

FINANCIAL STABILITY
REPORT 2019



FMA

Financial Market Authority
Liechtenstein

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PREFACE

Following the first publication in 2018, the Liechtenstein Financial Market Authority (FMA) presents its second 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).

Financial stability can be defined in many ways. Most importantly, financial stability is a necessary condition for the efficient allocation of resources in an economy, the management of risks and the absorption of shocks. The stability of the financial system also ensures access to finance and credit for households and businesses both during booms and recessions and even in the case of severe macroeconomic shocks. While this report covers Liechtenstein's whole financial sector, it particularly focuses on the banking sector. The banking sector is not only by far the most important financial sector in Liechtenstein, but empirical evidence from previous crises also suggests that financial stability goes hand in hand with a stable banking sector.

Overall, Liechtenstein's financial sector is assessed to be sound and stable, with systemic risks remaining relatively low. While the financial sector, and particularly the banking sector, is large relative to GDP, high capitalization, healthy profitability and a stable funding base contribute to a mitigation of risks. Liechtenstein also differentiates itself from other small financial centers, as the strong industrial and manufacturing sector reduces the dependence of the economy from the financial sector and its associated vulnerabilities. At the same time, the international financial market environment has become even more challenging in the past year. While Liechtenstein's banking and insurance sectors are likely to be less vulnerable to the low interest rate environment than their peers in other countries, recent developments are nevertheless associated with increasing challenges in terms of profitability in the years ahead.

In this context, the recent advancement of the macroprudential supervision and policy framework – including the creation of a Financial Stability Council – is particularly welcome, as it will facilitate a timely reaction to the build-up of systemic risks in the future. In light of the large role of the financial sector and its significance for the economy as a whole, a regular and careful analysis of the various risk factors is indispensable to appropriately calibrate and apply the various available macroprudential instruments, which crucially contribute to the stability of the financial sector.



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EXECUTIVE SUMMARY

The global macroeconomic environment has deteriorated in recent months. The global outlook has weakened considerably since the turn of the year, with the low-growth environment, weakening trade activity and elevated levels of political and policy uncertainty mutually reinforcing each other. A weak international environment, associated with subdued global trade activity and weak external demand, is particularly challenging for small and open economies like Liechtenstein.

Against this background, the Liechtenstein economy has also weakened since mid-2018. While data for GDP growth are only available until 2017, indicators point to strong growth in 2018, followed by weakening economic activity in the current year. Nevertheless, available measures – including the new business cycle index (“*KonSens*”) recently published by the Liechtenstein Institute – suggest a cyclical stabilization at somewhat lower levels, at around average levels of capacity utilization. In line with the business survey, the *KonSens* shows a cyclical weakening and the end of the boom phase in the course of 2018. Liechtenstein’s business cycle continues to be highly sensitive to external demand shocks, with trade growth (of direct imports and exports) turning negative in the first half of the year. In this context, rising barriers to trade and increasing protectionism around the globe are particularly painful for small economies like Liechtenstein, as local firms primarily rely on external demand and export a substantial share of their products.

For financial intermediaries, the international environment has become even more challenging in the past year. In an environment characterized by high political and policy uncertainty, expectations and materialization of looser monetary policy, weaker nominal growth and flight to safety flows, yields have further declined in both sovereign and

high-rated corporate bond markets, with the global volume of bonds yielding negative returns reaching record levels. Nevertheless, risks remain tilted to the downside in the context of limited monetary policy space in the cyclical downturn and increasing risks of abrupt corrections in financial markets. Additionally, lower yields on safe assets pose severe structural challenges for institutional investors in Swiss and euro area bond markets. In this environment, insurers and pension funds may have to raise the credit risk of their portfolios to maintain a certain level of profitability (or even to reach positive returns). Furthermore, although weak economic data have reduced the short-term risk of an interest rate shock, a potential repricing of global risk premia could have serious consequences, nonetheless, as debt levels have increased in many countries both in the public and private sector in recent years.

The strong manufacturing base differentiates Liechtenstein from other regional financial centers, with the highly specialized economy benefiting from its full access to main European markets. Liechtenstein strongly benefits from its very distinct legal arrangement, including a customs and currency union with Switzerland as well as its membership in the European Economic Area (EEA). As a result, financial intermediaries as well as the real economy enjoy full market access to both Switzerland and the European Union’s Single Market. The EEA membership is not only central for Liechtenstein’s international integration efforts, but also implies that the financial sector is fully regulated according to EU standards. The contribution of the industrial and manufacturing sector to Liechtenstein’s GDP is almost twice the share of the financial services sector, reducing the economy’s vulnerabilities associated with the large financial sector to a certain extent. At the same time, the large financial sector plays a key role behind the high volatility of GDP

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growth in Liechtenstein. Against this background, it is very important to closely monitor and – if deemed necessary – to address systemic risks in the financial sector by applying the appropriate macroprudential instruments in a decisive and timely manner.

While the overall indebtedness of the private non-financial sector has remained low, indebtedness is highly concentrated in the household sector.

As data on private sector indebtedness in Liechtenstein is not entirely comparable with other European countries, headline numbers might overestimate risks in the household sector and related risks may be lower than suggested by the reported debt figures. To address systemic risks arising from the high indebtedness of the household sector, Liechtenstein has introduced a macroprudential policy mix consisting of lender- and borrower-based measures to ensure sustainable lending standards. Nonetheless, against the background of the significant increase in household debt in recent years and a high share of loans being in the “exception-to-policy” category in terms of affordability, an in-depth analysis of both the underlying drivers and related risks is essential. Based on the proposed in-depth analysis, the Financial Stability Council (FSC) might consider proposing additional measures to tackle the risks and vulnerabilities in the mortgage sector.

In the banking sector, both safeguarding a risk-adequate capitalization as well as continuing improvements of structural efficiency are crucial from a long-term perspective. The three systemically important institutions in Liechtenstein are not only extremely large relative to Liechtenstein’s economy, but also the three largest institutions relative to the respective headquarter country’s GDP in the entire EEA. Consequently, both an efficient banking supervision at the bank level as well as a strong focus

on macroprudential supervision is indispensable for ensuring the stability of the banking sector and the whole economy. Furthermore, the banking sector’s surpassing capitalization has diminished to some extent in recent years against the international trend, albeit from very high levels. At the same time, the application of the standardized approach for calculating the risk inherent in banks’ exposures implies that the banking sector’s capitalization may be underestimated in cross-country comparisons. Nevertheless, it is important to maintain an adequate management buffer above regulatory requirements, not only to remain resilient against unexpected developments, but also from a reputational perspective, as the business model of banks directly depends on a prime reputation among investors and clients. Furthermore, efficiency indicators point to further room for improvement in terms of structural efficiency. On the contrary, the high asset quality as well as the stable funding base of Liechtenstein banks are important risk-mitigating factors.

