sector has remained sound and stable, with only negligible effects of rising interest rates on solvency ratios. The structural shift in Liechtenstein's insurance sector has continued, with the non-life insurance sector reporting continued strong growth over the past year. The premium income of life insurance companies, on the contrary, has further declined. While insurance companies have faced losses in their bond portfolios in light of increasing interest rates, the impact on solvency ratios is not entirely clear, as liabilities are also sensitive to interest rate changes. Against this background, solvency ratios have remained broadly stable over the last year, with a slight median increase by mid-2022. At the same time, the rise in inflation may directly increase the costs for insurance companies for loss events and may thus negatively affect their margins and profits going forward.

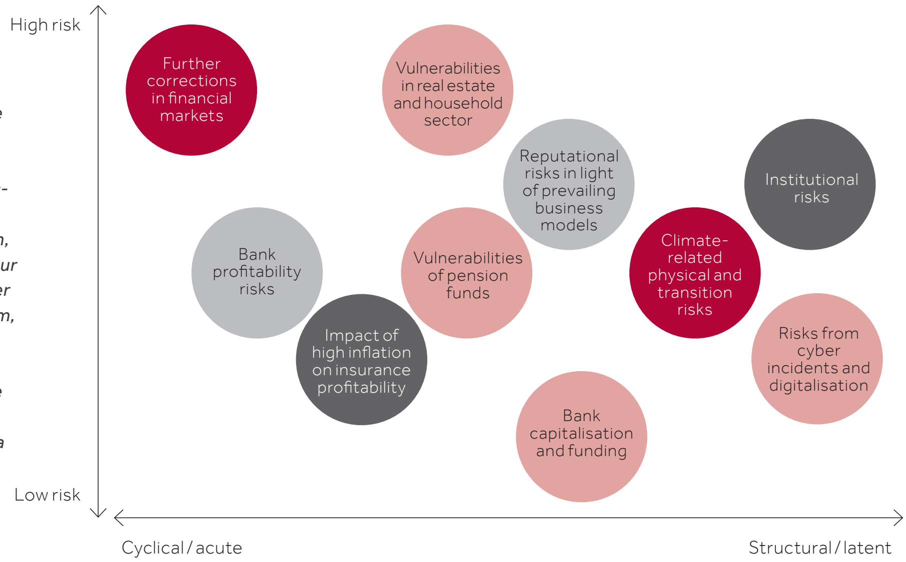
Pensions schemes are directly impacted by the adverse developments in financial markets. While the public pension system remains stable and will be able to absorb losses on financial investments in light of its large financial reserves, risks in the occupational pension system (i.e. the second pillar) have sharply increased. Recent losses in both stock and bond markets have led to a significant decline of coverage ratios in the first half of the year. Pension schemes recording a coverage ratio of less than 100 % need to act to return to a viable economic path. Against this background, the decreasing trend in conversion rates is set to continue in the years ahead. Thus, further restructuring measures may be necessary in case of a continued shortfall in coverage ratios.

1 *MREL is defined as "Minimum Requirement for Own Funds and Eligible Liabilities" and aims at having sufficient own funds and eligible liabilities to be able to use the bail-in tool for loss absorption and recapitalisation in the event of resolution.*

Figure 1
Risk Map 2022

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.



The investment funds sector continued its strong growth over the past year, with risks remaining low. Notwithstanding the challenging global environment, the investment funds sector continued its growth path in 2021, with Alternative Investment Funds (AIF) showing particularly strong growth. While assets under management declined slightly in the first half of the year on the back of financial market turbulences, the number of funds continued to increase since the turn of the year. In light of its strong links to the banking sector, the investment funds sector is relatively low-risk in Liechtenstein. While risks of consumer protection exist, they are not Liechtenstein-specific. In addition, the increasing complexity of European regulations makes it gradually more difficult for small funds to be profitable.

RECOMMENDATIONS

Against the background of the identified cross-sectoral risks, the FMA recommends to take the following actions:

– At the end of September, the ESRB has issued an unprecedented general warning, pointing to severe risks to financial stability in the European Union from a toxic combination of an economic downturn, falling asset prices and financial market stress. In line with this recently published ESRB warning[2], private sector institutions, market participants and relevant authorities should continue to prepare for the materialisation of tail-risk scenarios given the pronounced increase in financial stability risks;

2 ESRB (2022). Warning on vulnerabilities in the Union financial system (ESRB/2022/7), September 2022.

- The financial sector and relevant authorities should further enhance the understanding for possible dependencies from critical financial market infrastructure and consider possible alternatives in the respective business continuity plans;

- The government should proceed with the accession negotiations with the International Monetary Fund (IMF);

- Relevant authorities should continue their efficient and effective supervisory efforts to address reputational risks in the domestic financial sector;

- The FMA and the domestic financial sector should keep up the strong commitment to make progress in the area of sustainable finance while improving data availability to address climate-related risks. In addition, financial intermediaries should provision adequately for climate-related losses;

- Market participants should carefully analyse threats from potential cyber-attacks, while developing mitigation strategies to address the associated cyber risks to guarantee business continuity and limit potential financial losses;

- Financial institutions should regularly review their governance and internal control systems to continue to ensure compliance with international and European standards, including the recently adopted sanctions in light of the Russian aggression against Ukraine.

In light of recent developments in the banking sector, the FMA recommends to banks to mitigate the identified risks by focusing on the following measures:

- Continue addressing cost inefficiencies and strengthening structural efficiency;

- Maintain an adequate and solid capital base, by following a cautious distribution of dividends, as well as limiting share buybacks and other pay-outs which are associated with lower capital ratios;

- Ensure sustainable lending standards, while promoting risk awareness among borrowers, in particular for real estate lending.

The recent rise in inflation and the associated risks directly impact the non-bank financial sector. Therefore, the FMA recommends to the non-banking sector to take the following measures:

- Insurance companies should aim to further strengthen their resilience in light of the increasing costs related to the rise in inflation;

- Insurance companies should aim at maintaining a reasonable level of profitability and solvency to sustain financial market risks in the longer run;

- Pension schemes should maintain or restore sustainable coverage ratios by following a cautious approach when defining the basic parameters and annual returns for the assured employees.

- Investment funds should continue further building up liquidity buffers to be able to fulfil client's redemption needs even in the case of significant market movements.

The large size of the domestic financial sector and its important contribution to the economy as a whole requires a strong macroprudential policy and supervision framework in Liechtenstein. In this context, the FMA recommends to relevant authorities in Liechtenstein to take the following measures:

- Preserve and enhance the resilience of the financial sector, while continuing the close cooperation between relevant authorities across all financial sectors and market participants, as outlined in the general ESRB warning mentioned above;

- Further enhance the systemic risk identification and the risk monitoring framework;

- In line with the ESRB warning, relevant authorities should make use of the full range of macroprudential tools to contain the identified risks and mitigate their impact;

- Address risks in the real estate sector by strengthening borrower-based instruments, in particular regarding income-based measures;

- Keep up the efforts in banking resolution by further extending and improving resolution plans;

- Further develop and implement stress testing scenarios;

- Continue the strong cooperation and compliance with international and European authorities and standards in financial market regulation.

MACRO-FINANCIAL ENVIRONMENT

INTERNATIONAL DEVELOPMENTS

Following a strong post-pandemic recovery, the global economy has lost steam in the first half of the year. In light of the extensive containment measures during the pandemic, the world economy plummeted in the first half of 2020, before returning to a recovery path, with the economies in the US, the euro area and Switzerland reaching their pre-pandemic levels of GDP in the course of 2021 (Fig. 2). While the euro area and Switzerland reported robust growth in the first two quarters of the year, GDP growth turned negative in the US, partly in light of lower inventories, but also due to a decline in business and real estate investment.

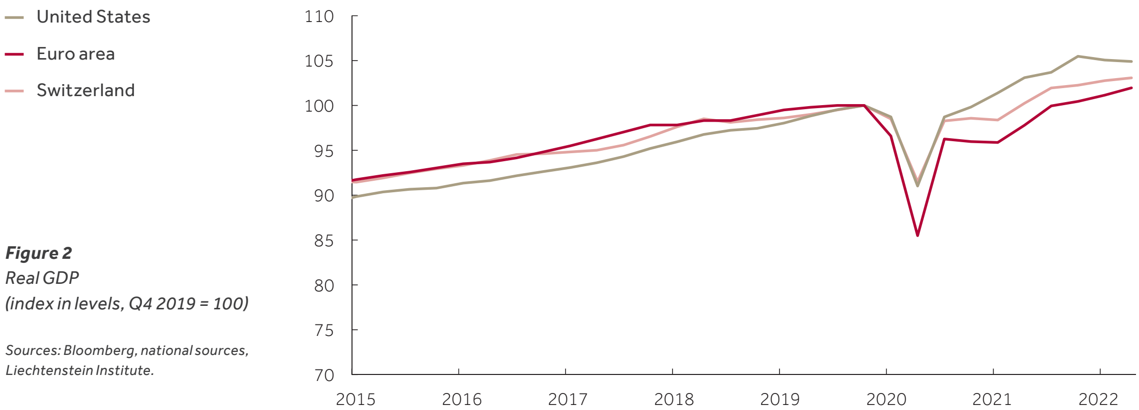


Figure 2
Real GDP
(index in levels, Q4 2019 = 100)

Sources: Bloomberg, national sources, Liechtenstein Institute.

Early indicators point to a sharp slowdown in economic growth and elevated risks for a global recession. Current projections suggest a continued weakening of the global economy on the back of the spike in inflation and rising interest rates. In the latest projections by the International Monetary Fund (IMF), global growth in 2023 is expected at 2.7%, the lowest value in the last 20 years except for the global financial crisis (2009) and the COVID-19 pandemic (2020). Short-term indicators also point to a deterioration in global demand. Purchasing Manager Indices (PMI) declined below the positive-growth threshold of 50 in the US, the euro area and at the global level. Following the strong rebound in 2020, global trade growth has also remained relatively weak ever since, also in light of supply-side bottlenecks in certain product groups.

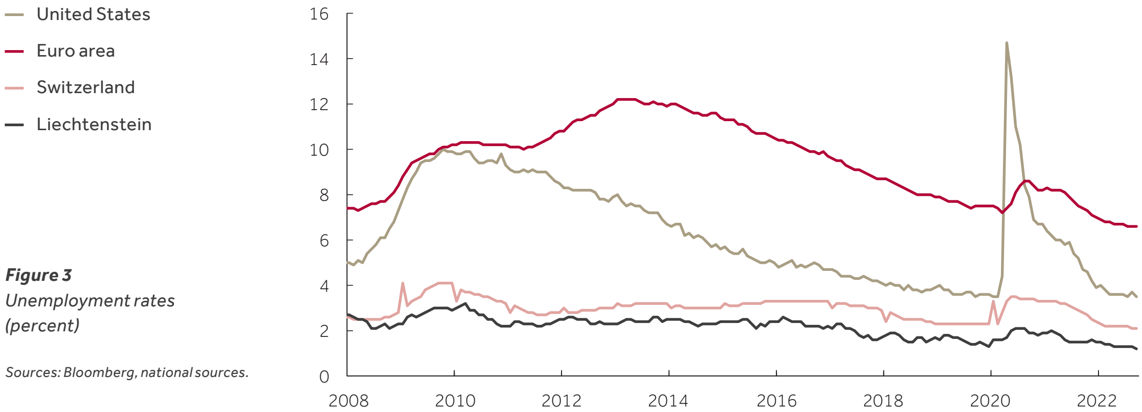


Figure 3
Unemployment rates (percent)

Sources: Bloomberg, national sources.

Despite the recent slowdown, labour markets have remained tight, with unemployment rates decreasing to the lowest level in decades (Fig. 3). Following skyrocketing unemployment rates at the start of the pandemic, labour markets have recovered strongly, with unemployment rates reaching their lowest values since the global financial crisis in the United States (3.7% in October) and the euro area (6.6%). While the Swiss and Liechtenstein labour markets were less affected during the pandemic, current levels of unemployment in October (Switzerland: 2.1%, Liechtenstein: 1.2%) are associated with rising risks of wage-price spirals in light of continued price pressures.

Inflation has increased to the highest level in half a century (Fig. 4). While increasing price pressures in the second half of 2021 had been classified as "transitory" or "temporary" by major central banks on the back of strongly rising commodity and energy prices, the rise in inflation turned out to be more persistent than previously anticipated. In fact, even simple forecasting models, at least for a forecasting horizon of one quarter (less so for one year), would have been able to project the strong rise of inflation above central banks' targets (see Box 1). Nevertheless, central banks around the globe have been hesitant to react to rising inflation, thereby facilitating the development of further wage and price pressures. The Federal Reserve only reacted in January by tightening US monetary policy for the first time, when headline inflation had already reached 7.5%. The ECB started to raise interest rates only in July, when headline inflation in the euro area had reached 8.9%. The SNB was a noteworthy exemption, with its first hike in interest rates already in June – prior to the ECB – at a time when core inflation in Switzerland stood at a mere 1.9% (headline inflation had increased to 3.4%). The front-loading of monetary tightening was effective in the fight against inflation, as the subsequent appreciation of the Swiss franc dampened inflation pressures going forward. In October, headline inflation amounted to 3.0%, i.e. still above target, but comparatively low relative to the United States (7.7%) and the euro area (10.7%).

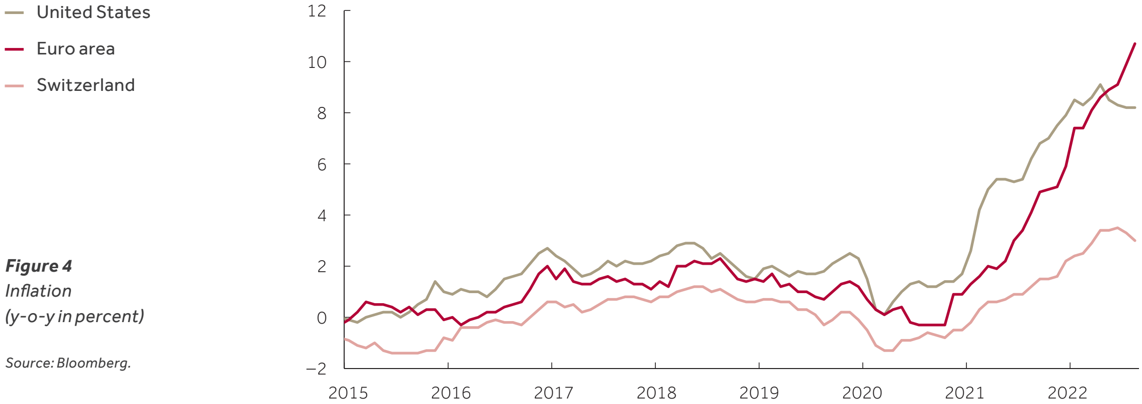


Figure 4
Inflation
(y-o-y in percent)

Source: Bloomberg.

BOX 1

The unexpected rise in inflation and the (too) hesitant reaction of central banks

One year ago, towards the end of 2021, central banks continued to assume that the rise in inflation is "temporary". In November 2021, headline inflation amounted to 6.8% in the United States and 4.9% in the euro area, well above their respective price stability targets. Still, in light of the strong rise in energy prices, central bankers insisted on their assumption of "transitory" and "temporary" inflation pressures. As we know today, their assumption was misguided, and a timelier reaction in terms of monetary tightening could have dampened price pressures at least to some extent. Against this background, this box raises the question whether central banks should have foreseen inflation, and whether it was justified to view the rise in inflation above target as transitory.

Inflation projection is one of the most difficult tasks in forecasting. Standard multivariate models – i.e. models that include other variables such as unemployment as predictors – often fail to outperform univariate models. In this context, well-known economic relationships between variables, such as between unemployment and inflation – i.e. the traditional Phillips curve – have become less relevant over recent decades because the link has become less stable and / or weakened considerably.

For the subsequent analysis, we use a time-varying intercept model with stochastic volatility. One particularly strong and widely used univariate model is the unobserved component model with stochastic volatility by Stock and Watson (2007), which is similar to the model proposed in this analysis. Models with time-varying volatility (either stochastic or deterministic) are particularly useful in predicting tail risks to economic growth (Carriero et al. 2020; Brownlees and Souza 2021). Furthermore, models with time-varying parameters can adapt to structural breaks or changing relationships when additional variables are included. In the subsequent analysis, we do not include any additional variables to avoid the criticism of selecting certain variables to fit one or the other conclusion in retrospect.

While the rise in inflation was indeed surprising when forecasting inflation one year ahead, our findings suggest that the build-up of inflation pressures could have been anticipated at least one quarter ahead. Remarkably, and also in contrast to the defla-

Figure B1.1
US inflation forecast one quarter ahead (percent)

Source: FMA, own calculations.

BOX 1

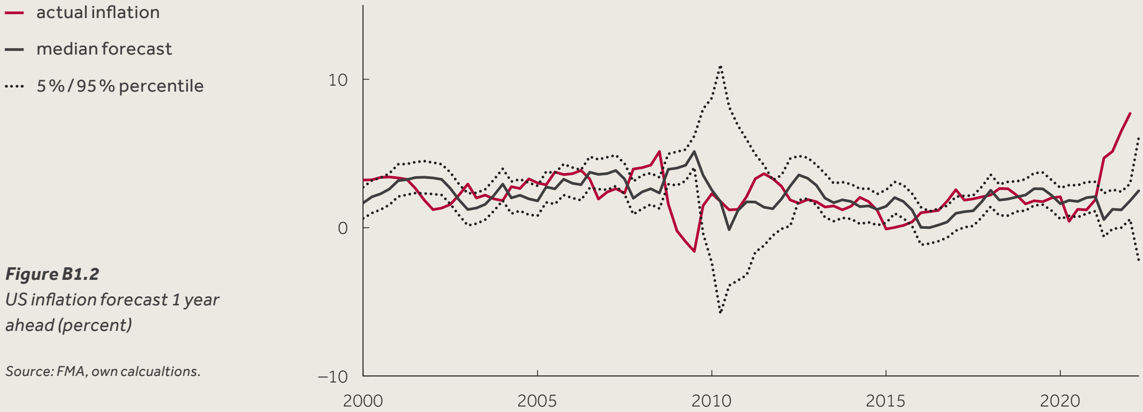


Figure B1.2
US inflation forecast 1 year ahead (percent)

Source: FMA, own calcualtions.

tionary period in 2009 and 2020, the rise in inflation was not surprising at a forecasting horizon of one quarter (for the case of the US, see Figure B1.1; the empirical results for the euro area and Switzerland are qualitatively similar). For the inflation forecast one year ahead, the jump in inflation was not predictable with this simple model. The model shows the largest gap between the upper 95 predicted percentile and actual inflation since the start of the millennium, indicating that the actual inflation rate was underestimated by the forecasting model (see Figure B1.2).

Near-term forecasts suggest that central banks may have been too hesitant in tightening monetary policy, even when considering real-time information. Central banks should have foreseen inflation in a timelier manner, and the notion that it was only temporary is not supported by (real-time) data. The reasons for the (too) late monetary policy response are manifold, however, and many of the arguments are comprehensible when considering the high uncertainty central banks were facing. First, central banks across the world were worried to compromise the recovery from the COVID-19 pandemic by increasing rates too fast, which could have been costly. Second, central banks were also worried about their credibility in terms of forward guidance, particularly in the case of the ECB. Third, both the ECB and the Fed have focused on the question how to bring inflation back (up) to their inflation targets in the last few years, and the recent adaptations to their monetary policy strategies assessed a sustained increase in inflation pressures as relatively unlikely. Finally, Faust and Wright (2013) show that expert judgement, i.e. subjective central bank forecasts deviating from quantitative models, have performed very well historically, so deviating from the results of the model-based forecasts is not necessarily irrational. Today, one year later, we know that price pressures continued to build up. A strong response by central banks – in line with the tightening steps by the SNB – is crucial to stabilise inflation expectations and to make sure that wage-price spirals do not get out of control.

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DOMESTIC ECONOMY

After a swift and strong recovery in the second half of 2020, the business cycle outlook for the Liechtenstein economy has recently worsened. As a small and open economy, Liechtenstein was particularly strongly affected from the slump in the global economy in 2020, but recovered quickly on the back of a strong rebound in global trade. Along with the broad-based moderation in global economic activity, the domestic economy has cooled down considerably since the turn of the year, with current geopolitical and economic challenges rendering the development over the third and fourth quarter highly uncertain. In line with these developments, quarterly estimates for Liechtenstein's real GDP for the first and second quarter are below the 2021 average according to flash estimates calculated by the Liechtenstein Institute.