While risks in the non-banking sector have remained limited, a strong focus on reputational risks – also in the context of anti-money laundering/combating the financing of terrorism (AML/CFT) issues – is important for the whole financial sector. Indicators suggest limited systemic risks in the insurance sector, not least due to prevalent business models. In contrast to other countries, life insurances in Liechtenstein hardly suffer from the low interest rate environment. This is due to the fact that guaranteed products are rare in Liechtenstein and the bulk of capital investments is attributable to investments managed for the account and risk of policy holders as part of unit-linked life insurance. Growth in the insurance industry continues to be driven by non-life insurances, and available risk indicators suggest limited risks in the sector. Liechtenstein’s pension system – built on three pil-

lars – is based on a stable footing, despite of negative returns in 2018. At the same time, the global financial market environment will further increase the challenges of the sector to generate positive returns. The investment fund sector is closely linked to the banking sector and has shown dynamic growth rates in recent years, but remains small compared to other parts of the financial sector. In the fiduciary sector, a revision of the Professional Trustees Act (TrHG) is currently underway, extending the FMA's supervisory competences in the sector. The FMA has put an increased focus on AML/CFT supervision in the whole financial sector by concentrating the related supervisory activities in a single division and increasing the respective staff resources. While AML policy and supervision is not a macroprudential issue, it is nevertheless essential from a macroprudential perspective, as a loss of trust and reputation could have systemic effects in Liechtenstein due to the prevailing business model of domestic banks. Since reputational issues in a small part of the financial sector could quickly spill-over to the whole financial sector – including systemically important banks – a holistic view on reputational risks is indispensable in safeguarding financial stability, with a zero-tolerance policy in the context of AML/CFT issues.

Liechtenstein has considerably strengthened its macroprudential policy framework in the last year.

The establishment of the Financial Stability Council (FSC) has strengthened the role of macroprudential policy in Liechtenstein, and also facilitates the collaboration between the FMA and the government in financial stability issues. The FSC has shown its ambitions by agreeing on a macroprudential strategy already in its first meeting in July 2019, aiming at fostering the decision-making process and enhancing the accountability and communication to the general public. The revision of the macroprudential capital buffer framework, also scheduled for the

present year, is a further important step ensuring stability in the banking sector. Since Liechtenstein does not have a national central bank, which is typically mandated to safeguarding financial stability in other countries, macroprudential policy in general, and the FSC in particular, play a crucial role in Liechtenstein.

While the Liechtenstein financial sector is assessed to be sound and stable, the following recommendations aim at ensuring financial stability in a sustainable manner. The current phase of slowing economic activity, as well as various country-specific factors related to the small size of the country and its large financial sector must be considered when risk-mitigating policies are discussed and evaluated. Systemic risks in Liechtenstein, not least due to the relatively large financial sector and the specific legal features, must be defined more broadly than in other countries. Against this backdrop, Liechtenstein banks should continue to focus on tackling the resulting challenges to further foster their profitability, improve their resilience against unexpected negative shocks, and apply sustainable lending standards in real estate lending. In particular, the FMA recommends the following measures to strengthen financial stability, which are discussed in detail in the following Financial Stability Report.

- High und still rising household indebtedness requires a continuous monitoring of associated systemic risks in the banking sector and the real estate market. Based on an in-depth analysis, the FSC might consider proposing additional measures, i.e. recommending to the FMA and/or the government to tighten existing measures or to introduce additional macroprudential measures ensuring sustainable lending standards.

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- Liechtenstein’s sound fiscal policy approach should be continued in light of the large financial sector and the high volatility of GDP growth, with positive budget balances of recent years increasing the policy space for growth-enhancing public investment projects.
- Compliance with international and European financial market regulation is absolutely essential for Liechtenstein’s international integration and the future development of the financial sector.
- Maintaining a risk-adequate capitalization of the banking sector is not only important to ensure the resilience of banks against negative shocks, but it is also essential from a reputational perspective.
- Banks should continue improving their structural efficiency to safeguard their profitability in the longer term.
- In the area of AML/CFT supervision, a zero tolerance policy has to be maintained to mitigate associated systemic risks in the entire financial sector.
- Besides increasing data availability, an adequate risk monitoring framework, not only at the level of financial intermediaries, but also from a financial stability perspective, is indispensable for an effective mitigation of identified systemic risks.
- The advancement of the macroprudential supervision and policy framework is welcome, and it is now up to the newly established FSC to use the expanded macroprudential policy toolbox to sustainably guarantee financial stability.

MACROECONOMIC ENVIRONMENT AND FINANCIAL MARKET DEVELOPMENTS

International environment

Global growth has weakened in the course of the last year. Notwithstanding a temporary spike in the first quarter, GDP growth in major economies has continued its downward trend over recent quarters (Figure 1). Germany recorded slightly negative growth in the second quarter and is expected to enter into a technical recession. Switzerland has recorded a technical recession at the turn of the year, and

growth prospects have remained subdued going forward. Overall, global growth has weakened substantially since mid-2018.

In light of the cyclical downturn, trade growth has turned negative at the global level. Global merchandise import growth has reported negative growth rates for three consecutive quarters, marking the longest period of negative trade growth since the global financial crisis (Figure 2). Both advanced as well as emerging economies have contributed to the

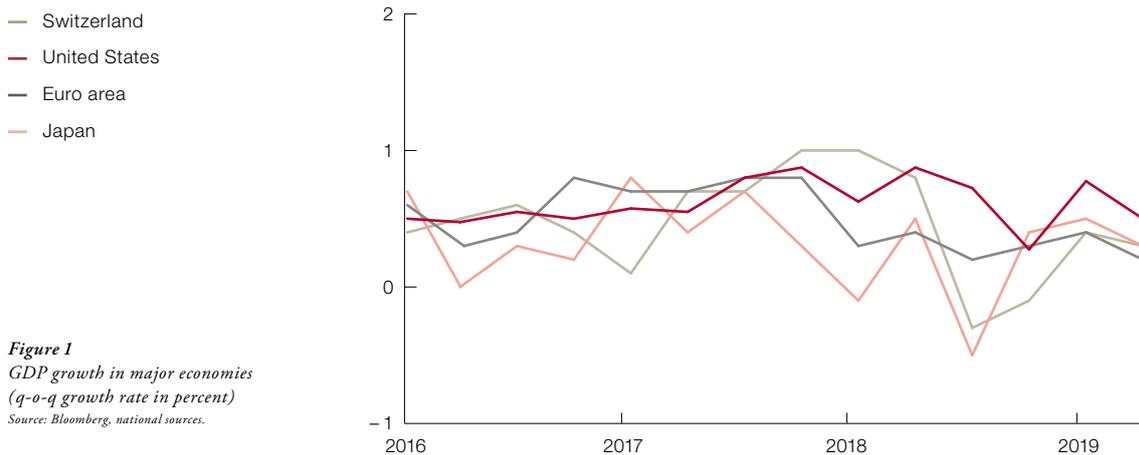


Figure 1
GDP growth in major economies
(q-o-q growth rate in percent)
Source: Bloomberg, national sources.

weak trade figures, confirming a broad-based deterioration of growth prospects. The deterioration in global trade figures does not only substantiate the global cyclical downturn, but also implies increasing risks of mutual reinforcement of weak growth and trade, potentially resulting in a downward spiral. At the same time, one has to keep in mind that merchandise trade data is remarkably volatile and short-

term movements should thus not be over-interpreted. Nevertheless, it seems likely that the recent weakness in global trade is not only due to cyclical weaknesses, but also a result of rising tensions in international trade relations, with increased protectionism across the globe.

MACROECONOMIC ENVIRONMENT

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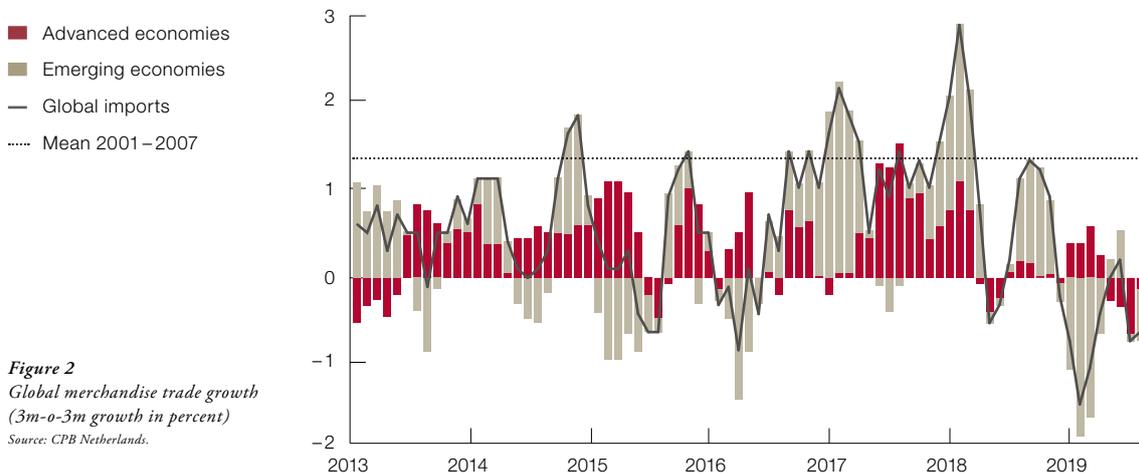


Figure 2
Global merchandise trade growth
(3m-o-3m growth in percent)
Source: CPB Netherlands.

Early indicators point to an even more pronounced downturn, with Purchasing Manager Indices (PMI) in major economies standing only slightly above the expansionary threshold. The global composite PMI decreased from its peak of 54.8 in February 2018 to 51.3 in September 2019, indicating only slightly positive growth (Figure 3). While the PMI in Switzerland fell below the expansionary threshold of 50 during the year (reporting a value of

44.6 in September), the remaining major economies have also deteriorated, but have remained slightly above the expansionary threshold. Weakness is mainly driven by the manufacturing sector (particularly in the euro area), although indicators point to increased sluggishness in the services sector as well. While GDP growth has remained stronger in the United States so far, leading indicators suggest a substantial weakening for the second half of the year.

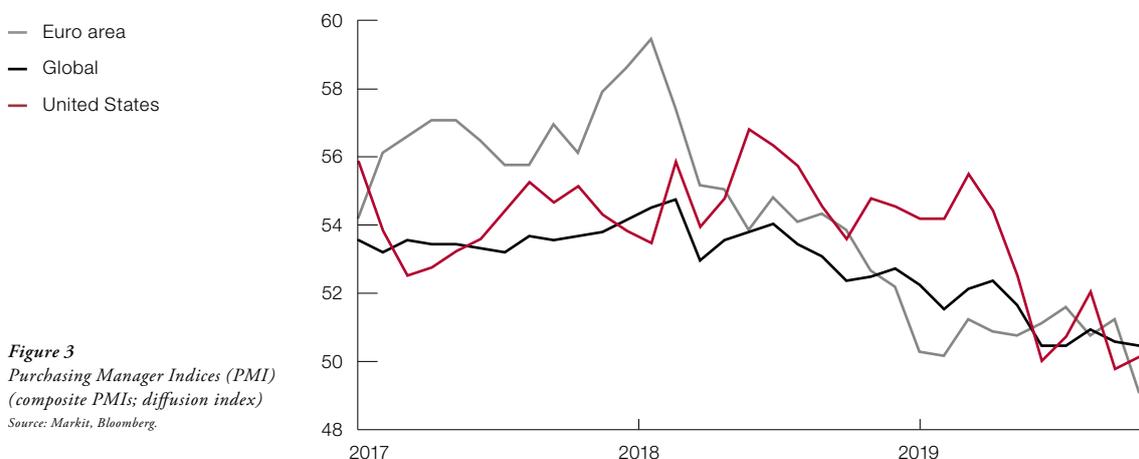


Figure 3
Purchasing Manager Indices (PMI)
(composite PMIs; diffusion index)
Source: Markit, Bloomberg.