Figure 5
Business cycle indicator "KonSens" (index)

Source: Liechtenstein Institute.

Cyclical indicators reflect that various and – to some degree – counteracting business cycle dynamics are currently at play. The KonSens, a quarterly index that summarises 16 data series, which are indicative for domestic business cycle developments, turned negative in the second quarter of 2022 (Fig. 5). The index fell from slightly above 0 to − 0.6 in the second quarter, indicating economic growth below historical average. Liechtenstein's economy is thus still quite robust in light of the worldwide downturn and its usual sensitivity to international trade fluctuations. Goods exports, an important indicator for Liechtenstein's economy because of the large industrial sector, remained relatively stable over the last quarters, although the level of exports remained below the pre-pandemic average (Fig. 6). By contrast, survey data capturing sentiment among consumers and producers fell markedly. Overall, signals from single business cycle indicators vary strongly, reflecting a large degree of uncertainty over current and future business cycle dynamics.

The generally high sensitivity of Liechtenstein's economy vis-à-vis the global business cycle suggests a pronounced impact in case of a global recession. Small and open economies like Liechtenstein react particularly sensitively to a drop in global economic activity. Figure 7 shows the historical sensitivity of Liechtenstein and various OECD countries to a drop in global output (proxied by OECD GDP) estimated with data from 1998Q1 to 2019Q4. On average, a drop in OECD GDP of one percent translates into a 3.6 percentage points reduction of Liechtenstein's GDP, while larger countries often exhibit elasticities below one. Notably, the Liechtenstein economy did not react as strongly to the world-wide COVID-19 recession as

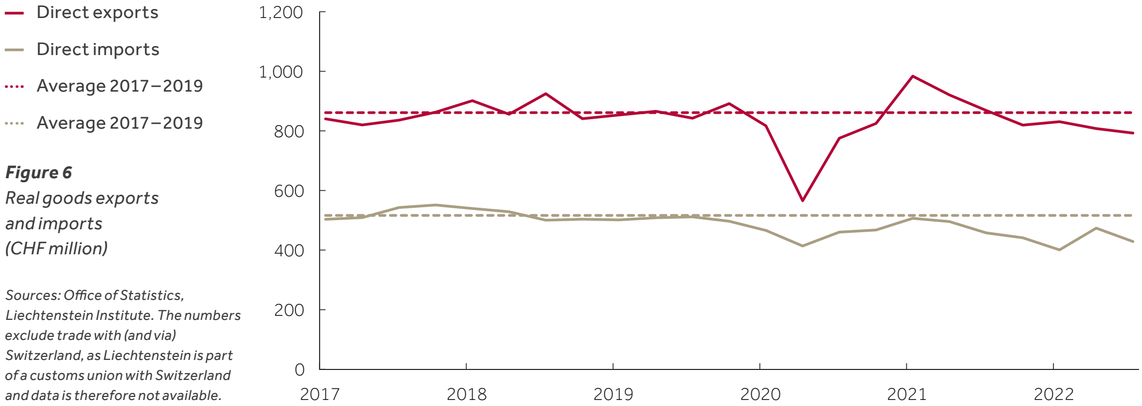

Figure 6
Real goods exports and imports (CHF million)

Sources: Office of Statistics, Liechtenstein Institute. The numbers exclude trade with (and via) Switzerland, as Liechtenstein is part of a customs union with Switzerland and data is therefore not available.

could have been expected in terms of Liechtenstein's historical sensitivity. This can be explained, among other factors, by the nature of the COVID-19 recession, which mainly affected the economy through domestic demand, a channel which is relatively less important in Liechtenstein compared to larger countries. If current disruptions in energy markets and the geopolitical situation more generally will trigger a broad-based global recession, a stronger response of the Liechtenstein economy along the lines of the historical business cycle sensitivity is to be expected.[3]

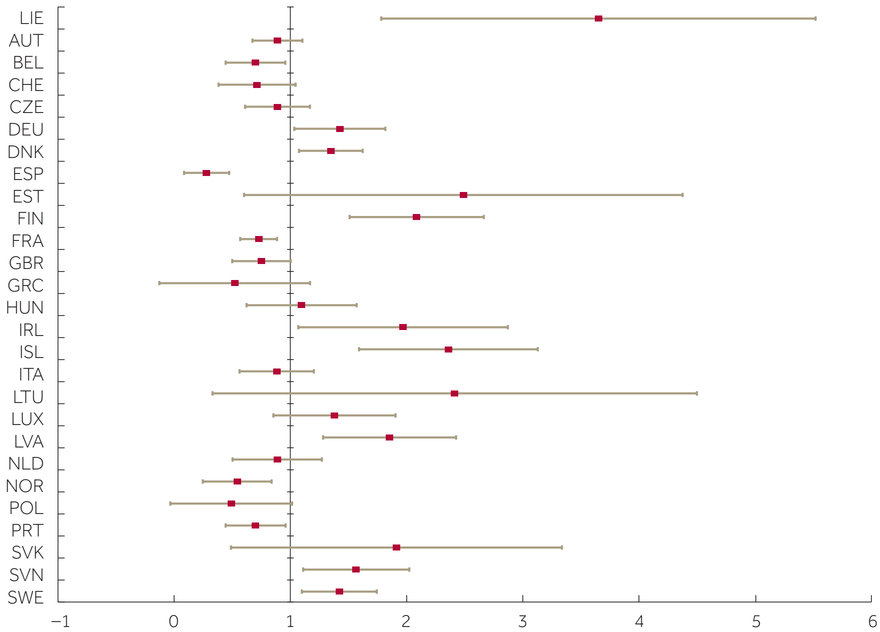

Figure 7
Sensitivity of domestic to global GDP (estimated elasticity and confidence bands)

Sources: Liechtenstein Institute, FMA.

3 *In this context, see also Brunhart, A., Geiger, M. and Ritter, W. (2022). Besonderheiten der Corona-Rezession und die Rolle des Binnenmarktes, LI-Focus 1/2022.*

While Liechtenstein exhibits a high amplitude in terms of business cycle volatility, employment and business activity have remained remarkably resilient over the past decades. Thanks to a highly competitive economy, total employment (41,352 employees at end-2021) exceeds the number of inhabitants (39,315) in Liechtenstein. More than half of employees are commuters, mostly living in Switzerland and Austria. Liechtenstein's labour market is highly resilient, with unemployment rates and employment growth hardly related to the business cycle (for an in-depth analysis, see Box 2 in last year's Financial Stability Report 2021). This general observation was once again confirmed during the COVID-19-related recession in 2020, with the unemployment rate peaking at 2.1%. Also, structural characteristics of Liechtenstein's economy contribute to the high resilience of the private sector vis-à-vis macroeconomic shocks. First, Liechtenstein's industrial and manufacturing sector comprises highly successful niche players in global markets and is remarkably innovative, also in light of extremely high private spending on research and development. Second, high equity ratios among non-financial corporations (NFC), also on the back of 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 its membership in the European Economic Area (EEA) as well as to Switzerland, based on its customs union since 1923. The currency union with Switzerland also contributes significantly to the stability of both the financial sector and the economy as a whole. Finally, private wealth and incomes are very high, 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 (as explained in detail in the next chapter) also support the economy's stability as a whole, as unexpected adverse developments can be absorbed by the financial sector without any negative implications for credit supply or financial stability.

Public finances have remained 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 generally uncontroversial among all political parties in parliament. On the back of an ambitious structural reform package after the global financial crisis, with cuts in government spending and increasing tax revenues, Liechtenstein has reported budget surpluses since 2014. In 2020, despite increased spending in the context of the pandemic, the budget surplus at the general government level amounted to CHF 445 million or about 7.5% of GDP. A one-off profit tax revenue of approximately CHF 300 million more than offset the fiscal costs of the government's support packages and the pandemic-related shortfalls in revenues. Moreover, high investment income (i.e. gains from invested financial reserves) also contributed significantly positively to the overall budget surplus. The budget balance on the state level remained significantly positive in 2021 (reporting a surplus of CHF 224 million or about 3.5% of GDP). Fiscal numbers for the general government level, including the community level and social insurances, for the year 2021 will only become available in early 2023, but a significant budget surplus can be expected.

While financial market turbulences since the start of the year will likely lead to the first budget deficit in almost a decade, financial reserves will remain extraordinarily high. For the current year, adverse developments in stock and bond markets will weigh on the budget balance against the background of high financial reserves which are invested in global markets. By mid-2022, the government expected a deficit of about 300 million for the current year due to adverse investment performance, while the primary budget balance – i.e. in Liechtenstein without the losses on financial investments (i.e. there are virtually no interest payments, as the state has no debt) – will remain slightly positive. In any case, financial reserves of the public sector will remain extraordinarily high. Net assets of the public sector amounted to CHF 9.4 billion at the end of the year 2020 (i.e. more than 140 % of GDP), of which CHF 3.9 billion were held by social insurances (41 %), CHF 3.5 billion at the state level (37 %), and the remaining CHF 2.0 billion (22 %) at the community level. Against this background, public finances are well-equipped for the challenges ahead, even in the case of a negative budget balance in 2022.

While overall indebtedness in the economy is low in international comparison, the high indebtedness of private households remains the Achilles' heel of the economy. The total debt-to-GDP ratio – defined as the sum of the indebtedness of both the (non-financial) private and public sector to GDP – is relatively low in Liechtenstein, estimated at around 167 % of GDP at the end of 2021. While the public sector has virtually no debt and large financial reserves, the non-financial corporate (NFC) sector is characterised by high equity and low debt levels, also due to corresponding tax incentives. We estimate the indebtedness of the NFC sector to about CHF 2.9 billion (or 45 % of GDP).[4] Private indebtedness is therefore highly concentrated in the household sector. According to recent estimates, private household indebtedness amounted to approx. 122 % of GDP at the end of 2021, a slight increase from last year's numbers. While the high headline number is not directly comparable to other countries due to differences in data sources and the underlying definitions of the variables, Liechtenstein's household indebtedness ranks highest among all EEA countries. Against this background, the elevated level of household debt is one of the main systemic risks to financial stability in Liechtenstein. The issue has also remained a strong focus of macroprudential supervision and policy over the past year.

FINANCIAL MARKET DEVELOPMENTS

Some of the risks highlighted in last year's Financial Stability Report have materialised since the turn of the year. One year ago, the report warned that long-term yields could abruptly move higher, based on the striking disconnection between inflation and interest rate developments, particularly in the United States. The decoupling between the two variables was based on the idea of a "temporary" increase in inflation on the one hand, and extraordinary expansive monetary policy on the other, which may have resulted in distorted market prices. As we know today, the assumption of "transitory" inflation was misguided, and the abrupt increase in interest rates has hit financial markets at full tilt.

Central banks around the world have – eventually – reacted to the strong rise in inflation by tightening monetary policy. In the United States, the Federal Reserve finally put an end to its hesitancy and started to increase the federal funds rate in January 2022. Since then, several interest rate hikes have followed amidst further rising inflation rates, bringing the policy rate to the current level of 3.75 – 4 %. In the euro area, the ECB was even more hesitant to increase policy rates. On the back of the continuation of its asset purchase programme (APP), the ECB decided to follow its own forward guidance and kept its policy

4 *Data availability on private indebtedness is limited in Liechtenstein. For details regarding data sources, please refer to last year's Financial Stability Report 2021.*

rates unchanged until asset purchases came to an end at the beginning of the third quarter. Until the end of October, the ECB raised policy rates three times by a total of 2 percentage points, bringing the policy rate (interest rate on the main refinancing operations) to 2%, while the interest rates on the deposit facility increased to 1.5%.[5] The SNB started its policy tightening already in June, by increasing the policy rate by 50 basis points. In September, the SNB tightened by another 75 basis points, bringing the policy rate to 0.5% and – after more than 7 years – back into positive territory. While markets took it as a surprise that the SNB increased its policy rate prior to the ECB, also in light of the strong Swiss franc in the last few years, the SNB emphasised that the large inflation differential to the euro area (and other countries) gave them some leeway to allow for a nominal appreciation of the Swiss franc without disproportionately hampering the competitiveness of the Swiss economy. In fact, the appreciation of the CHF – an increase of about 5% to the EUR since the start of the year – dampens inflationary pressure in Switzerland in light of a high import share from the euro area.

Markets currently expect several additional interest rate hikes by central banks. Market-implied interest rates suggest further monetary policy tightening in the next few months (Fig. 8). In the US, markets expect a peak in the federal funds rate at around 5% at the start of the second quarter, in the euro area at around 3% at the end of the third quarter 2023. The inverted yield curve in the US – time spreads between 10- and 2-year sovereign bonds turned negative in recent weeks – implies that markets expect a recession in the US in the course of 2023.

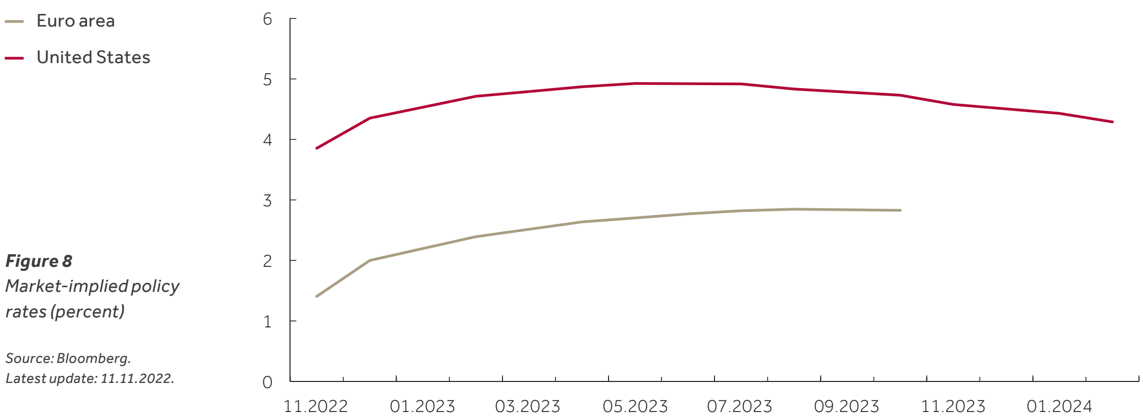

Figure 8
Market-implied policy rates (percent)

Source: Bloomberg.
Latest update: 11.11.2022.

5 *In light of excess liquidity, the interest rate on the deposit facility is currently a better indicator for the monetary policy stance in the euro area than the "main" policy rate (i.e. on main refinancing operations).*

Stock and bond markets have plummeted since the start of the year, and global initial public offering (IPO) issuanc has virtually come to a standstill. Since the start of the year, once it became apparent that the rise in inflation is not as temporary as previously assumed, medium and long-term interest rates have sharply increased, driven by upside inflation surprises and the expectation of monetary policy tightening. This, in turn, resulted in strong corrections in both bond and stock markets. Major stock markets have lost more than 20% since their peaks at the turn of the year (Fig. 9). Against the background that price corrections were primarily driven by the discount factor, with corporate earnings remaining stable or even increasing, the correlations of returns between equities and bonds increased substantially, thus dampening diversification effects and increasing losses for investors. Elevated levels of economic uncertainty, combined with tighter financial conditions also led to an unprecedented decline in the global number and value of IPOs. In a similar vein, the issuance of high-yield bonds also collapsed, as risk premia started to increase with higher interest rates. Similar to the dot-com bubble and the global financial crisis, the peak in global IPOs last year can be interpreted as an early warning sign of an ending financial market boom, and the trend reversal of risk premia seems to mark an end to the pronounced search for yield during the last years' low interest rate environment, as investors become more sensitive to credit risks.

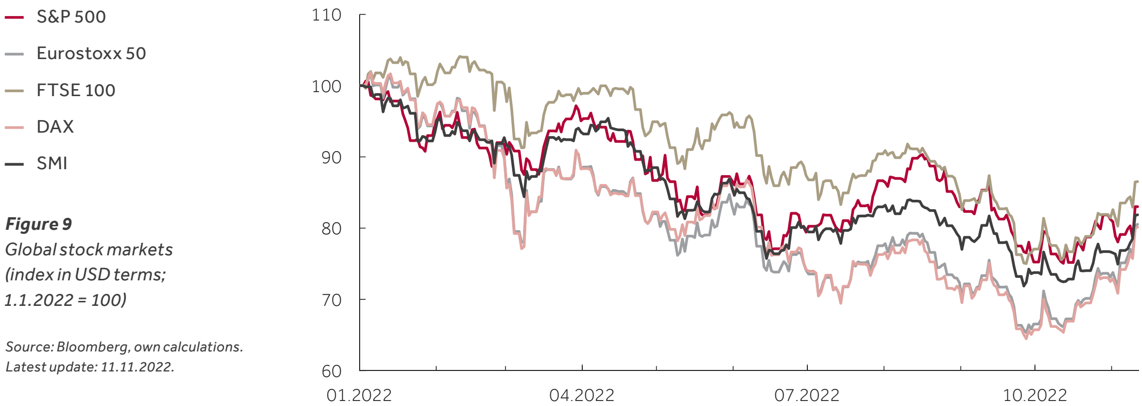

Figure 9
Global stock markets (index in USD terms; 1.1.2022 = 100)

Source: Bloomberg, own calculations. Latest update: 11.11.2022.

Differences in terms of inflation as well as regarding the monetary policy stance has led to strong fluctuations in foreign exchange markets. In light of stronger interest rate rises as well as increasing uncertainty and thus stronger flight-to-safety capital flows, the US dollar (USD) appreciated to its highest value in nominal-effective terms in the last 20 years. Most currencies have depreciated substantially against the USD since the start of the year (Fig. 10). While the losses of the Swiss franc (CHF) were relatively limited, the Japanese Yen (JPY) and the British Pound (GBP) have lost about 20 percent against the USD since January. The drivers are different, however. The Bank of Japan intentionally lags behind in terms of monetary policy tightening in light of its fight against deflation (and too low inflation expectations) over the last 30 years. On the contrary, the UK has lost confidence among investors, not only because of very high inflation, but also against the backdrop of the plan for a vast fiscal expansion (which has been mostly reversed), which would counteract the fight against inflation by the Bank of England. The strong USD is bad news for

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the global economy. On the one hand, a stronger dollar implies higher rates of imported inflation (e.g. via commodities) in other advanced economies. On the other hand, an appreciation of the USD goes hand in hand with a tightening of global financial conditions, particularly for emerging market economies (EMEs). Many EMEs are not able to borrow in local currency due to low investor confidence or a track record of high inflation. Instead, they often borrow in USD. Higher policy rates and the USD appreciation are therefore not only associated with higher debt levels (in terms of local currency), but also with higher borrowing costs, leading to a sharp tightening of financial conditions and a slowdown in economic growth in emerging economies.

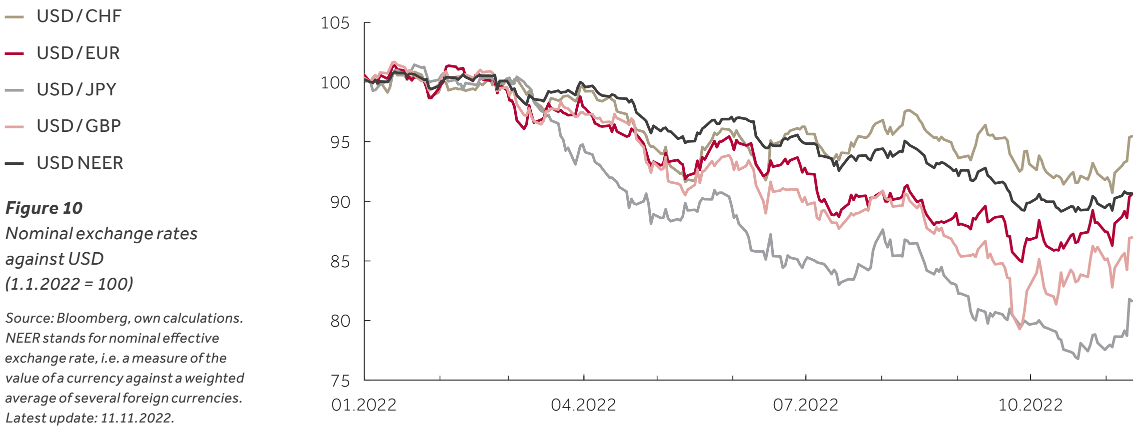


Figure 10
Nominal exchange rates against USD (1.1.2022 = 100)

Source: Bloomberg, own calculations. NEER stands for nominal effective exchange rate, i.e. a measure of the value of a currency against a weighted average of several foreign currencies. Latest update: 11.11.2022.

For the SNB, the current appreciation of the CHF is welcomed as it supports the policy objective of guaranteeing price stability. Since the strong appreciation of the CHF in the aftermath of the global financial crisis, when Switzerland once again confirmed its safe haven status in uncertain times, the SNB had to fight an overvaluation of the CHF, not only to ensure the competitiveness of the Swiss economy, but also to achieve price stability. Particularly during the euro area sovereign debt crisis, i.e. when the most important trading partners of Switzerland came into severe trouble, the SNB had to lean against strong capital inflows by adopting a minimum exchange rate to the euro on the one hand, and by intervening in foreign exchange (FX) markets on the other. As explained in Box 2, the SNB policy was quite successful in this respect, as the effect of FX interventions was surprisingly persistent. In light of substantial FX interventions, the balance sheet of the SNB increased to CHF 1,057 billion by end-2021, more than 140 % of GDP. While financial market turbulences and the depreciation of the euro vis-à-vis the CHF have led to considerable losses in the first half of the year, the large balance sheet could open new opportunities in terms of monetary policy instruments, as the SNB (at least in principle) could support the CHF by selling FX reserves, and thereby, fight inflation with a stronger CHF rather than policy rate increases.

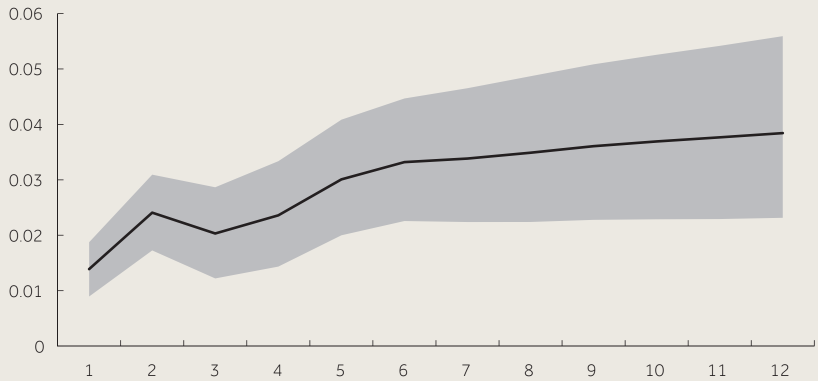
BOX 2

Euro area sovereign stress, the CHF-EUR exchange rate and SNB policy

The safe haven status of the Swiss franc has challenged the economy and the SNB. In June 2022, the euro (EUR) has fallen below parity relative to the Swiss franc (CHF). Being regarded as a safe haven, the CHF has been under appreciation pressure since the global financial crisis. The SNB has tackled the overvaluation of its currency with massive interventions in the foreign exchange (FX) market and, at its peak, committed to a minimum exchange rate towards the EUR. At this time, the Swiss economy was challenged by a strong domestic currency on the one hand, and a distressed main trading partner on the other.

Figure B2.1
Shock to euro area sovereign stress and CHF / EUR exchange rate (impulse response function; x-axis: months; y-axis: changes in the CHF / EUR exchange rate in percent)

Source: Own calculations.



Sovereign stress in the euro area triggers an appreciation of the CHF. Based on monthly data from January 1999 to June 2022, a strong relationship between sovereign stress in the euro area and the movements of the EUR / CHF exchange rate is observable. Impulse response functions estimated using a Bayesian VAR model show the reaction of the exchange rate to a (one standard deviation) shock in the sovereign stress level. Figure B2.1 shows a significant, persistent appreciation of the CHF towards the EUR when euro area sovereign stress increases. The results also hold true with respect to the real-effective exchange rate of the CHF relative to its most important trading partners.

Empirical results suggest that the SNB is able to smooth the adjustment of the economy to appreciations by intervening in the FX market. Assessing the response of the CHF exchange rate to the SNB's FX interventions, proxied by sight deposits of commercial banks at the SNB, the SNB seems to be able to effectively impact the CHF exchange rate. Figure B2.2 shows a slightly delayed, but significant devaluation of the CHF towards the EUR when sight deposits at the SNB are shocked. Hence, when deemed required, the SNB is able to "buy time" for the Swiss economy to adapt to a stronger domestic currency, and also to make sure that deflationary pressures do not get out of hand in Switzerland.

BOX 2

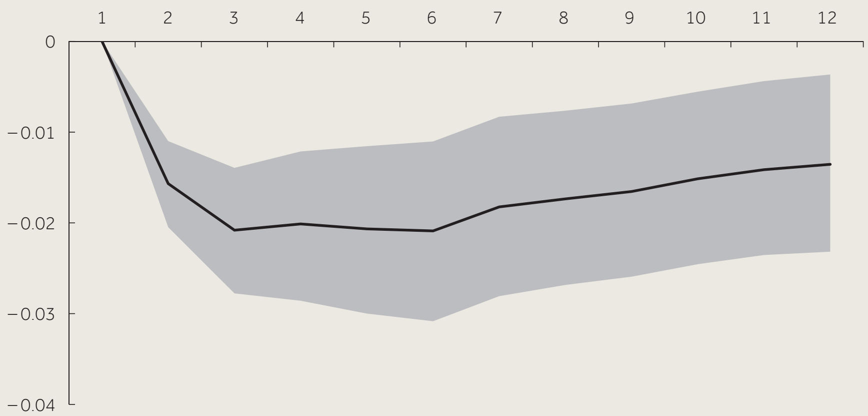


Figure B2.2
Shock to SNB sight deposits and CHF / EUR exchange rate (impulse response function; x-axis: months; y-axis: changes in the CHF / EUR exchange rate in percent)

Source: Own calculations.

Considering current inflationary pressures, the large balance sheet can serve as an effective tool to tame inflation without the need to raise the policy rate. Currently, when price pressures have led to rising inflation rates, a nominal appreciation of the CHF is welcomed for SNB policy makers to dampen imported inflation. In fact, high FX reserves in the SNB balance sheet could theoretically be used to buy CHF in the market, thereby facilitating a further appreciation of the CHF. In practice, further policy rate hikes will be necessary to ensure that inflation moves back towards the SNB's target. Additionally, FX interventions – this time probably in the other direction – may prove helpful to finetune the monetary policy mix. Whether FX interventions to support the CHF, i.e. by selling FX reserves to buy CHF, are as successful and persistent as the interventions to weaken the CHF over the last years, however, is yet to be examined.

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REAL ESTATE MARKET DEVELOPMENTS

In October 2021, the FMA published a report on the vulnerabilities in the Liechtenstein real estate and mortgage market. The report provides a comprehensive financial stability risk analysis of the Liechtenstein residential real estate sector and evaluates the appropriateness and sufficiency of the macroprudential policy mix aimed to address the identified risks. The risk assessment of the residential real estate market in Liechtenstein is based on the suggested methodology from the European Systemic Risk Board (ESRB)[6] for assessing residential real estate (RRE) risks and is carried out using three different risk categories (so-called stretches). In this context, the collateral stretch considers the current valuation of collateral in real estate markets, while the funding stretch focuses on various credit indicators. Finally, the household stretch focuses on a balance sheet perspective of private households and thus their vulnerability to unexpected shocks such as an abrupt rise in interest rates, a loss of job or a decline in housing prices.

From a financial stability perspective, the high and rising level of household indebtedness poses a systemic risk to the Liechtenstein financial sector. The risk analysis of the FMA identifies a high vulnerability of Liechtenstein households, in particular given their high indebtedness resulting from large mortgage debt. Figure 11 shows the development of household debt-to-GDP ratios for selected countries. Contrary to the developments in the United States and the euro area, household indebtedness in Liechtenstein (and in Switzerland) has continued its upward trend after the global financial crisis. In Liechtenstein, household indebtedness increased from around 82 % of GDP in 2000 to 122 % in 2021, one of the highest values among EEA countries. The main reason is a different credit model compared to other European countries, where it is common to fully amortise a mortgage loan over its term. This is different in Switzerland and Liechtenstein, where it is common that only the so-called “second mortgage” (which is the amount of the loan above a loan-to-value ratio of 66 %) is amortised, while the rest of the loan remains in banks’ balance sheets. As a result, not only households that have recently bought or built a property are highly indebted, but also those whose house purchase happened some time ago. The result is a significantly higher overall debt ratio of private households, with low interest rates combined with perceived tax incentives also contributing to the upward trend in recent decades. According to tax statistics in 2020, household debt is unevenly distributed across households, with 14 % of households reporting debt between CHF 500,000 and CHF 1 million, and 10 % of households reporting debt exceeding CHF 1 million. In addition, a relatively high share of households has a debt-to-income (DTI) ratio above 5, indicating that elevated household indebtedness is not always accompanied by high household incomes.

On the contrary, risks related to the collateral stretch are classified as relatively low. Although land and apartment prices have increased in the last few decades, available data based on expert assessments suggests weakening housing market dynamics since the turn of the millennium. Given the legal restrictions on the purchase of real estate, transaction activity is generally low in Liechtenstein. Despite data availability issues, moderate price increases in the last 20 years suggest that the imbalances in terms of price overvaluations in the residential real estate (RRE) sector may be quite limited in Liechtenstein. Similarly, broadly stable building activity and vacancy rates confirm the overall assessment of relatively low risks in the “collateral stretch”.

6 *ESRB (2019). Methodologies for the assessment of real estate vulnerabilities and macroprudential policies: residential real estate.*

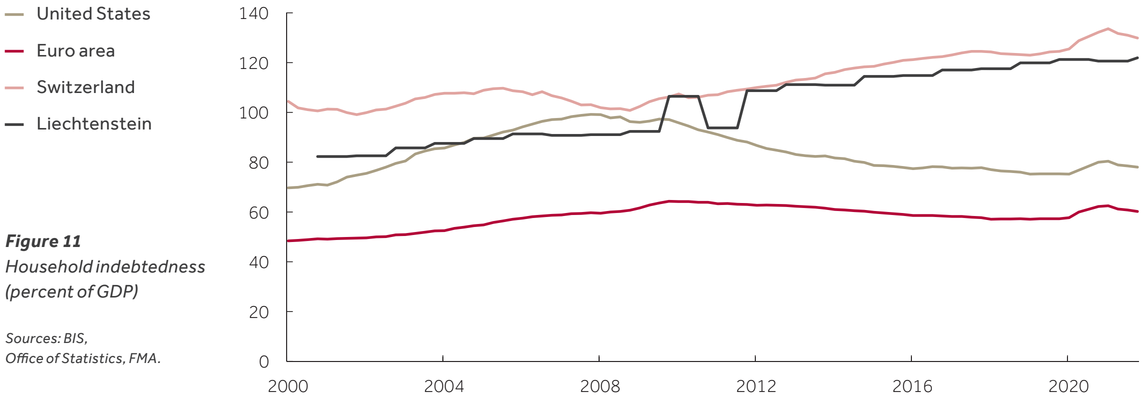


Figure 11
Household indebtedness (percent of GDP)

Sources: BIS, Office of Statistics, FMA.

Risks in the funding stretch category are classified as moderate, notwithstanding the high volume of mortgage loans in banks' balance sheets. The total volume of domestic RRE loans amounted to roughly 90 % of GDP in 2021, one of the highest levels in the EEA. However, the banking sector is very large relative to GDP, with assets of the banking sector corresponding to roughly 16 times the country's GDP. Against this backdrop, it becomes obvious that the total volume of mortgage loans relative to banks' balance sheets is less of a cause for concern from a financial stability perspective, as domestic mortgage loans are not crucial for the profitability and the solvency of most banks operating in Liechtenstein, as they mainly focus on private banking services (see also chapter 3). In addition, mortgage credit growth has remained low in recent years, with an annual growth rate of 2.7 % in 2021, not pointing to increasing imbalances in Liechtenstein (Fig. 12). At the same time, the banking sector is characterised by above-average capital and liquidity indicators, implying a sound and stable banking sector.

For an overall risk assessment of the real estate market, risk-mitigating factors must also be considered. Liechtenstein's real estate market is characterised by certain specifics, hampering a comparability with other countries. First, a prolonged housing market price decline in Liechtenstein may be less probable given the small and strong economy as well as certain legal restrictions. At the same time, a materialisation of risks could be targeted with a range of different measures by relaxing the corresponding limitations, resulting in additional room of manoeuvre in case of a crisis. Second, the domestic labour market is extremely resilient against recessions, with virtually zero correlation between GDP growth and employment, as was once again observed during the COVID-19 pandemic. In addition, high job security and low unemployment rates increase planning certainty for households with regard to their income, indicating a higher sustainable household debt level. Third, the low taxation on household income leads to higher disposable income, which in turn reinforces the argument of higher sustainable debt levels. Fourth, the overall debt level in the economy is very low with large public financial reserves and low NFC debt ratios. Fifth, banks follow relatively prudent lending standards in terms of LTV ratios and asset quality has continued to be favourable, with very low NPL ratios. Another important mitigant to the risks related to the high household indebtedness is the high share of fixed interest rate mortgages, reducing the immediate effect of higher interest rates on households. Finally, high household income is frequently accompanied by large (net) household wealth, in particular, for the most highly indebted households. After careful consideration of the risk-mitigating factors, the overall systemic risk in Liechtenstein's mortgage market is not (yet) regarded a cause of concern. Nevertheless, it is beyond dispute that the high indebtedness of private households requires an open discussion on how to address the related systemic risks in the medium term. In fact, the end of the low interest rate environment and its implications for borrowers (see Box 3) may further reinforce the necessity to activate additional macroprudential instruments to target the real estate sector (see chapter 5 for an overview of policy developments in this context).

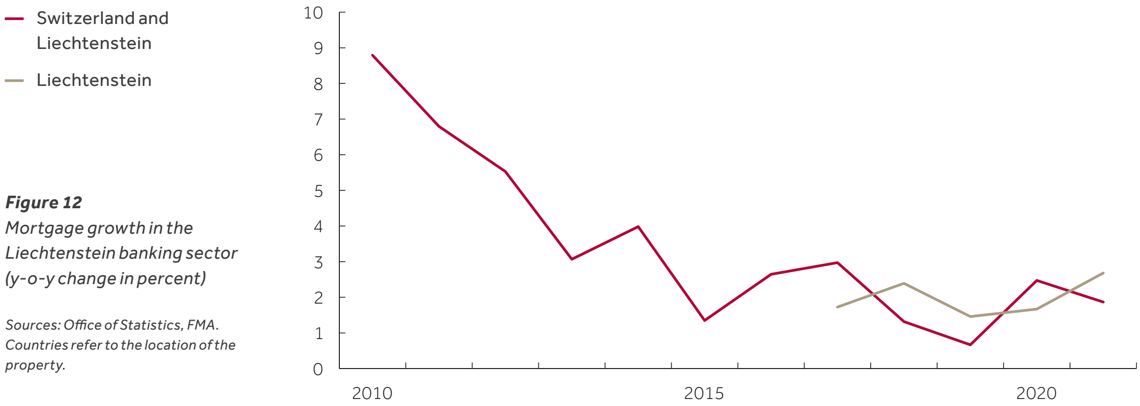


Figure 12
Mortgage growth in the Liechtenstein banking sector (y-o-y change in percent)

Sources: Office of Statistics, FMA. Countries refer to the location of the property.

Negative feedback effects cannot be ruled out in the event that risks materialise in the real estate sector. Despite various risk-mitigating factors, the high level of household debt makes the real estate sector vulnerable to unexpected macroeconomic shocks. A significant proportion of borrowers does currently not meet affordability requirements, which vary substantially across domestic banks. If interest rates rise further, and / or household income falls, debt servicing could become a problem for a significant share of households. Combined with second-round macroeconomic effects – including consumption constraints and potentially falling house prices – such a scenario would be associated with a significant increase in credit default risks for banks and the financial system as a whole. Thus, against the backdrop of structurally high household indebtedness, a profound risk-monitoring framework is important to facilitate a timely reaction of macroprudential policy if deemed necessary.

BOX 3

Implications of rising interest rates for borrowers and the real estate sector

The risks in the real estate and mortgage market have increasingly come into focus against the backdrop of the sharp rise in interest rates. Higher mortgage interest rates imply a higher debt servicing burden for borrowers who have taken out loans with variable interest rates or whose mortgages are newly negotiated. This could be a challenge especially for low-income households, in particular in those countries where household debt is elevated. As pointed out repeatedly in recent years, the affordability of mortgage loans for households does indeed represent a vulnerability in Liechtenstein, with any further surge in household indebtedness going hand in hand with an additional increase in systemic risks.

In Liechtenstein, several risk-mitigating factors decrease the acute vulnerabilities related to the current interest rate increase. On the one hand, available data indicate that real estate prices in Liechtenstein have developed less dynamically in recent years compared to other European countries, and that the overvaluation is therefore likely to remain contained. On the other hand, before granting loans, Liechtenstein banks conduct an affordability analysis with an imputed interest rate – in practice of around 4.5% – whereby the resulting debt service burden should not exceed a certain share of household income in this scenario. This affordability analysis already considers a hypothetical interest rate increase to 4.5%, which means that the loans in such a scenario should, at least in principle, remain affordable for households. However, it should be noted that the proportion of loans secured by mortgages in Liechtenstein that represent an exception to these (bank-internal) guidelines is relatively high at around 21% of the total mortgage lending volume as of June-2022.[7] In addition, despite the significant increase in recent months, a rise in interest rates to more than 4.5% seems relatively unlikely at present in the Swiss franc currency area. Another risk-mitigating factor in the short run is the large proportion of mortgage loans that are concluded with a fixed interest rate. This development greatly mitigates the immediate effects of the surge in interest rates, as the recent climb of interest rates only gradually affects households (and thus the real estate market) in Liechtenstein. Finally, the resilient labour market and, on an aggregate level, the relatively high household wealth also lead to a mitigation of risks associated with the rise in interest rates (see the previous section for an overview of risk-mitigating factors in the domestic RRE market).

Even in the case of a real estate crisis, the threat of contagion within the economy would be significantly less pronounced than in other countries. Procyclical effects of a downturn in the financial cycle would be significantly lower in small and open economies like Liechtenstein, as domestic demand does not play a major role. Hence, even a significant increase in the savings rate of private households would have only negligible demand effects and would limit the impact on the overall economy. Negative contagion effects within the banking sector also seem unlikely in the current environment, as banks' business models focus primarily on other sources of income and their capitalisation is above the European banking sectors' average. In summary, an abrupt rise in interest rates leads to higher interest and debt service payments on mortgages, thereby also increasing the credit risk for banks. While the overall economy would probably be less affected in Liechtenstein than in other countries in the case of a real estate crisis, addressing medium-term risks is still central to ensure financial stability in the medium to long term.

7 *So far, the respective guidelines are only qualitatively defined in the Banking Ordinance, i.e. the quantitative criteria defining affordability differ substantially across banks. A revision (and harmonisation) of the guidelines is currently discussed.*

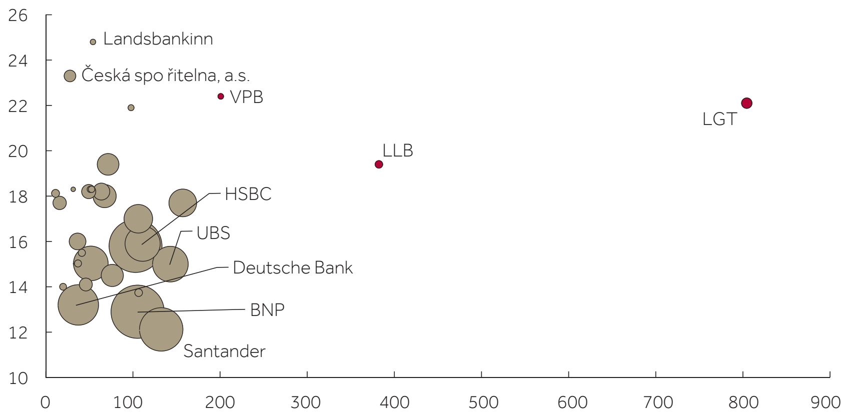
RECENT DEVELOPMENTS IN THE FINANCIAL SECTOR

BANKING SECTOR

As the banking sector is very large relative to Liechtenstein's GDP, a strong focus on macroprudential supervision is important to safeguard financial stability. Total assets of Liechtenstein's banking sector, which is mainly under domestic ownership, continued to increase to a record high and amounted to CHF 105.4 billion at the consolidated level in June 2022 (compared to CHF 83.0 billion on the individual bank level), corresponding 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 banking sector. Hence, the related "too-big-to-fail" (TBTF) problem and the resulting moral hazard issue need to be addressed in order to mitigate risks for Liechtenstein's economy. The total number of banks in Liechtenstein amounts to 12 institutions. The three O-SIIs in Liechtenstein's banking sector are not only extremely large in relation to Liechtenstein's economy, but also the three largest institutions relative to the respective headquarter country's GDP in the entire EEA. At the same time, their level of capitalisation has remained well above-average (Fig. 13). Against this background, a stable banking sector is key for the whole economy, even though total assets of the three largest banks remain relatively small in comparison to large European banks. Consequently, 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 13
Banks' size relative to GDP (y-axis: CET 1 ratio; x-axis: assets as percent of the country's GDP); Size of datapoint: total assets in CHF (in logs)

Sources: Bloomberg, banks' annual reports, FMA, Eurostat.
Sample: Besides Liechtenstein (where all three O-SIIs are shown), only the biggest G-SII or O-SII in each EEA country and Switzerland is considered, respectively. The size of the datapoint is proportional to total assets. Data is based on year-end 2021.