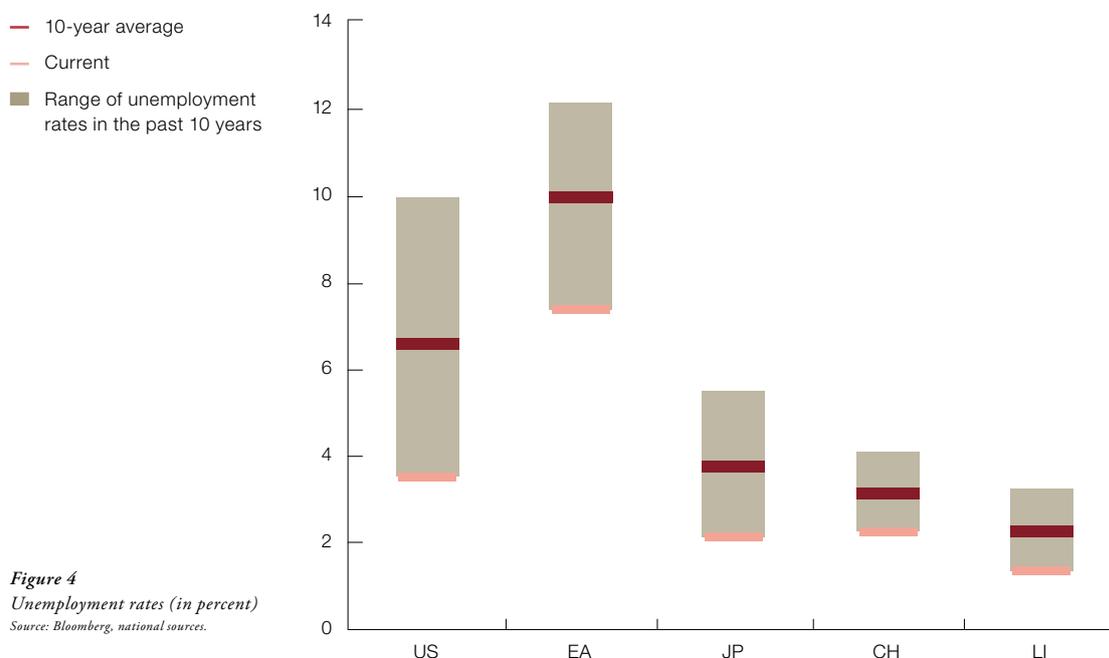


Figure 4
Unemployment rates (in percent)
Source: Bloomberg, national sources.

In contrast, unemployment rates in major economies have remained at very low levels. Despite the recent weakening of the world economy, GDP growth has mostly remained positive in the past year, also resulting in the longest cyclical upturn in the United States in the post-war period. As a result of the long recovery, unemployment rates stand at historically low levels, far below the long-run average (Figure 4). Unemployment rate stood at 3.5% in September in the United States, marking a 50-year low well below the natural (long-run) rate as estimated by the Federal Reserve (at 4.2% according to the September projection). In Liechtenstein, the unemployment rate has remained at very low levels, amounting to 1.4% in August, and Switzerland also reported very low levels with 2.1% of the labor force being unemployed.

Despite of the broad recovery and decreasing unemployment rates, inflationary pressure has further diminished in recent months. Wage growth has only temporarily increased, with inflation rates increasing only slightly in the cyclical upturn during 2017 and 2018 (Figure 5). Weak inflation rates are a source of concern, as the Phillips curve relationship has remained weak despite a long period of low unemployment rates, particularly in the United States, resulting in a “low for longer” interest rate scenario. Even more worrying, inflation expectations have started to decline again, with central banks reacting accordingly in recent months.



Economic developments in Liechtenstein

The strong manufacturing base differentiates Liechtenstein from other regional financial centers. The contribution of the industrial and manufacturing sector to Liechtenstein's GDP amounts to 43%,

thus substantially exceeding the share of the financial services sector (23%, Figure 6). Additionally, the economy has a high share of small and medium enterprises, including highly successful niche players in global markets, further contributing to the strong economic diversification. As explained in detail in last year's Financial Stability Report, the economy is also extraordinarily innovative due to high (pri-

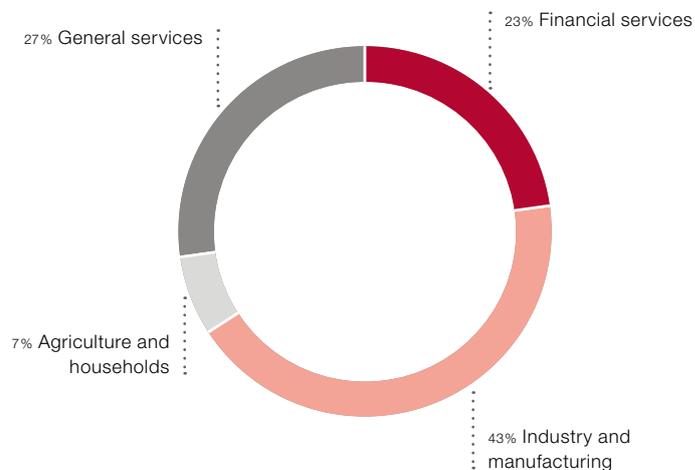


Figure 6
Contributions to gross value added
(2016, shares in percent)
Source: Office of Statistics.

vate) spending in research and development, particularly in the industry and manufacturing sector.

The highly specialized economy benefits from its full access to main European markets, including Switzerland and the European Economic Area (EEA). Liechtenstein has a very distinct legal arrangement, including a customs union with Switzerland since 1923 and the membership in the EEA since 1995. Liechtenstein has introduced the Swiss franc as the local currency already back in 1924. While the country does not have a vote in monetary policy decisions by the Swiss National Bank (SNB), the use of the Swiss franc has been institutionalized and legally secured in an intergovernmental currency treaty between Liechtenstein and Switzerland in 1980. While the SNB is responsible for monetary policy decisions, financial stability issues and macroprudential policy are joint responsibilities of Liechtenstein's government and the FMA. The EEA membership implies that the financial sector is fully regulated according to EU standards. The EEA membership is central for Liechtenstein's international integration efforts, both for the industrial as well as the financial sector.

In Liechtenstein's economy, total employment exceeds the number of inhabitants. Total population stood at 38,378 in 2018, exceeded by the total number of employed people (39,635), with the majority being commuters (55.6%) mostly living in Switzerland and Austria. Against the backdrop of the small size of the economy (total GDP amounted to CHF 6.4 billion in 2017), data availability is an issue, with many economic and financial indicators not being available or published with a long delay. Nevertheless, taking into account the small size of

the country, a number of statistical indicators are readily available, enabling policy-makers to follow the main developments in the economy and the financial sector, and to react accordingly if necessary.