Liechtenstein banks' business model mainly focuses on private banking and wealth management services. The specificities of the business model of Liechtenstein banks is clearly visible when taking a look at their income statements. For banks focusing on private banking, fee and commission income plays a significantly larger role in their income composition. In 2021, 50.7 % of total revenues of the banking sector in Liechtenstein was attributed to fee and commission income, while only 32.1 % 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. Liechtenstein banks have traditionally relied on private banking and wealth management activities, but have avoided the riskier field of investment banking. Other income (17.2 %) refers to income from securities, financial transactions, real estate and other ordinary income.

Following stable profitability during the COVID-19 pandemic, profits have further increased in the first half of the year on a consolidated level. While earnings before tax (EBT) decreased by approx. 15 % from 2019 to 2020, EBT recovered in 2021 and 2022, with earnings in the first semester of 2022 recording a 12.5 % year-on-year increase. Nevertheless, EBT in recent years, standing at CHF 671.3 million in 2021, still lack considerably behind earnings before the global financial crisis (CHF 861.6 million in 2007). Profitability remained subdued for some years following the crisis, not only due to the sluggish global recovery, but also due to increasing international regulatory pressure, leading to additional expenses for banks. While profitability of domestic banks has recovered substantially in the past years, the contribution of foreign group companies has become increasingly important for the banking sector, making up 79.4 % (up from 55.3 % in the first semester of 2021) of total EBT in the first half of 2022. The large difference between individual banks and the consolidated level in the first half of the year is mostly due to the different accounting treatment of banks' bond portfolios with regard to valuations between Local GAAP and IFRS. At the consolidated level, the return on equity (RoE) amounted to 6.3 % by mid-2022, while the return on assets (RoA) stood at 0.6 %.

During the COVID-19 pandemic and its recovery, assets under management (AuM) have continued their 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 Liechtenstein banking sector, net money inflows have been positive throughout 2021, resulting in a total inflow of CHF 37.5 billion. In the first two quarters of 2022, net new money inflows amounted to CHF 23.9 billion[8], with AuM standing at CHF 411 billion in June 2022, a moderate market-driven decline relative to the record level of AuM at year-end 2021 (CHF 424 billion). In fact, a large part of the market correction could be made up for by net new money inflows also supported by acquisitions, with the decline in AuM remaining relatively limited in the first half of the year.

Direct exposures of the banking sector to Russia, Belarus and Ukraine are limited. To assess the risks of the banking sector to the Ukraine conflict, the FMA has sent out a survey for an ad-hoc data collection already in early March. The data, which were combined with banks' regulatory reporting, showed that direct linkages of the Liechtenstein banking and financial sector with the respective countries have been very limited. The credit risk exposure of the domestic banking sector to Russia, Belarus and Ukraine has been relatively low, together amounting to a small fraction of a percent of total exposures of the banking sector. The risk exposures of the financial sector towards sanctioned persons is also limited, with direct vulnerabilities of the domestic banking sector remaining low. Moreover, these countries also play a limited role in terms of assets under management, with negligible immediate effects on profitability.

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8 This number includes the acquisition of Australian-based Crestone Wealth Management by LGT, which constitutes a substantial share of total net new money in the first half of the year.

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 68.4% by mid-2022 on a consolidated level, has decreased somewhat from a rather high level in recent years on the back of rising income. 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. The increase in interest rates, which is expected to be associated with an increase in the respective interest rate margins, may offer banks a window of opportunity to lower their CIR.

Despite the recent decline in CET1 ratios in the first half of the year, Liechtenstein's banking sector has remained well capitalised. On the consolidated level, the Common Equity Tier 1 capital (CET1) ratio stood at 21.7% at the end of 2021, almost unchanged from the previous year (21.8%). Since the start of 2022, the CET1 ratio has decreased markedly, however, both on the back of lower capital and a further increase in risk-weighted assets. While a large part of the decline in capital is temporary in light of the lower value of bond portfolios due to the rise in interest rates, regulatory changes, acquisitions[9] as well as higher dividend payouts have also contributed to the reduction. Simultaneously, risk-weighted assets (RWA) have increased by CHF 2.0 to 41.9 billion since the start of the year[10], reducing the CET1 ratio to 19.1% as of mid-2022. Nonetheless, the capitalisation of Liechtenstein banks remains substantially higher than the EU average, which stood at 15.2% in June 2022 (Fig. 14).

9 *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.*

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

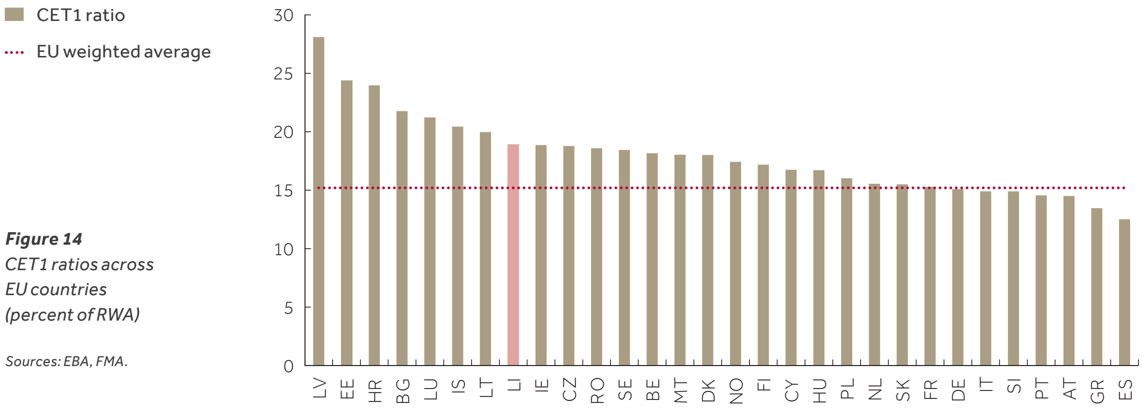


Figure 14
CET1 ratios across EU countries (percent of RWA)

Sources: EBA, FMA.

The high capitalisation of the banking sector is also confirmed by a high leverage ratio. Liechtenstein's systemically important banks (O-SIIs) do not only stand out with their CET1 ratios exceeding the 18 % threshold, but also with their high leverage ratios. Since domestic banks apply the standardised approach (SA) to measure credit risks, the ratio of RWA to total assets is relatively high, amounting to 39.8 % in June 2022. The application of the SA for calculating the risk inherent in the banks' exposures implies 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, all three O-SIIs exceed a leverage ratio of 6 %, significantly higher than the minimum requirement of 3 %.

Asset quality has remained stable despite the COVID-19 pandemic, with non-performing loans (NPLs) remaining at low levels. At mid-2022, the NPL ratio of the banking sector amounted to 0.8 %, 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 and the COVID-19 pandemic. 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 the current macrofinancial environment – including the rise in interest rates – may become visible with a significant delay.

The liability side of the balance sheet of Liechtenstein banks primarily relies on deposits. Because of banks' focus on private banking activities, the country's banking sector is relatively abundant with deposits. Total deposits of the banking sector amounted to more than CHF 79 billion in June 2022 on a consolidated basis (which corresponds to 75 % of total liabilities). Thus, market-based funding plays a minor role in Liechtenstein, representing less than 7 % of total liabilities. The remarkably stable funding is also confirmed by the loan-to-deposit ratio, amounting to approximately 66 % in June 2022, among the lowest values in Europe, indicating low funding risks for the banking sector.

Standard liquidity indicators also highlight the strong funding base of domestic banks, with the average (weighted) liquidity coverage ratio (LCR) amounting to 195 % in June 2022 (Fig. 15). In recent years, the LCR in Liechtenstein has remained relatively stable at a high level. Besides the LCR, the net stable

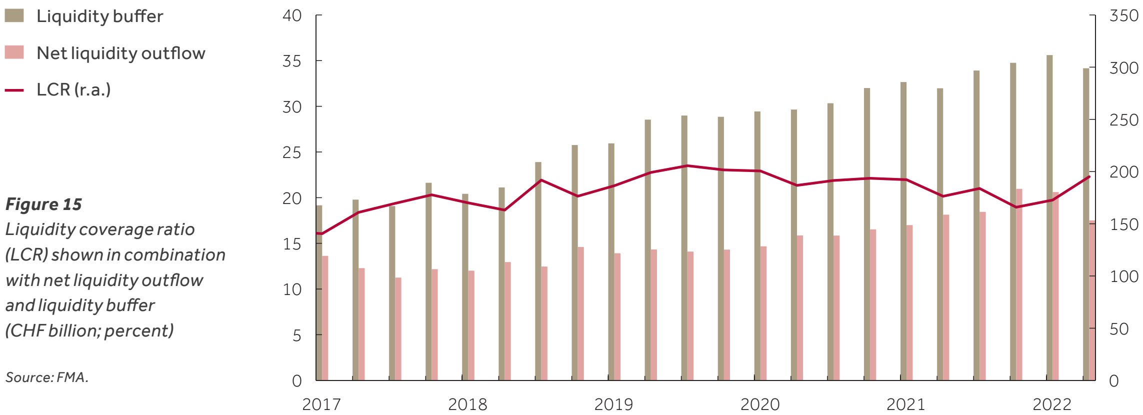


Figure 15
Liquidity coverage ratio (LCR) shown in combination with net liquidity outflow and liquidity buffer (CHF billion; percent)

Source: FMA.

funding ratio (NSFR) is another important liquidity indicator. The NSFR considers a stress situation concerning medium and long-term funding of assets and banking activities by comparing available stable funding with the requirement of stable funding. The NSFR has become a binding requirement as of May 2022 when the CRR II package entered into force. 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 166 %, with a range across banks from 137 % to 480 %. This predicts a stable funding base in ordinary as well as in times of stressed funding markets.

Furthermore, the currency treaty between Liechtenstein and Switzerland ensures equivalence of Liechtenstein and Swiss banks in terms of central bank funding from the Swiss National Bank (SNB). Notwithstanding the comfortable liquidity position of Liechtenstein banks, it is important to ensure access to liquidity even in the unlikely case of a crisis. Since Liechtenstein is part of the Swiss franc currency area based on an intergovernmental state treaty, monetary policy is conducted by the SNB. Concerning the CHF currency area, the SNB has qualified five Swiss banking groups – of which none is headquartered in Liechtenstein – as systemically important. Additionally, the SNB guidelines on monetary policy instruments state explicitly that the emergency liquidity assistance (ELA) by the SNB requires certain conditions, including that the bank or banking group seeking credit must be of importance for the stability of the financial system. While Liechtenstein banks have access to SNB funding on the same terms as their Swiss counterparts, the SNB guidelines imply that access to ELA would be limited for Liechtenstein institutions, at least in comparison to the biggest banks or banking groups in Switzerland. The availability of highly rated securities in banks' balance sheets that can be used as collateral in monetary policy transactions is therefore essential for ensuring banks' liquidity in the unlikely case of a crisis. At the same time, along with their Swiss peers, Liechtenstein banks could make use of the SNB's liquidity-shortage facility and the emergency deposit depot, which ensures access to liquidity even in periods of severe liquidity shortage. The banking sector therefore benefits from being part of one of the most stable currency areas in the world, with access to central bank funding guaranteed by a corresponding intergovernmental state treaty. Furthermore, some of the banks also have access to central bank funding in other countries (e.g. the euro area) via their subsidiaries abroad.

NON-BANKING SECTOR

Insurance sector

The non-life insurance sector has remained on a strong growth path, with premium income of life insurance companies continuing to decrease. In recent years, business models in the domestic insurance sector became more diversified, accompanied by a structural shift from the life to the non-life sector. While back in 2011 the life insurance sector contributed almost 90% of premium income, the share of the non-life insurance sector has exceeded those of life insurance companies since 2017, with the gap in premium income increasing once again in 2021 (Fig. 16). While premiums in the non-life sector continued their growth in 2021 (+14.2% y-o-y to CHF 3.6 billion), life insurance premiums decreased by −16.7% to CHF 1.9 billion. Reinsurance companies also showed a small decline in the past year (−5.6%), albeit from a relatively low level of premium income (CHF 72 million in 2021). At the end of 2021, 16 life (2020: 19), 14 non-life and 3 reinsurers operated in Liechtenstein. Overall, premium income increased modestly in comparison to 2020, amounting to CHF 5.6 billion.

Liechtenstein's insurance sector benefits from direct market access to countries of the EEA and Switzerland. Besides Liechtenstein's EEA membership that ensures market access to the Single Market, the Direct Insurance Agreement with Switzerland permits Liechtenstein insurers to offer their services also in Switzerland (and vice-versa). While the simultaneous market access to both the EU and Switzerland is a competitive advantage compared to other insurance market locations, the membership in the two economic areas also comes with its challenges, which are further elaborated in chapter 4.

In light of the small domestic market, cross-border provision of services represents the lion's share of insurance revenues. The main markets for Liechtenstein insurance undertakings in 2021 were the United States (18.4% of total premium income), Switzerland (18.4%), Germany (17.3%) and Ireland (15.1%). Inter-

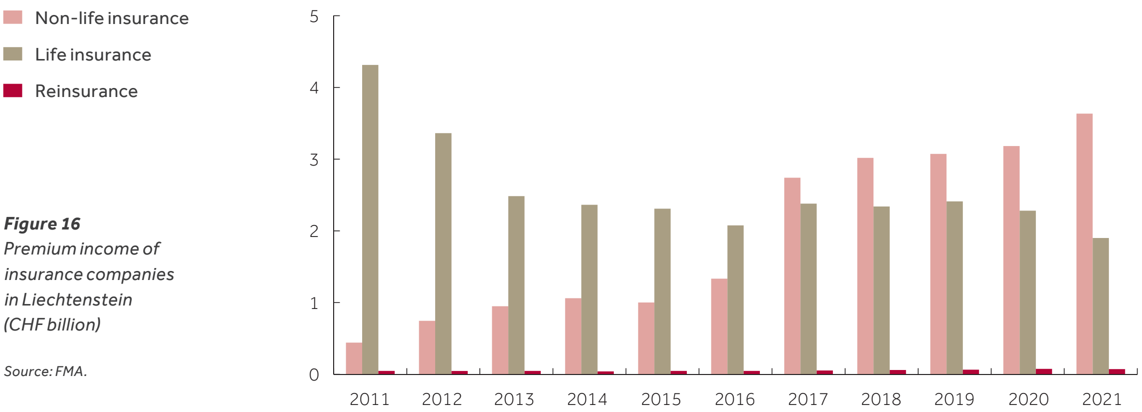


Figure 16
Premium income of insurance companies in Liechtenstein (CHF billion)

Source: FMA.

national activities, which are strongly diversified across countries, highlight the attractiveness of Liechtenstein as a location for insurance companies seeking access to both the EEA and Switzerland.

Solvency ratios have slightly increased over the past year. By the end of June 2021, the median solvency ratio amounted to 233 %, slightly increasing relative to 2020 (214 %) and 2021 (215 %). Figure 17 provides an illustration of solvency ratios across insurance undertakings in Liechtenstein. By the end of June 2022, all insurance undertakings fulfilled the solvency capital requirements, with the minimum level amounting to 133 %. In contrast to other countries, life insurance companies in Liechtenstein hardly suffered from the low interest environment in the past few years, as guaranteed products are rare in Liechtenstein and the lion's share of capital investments is attributable to investments managed for the account and risk of policy holders as part of unit-linked (i.e. fund-linked) life insurance. In this context, managed capital in the context of unit-linked life insurances in Liechtenstein amounted to approximately CHF 22.3 billion at the end of 2021. Nevertheless, similar to the situation in other countries, insurance companies in Liechtenstein are also facing an increasingly challenging and uncertain environment in terms of profitability going forward.

Pension schemes

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

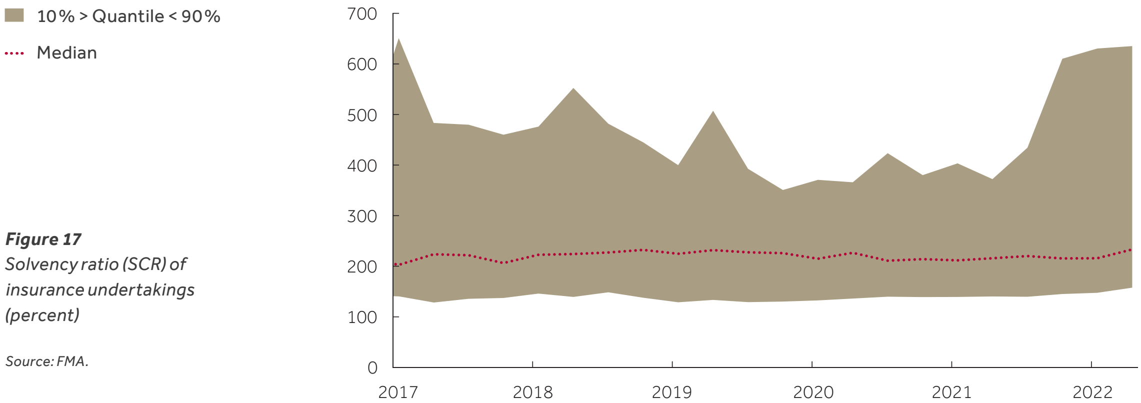


Figure 17
Solvency ratio (SCR) of insurance undertakings (percent)

Source: FMA.

For the public pension system (AHV), the year 2021 was characterised by solid investment income. The increase in financial reserves has continued over the course of 2020 and 2021, with the return of financial reserves amounting to 5.9% in 2021. Financial reserves did not only benefit from a small increase in contributions (+CHF 2.7 million to CHF 272.9 million) and the "regular" annual government contribution of CHF 30.4 million, but also from an extraordinary CHF 100 million government contribution in 2020, due to a one-off tax revenue. At the same time, total expenditures also increased by +2.9% to CHF 321.5 million, resulting in a total surplus of CHF 187.1 million.

Structural reforms in previous years imply deficits in the public pension system in the years ahead. As part of the fiscal consolidation package following the public budget deficits in 2012 and 2013, a pension reform was enacted in Liechtenstein. This reform increased the retirement age by one year to 65 and raised the contributions from employers and employees. At the same time, however, it also decreased the state contribution to the public pension system significantly. It is therefore expected that the expenditures of the public pension system will exceed revenues in the future. As expenditures for pensions will exceed the sum of contributions from employees, employers and the state, the structural legal framework implies that the public pension system has to generate positive returns from its investment income to keep financial reserves stable. In 2021, this income-expenditure gap (excluding the profit/loss from financial investments, but including the annual ordinary state contribution) amounted to approx. CHF –18.2 million.

Large financial reserves accumulated in the past guarantee a stable public pension system. While the structural reforms imply certain challenges ahead, the public pension system remains on a stable footing, not least due to the large financial reserves of CHF 3.65 billion at end-2021, approximately 58% of GDP. As a result, financial reserves could cover pension payments for approximately 11.35 years (up from 11.08 from 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. According to the latest projections, dating back to end-2018, the public pension forecasted a decrease of the financial reserves to 4.26 annual expenditures by 2038. As this indicator is below the threshold of 5 annual expenditures in the forecast horizon of 20 years, the government is legally obliged to propose corresponding stabilisation measures. While the extraordinary state contribution of 2020 may have mitigated this issue to some extent, it is expected that the political discussion will continue. A more detailed analysis is available in the annual report published by the public pension's administration office (AHV).[11]

The occupational pension provision, i.e. the second pillar of the pension system, plays an important role in Liechtenstein to maintain the accustomed standard of living after retirement. The autonomous legal entities in the form of foundations are subject to the Occupational Pensions Act (BPVG) and are supervised by the FMA. Occupational pension provision is funded by employer and employee contributions. The number of entities has decreased over the past few years, from 33 in 2010 to 16 foundations in 2021. This consolidation trend is expected to be continued in the near future, as larger pension funds can benefit from scale effects. The large pension capital in the second pillar relative to Liechtenstein's GDP underscores the great overall economic importance of the occupational pension scheme. Total assets of the pension scheme amounted to CHF 8.63 billion by end-2021,

11 The annual report is available on the AHV website.

corresponding to approx. 131 % of Liechtenstein's GDP. This figure does not only show the overall well-positioned retirement system in Liechtenstein, but it also emphasises the significance of the second pillar for the provision of pensions.