The Liechtenstein economy is characterized by highly volatile growth rates, also related to the small size of the economy. As single transactions of large firms can substantially affect macroeconomic indicators, GDP growth is quite volatile in Liechtenstein – a typical stylized fact in small state economies. Interestingly, however, the higher volatility relative to neighboring states such as Switzerland or Austria is not only due to the small size, but also because of the large financial sector, as explained in Box 1. As the financial sector – and more precisely, volatile profits in the financial sector – play an important role for GDP volatility, it is particularly important to regularly and thoroughly monitor the financial sector and related systemic risks. As already explained in last year's edition of the Financial Stability Report, systemic risks in Liechtenstein have to be defined more broadly than in other countries, as the large financial sector plays an important role in terms of employment and for the economy as a whole. Financial stability analyses – as conducted in this report – are thus indispensable in a country like Liechtenstein. To account for the high volatility in GDP, all indicators relative to GDP presented in this report are calculated based on potential output. Based on the business survey, GDP can be back-casted for the year 2018. Subsequently, potential GDP is estimated by using standard methods. Potential output in 2018 is estimated at CHF 6.6 billion.

■ Annual GDP growth (r.a.)
 — Quarterly business survey (l.a.)

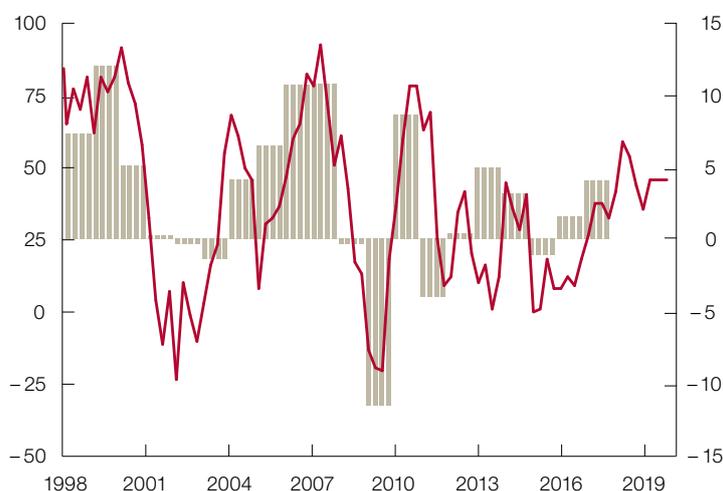


Figure 7
 Liechtenstein's economy has weakened somewhat since 2018 (index, annual growth in percent)
 Source: Office of Statistics.

Indicators point to strong growth in 2018, followed by weakening economic activity in the current year. GDP increased by 3.8% (in nominal terms) from 2016 to 2017. For 2018, GDP numbers are not yet available, but data at-hand suggests strong growth in the past year, with the business survey peaking around mid-2018 (Figure 7). Since then, business sentiment has deteriorated somewhat, but stabilized again at a lower level in the first half of 2019.

The recent cyclical stabilization – against the international trend – is also confirmed by a recently published new cyclical indicator. The new business cycle index *KonSens*, recently developed and published by the Liechtenstein Institute, is a quarterly,

coincident composite indicator for Liechtenstein's business cycle pattern (see Box 2). The new index confirms the recent stabilization of the Liechtenstein business cycle, showing a (slight) improvement in the first and the second quarter of this year. With a current value close to zero, the indicator signals average capacity utilization. In line with the business survey, however, the *KonSens* shows some weakening and the end of the boom phase in the course of 2018 (Figure B2.2).

GDP volatility in Liechtenstein and the role of the financial sector

In Liechtenstein, GDP volatility never converged to low levels reached in other developed countries and picked up from historically low levels already prior to 2008. It is well documented that volatility has adverse impacts on economic activity.¹ From the 1980s until 2008, when the global economic and financial crisis erupted, most developed countries experienced a period of low business cycle volatility. This episode is often referred to as the “Great Moderation”.² Considering Liechtenstein, however, we do not observe comparable volatility patterns of key macroeconomic aggregates.³ As an indication for business cycle volatility, we consider standard deviations of the annual real GDP growth rates calculated from 7-years windows (centered moving averages). Figure B1.1 shows the historical evolution of the standard deviations for Liechtenstein in comparison to Switzerland, Germany and Austria. The available GDP data for Liechtenstein range from 1972 until 2017.⁴ Consistent with most developed countries, we observe a downward trend in business cycle volatility for Switzerland, Austria and Germany until the global financial and economic crisis.

By contrast, after an initial decline, business cycle volatility picked up in Liechtenstein already in the mid-1990s. Moreover, in absolute values, standard deviations of GDP growth rates are well above the levels observed in the neighboring countries. Recently, business cycle volatility has decreased in all countries including Liechtenstein.

The generally higher volatility is related to the size of Liechtenstein’s economy.⁵ As small states typically feature a high degree of openness, domestic demand plays a less important role. As a consequence, small nations are more exposed to external shocks. In addition, a small country like Liechtenstein has only limited leverage for policy intervention: Liechtenstein has no monetary policy mandate and fiscal policy is less effective as domestic demand plays a subordinate role. Finally, small states are typically less diversified in terms of the number of firms and sectoral differentiation, which is also the case in Liechtenstein to some extent.

The increase in business cycle volatility long before the global financial crisis is mostly due to financial sector developments in Liechtenstein. The financial sector is characterized by relatively high volatility,

BOX 1

1 *The channel through which volatility affects the economy is through economic uncertainty. Higher volatility makes it harder to foresee future outcomes which induces uncertainty, making economic agents reluctant to engage in consumption, investment and hiring decisions that are costly to reverse. Higher uncertainty also increases the premium on external finance (Bloom 2009, Alessandri and Mumtaz 2019).*

2 *The literature offers several explanations for the Great Moderation, e.g. monetary policy that focuses on stabilizing the price level and the output gap (Cogley and Sargent, 2005), the absence of large shocks (Stock and Watson, 2002), or efficiency gains in inventory allocation (McConnel and Perez-Quiros, 2000).*