The sharp financial market correction over the first half of the year will lead to a significant decrease in investment returns and coverage ratios. Following a positive investment return of 6.6 % in 2021, the returns turned significantly negative in the first half of 2022, with the median investment return standing at – 10.7 % 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 105.9 % at the end of the second quarter, decreasing from 119.9 % (a record high since the start of the time series) at the start of the year. Coverage ratios of the 16 pension schemes ranged from 100.3 % to 131.4 % at the end of last year. Considering the negative return on assets, the decreasing trend in conversion rates is set to continue in the years ahead. For a more detailed risk assessment on the occupational pension system, please see the annually published report on pension schemes by the FMA.[12]

Investment funds and asset management companies

Notwithstanding the challenging environment caused by the global pandemic, the investment funds sector continued its growth path in 2021. 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. Following the market related dip in assets under management (AuM) in 2018 and the dynamic growth in 2019 and 2020, the past year was characterised by another strong increase in AuM (Fig. 18), by almost 19 % to CHF 70.3 billion (2020: CHF 59.1 billion). Alternative Investment Funds (AIF) showed particularly strong growth in AuM (+ 27.0 % to CHF 35.8 billion), while UCITS ("Undertakings for Collective Investments in Transferable Securities", + 10 % to CHF 34.0 billion) and IU ("Investmentunternehmen", + 2 % to CHF 0.5 billion), a domestic fund regime, registered lower growth rates in 2021. Over the first half of 2022, AuM dropped slightly to CHF 69 billion, with UCITS decreasing by 7.1 %, while IUs and AIF[13] increased by 6.3 % and 7.8 %, respectively. The number of sub-funds also increased by 49 to a total number of 812 at the end of 2021, and further to

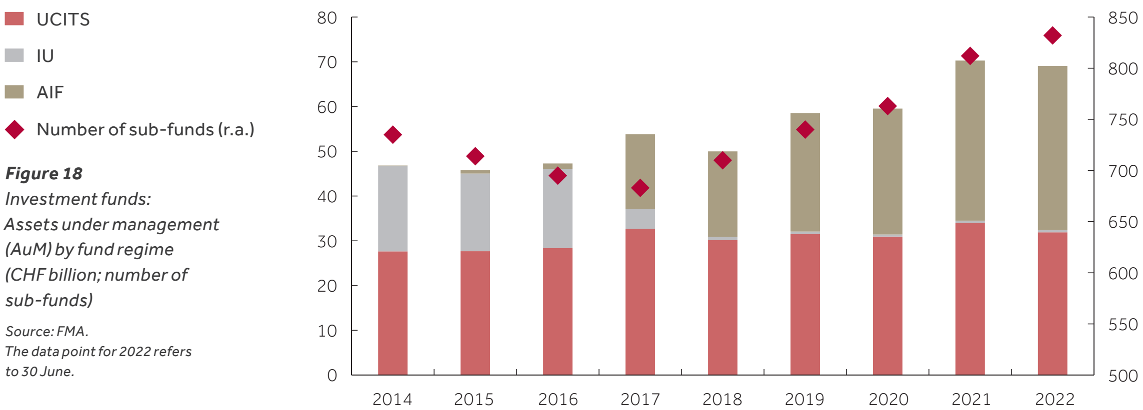


Figure 18
Investment funds: Assets under management (AuM) by fund regime (CHF billion; number of sub-funds)

Source: FMA. The data point for 2022 refers to 30 June.

12 *The report is available on the FMA website.*

13 *It is of note that 61 AIFs (with CHF 3.7 billion AuM) only conduct yearly valuations.*

832 by mid-2022. Overall, the domestic investment funds sector has profited strongly form the market performance in 2021, and has also shown strong resilience during the market turbulences in the first half of 2022.

The investment funds sector is closely linked to the banking sector. In Liechtenstein, 17 management companies (ManCos) are authorised to manage investment funds. The ManCos of the three largest banks jointly manage the lion's share of 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, with risks remaining relatively limited. While further risk-based indicators on the investment funds sector will become available in the near future, we do not expect to detect major risks in terms of liquidity in the context of the additional risk-based analysis.

Asset management companies (i.e. MiFID investment firms) play a significant role in Liechtenstein, particularly in terms of employment. At the end of 2021, 98 asset management companies (AMCs) reported AuM of CHF 59.5 billion, of which almost CHF 51.1 billion were portfolio investments (an increase by about 11% relative to 2020). Over the first half of 2022, AuMs decreased by CHF 4.6 bn. Roughly half of total assets were hold at domestic banks. AMCs employed about 650 employees in the second half of 2021, remaining stable relative to the previous year, with the number of client relationship increasing from 9,622 in 2020 to 10,291 in 2021.

Fiduciary sector

The fiduciary sector still remains an important part of Liechtenstein's financial sector. The number of Trust or Company Service Providers (TCSP) has remained quite stable in the past few years, but has declined in 2021 by approx. 5% to a total number of 576, 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, the relatively stable number of fiduciary companies is somewhat surprising but may be explained by their increased specialisation (and higher revenues per customer). The recent revision of the Professional Trustees Act (TrHG) has extended the FMA's supervisory responsibilities in the fiduciary sector and increased customer protection. At the same time, data availability remains an open issue.

Token economy

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

Both the number of entities as well as the quantity of services registered in Liechtenstein has continued to grow. In 2020, a total of 24 entities reported to the FMA that they had already been active in 2019, intending to make use of the grandfathering period over the course of 2020 as intended by the TVTG. In the meantime, 51 companies have applied for a registration according to the TVTG, 22 of them have successfully registered for 45 services. 16 applications are currently under consideration, while the remaining registrations have been withdrawn. The so far registered entities include both classical 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 (Directive (EU) 2019 / 1937 on Markets in Crypto-assets, MiCA), some service providers currently covered by the TVTG will be comprehensively regulated across the Single Market. The implications for the regulation in Liechtenstein are not yet clear, but will be analysed in detail going forward.

SYSTEMIC RISKS IN THE FINANCIAL SECTOR

CROSS-SECTORAL SYSTEMIC RISKS

Macro-financial risks

Financial stability risks have increased in light of a strong rise in inflation and interest rates. The marked increase in inflation on the back of soaring energy and food prices, but also due to extremely tight labour markets, has forced central banks around the world to exit their extremely accommodative monetary policy stance which has largely dominated the world economy since the global financial crisis. In fact, current developments may mark an abrupt end to the long-run downward trend to both nominal and real interest rates that started around 40 years ago (Fig. 19). Tightening financial conditions are not only associated with increasing risks and vulnerabilities in financial markets, but also strongly affect financial intermediaries, non-financial corporations and private households. With regard to the outlook for financial intermediaries, current macro-financial developments will lead to increased challenges in terms of profitability, with the transmission channels varying considerably across the financial sector (as explained below).

The real economy will face increased challenges in light of higher energy prices and tighter financial conditions. Slowing growth and increasing inflation have led to multiyear lows in investor and consumer confidence. Increasing interest rates will particularly weigh on investment, and the loss in purchasing power is likely to imply a further decline in consumption expenditures. Companies will therefore face headwinds from high input prices, particularly in energy-intensive sectors, tighter financial conditions and lower sales, which may lead to an impairment of their debt servicing capacity going forward.

United States
Japan
Germany
Euro area
United Kingdom
Switzerland

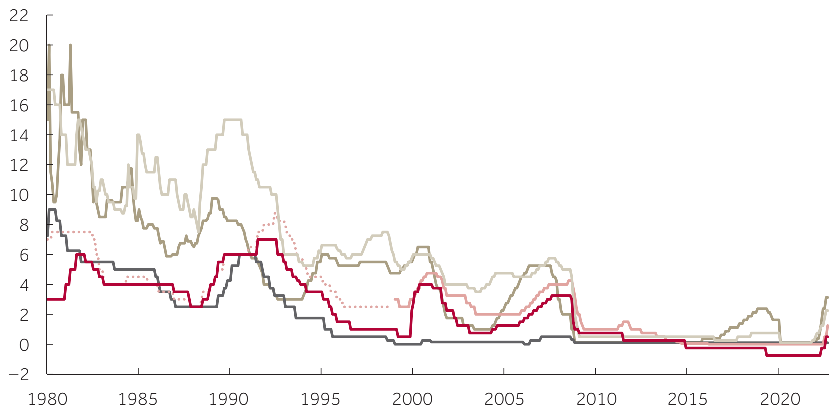


Figure 19
Nominal policy rates (percent)

Source: Bloomberg.

Financial markets remain vulnerable to further corrections. Both bond and stock markets have recorded significant corrections so far this year. Nevertheless, valuations remain vulnerable to various negative surprises. In particular, markets currently price in a scenario of rapidly declining inflation, a mild slowdown in terms of growth and relatively limited monetary policy tightening. In light of repeated inflation surprises and a sharply darkening economic outlook for the global economy, such a scenario may be too optimistic. It seems questionable whether the peak in the projected policy rate will be sufficient to bring inflation back to target in the absence of a recession (as currently assumed not only by markets, but also by the Fed projections). An analysis of ten disinflationary periods in the US since the 1950s[14] shows that a median fall in core inflation of two percentage points was achieved on average over a 30-month horizon with a rise in unemployment of 3.6 percentage points. Accordingly, eight (out of 10) disinflationary periods were accompanied by a recession. Instead, current market expectations for the US suggest that interest rates will start to decline already in the second half of 2023, and that monetary tightening in the euro area will end shortly after the US, with a terminal rate at a much lower level and remaining significantly negative in real terms. Markets also expect that corporate earnings will remain relatively robust despite the expected growth slowdown. Current valuations are thus vulnerable to repricing in case of more persistent inflation (and thus, an icreased need for monetary tightening) or less robust corporate earnings (which seems likely in the case of a recession). Also, despite the corrections, stock market valuations have remained high by historical standards, as indicated e.g. by the cyclically adjusted price / earnings ratio for the S&P 500 index, which still stood at 28 at the start of October, substantially above its long-term average of 17.

Risks in the real estate sector have significantly increased. Tighter financial conditions, accompanied by a strong deterioration in the economic outlook, could impair debt servicing capacities of households. While risks may be higher in other countries where the rise in real estate prices has been stronger in recent years, vulnerabilities are also rising in Liechtenstein's real estate market. In light of the high share of fixed interest rate mortgages, continued low unemployment rates even in times of recessions, and, relatively prudent lending standards, risks of quickly rising credit risks or a correction of housing prices are contained in the short term. In the medium to long term, however, vulnerabilities are higher than in other countries, as the indebtedness of the private household sector is among the highest across European countries, which can be hazardous in case of persistently high interest rates going forward.

Risk premia are on the rise, and early warning indicators for financial crisis probabilities have recently soared. While public debt is a non-issue in Liechtenstein due to zero debt and large financial reserves, downside risks to public finances in other countries have been on the rise. Higher funding costs will weigh on sovereigns going forward, and fragmentation (and spreads) across euro area countries are also likely to increase with the rise in policy rates, as empirically suggested by past episodes (see Fig. 20). The new instrument by the ECB against fragmentation in the euro area (TPI[15]) could be activated to protect against the widening of spreads which is not warranted by changes in fundamentals. While the argument of a hampered monetary policy transmission mechanism is understandable to some extent, in practice, it will be difficult to distinguish between "warranted" and "unwarranted" spreads, and the application of the TPI could therefore further hamper market discipline and fiscal sustainability. Additionally, various early warning indicators for financial crisis have risen significantly since the start of the year. Recent developments in the United Kingdom, where pension funds were at the edge of becoming insolvent due to abruptly rising sovereign bond yields and margin calls on their derivatives portfolio, show that increasing yields will probably be accompanied by some negative surprises in financial markets. In the case of the UK, only the intervention by the Bank of England prevented a potentially disastrous liquidity crunch and further fire sales among pension funds.

14 For further details, see Cecchetti, S. and Schoenholtz, K. (2022). The Costs of Acting Too Little, Too Late.

15 The "Transmission Protection Instrument" was endorsed by the ECB Governing Council in June 2022.

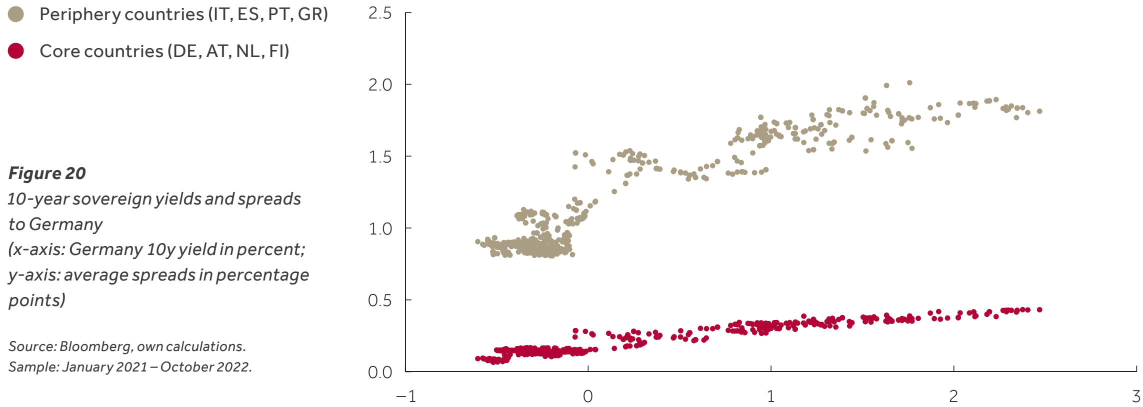


Figure 20
10-year sovereign yields and spreads to Germany (x-axis: Germany 10y yield in percent; y-axis: average spreads in percentage points)

Source: Bloomberg, own calculations. Sample: January 2021 – October 2022.

In addition, inflation pressures may also turn out to be more persistent than currently envisaged by financial markets, dampening the performance of financial markets going forward. Inflation has risen both due to supply and demand factors, and investors may assume that when those factors recede, inflation pressures will also diminish. There are several factors, however, which might complicate a return of inflation back to target. First, fiscal stimulus during the pandemic, at more than 10% of global GDP, has caused overheating. Second, persistently high inflation rates may lead to a de-anchoring of inflation expectations, giving rise to second round effects. Third, tight labour markets in many countries fuel wage and price momentum. Finally, structural factors related to slowing (or even stagnating) globalisation and demographics also contribute to higher inflation rates. Since the start of the Great Moderation, the global economy was characterised by a massive positive labour supply shock on the back of rising globalisation as well as favourable demographic developments, associated with cheap imports, deflationary pressures and falling interest rates in advanced economies. Today, the restraining effects of globalisation on inflation may be rewinding in an increasingly fragmented world. Against this background, it is not implausible that more monetary tightening (and higher interest rates) will be necessary to bring inflation back to target. In fact, real interest rates have risen strongly, in the United States by approx. 5 percentage points in the last few months (Fig. 21). Higher real interest rates dampen the performance of stock markets, as valuations depend on both future

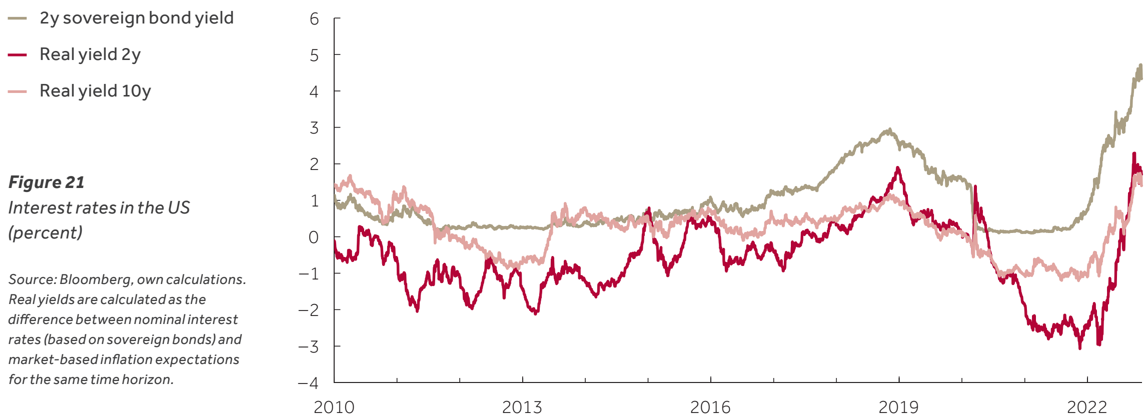
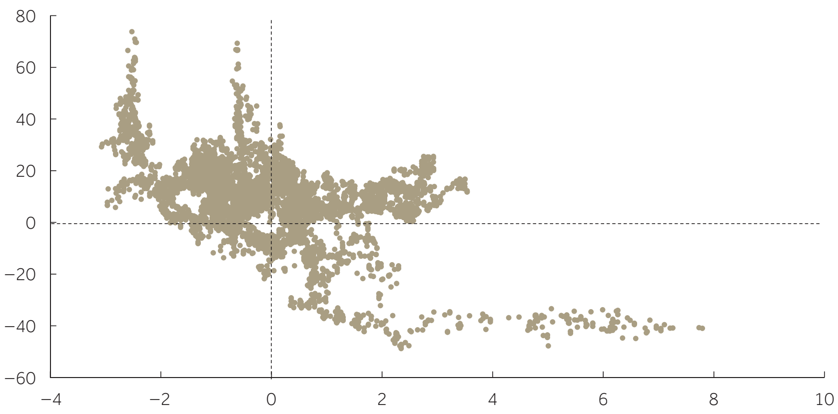


Figure 21
Interest rates in the US (percent)

Source: Bloomberg, own calculations. Real yields are calculated as the difference between nominal interest rates (based on sovereign bonds) and market-based inflation expectations for the same time horizon.

Figure 22
Real interest rates and stock markets
(x-axis: real 2y interest rate in percent; y-axis: annual return of S&P 500 index in percent)

Source: Bloomberg, own calculations.
Sample: 2005 – 2022.



earnings and the respective discount factor. As both determinants are negatively affected by higher real interest rates, it is not surprising that higher real interest rates show a strong (negative) correlation with stock market returns (Fig. 22). Against this backdrop, and a high probability that real rates will further increase in light of the fight against inflation, the outlook for stock markets remains highly uncertain.

Institutional risks

Systemic risks arising from the institutional specifics of the Liechtenstein financial sector may also adversely affect the stability of the financial system. Liechtenstein's financial sector is characterised by some institutional particularities. These include the lack of a lender of last resort, its dependence on the Swiss financial market infrastructure, which is a third country from the EU perspective, as well as the structural chracterstics of the economy. The escalating geopolitical tensions may lead to increased fragmentation and – potentially – higher barriers to trade, which would be particularly harmful for a small and open economy like Liechtenstein. These institutional risks are increasing the uncertainty both for the real economy and the domestic financial sector going forward.

Liechtenstein currently lacks a lender of last resort, but has recently started accession negotiations with the IMF. Liechtenstein is in a currency union with Switzerland stipulating that the SNB is responsible for monetary policy in the Swiss franc currency area. Thus, Liechtenstein has no central bank and hence lacks a lender of last resort, as domestic banks – which are too small to be systemically relevant for the whole currency area – have no access to the SNB's emergency liquidity assistance (ELA). Potentially solvent, but temporarily illiquid banks could therefore not be provided with sufficient liquidity in the event of a crisis. With an IMF membership, Liechtenstein (as a state) would receive such a lender of last resort. Even without taking up liquidity from the IMF, a respective credit line strengthens investor confidence, which significantly reduces the risk of a massive outflow of liquidity in a crisis situation. An IMF membership would therefore also contribute to prevent a financial crisis. Against this background, the FMA welcomes the recent steps taken by the government and the endorsement by parliament to start accession negotiations with the IMF.

Liechtenstein's dependence on the Swiss financial market infrastructure (FMI) could result in legal challenges with potentially negative consequences for financial stability. Based on the Currency Treaty with Switzerland from 1980, the Liechtenstein banking sector is integrated into the Swiss FMI. Since Liechtenstein's accession to the EEA, various areas of conflict have opened up, as from the perspective of the EU financial market acquis, Switzerland is classified as a third country. This can result in problematic legal challenges for Liechtenstein's access to the Swiss FMI, which could ultimately even undermine the foundations of the single currency area. The first cracks in the currency area became apparent in 2017, when the EU recognised the equivalence of Swiss trading venue regulation – mainly for political reasons – only for a limited period of one year. This time limit finally expired in mid-2019, but a long-term solution – also in other areas, e.g. for the access to central securities depositories – will, at least politically, depend on the institutional framework agreement between the EU and Switzerland and is therefore fraught with uncertainty. A failure of the negotiations could hamper or even make it impossible to use the Swiss FMI in the future, which could in some circumstances jeopardize domestic financial stability. Against this background, close cooperation and a regular exchange with the European Commission is indispensable, to raise awareness of Liechtenstein's situation on the back of potentially increasing divergence between the two legal areas, i.e. Switzerland on the one hand, and the EEA countries on the other, as well as its implications for financial stability.

Reputational risks

International reputation and recognition are crucial for the stability of the entire financial centre. The prevailing business models of the financial sector primarily build on trust and reputation. Thus, reputational damage or incidences (e.g. allegations of money laundering, misappropriation of client funds, etc.) could, in principle, be accompanied by strong contagion effects in the entire financial sector.

Systemic risks related to reputational damage may arise from different sources for the Liechtenstein financial sector, such as reputational damage related to money laundering and terrorist financing, opaque business models, circumvention of sanctions, perceived malpractice in the fiduciary, crypto or fintech sector etc. Reputational risks can also arise from transactions or business relationships with or in high-risk countries, including states that have strategic deficiencies in their systems for combating money laundering and terrorist financing. The reputational risks from these sources are closely linked to each other and cannot be considered separately, since reputational damages – even originating from a suspicion of money laundering of a small player, for example – may lead to the materialisation of systemic risks in the domestic financial sector with potentially far-reaching consequences, including a loss of access to global markets. As past cases in other countries have shown, banks can lose their correspondent banking relationships and, thus, their access to the international financial system, in particular, in the case of money laundering incidents. At the same time, risks for grand-scale money laundering are lower than in other countries in light of the relatively small financial center.

Reputational risks may also arise from the fiduciary or fintech sector. Although a recent revision of the Professional Trustees Act (TrHG) has extended the FMA's supervisory responsibilities in the fiduciary sector, data availability remains an open issue, with the fiduciary sector remaining largely self-regulated by the Liechtenstein Institute of Professional Trustees and Fiduciaries (THK). While new legal provisions that entered into force in mid-2020 include that the audit reports of fiduciaries and fiduciary companies have to be submitted to the FMA on an annual basis, the legal revision does not introduce a reporting system for fiduciary companies with regard to prudential indicators. Thus, monitoring the interconnectedness between the fiduciary and banking sector more accurately remains impossible, which would be highly relevant from a financial stability perspective. Reputational risks may also arise from companies operating in the Trusted Technology sector (i.e. Blockchain) in Liechtenstein, where the FMA is responsible for the due diligence supervision. However, the FMA's prudential supervision competences under the TVTG are less pronounced than in other parts of the financial industry. Thus, further enhancing the regulation in the fintech and fiduciary sector may be important to ensure the stability of the Liechtenstein financial centre going forward.

Future risks: Climate-related financial stability risks

Both the financial sector and the real economy are impacted by climate change as well as the transition towards a climate-friendly, low-carbon economy. There are two main transmission channels through which climate change affects the stability of the financial sector. First, physical risks arise from severe weather events such as storms or floods and from climate-related environmental changes such as rising sea levels and changes in precipitation.[16] When physical risks occur, they may lead to assets being impaired or lost as a result of write-downs on corporate loans being particularly exposed to these risks. Thus, physical risk mitigation through loan collateralisation appears to be an important factor in the mitigation of banking sector losses in the future, calling for a strengthening of insurance options against the background of a growing protection gap.[17] Second, the mitigation of climate change also requires a process of adjustment towards a sustainable, low-carbon economy. This transitioning towards new regulations and innovations may lead to uncertainties related to the timing and speed of this process, which can negatively affect financial markets. Moreover, physical as well as transition risks might persistently affect macroeconomic and financial variables, such as growth, productivity, food and energy prices, inflation expectations and insurance costs, which are crucial for the achievement of central banks' mandates in monetary policy and financial stability.[18] In addition, trading losses caused by valuation adjustments in equity and bond markets can equally impair the financial sector's assets.[19] The materialisation of physical and transition risks is reflected in various risk categories and typically implies numerous secondary and side effects: credit risk, market risk, liquidity risk, operational risk and insurance risk.[20] Also, physical and transition risks are not likely to be independent of one another.

To counteract the impact of climate change, sustainable finance has gained increasing attention both by policymakers as well as the broader public. The high and growing demand from investors for sustainable financial products is increasing the demand for greater transparency on the financial intermediaries' side regarding their climate-related financial risks. Also, in Liechtenstein, banks disclose various climate-related information in their sustainability reports. More specifically, some banks report the amount invested in sustainable investment solutions, which corresponds to around a quarter of total assets under administration at the largest bank in Liechtenstein.

16 *ESRB (2020). Positively green: Measuring climate change risks to financial stability, June 2020.*

17 *ESRB (2022). The macroprudential challenge of climate change, July 2022.*

18 *NGFS (2019. April). A Call for Action: Climate Change as a Source of Financial Risk.*

19 *SNB (2022). Financial Stability Report 2022.*

20 *Bolton, P., Despres, M., Pereira da Silva, L.A., Samama, F., & Svartzman, R. (2020). The green swan: Central banking and financial stability in the age of climate change. Bank for International Settlements.*

Various actions have been taken on the European and international level to address climate-related financial stability risks. On the European level, the ESRB recently published a report[21] on the macroprudential challenges of climate change, in which it calls for the need to better assess the systemic risk implications of climate-related financial stability risks and the associated scope for a macroprudential policy response in the EEA. The ECB[22] has also taken a broad set of activities to assess the level of preparedness of the banking sector for properly managing climate risk. In this context, the ECB has carried out a climate risk stress test for the first time among significant institutions. The stress test results were not having quantitative effects on banks' Pillar 2 guidance, but were incorporated into the annual SREP assessment in a qualitative way. The scenarios in the stress tests were largely based on the scenarios developed by the Network for Greening the Financial System (NGFS). The main findings of the stress test exercise reveal that while banks made significant improvements regarding their climate stress-testing capabilities, deficiencies, data gaps and inconsistencies remain across institutions. At the same time, a non-negligible income of a large majority of significant institutions in the euro area are generated from greenhouse gas-emitting industries, while they are also exposed to the materialisation of acute physical risks in Europe. The risk level depends on the geographical location of their lending activities. At the international level, the NGFS, the Basel Committee on Banking Supervision (BCBS), as well as the IMF are also working together with central banks to assess climate-related risks and possible measures to address them. In this context, a better risk assessment can be facilitated through disclosure requirements to increase the transparency of climate-related risks in banks' books. However, despite the diverse approaches taken to better assess the associated risks, challenges remain for policymakers and market participants in assessing the implications of climate change.

To monitor climate-related risks to financial stability, a quantification of climate-related factors is necessary. Although climate-related disclosures have improved in recent years, existing data gaps and data inconsistencies remain an important factor limiting the assessment of physical risks and the associated exposure losses. Policymakers and the financial sector use a broad range of data, sources and information to assess the risks associated with climate change. While at the European level, the ESRB, the ECB and national authorities frequently use AnaCredit data for their climate-related analyses, as it contains detailed information on individual bank loans in the euro area across all member states, Liechtenstein does not collect loan data on this granular level, making a profound assessment of physical risks in the banking sector more challenging. Nonetheless, when taking a closer look at the exposures of the domestic banking sector and its exposures towards the NFC sector, it becomes obvious that the exposures are very small relative to the balance sheet of the banking sector, decreasing direct climate-related contagion risks from the NFC to the banking sector. However, beyond corporate lending, for which data are most complete at the international level, risks also exist for household lending, which plays an important income source for some Liechtenstein banks. Against this background, some financial intermediaries have recently begun with assessing the potential physical risks inherent in their mortgage portfolio.

21 ESRB (2022). The macroprudential challenge of climate change, July 2022.

22 ECB (2022). 2022 climate risk stress test, July 2022.

In recent years, the FMA and the domestic financial sector have shown their commitment to make progress in the area of sustainable finance and on assessing potential climate-related physical and transition risks. The FMA strives to support the transformation towards a sustainable financial center, guided by the political sustainable development goals (SDGs). As part of prudential supervision, the FMA ensures the incorporation of sustainability risks and factors into the business strategies of financial market participants and, in particular, compliance with the legislative transparency requirements for the purpose of efficient investor protection. At the same time, the FMA is working on integrating sustainability risks into its own stress tests and supervisory analyses as well as into its own crisis prevention and crisis management planning more generally. In this context, a special emphasis lies on the avoidance of any sort of "greenwashing". Against this background, the implementation of the EU taxonomy in Liechtenstein is highly welcomed. In addition to the broad set of activities taken to tackle climate-related risks in 2022, the FMA has recently also become a member of the NGFS to contribute to and benefit from its invaluable work.

Systemic cyber risks

Cyber risks are increasingly important from a macroprudential perspective. According to the systemic cyber risk report of the ESRB[23], digitalisation and interconnectedness of the financial system has increased, which, in combination with a European wide increase in cyber incidents, leads to an amplified risk for financial stability in Europe. Cyber risk is characterised by three key features that, when combined, fundamentally distinguish it from other operational risks: (1) the speed and (2) scale of its propagation as well as (3) the potential intent of threat actors. Overall, the costs of cyber incidents are difficult to assess, with estimates ranging from USD 45 billion to USD 654 billion for the global economy in 2018.

A systemic crisis can occur when a cyber incident erodes the trust in the financial system. An erosion of trust can most likely be attributed to one of the following two scenarios. First, if the financial system loses its ability to provide critical functions to the real economy and, second, if financial losses from the incident reach 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 expected to report any serious or operationally disruptive cyber incidents to the FMA based on an FMA Communication[24], which outlines minimum standards with respect to cyber risks. The FMA has not observed an increase or spike in cyber incidents in Liechtenstein in recent years. In addition, to mitigate risks from cyber incidents, three 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.

23 ESRB (2020). Systemic cyber risk, February 2020.
24 FMA (2021). Richtlinie 2021 / 2, IKT-Sicherheit.

Digitalisation

The recent wave of financial innovation has come mostly from outside the banking system, potentially challenging the status of banks in the traditional financial system and their business model.[25] A recently published ESRB report (2022) gives a very comprehensive overview of the main aspects of digitalisation and its implications for the financial sector. According to the report, financial innovation has materialised in the form of new financial service providers, either in competition or cooperation with already existing banks, with the potential for causing substantial disruption in the financial sector. Banks typically expect fintechs not to threaten their business model, given their ability to buy out innovators to sustain their position in the financial market. The reaction towards big techs, due to their market value, is a different one, depending on big techs strategy on expanding into financial service provision, i.e. either by establishing subsidiaries or cooperating with incumbent banks. While financial innovation poses regulatory challenges and might create new sources of systemic risk, it has the potential to result in cheaper and more convenient services, increased efficiency, less costly delivery and greater competition. This will lead to both a reshaping of existing risks and the emergence of new risks. New providers entering the business model of banks would be exposed to existing risks in banking (i.e., liquidity risk, credit risk, market risk, etc.), affecting, in turn, system-wide risk. While more competition could enhance stability over the long term, increased concentration (particularly with big techs) could result in new too-big-to-fail institutions. Additionally, an increase in procyclicality is likely, given a stronger focus on transaction-based intermediation.

While digitalisation risks are also existent in Liechtenstein, the domestic financial sector appears to be on the pulse of financial innovation. On the one hand, business models of financial intermediaries in Liechtenstein are based on trust and reputation and are highly specialised, which makes them unlikely to disappear in the near future. Furthermore, Liechtenstein was one of the first countries globally to introduce a regulation for "Trusted Technologies" (TT), setting a legal framework for TT service providers and other businesses in the crypto, token and blockchain space, thereby building expertise in key areas of digitalisation both in the financial market as well as among authorities. On the other hand, intermediaries need to stay alert to the latest trends and customer expectations to make sure that financial innovation is not undermining their business model. Overall, however, digitalisation risks are likely to be less pronounced than in other countries, both due to the more specialised business models as well as the greater awareness for financial innovation relative to other locations.

RISKS IN THE BANKING SECTOR

Profitability risks remain one of the key issues to address in the Liechtenstein banking sector. In contrast to their US and EU counterparts, profitability of Liechtenstein banks has remained stable during the COVID-19 pandemic, pointing to high resilience of the business model during the recent crisis. At the same time, profitability (as measured by the return on equity, RoE) has recently remained below the EU (7.9%) and the US average (11.5%), standing at 6.3% as of mid-2022. The reasoning for the relatively lower profitability in Liechtenstein is twofold. On the one hand, the busi-

25 *For further information please refer to: ESRB (2022). Will video kill the radio star? – Digitalisation and the future of banking, January 2022.*

ness model is based on stability and reputation, necessitating high capitalisation ratios, which lowers profitability indicators such as the RoE. On the other hand, banks' business model focuses on private banking and is therefore associated with high staff costs as well as a high cost-income ratio. Profitability indicators are further under pressure from rising regulatory requirements as well as a complex sanctions regime leading to additional expenses for banks. These developments make it increasingly difficult, in particular for smaller banks, to generate profits due to absent scale effects and rising consolidation pressures.

Rising interest rates are associated with increasing bank profitability. A rise in interest rates typically leads to increasing interest rate margins, and therefore has a positive impact on profitability. While this effect has a rather immediate impact on assets denominated in EUR and USD, the effect will likely be delayed in terms of CHF. More precisely, the impact of rising interest rates will depend on how much of the banks' CHF credit portfolio has been hedged, as a large share of credits in CHF (particularly mortgages) have a fixed interest rate. In the short term, banks may therefore face a further decline in interest rate margins, before the positive effects become visible with the roll-over of existing mortgages as well as new lending. At the same time, the specialisation on private banking activities decreases Liechtenstein banks' profit share of interest income[26], with the positive impact of rising interest rate margins on banks' profitability likely being lower than in other countries. In terms of fee and commission income, profitability depends on the volume of AuM on the one hand, and on the volatility of financial markets on the other. While lower AuM are generally associated with lower profitability, commission income may increase in an environment of highly volatility markets due to increased trading activity.

On the contrary, the strong rise in interest rates may also increase credit risks and funding costs for banks. While credit risks have risen across Europe in the non-financial sector, particularly in energy-intensive sectors, commercial loans are expected to be less of an issue in Liechtenstein in light of the low indebtedness of the non-financial corporate sector. Still, the high household indebtedness, driven by the high volume of mortgage loans, may imply higher credit risks in the household sector, especially in case of a stronger

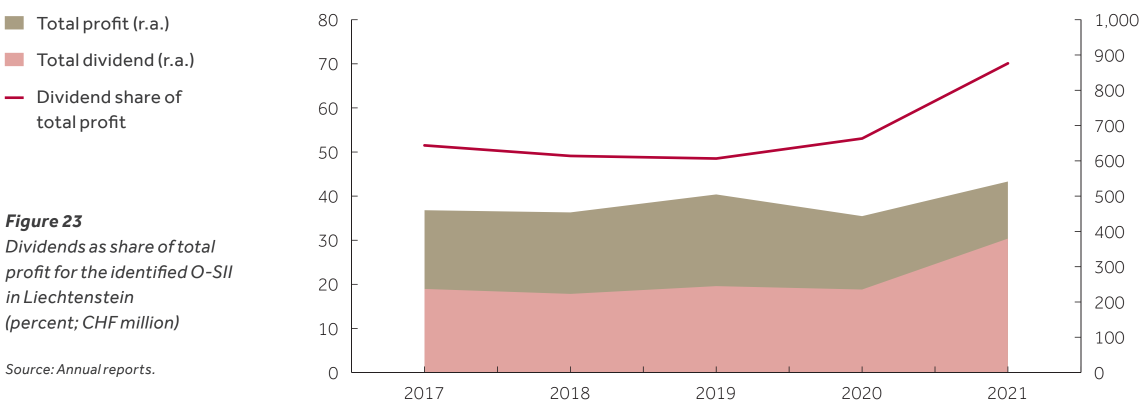


Figure 23
Dividends as share of total profit for the identified O-SII in Liechtenstein (percent; CHF million)

Source: Annual reports.

26 *For further analysis of the difference in income composition between O-SII banks in Liechtenstein and G-SII banks in the US and the EU please refer to the Financial Stability Report 2021.*

increase or higher persistence of interest rates than currently anticipated. At the international level, banks' bond funding costs have also increased significantly since the start of the year, negatively affecting bond issuance particularly for riskier instruments, such as Additional Tier 1 (AT1) and bail-in-able debt in European markets. While current estimations for MREL (i.e. minimum requirements of own funds and eligible liabilities) and subordination requirements for domestic banks do not point to MREL shortfalls to fulfil the respective requirements (which will become effective around mid-2023), a further decline in capital ratios could alter this assessment.

Capital ratios of Liechtenstein banks have declined in the first half of the year. The CET1 ratio on the consolidated level dropped from 21.7 % as of year-end 2021 to 19.1 % by mid-2022. This strong decline in the CET1 ratio can be traced back to several factors. First, against the background of increasing interest rates, bond prices have reported sharp losses, leading to a strong, but largely temporary decline in CET1 ratios. Second, CET1 ratios have also declined in light of regulatory changes following the implementation of CRR II, leading to an increase in risk-weighted assets. Third, acquisitions of the two largest banks have both lowered capital and increased risk-weighted assets, thus further contributing to the decline. Finally, dividends for 2021, which were paid out in the first semester of 2022, reached new record highs, with 70 % of earnings being distributed (Fig. 23). Higher dividend pay-outs relative to the previous year contributed around 0.3 percentage points to the decline in CET1 ratios in the first half of the year.

While the CET1 ratio in Liechtenstein remains higher than the EU average (15.2 %), lower capital ratios are associated with lower resilience and may hamper further expansion ambitions. First, banks focusing on private banking activities are reliant on a high CET1 ratio, as a stable and sufficiently high capitalisation represents a quality indicator for potential clients. A significant fall in the capital ratio can therefore put banks business model at risk. Second, a lower CET1 ratio could hinder further business acquisition as well as organic growth of the institutions, which may put a serious strain on the growth strategy of the Liechtenstein financial centre. Third, the macro-financial environment has lately deteriorated, with financial stability risks increasing across the globe. Against this background, a high capitalisation of the banking sector remains crucial also from a financial stability perspective.

RISKS IN THE NON-BANKING SECTOR

Rising interest rates have only a limited impact on the profitability and capital position of insurance companies. While insurance companies have also faced losses in their bond portfolio in light of increasing interest rates, the impact on capital ratios is not entirely clear, as liabilities are also sensitive to interest rate changes and insurance companies are typically protected against interest rate risk on the back of a negative duration gap on their balance sheet. Moreover, most life insurance policies in Liechtenstein are unit-linked and therefore only indirectly affected by rising interest rates, which are currently associated with severe financial market corrections. Thus, for unit-linked insurances, the risk associated with financial market turbulences lies with the policy holder and is thus not affecting their profitability or capital position. On the contrary, non-unit linked insurance policies, which make up approximately 15 % of the market, have a more direct effect on profitability in case of guaranteed products. Overall, the risk of increasing interest rates on the profitability of the insurance sector is assessed to be relatively low.

The Liechtenstein insurance sector entered 2022 in sound financial condition, but may be negatively affected by inflationary pressures. Inflation is directly increasing the costs for insurance companies for loss events and is thus negatively affecting their margins and profits, which are already under pressure in the face of increasing regulatory requirements. The current inflationary pressure also makes it more difficult for the sector to calculate respective loss provisions, which may have an adverse effect on their future profitability.