3 *This box is a summary and updated version of Brunhart, 2013b, Chapter 3.*

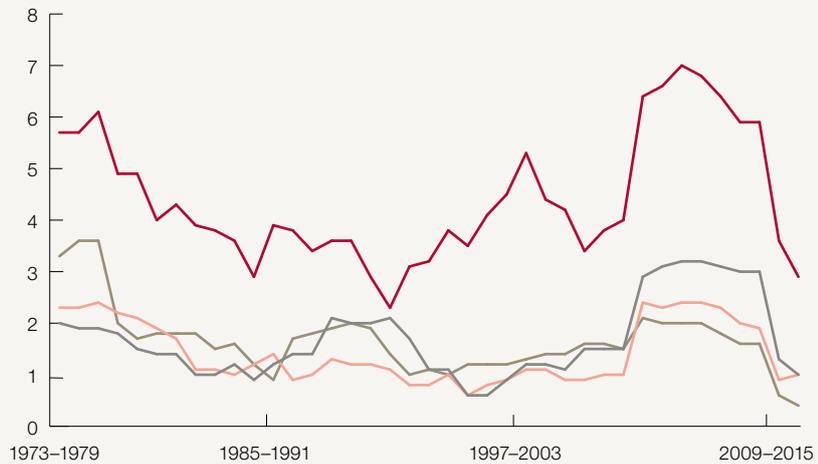
4 *Nominal GDP and (sectoral) income side figures are from Liechtenstein’s official national accounts provided by the Office of Statistics, complemented by backward estimations in Brunhart (2013a) for the years before 1998. We approximate the level-shift in the data due to the revision from ESA1995 to ESA2010. Real figures have been computed by applying the Swiss GDP deflator, since no official price index exists for Liechtenstein. Due to the monetary union with Switzerland (with the Swiss franc as common currency) along with a customs union resulting in common collection of most of the indirect taxes, price level developments are comparable across the two countries.*

5 *High volatility is typical for small nations and a stylized fact in small state economics (see for example Easterly and Kraay, 2000).*

BOX 1

- Liechtenstein
- Switzerland
- Austria
- Germany

Figure B1.1
Standard deviations of annual real GDP growth rates (centered moving averages, 7y windows, percent)
Source: Liechtenstein Institute.



which, in turn, drives overall GDP volatility in Liechtenstein. We draw this conclusion based on a growth accounting exercise using components of Liechtenstein’s GDP. We consider the generation of the income account in Liechtenstein’s national accounts:

	Compensation of Employees
plus	Gross Operating Surplus
plus	Taxes on Production and Imports
minus	Subsidies

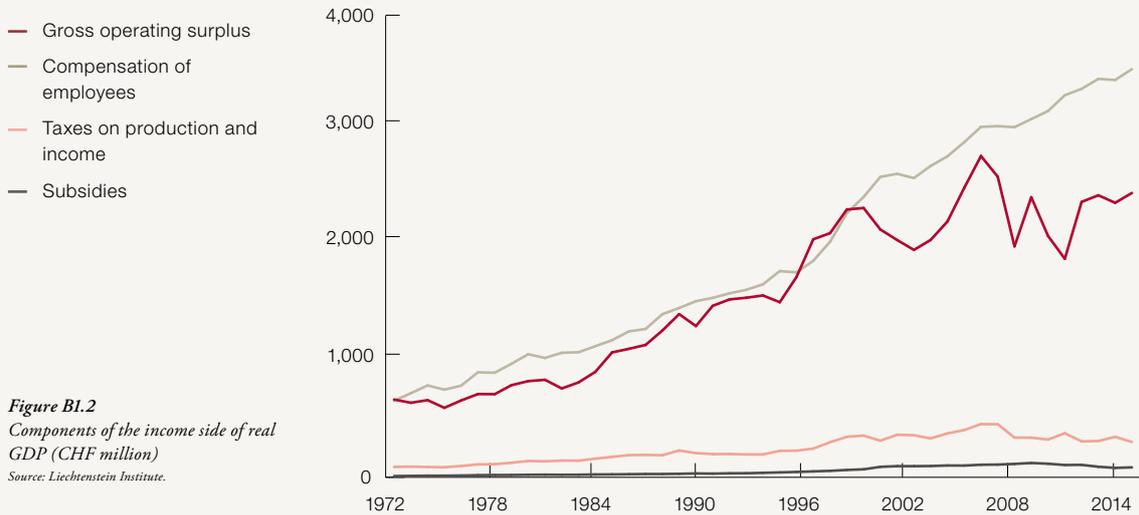
=	Gross Domestic Product
	=====

Figure B1.2 shows the development of income components of Liechtenstein’s GDP⁶, with compensation of employees and gross operation surplus being the two main sources of income. Since the early 2000s, however, we observe some divergence between the developments of these two components. While a slowdown in gross-operating surplus growth

can be observed, compensation of employees continued its stable growth path.

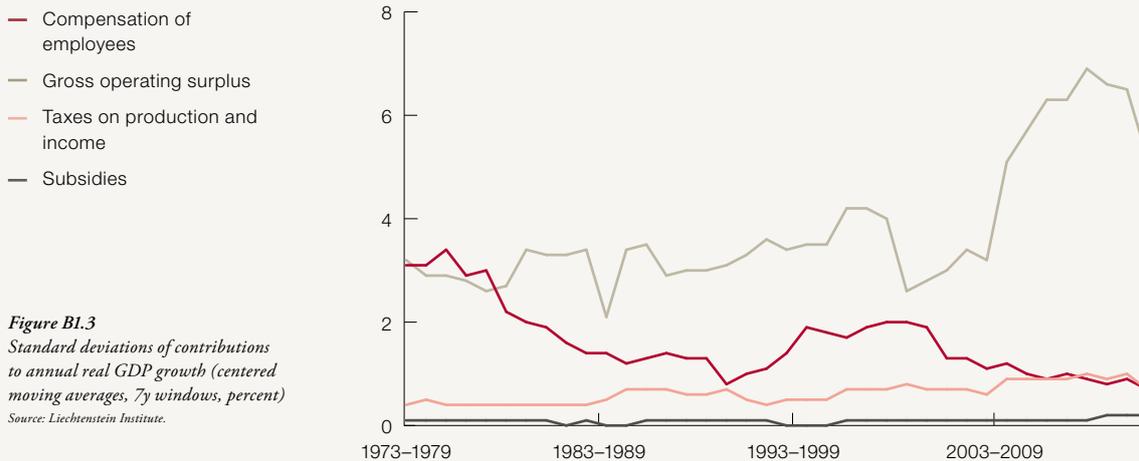
In Liechtenstein, gross operating surplus is by far the most volatile component among the sources of generated incomes. Figure B1.3 shows standard deviations of contributions to annual real GDP growth (centered moving averages, 7-years windows). Contributions are calculated as growth rates weighted by the component shares. Considering the development of the volatility of growth contributions of gross operating surplus and compensation of employees, a pronounced divergence can be observed. Since the 1970s, the volatility of gross operating surplus increased strongly in contrast to compensation of employees. At the volatility peak in the period 2007–2013, the total standard deviation reached 8.9%, with a contribution of 6.9 percentage points (pp) from gross operating surplus (compared to 0.9 pp from compensation of employees, 1 pp from taxes on production and income and 0.1 pp from subsidies).