Access to both the Swiss and the EU insurance market with differing legal frameworks remains a challenge for insurance companies in Liechtenstein. While the EEA membership offers the domestic insurance sector the possibility to provide services across the Single Market, it also puts a strain on the availability of insurance services in Liechtenstein. As Liechtenstein has a direct insurance agreement with Switzerland guaranteeing mutual market access, insurance services are mainly provided by Swiss insurance companies on the back of strong historical ties and the small domestic market, which renders a market entry unattractive for large insurance companies located in EEA countries. Furthermore, Liechtenstein directly participates in the Swiss national hazard insurance, motor vehicle insurance and national guarantee fund, leading to a high dependence on the Swiss insurance market in this segment. In this context, the participation in both the Swiss and the EEA insurance market leads to legal challenges for Swiss insurance companies operating in Liechtenstein. For instance, Liechtenstein's insurance market is facing increasing unwillingness of the Swiss insurance sector to operationally adjust insurance plans for Liechtenstein to adhere to EU standards, leading to potential market exits of Swiss insurance companies from the Liechtenstein market. On occasional instances, this has already led to problems in terms of availability of insurance policies for people in Liechtenstein. With increasing divergence in the two legal spheres, these issues may become more problematic going forward. A further institutional risk in the insurance sector is the non-uniform application of EU standards across the EEA insurance market, especially in the area of conduct supervision. Although European Insurance and Occupational Pensions Authority (EIOPA) is working intensively on this topic by constantly promoting supervisory convergence, there is potential for negative effects for insurance companies, as the hurdle for accessing different EEA countries may become higher.

Pensions schemes are directly impacted by the performance of capital markets. Contrary to the limited effect of rising interest rates on the profitability of the insurance sector, pension schemes are heavily affected by current financial market developments. The median coverage ratio in the first half of 2022 declined by around 14 percentage points on the aggregate level in light of the adverse financial market developments. Pension schemes, which recorded a coverage ratio of less than 100 %, need to act to return to a viable economic path. Thus, potential restructuring measures are being discussed for pension schemes with a low coverage ratio. In addition, there has been a consolidation away from individual pension schemes towards collective pension foundations, a process that has already been ongoing over several years. This consolidation leads to an increasing cluster risk and requires higher attention from the regulator.

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 and supervisory limitations. Despite of sizeable outflows from equity funds and a flight-for-safety to sovereign bonds, liquidity risks in the investment funds sector at the European level have not materialised in the first half of the year. Also, in Liechtenstein, no issues were reported in terms of investment funds not being able to meet investors' redemptions in times of heightened volatility. Risks for consumers in the investment funds industry are twofold and not Liechtenstein-specific, as they are mostly due to common regulatory limitations across EEA countries. First, costumers are at risk from greenwashing as it is difficult to distinguish between minimal and proper ESG implementation. Second, investors, across the whole of Europe, face risks from the limited supervisory competence in the area of bond issuance. As long as risks are transparently communicated, investment firms are able to issue bonds despite large financial risks for the costumer, potentially implying reputational risk for the funds market, also in Liechtenstein. Additionally, there is a risk of abuse towards the regulatory system with companies attempting to circumvent licencing requirements. The increasing complexity of European regulation makes it gradually more difficult for small funds to be profitable, especially when considering the lack of proportionality in European regulation. Potential stability risks in Liechtenstein stem mainly from the dependency on Swiss market infrastructure, which would be costly to substitute, as explained in the previous section.

POLICY DEVELOPMENTS

MACROPRUDENTIAL POLICY AND REGULATORY FRAMEWORK

The responsibilities for macroprudential policy and supervision in Liechtenstein is spread among the FMA, the Financial Stability Council (FSC) and the government. The FSC is the central body of macroprudential policy and supervision in Liechtenstein and is composed of representatives from the Ministry of General Government Affairs and Finance (MPF) and the FMA. It holds quarterly meetings since its establishment in 2019 to discuss a broad range of topics related to financial stability and takes necessary steps to safeguard the stability of the financial system in Liechtenstein. According to Article 4 FMA Act, ensuring financial market stability is part of the FMA's legal mandate in its role as the competent authority for macroprudential supervision. For this purpose, the FMA can apply various macroprudential instruments. Furthermore, the FMA is serving as Secretariat to the FSC and, in its responsibility and in the scope of its monitoring activities, provides financial stability analyses to the FSC. Based on its financial stability assessments, the FSC proposes the application of macroprudential measures by issuing recommendations and warnings to the government, the FMA or any other domestic authority. Decisions on the implementation of macroprudential instruments are then taken either by the government or the FMA within the framework of the existing legislation.

At the European level, both the FMA and the MPF are represented in the European Systemic Risk Board (ESRB) and actively participate in the work of its committees. Liechtenstein has been an active member of the ESRB[27] since 2017. While both the MPF and the FMA are represented in the General Board, the decision-making body of the ESRB, FMA staff is responsible for the technical work in its committees in line with its tasks as the competent authority for macroprudential supervision in Liechtenstein. Within its mandate, the ESRB can issue warnings and recommendations to its member states or to national supervisory authorities, if substantial risks to the financial system have been identified. In this context, Liechtenstein's macroprudential authorities are intensively working on the implementation of the list of macroprudential recommendations and warnings to contribute to the stability of the financial system.

In Liechtenstein, the revised European legal framework for macroprudential policy was transposed into national law as part of the CRD V[28] implementation as of May 2022. Against the background of the legal revisions of the macroprudential policy framework in the context of the CRD V package, the macroprudential authority in Liechtenstein revised its capital buffer framework in line with the new common standards applicable in the EU. The details of the revision are described in more detail in the following section.

RECENT (MACRO-)PRUDENTIAL POLICY DEVELOPMENTS IN LIECHTENSTEIN

Since 2017, macroprudential authorities have continuously worked on enhancing macroprudential supervision and policy in Liechtenstein by further advancing their policy-mix. The current macroprudential policy mix consists of a comprehensive set of capital, lender- and borrower-based measures aiming at reducing the identified systemic risks and increasing the risk-bearing capacity of the domestic financial

27 The ESRB is responsible for the macroprudential oversight of the EU financial system and for preventing and limiting systemic risk in its Member States.

28 Capital Requirements Directive, Directive 2019/878/EU.

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sector. While capital-based measures aim to improve the resilience of the domestic banking sector and to reduce the likelihood of the materialisation of long-term structural risks, borrower-based measures target the further build-up of systemic risks in the real estate sector. Current lender-based measures also target the real estate sector by requiring banks to apply higher risk weights for riskier residential real estate exposures to further strengthen the risk-bearing capacity of the banking sector.

Capital-based measures

With the implementation of the CRD V package, the macroprudential buffer requirements for the banking sector have been re-evaluated and recalibrated in line with the new European standards in 2021.[29] These revisions affect the calibration of all capital-based macroprudential measures in order to prevent buffer requirements from increasing only because of the legal changes. In particular, as a result of the new regulatory requirements, the FSC decided on revising the systemic risk buffer as well as the capital buffer for other systemically important institutions (O-SII), with the ratio for the countercyclical capital buffer (CCyB) remaining unchanged at 0 % of risk-weighted assets. Figure 24 provides an overview of the changes in the buffer framework for Liechtenstein's banks before and after the implementation of the CRD V framework.

Capital and buffer requirements according to the CRD IV framework		
G-SII buffer *	O-SII buffer 2 %	Systemic risk buffer 1 – 2 %
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

Capital and buffer requirements according to the CRD V framework		
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 24
Capital and buffer requirements for Liechtenstein's banks before and after the implementation of the CRD V framework (in percent of risk-weighted assets).

** not applicable in Liechtenstein*
*** for domestic exposures*

Source: FMA.

29 *For an overview of the revision of the macroprudential capital buffer framework in light of the CRD V see Box 7 in last year's Financial Stability Report 2021.*

With the introduction of the CRD V package, the scope and flexibility of the systemic risk buffer (SyRB) has been increased. Pursuant to Article 4l Banking Act (BankG), the SyRB serves to prevent and mitigate macroprudential or systemic risks with potential serious adverse effects on the financial system and the real economy. The SyRB can now be applied in a sectoral manner to target specific systemic risks inherent in banks' exposures. The CRD V defines four high-level sectoral exposures to which the SyRB can be applied. The SyRB differentiates between natural and legal persons as well as between residential and commercial immovable property exposures or a subset thereof (EBA, 2020).[30] In addition, the legislator clarified the interdependencies between the macroprudential buffers, e.g. the SyRB, the O-SII buffer and the CCyB, respectively, and highlighted that the SyRB may address all systemic risks which are not covered by the O-SII, the CCyB or the capital conservation buffer (CCoB). Against this backdrop, the SyRB and the O-SII buffer now apply cumulatively as overlaps between the buffers need to be considered in the calibration procedure (previously only the higher of the two capital buffers was applicable).

Given the identified systemic risks in the domestic financial system, the FSC recommended a sectoral SyRB of 1% of risk-weighted assets for loans secured by real estate property in Liechtenstein.[31] The calibration of the SyRB in Liechtenstein follows a three-step approach, starting with a systemic risk analysis. In this context, the FMA identifies structural, non-cyclical systemic risks in the financial system and analyses the development of banks as well as their risk-bearing capacity at the system level. Based on the FMA's analysis, two significant sources of systemic risk were identified for the Liechtenstein banking sector: systemic vulnerability and systemic cluster risk. In a second step, the level of the systemic risk buffer is calibrated using different methodological approaches, considering both historical crisis costs and potential costs due to the materialisation of specific systemic risks. Furthermore, the calibration results are compared with macroprudential capital buffer requirements in similar banking systems. In particular, the calibration also considers overlaps with the capital buffer for other systemically important institutions (O-SII buffer) as well as risk mitigating factors. These include, for example, the lower complexity of Liechtenstein bank balance sheets given the application of the standardised approach, the less complex business models, proportionality criteria as well as the addressing of idiosyncratic risks in the Supervisory Review and Evaluation Process (SREP) and in the Pillar 2 capital requirement. The calibration resulted in a sectoral SyRB for all Liechtenstein banks of 1% of the risk-weighted amount of loans secured by real estate properties in Liechtenstein. The sectoral SyRB aims to strengthen the resilience of the banking sector in relation to the identified real estate-related systemic risks. The recalibrated SyRB entered into force on 1 May 2022, when the CRD V was incorporated into national law and the revised Banking Act entered into force.

Based on the annual calibration and buffer review conducted by the FMA, the FSC also recommended to maintain the O-SII buffer rate at 2% of the total risk exposure amount.[32] The O-SII buffer is applied to financial institutions that pose substantial systemic risks to the banking system. By specifying an additional buffer consisting of CET1, the O-SII buffer primarily

30 *EBA (2020). Final guidelines on the appropriate subsets of sectoral exposures to which competent or designated authorities may apply a systemic risk buffer in accordance with Article 133(5)(f) of Directive 2013/36/EU. EBA/GL/2020/13, 30 September 2020.*

31 *Recommendation FSC/2021/3 is available on the FMA website.*

32 *Recommendation FSC/2022/2 is available on the FMA website.*

aims to reduce the probability of a systemically important institutions' default, while also compensating for the negative effects of an implicit state guarantee. In addition, the buffer is intended to strengthen market confidence in the identified banks by increasing their loss-absorbing capacity. O-SIIs are identified on a yearly basis, following a two-step procedure established under the EBA Guidelines[33] by taking into account ten indicators, which can be subsumed by the following four core indicators: (i) size, (ii) importance for the economy of the Member State (including substitutability / financial institution infrastructure), (iii) complexity, including the additional complexities from cross-border activity, and (iv) interconnectedness of the institution with the financial system. In Liechtenstein, three banks are identified as systemically important to the domestic banking sector on both the consolidated and individual level, while the level of the O-SII buffer rate is set at 2 % of total risk exposures for all three O-SIIs.[34]

The FSC also affirmed its recommendation[35] on the countercyclical capital buffer (CCyB) to maintain the CCyB rate at its current level of 0 % of risk-weighted assets. The primary goal of the CCyB is to counteract excessive credit growth and to counter procyclicality in the financial system. By building up a capital buffer in good times, the CCyB aims at contributing to preserve credit supply in times of crisis and dampen the downturn of the financial cycle. When deciding on the appropriate buffer rate, authorities are recommended to combine a rules-based approach with discretionary powers ("guided discretion"). In this context, the Basel credit-to-GDP gap, i.e. the credit-to-GDP ratio and its deviation from its long-term trend, is recommended to be used as a common starting reference point for taking buffer decisions, combined with the use of additional cyclical indicators to promote sound decision making. In Liechtenstein, the FMA continuously monitors the developments of cyclical risks in the financial sector. The credit gap in

Figure 25
Credit gaps in Liechtenstein (percent)

Source: FMA.

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

34 Further information on the O-SII buffer can be found on the FMA website.

35 Recommendation FSC / 2022 / 1 is available on the FMA website.

Liechtenstein, which is calculated on the basis of household debt and mortgage loans, has remained in negative territory and therefore implies keeping the buffer at 0% from a purely technical, rules-based perspective (Fig. 25). In addition to the credit-to-GDP gap, information stemming from construction and building statistics (i.e. costs and volume of building, different categories of approved new buildings, as well as vacancy rates) have also been considered to assess cyclical risks in the Liechtenstein economy. The CCyB was left unchanged at 0% of risk-weighted assets against the background of moderate mortgage growth as well as under consideration of other indicators linked to the development of cyclical risks in Liechtenstein.

Instruments targeting the real estate sector

The real estate and mortgage report of the FMA[36] provides a comprehensive analysis of the situation in 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 (see chapter 2). 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 vulnerability of the collateral and the funding stretch 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.

In February 2022, the ESRB issued a risk warning for the Liechtenstein RRE sector in light of the high household indebtedness. In early 2022, the ESRB completed a European-wide systematic assessment of medium-term vulnerabilities in the residential real estate sector and, in this context, issued a risk warning for the Liechtenstein residential real estate sector.[37] Risk warnings are issued by the ESRB in order to indicate significant systemic risks in a member state's financial system. In case of Liechtenstein, the FSC is required by law to discuss ESRB warnings and to recommend additional policy measures if deemed necessary.[38] The warning has been issued to Liechtenstein, as the ESRB has identified medium-term RRE-related vulnerabilities as a source of systemic risk to financial stability, which may have the potential for serious negative consequences for the real economy. The ESRB considers the high and increasing indebtedness of private households as the main vulnerability, also in the context of the absence of income-related borrower-based measures to mitigate a further accumulation of risks related to the RRE sector. The ESRB's risk assessment confirms earlier analyses, in which the FMA has identified and highlighted the respective risks several times in recent years, including in its Financial Stability Report and in the report on the Liechtenstein mortgage and real estate market published in October 2021.

36 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 last year's Financial Stability Report.

37 The warning is available on the ESRB website.

38 The FSC press release for further information is available on the FMA website (only available in German).

In their risk assessments, both the FMA and the ESRB have concluded that direct real estate related risks are limited in the short term, but that additional measures are necessary in the medium-term. Although the labour market in Liechtenstein has proven resilient in recent decades, even during recessions, and household wealth is high by international standards, the high level of household debt makes this sector vulnerable to unexpected macroeconomic shocks. A significant proportion of borrowers, does not meet the affordability requirements as defined in banks' internal guidelines. If interest rates rise further, unemployment rates increase and / or household income falls, debt servicing could become a problem for vulnerable households (see chapter 2 and Box 3). In combination with the macroeconomic second-round effects – including the drop of consumption and potentially falling house prices – such a scenario might be associated with a substantial increase in credit default risks for domestic banks. As the current macroprudential policy mix is not considered to be fully appropriate and sufficient from a forward-looking perspective, both the FSC and the ESRB have proposed taking further action to decrease systemic risks to financial stability in the domestic RRE market.

In the past year, the FSC has also drawn up a series of proposals for addressing the risks arising from the high household indebtedness. In light of the findings by the FMA and the ESRB, additional measures are considered sensible in the medium term. To protect households from unexpected macroeconomic shocks as well as to prevent a further accumulation of residential property risks in Liechtenstein, the ESRB proposes in its risk warning to strengthen the already existing borrower-based measures, in particular with regard to income-related instruments, as also suggested in the FMA's real estate report. Based on discussions between the relevant authorities, the FSC has – already before the publication of the ESRB risk warning – developed a number of proposals for addressing the identified risks. First, the availability of data on the real estate market is to be improved, among other things, by implementing the ESRB recommendation on closing data gaps (ESRB / 2016 / 14 as amended and the related FMA instructions 2021 / 20[39], see also Box 5 for a first overview of the data received). Second, risk awareness among lender and borrowers has to be strengthened with various measures. Third, a strengthening of targeted income-based borrower-based instruments may be necessary.

In December 2021, the FSC recommended to the FMA to develop possible solutions to address the identified risks in cooperation with the banking sector. For this purpose, the FMA has set up a working group with the Liechtenstein Banking Association as well as the three systemically important institutions. The aim is to gain a common understanding of systemic risks and to develop macroprudential measures to mitigate systemic risks in the domestic RRE sector. More precisely, the working group aims to develop new borrower-based measures to stabilise the debt ratio of private households without further restricting the access to the mortgage market for borrowers. In addition to the joint discussions with the banking sector, there is also a bilateral exchange between the banks and the FMA to analyse lending practices and discuss possible solutions from the banks' point of view. Initial proposals for addressing the risks are expected to be available in the coming months.

39 The FMA instruction is available on the FMA website (in German only).

BOX 4

Data on real estate financing in Liechtenstein

Earlier this year, the FMA has received the first data in the framework of the ESRB recommendation on closing real estate data gaps. At its meeting on 14 December 2020, the Financial Stability Council (FSC) recommended to the FMA to implement the ESRB recommendation on closing real estate data gaps (ESRB / 2016 / 14[40] as amended). The ESRB recommendation was implemented in Liechtenstein by considering the specifics of the domestic real estate and mortgage market (AFMS / 2020 / 4[41]). The regulatory reporting on real estate financing was intended to establish a more harmonised framework for monitoring developments in the RRE and commercial real estate (CRE) markets across EEA jurisdictions by facilitating the identification of potential risks to financial stability to ensure an early identification of vulnerabilities. In this context, the FMA also published instructions[42] for reporting banks by providing information regarding those data attributes, which – due to specifics of Liechtenstein mortgages – are to be reported in deviation from the ESRB recommendation or for which an additional explanation appears useful. In Liechtenstein, all banks that have a significant market share in real estate financing (currently, this is applicable to the three other systemically important institutions, O-SIIs) are required to report the relevant data to the FMA on a quarterly basis at the individual level.

Banks report information on loans secured by real estate property in Liechtenstein and Switzerland. The new reporting framework closes existing data gaps in the area of real estate financing in Liechtenstein, so that financial stability risks arising from the financing of residential and commercial real estate can be better identified and addressed. 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. The real estate data collection considers residential and commercial real estate loans granted by O-SIIs for real estate property in Liechtenstein and Switzerland regardless of the borrower's nationality. Directly disbursed residential and commercial real estate loans in Switzerland are also considered relevant from a domestic financial stability perspective due to their high volume in domestic banks' balance sheets and the close interdependencies between the two countries.

The first data received within the reporting framework reveal some valuable insights. The FMA received the first data points as of March 2022 for some selected indicators. In the first half of 2022, the three largest banks in Liechtenstein disbursed 992 residential real estate loans valued at CHF 536 million. Of those 992 loans, 266 (valued at CHF 117 million) were buy-to-let housing and 726 (valued at CHF 419 million) were owner occupied loans. 716 loans were secured by real estate mortgages in Liechtenstein, whereas 276 loans were secured by real estate collateral in Switzerland. The average loan-to-value (LTV) ratio at loan origination was at around 55 %, confirming earlier reporting data indicating moderate LTV ratios. In the same time period, 130 commercial real estate loans were disbursed with a value of CHF 121 million with an average LTV ratio at origination slightly below 60 %.

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

41 The recommendation is available on the FMA website.

42 FMA-Wegleitung 2021 / 20 – Umsetzung der ESRB-Empfehlung ESRB / 2016 / 14 zur Schliessung von Lücken bei Immobiliendaten.

BOX 4

An in-depth analysis of real estate financing in Liechtenstein will be provided in the next financial stability report, when data quality and data availability issues of the regulatory reporting have improved. The newly sourced data will play an integral part in the FMA's risk framework and the discussions between the FMA and relevant banks on how the systemic risk for the Liechtenstein economy stemming from real estate financing can be mitigated. For the first two reference dates, available data do not yet include information on indicators related to the borrower's income, such as the indebtedness of borrowers relative to their income. Only the full dataset, which will likely become available in the first quarter of 2023, includes detailed information on loan-to-income ratios (LTI), loan-service-to-income ratios (LSTI) and interest coverage ratios (ICR), in addition to the LTV ratios mentioned above. The largest part of the collected indicators focuses on the volume and the number of contracts of flow data for the given period under consideration. The dataset also distinguishes between loans for buy-to-let housing and owner-occupied properties. A full list of indicators is provided in the guidance for the reporting institutions mentioned above. In next year's financial stability report, it is planned to include an in-depth analysis on the first results of the newly established risk monitoring framework of the domestic RRE sector.