⁶ Due to the publication lag, income components are only available until 2016.



While growth rates of operating surpluses in general services are relatively stable, industry and financial services show higher variability. Figure B1.4 shows standard deviations of contributions to gross operating surplus growth by sector:

industry/manufacturing, financial services and general services.⁷ It is striking that the standard deviations of financial services surplus' growth rates exhibit an upward trend, while no clear long-run trend is evident in industry and services.



7 Income in the sector agriculture/households is not included in the analysis.

BOX 1

— Industry/manufacturing
— Financial services
— Other services

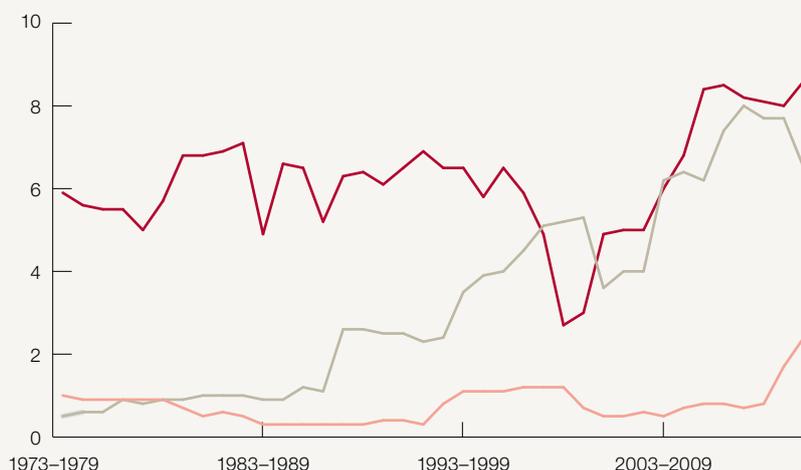


Figure B1.4
Standard deviations of contributions to gross operating surplus growth by sector (centered moving averages, 7y windows, percent)
Source: Liechtenstein Institute.

The share of the gross operating surplus generated in the financial services sector continuously increased from the 1980s until 2010. This can be seen in the upward trend in the share of financial services in overall gross operating surpluses shown in Figure B1.5. Thus, the high and until 2010 increasing volatility in gross operating surplus in financial services combined with the increasing share of financial services in overall gross operating surplus, explain the evolution of overall business cycle volatility to a large extent.⁸ Since 2010, the share of financial services in overall gross operating surpluses has decreased, with industry/manufacturing gaining importance in recent years.

To sum up, we find a strong link between business cycle volatility on the one hand and the financial sector’s relative performance (both in terms of growth and sectoral share) on the other hand. Overall, it appears that high growth in financial sector services in the 1980s and 1990s came at the cost of higher volatility. Going back to Figure B1.1, we observe a reduction in the overall business cycle volatility in recent years. The deep structural changes⁹ in the financial sector in the previous decade may have decelerated average growth rates, but it also had a moderating effect on the volatility of Liechtenstein’s economy.

⁸ Alternatively, one could also consider the production side of GDP: Sectoral gross value added figures from the national accounts’ (1998–2016) support the assumption that the financial sector is the main driving force behind the high business cycle volatility.

⁹ In addition to the shock of the financial crisis and widespread new international regulation in the financial sector, Liechtenstein’s financial service sector has faced structural changes related to the Principality’s full commitment to tax compliance and automatic information exchange.

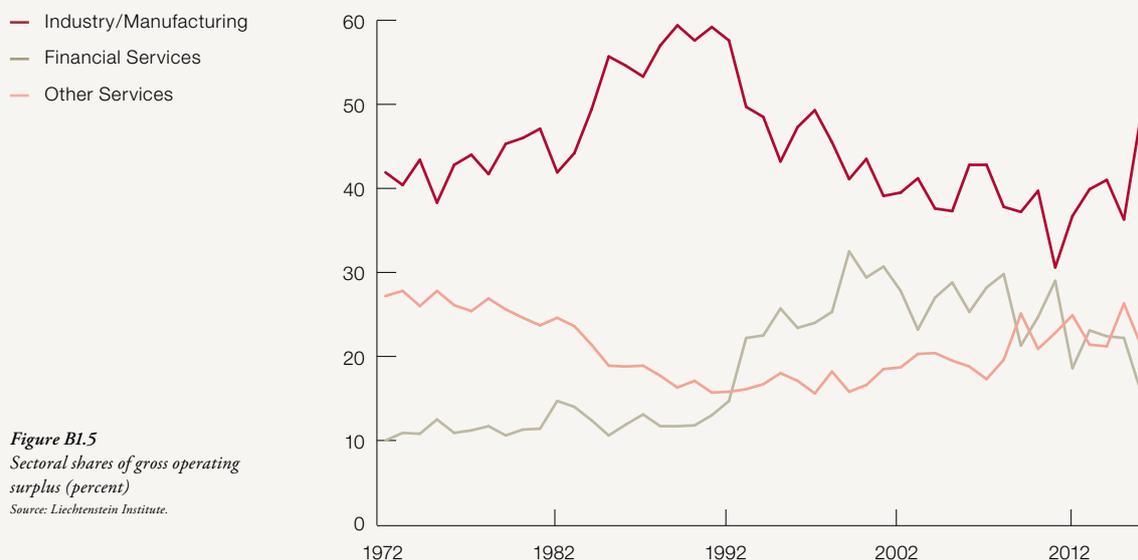


Figure B1.5
Sectoral shares of gross operating surplus (percent)
Source: Liechtenstein Institute.

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Meanwhile, trade growth has turned negative in Liechtenstein. Since Liechtenstein is part of a customs union with Switzerland, only direct export and import data (excluding Switzerland) are available.¹⁰ Figure 8 shows four-quarter moving averages of direct export and direct import growth in Liechtenstein. Following the slump in 2015 – as a result of the exchange rate shock – trade growth turned positive again in 2016, remaining in expansion for the most part until mid-2018. Since then, however, growth rates have followed a downward trend, with both export and import growth turning negative in

2019. Interestingly, while imports and exports moved hand-in-hand in the past few years, the current downturn is more pronounced in the case of imports, although exports have recently also followed a decreasing path.