Other recent macroprudential developments

Liechtenstein authorities continued their ambitious agenda in implementing relevant ESRB recommendations. Since its establishment in 2019, the FSC has managed to catch up for most of the earlier recommendations, which were issued before Liechtenstein became an ESRB member in 2017. In addition to the newly published recommendations, domestic authorities regularly implement the calibration of the domestic CCyB rate[43] and the recognition and setting of CCyB rates for exposures to material third countries.[44] The recommendations related to closing real estate data gaps[45] were particularly important to implement in Liechtenstein, although the implementation was complex in light of the small market. The data received under this recommendation aim at improving the monitoring of risks in the domestic residential real estate sector (see also Box 4 for an overview of the first data received). In light of the COVID-19 pandemic, the ESRB has issued a number of recommendations to tackle the related financial stability risks of the pandemic. In this context, Liechtenstein's macroprudential authorities continued to monitor and regularly report the design features and uptake of measures taken in response to the Corona pandemic[46] in the past year. In 2021, the ESRB also worked on mitigating systemic cyber risks in Europe. To address the risk of coordination failure between European and national institutions and to create a framework to react to cyber incidents, a pan-European systemic cyber incident coordination framework (EU-SCIRF) was established.[47] To adequately deal with cyber risks, new macroprudential instruments are required. For the development and calibration of these new macroprudential instruments a monitoring framework for systemic cyber risks needs to be established. The ESRB plans to further work on the creation of a monitoring framework and on suggestions of relevant macroprudential measures to mitigate cyber risks. In 2022, the ESRB has issued a general warning on vulnerabilities in the EU's financial system for the first time. The warning points out increasing financial stability risks given the increasing geopolitical and economic uncertainties since the beginning of 2022 and calls for the need to have sufficient leeway to address the risks and to ensure that authorities and financial institutions remain well prepared for the possible materialisation of severe tail risk scenarios. Liechtenstein authorities have dealt with all recommendations and warnings addressed to Liechtenstein in due time and are closely collaborating with the ESRB Secretariat in implementing the relevant recommendations and warnings to address potential serious negative consequences for the real economy in Liechtenstein.

The FSC continues its regular monitoring of financial stability risks. Risks to financial stability have also intesified in Liechtenstein in light of the aggravating geopolitical and economic developments, in particular, since the war in the Ukraine. Although the financial

43 Recommendation of the European Systemic Risk Board of 18 June 2014 on guidance for setting countercyclical buffer rates (ESRB/2014/1).

44 Recommendation of the European Systemic Risk Board of 11 December 2015 on recognising and setting countercyclical buffer rates for exposures to third countries (ESRB/2015/1).

45 Recommendation of the European Systemic Risk Board of 31 October 2016 on closing real estate data gaps (Recommendation ESRB/2016/14 as amended).

46 Recommendation of the European Systemic Risk Board of 27 May 2020 on monitoring the financial stability implications of debt moratoria, and public guarantee schemes and other measures of a fiscal nature taken to protect the real economy in response to the COVID-19 pandemic (ESRB/2020/8).

47 Recommendation of the European Systemic Risk Board of 2 December 2021 on a pan-European systemic cyber incident coordination framework for relevant authorities.

system in Liechtenstein remained resilient despite the adverse global developments, cyclical risks are also increasing in the domestic market. Against this background, the FSC is closely monitoring the impact of the global macroeconomic and financial turbulences on the domestic market and will take the necessary actions to tackle the risks to financial stability if needed.

To secure the prosperity and the stability of Liechtenstein in the long term, the government has proposed Liechtenstein's accession to the International Monetary Fund (IMF). Liechtenstein does not have a central bank, and as a result, the state lacks a lender of last resort. In case of a crisis, domestic banks would not be able to access the SNB's emergency liquidity assistance (ELA), given that they are not systemically relevant for the Swiss franc currency area. Against this background, an IMF membership would ensure access to liquidity for Liechtenstein's government even in periods of severe liquidity shortages, making a membership also essential from a financial stability perspective. Thus, the FMA highly welcomes the initiative of IMF accession and actively supports the preparations of the government during the accession process. In September 2022, the parliament endorsed the start of accession negotiations with the IMF, which are currently underway.

RESOLUTION

In April 2022, the resolution authority within the FMA was reorganised. Since 2017, the tasks of the resolution authority had been exercised by staff from the Executive Office. As of April 2022, a newly formed Financial Stability Division is mandated with resolution matters. This reorganisation aims at strengthening the FMA's resolution tasks, given that additional EEA relevant EU legislation in the realms of resolution is on the horizon. The Financial Stability Division consists of two separate sections, one dealing with resolution matters and another one tasked with macroprudential supervision issues. The reorganisation therefore facilitates the effective use of synergies in the area of financial stability.

The resolution authority pursued an ambitious work programme in the past year and set up resolution plans for all Liechtenstein banks within its remit. A resolution plan is a comprehensive document which details the characteristics of a bank (or banking group), determines its possible critical functions and describes the preferred resolution strategy, including which resolution tools to apply. In order to enhance preparedness for resolution, it concludes with a resolvability assessment of the bank. The purpose of this assessment is to identify and address any impediments to resolvability of the respective institution. By the end of 2022, a first version of resolution plans will be submitted to all banks.

Resolution action may only be taken if it is necessary in the public interest and if the resolution objectives cannot be met to the same extent through winding up the bank under normal insolvency proceedings. Against this background, the public interest assessment is an integral part of each resolution plan, examining whether resolution of a failing bank would be necessary in light of the five resolution objectives as set out in the EU's Recovery and Resolution Directive (BRRD):

1) to ensure the continuity of critical functions;
2) to avoid significant adverse effects on financial stability;
3) to protect public funds by minimising reliance on extraordinary public financial support;
4) to protect depositors covered by the Deposit Guarantee Scheme Directive (DGSD) and investors covered by the Investor Compensation Scheme Directive (ICSD);
5) to protect client funds and client assets.

The identification of a bank's critical functions is an essential step in the public interest assessment. Critical functions include any operation, service or business, where its cessation is likely to result in the interruption of services that are essential to the real economy or lead to a disruption of financial stability in Liechtenstein or in one or more other EEA Member States due to the institution's or banking group's size, market share, external and internal interconnectedness, complexity, and cross-border activities. An activity is not considered critical if it can be substituted at reasonable costs and time.[48] The resolution authority identified critical functions with regard to all systemically relevant institutions (O-SIIs) in Liechtenstein. All these banks provide services and distribute products on which other financial market participants and / or clients are significantly reliant on. For example, their relative share of deposit-taking and lending business for domestic clients is very high. An abrupt failure could have significant effects on the financial centre and the real economy. Thus, public interest is given concerning the provision of critical functions among O-SIIs and specific resolution action would be necessary in order to ensure the continuity of these critical functions.

In the course of the public interest assessment, the resolution authority considers significant adverse effects on the financial system in case of a bank's failure. In Liechtenstein, the failure of a systemically relevant bank is likely to lead to significant adverse effects on the financial system (see Box 6 for an overview of the methodology). In this specific case, resolution actions are necessary.

In a similar vein, public funds need to be protected by minimising reliance on extraordinary public financial support. In this context, the resolution authority assesses the interlinkages between the banks and Liechtenstein's public sector. If extraordinary financial support from public funds will be required in the event of a bank's failure, public interest would be given, thus also making resolution action necessary.

Another resolution objective within the scope of the public interest assessment is the protection of depositors and investors. In the event of failure of a systemically important bank, the comprehensive compensation for depositors may potentially not be fully ensured. Additional payments may be required, giving rise to significant adverse effects on other financial market participants. Second-round effects may arise which would further overload the protection scheme. It is thus necessary to provide for resolution action form the public interest perspective.

Finally, the resolution authority needs to take a closer look at the protection of client funds and client assets. Due to the high market share in the deposit-taking business, the failure of a systemically relevant bank in Liechtenstein may lead to a large proportion of affected clients, making resolution action necessary and in the public interest.

Besides the public interest test, another focal point of resolution planning is the determination of MREL (Minimum Requirement for Own Funds and Eligible Liabilities), which is a key instrument in order to achieve resolvability. The purpose of MREL is to have sufficient own funds and eligible liabilities to be able to use the bail-in tool for loss absorption and recapitalisation in the event of resolution. The MREL requirement is supplemented by a subordination requirement and determined institution-specifically, based on the capital requirements and depending on the respective resolution strategy.

48 See Article 3(1)(84) Resolution and Recovery Act (RRA) and Article 6(3) of Delegated Regulation (EU) 2016 / 778.

In the course of 2022, the Liechtenstein Resolution Authority has set up a national "MREL Policy"[49], which explicitly accommodates some essential specifics of the Liechtenstein banking sector and serves to transparently present the calibration of MREL. The MREL Policy is based on European standards and already anticipates the changes in the revised recovery and resolution framework under BRRD II. The MREL Policy allows banks for long-term planning and embedding the MREL in their overall bank management. The national MREL Policy addresses specific characteristics of the Liechtenstein banking sector, particularly the high capitalisation with CET1 and the stable ownership structure of the three systemically important banks. Due to the stable and overwhelmingly domestic ownership of the three OSIIs, the main shareholder's stake represents a cluster risk for that shareholder because a large proportion of the shareholder's assets is invested in the institution. Therefore, shareholders would also bear a major share of the costs were the strategy to fail and cause losses. In light of their high CET1 capitalisation, higher costs for banks as a result of additional MREL requirements could potentially undermine competitiveness without any objective justification. Therefore, in Liechtenstein MREL requirements are set at a relatively moderate level while the subordination requirement is relatively strict in order to ensure that the high level of CET1 (or other subordinated instruments) is maintained going forward.

The resolution authority has also been involved in several resolution colleges. For two banking groups, the Liechtenstein resolution authority takes the role of the group-level resolution authority and consults the other members of the resolution college concerning resolvability. The group-level resolution authority is responsible for the cooperation and coordination between the authorities which are members and observers of the resolution college within the EEA. The resolution college is, inter alia, responsible for developing the group resolution plan, assessing the group's resolvability, setting MREL for the group and serves as a discussion forum for all questions relating to cross-border group resolution.

In 2022, the funding of the resolution financing mechanism has further continued. In the current year, Liechtenstein banks paid CHF 5.05 million into the resolution fund. Until now, the total contributions to the resolution fund equals more than CHF 26 million. The target level of the national resolution fund is 1% of all covered deposits in Liechtenstein. This amount must be raised by the banks by the end of 2027 at the latest.

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49 The document is available on the FMA website, see FMA-Mitteilung 2022/02.

BOX 5

Safeguarding financial stability in the case of resolution

In the context of resolution planning, the resolution authority needs to decide whether resolution is in the public interest. The Recovery and Resolution Act (RRA), transposing the European Recovery and Resolution Directive (2014/59/EU – BRRD), provides a framework for addressing the "too-big-to-fail" (TBTF) issue and hence contributes to strengthening the stability of the Liechtenstein financial system. Against this background, the resolution authority is, amongst others, tasked with drawing up resolution plans. However, resolution action can only be taken if it is in the public interest. For this reason, the resolution authority needs to assess the resolution objectives according to Art. 37 RRA. If all of the five resolution objectives can be achieved without resolution proceedings, the respective bank will be winded up under normal insolvency proceedings in case of its failure.

This box represents an overview of the analytical framework of "resolution objective 2". To assess the fulfilment of the resolution objective "avoidance of significant adverse effects on financial stability" pursuant to Article 37 para. 2 no. b of the Restructuring and Resolution Act (RRA) in the context of the resolution planning phase, the Macroprudential Supervision Unit of the FMA provides a preliminary opinion on whether an institution's market exit through insolvency proceedings could have significant negative effects on the financial system and the real economy. The assessment is based on a simplified procedure compared to the public interest assessment (PIA), which authorities conduct in case an institution is failing or likely to fail (FOLTF). It is also without prejudice to the result of the PIA, as future PIA's may yield different results.

To fulfil the resolution objective, it must be achieved that "a significant adverse effect on the financial system, in particular by preventing contagion, including to market infrastructures, and by maintaining market discipline" can be avoided in case of an institution's failure. The methodology used to assess whether an institution's exit is likely to have significant negative effects on financial stability is derived from an analysis by the Austrian Central Bank (OeNB).[50] In their paper, the authors set up an assessment framework with four main financial stability criteria (financial market conditions, economic importance, direct contagion and indirect contagion) by using around 30 different indicators. Since the setting of explicit thresholds is a complex task[51], the paper proposes a methodological approach for calibrating explicit thresholds for each of these indicators in order to assess the systemic importance of banks. This approach is applied with certain adjustments to Liechtenstein.

A basic assumption behind the applied methodology is the idea of substitutability. If market activities (such as payment services, granting loans, receiving deposits, etc.) of a failing bank can be absorbed promptly by other market participants, financial stability will not be at risk. More specifically, substitutability is assessed by comparing the volume of services provided by each bank with the average historical quarterly changes of the aggregated market volume. As the substitution of bank activities, and thus, the

50 *Eidenberger et al. (2019). Who puts our financial system at risk? A methodological approach to identify banks with potential significant negative effects on financial stability. Financial Stability Report 37, June 2019. Oesterreichische Nationalbank.*

51 *The current macroprudential policy framework does include guidelines on certain indicators, but no explicit thresholds for individual indicators (e.g. O-SII thresholds are determined implicitly, see EBA/GL/2014/10).*

BOX 5

consequences of a bank failure for the economy and the financial system also depend on the current phase of the economic cycle, the current conditions on financial markets also need to be considered.

Specifics of the Liechtenstein banking sector have to be considered in the assessment. Liechtenstein's banking sector is small but highly concentrated. Against this background, the identification of systemically important banks and whether their failure will lead to significant adverse effects may be more intuitive compared to countries with many banks (e.g. Austria). Given the domestic banking sector specifics and the fact that the quarterly time series used to identify thresholds for the Liechtenstein banking sector are shorter than in other countries, the OeNB's methodology is adapted with regard to the selection of indicators and the calculation of certain thresholds. In addition, in certain cases, we apply expert judgement to explicitly consider country specifics. For certain indicators, proportionality limits are also taken into account. The results of this assessment were considered in the respective resolution plans.

OTHER POLICY DEVELOPMENTS

On an annual basis, the FMA assesses risks at the individual bank level in the context of the Supervisory Review and Evaluation Process (SREP). Based on the SREP, the FMA may require certain banks to hold additional capital under the Pillar 2 requirement. The SREP combines a wide range of findings from the supervisory process at the institution level, resulting in a comprehensive supervisory overview for each bank in the domestic market. In 2022, the EBA revised the corresponding SREP guidelines[52], which will apply from 1 January 2023, and added relevant changes related to the proportionality, as well as the cooperation among prudential supervisory authorities, AML / CFT supervisors and resolution authorities. Based on the risks of the individual bank – including vulnerabilities stemming from ML / TF and ESG risks – the FMA may require banks to hold additional capital, liquidity and / or set qualitative requirements from a microprudential perspective with the objective to support the solvency and liquidity of individual institutions.

The FMA has further refined the stress test framework to assess how well domestic banks can cope with financial and economic shocks. In the past year, the FMA conducted stress tests covering almost the whole banking sector based on several different scenarios. The baseline scenario is intended to represent a plausible outlook of future economic development. The other scenarios are intended to simulate an adverse scenario, such as a financial market collapse or a reputational stress scenario of an idiosyncratic crisis for Liechtenstein and its banking centre. The results of the stress test show that the banking sector is stable and that the stress scenarios have to be quite extreme to see a significant impact on banks' capital ratios which would be a cause of concern.

In June 2022, MONEYVAL published its fifth country report on Liechtenstein, highlighting the FMA's supervisory system to be well suited and efficient in combating money laundering and terrorist financing. The report gives Liechtenstein's authorities a very good grade with regard to combating money laundering and terrorist financing. MONEYVAL recognises the progress made by Liechtenstein and encourages the country to further intensify measures in this respect. With regard to the legal regulations on the prevention of money laundering and terrorist financing, Liechtenstein is rated as "compliant" or "largely compliant" for 37 of the 40 recommendations. MONEYVAL also found no significant gaps in the defence mechanism in the other audit areas. Nonetheless, the report identifies potential for improvement and makes a number of recommendations to further improve the national system for combating money laundering and terrorist financing. Thus, the FMA will keep working on improving its processes given the high reputational risks – even possibly triggered by a single incident – in the financial sector.

The current war in Ukraine also poses new challenges for the domestic financial sector. Following the start of the Russian aggression against Ukraine, the government in Liechtenstein has swiftly announced that it fully adopts the European Union wide sanctions against Russia and Belarus. The financial sector has also pledged its full support to the government and authorities in enforcing the measures imposed on Russia and Belarus, although the implementation of

52 *EBA (2022). Final Report. Guidelines on common procedures and methodologies for the supervisory review and evaluation process (SREP) and supervisory stress testing under Directive 013 / 36 / EU. EBA / GL / 2022 / 03. 18 March 2022.*

sanctions is associated with considerable efforts and costs for the whole financial sector, in particular, for smaller institutions. The swift implementation increases costs for the financial sector in Liechtenstein, but is mostly uncontroversial even among affected financial intermediaries.

Particular caution is also needed in light of the uncertain global political and economic environment. The effective and full implementation of international sanctions has shown Liechtenstein banks' ability to quickly adhere to and implement international standards. Against the background of heightened uncertainty, the FMA will continue closely monitoring further developments and propose appropriate measures, if deemed necessary.

APPENDIX

LIST OF ABBREVIATIONS

AIF	Alternative Investment Funds
AMC	Asset Management Company
AML / CFT	Anti-money laundering / Combating the financing of terrorism
AHV	Public pension system
APP	Asset purchase programme
AuM	Assets under management
BankG	Banking Act
BIS	Bank for International Settlements
BPVG	Occupational Pension Act
BRRD	Banking recovery and resolution directive
CCoB	Capital Conservation Buffer
CCyB	Countercyclical capital buffer
CET1	Common equity Tier 1
CHF	Swiss franc
CIR	Cost-income ratio
CRD	Capital Requirements Directive
CRE	Commercial real estate
CRR	Capital Requirements Regulation
DTI	Debt-to-income
EA	Euro area
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
EME	Emerging market economies
ESG	Environmental, social and governance
ESRB	European Systemic Risk Board
EU	European Union
EUR	Euro
FMA	Financial Market Authority
FMI	Financial market infrastructure
FOLTF	Failing or likely to fail
FSC	Financial Stability Council
FX	Foreign exchange
GBP	British Pound
GDP	Gross domestic product
GNI	Gross national income
G-SII	Global systemically important institution

ICR	Interest coverage ratio
IMF	International Monetary Fund
IPO	Initial public offering
IU	Investmentunternehmen (domestic fund regime)
JPY	Japanese Yen
LCR	Liquidity coverage ratio
LSTI	Loan-service-to-income
LTI	Loan-to-income
LTV	Loan-to-value
ManCos	Management companies
MiFID	Markets in Financial Instruments Directive
MPF	Ministry for General Government Affairs and Finance
MREL	Minimum requirements of own funds and eligible liabilities
NEER	Nominal effective exchange rate
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
O-SII	Other systemically important institution
PIA	Public interest assessment
PMIs	Purchasing manager indices
PPP	Purchasing Power Parity
RoA	Return on assets
RoE	Return on equity
RRA	Recovery and Resolution Act
RRE	Residential real estate
RWA	Risk-weighted assets
SA	Standardized approach
SDGs	Sustainable development goals
SNB	Swiss National Bank
S&P 500	Standard & Poor's 500
SREP	Supervisory review and evaluation process
SyRB	Systemic risk buffer
TBTF	Too-big-to-fail
TCSP	Trust or company service providers
THK	Liechtenstein Institute of Professional Trustees and Fiduciaries

TPI	Transmission Protection Instrument
TrHG	Professional Trustees Act
TT	Trusted Technologies
TVTG	Tokens and Trusted Technologies Act
UCITS	Undertakings for collective investments in transferable securities
US	United States
USD	US dollar
VAR	Vector autoregression
y-o-y	year-on-year

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