— Direct imports
— Direct exports

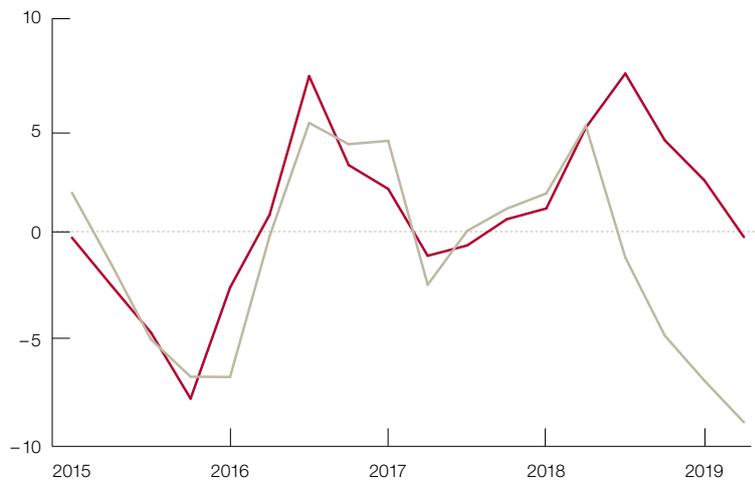


Figure 8
Trade growth has turned negative in Liechtenstein (4q-moving average growth in percent)
Source: Office of Statistics, own calculations.

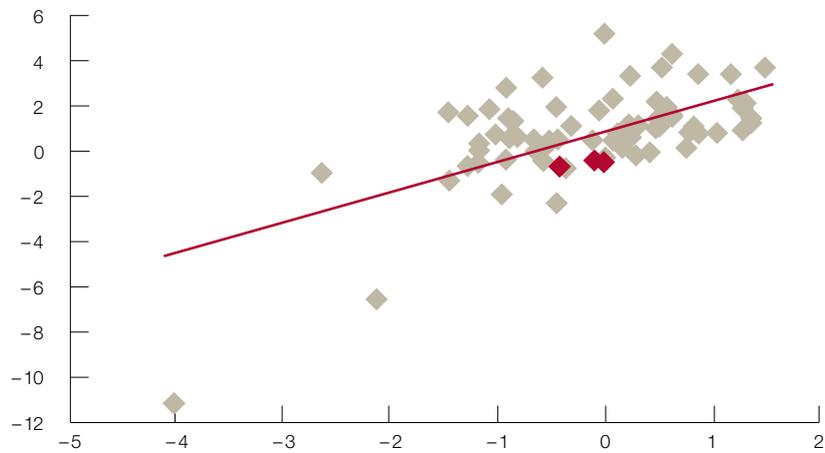
¹⁰ As only direct goods trade is reported, data excludes exports and imports that leave or enter the customs union via Switzerland.

A simple correlation analysis shows the strong dependency of Liechtenstein’s economy on global trade growth. As a small and open economy, Liechtenstein’s openness to trade is high, with the share of direct goods trade (imports plus exports, excluding trade to and via Switzerland and excluding services) amounting to 85% of GDP. Unsurprisingly, the business cycle in Liechtenstein is highly sensitive to external demand shocks. Figure 9 shows a simple correlation analysis of the business cycle in Liechtenstein (as measured by the *KonSens* indicator, see Box 2) and global merchandise trade growth (as

measured by global import growth). At a quarterly frequency, global merchandise trade growth explains around 40% of the total variance of Liechtenstein’s business cycle.¹¹ Consequently, rising barriers to trade and increasing protectionism around the globe are particularly painful for small economies like Liechtenstein, as local firms primarily rely on external demand and export a substantial share of their products.

Figure 9
Global trade growth and Liechtenstein’s economic cycle
(x-axis: *KonSens* index; y-axis: global import growth in percent)

Source: CPB Netherlands, Liechtenstein Institute, own calculations. Quarterly data since 2001, with the three quarters of 2019 colored in red.



¹¹ The outliers in Figure 2.9 are the quarters of the global financial crisis in 2009, when quarterly trade growth plummeted to less than -10%.

BOX 2 KonSens – a new cyclical indicator for the Liechtenstein economy

On the back of the small size of the economy, Liechtenstein's GDP growth is relatively volatile and reacts highly sensitive to the international environment. Liechtenstein with its 38,000 inhabitants represents a truly special case, particularly when it comes to growth and business cycle issues, not only because of its remarkable economic growth history but also due to many special characteristics. It is a micro state with a very small open economy and a high employment and GDP share both in industrial production (43%) and financial services (23%). Additionally, due to its small size, it exhibits a high share of international trade and cross-border services. Also, not surprising for such a small economy, Liechtenstein shows a high degree of economic volatility.¹² Furthermore, Liechtenstein's economy does not only respond very sensitively to the international business cycle, but also earlier and has a statistically significant business cycle lead to its closest neighbor, Switzerland (as shown in Brunhart, 2017).¹³ Both stylized business cycle facts mentioned above highlight the importance of a timely business cycle analysis for Liechtenstein. Unfortunately, GDP and other national accounts figures for Liechtenstein are only annually available and also with a long publication lag (GDP: 15 months lag). Even though Liechtenstein's economic data base has improved significantly, it is still scarce compared to other countries, especially on sub-annual fre-

quency.¹⁴ Nonetheless, there is a set of some useful indicators available, which can be combined to extract a comprehensive business cycle indicator.

The *KonSens*, a newly established business cycle measure by the Liechtenstein Institute¹⁵, is a quarterly, coincident composite indicator for Liechtenstein's special business cycle pattern and consists of 16 individual economic indicators. It focuses on the state of Liechtenstein's business cycle, rather than on its determinants or influences. The name *KonSens* originates from the conception of the "business cycle as a consensus" (Burns and Mitchell, 1946) of various individual business cycle impulses. At the same time, it is also the simple abbreviation of "Konjunktur-Sensor" (i.e. a sensor of Liechtenstein's business cycle situation). The *KonSens* offers a timely aggregation of various – sometimes contradicting – business cycle signals to a consistent picture (with a publication lag of around 6 weeks) and can be understood as a conceptual supplement to the ordinary focus on GDP and is accessible on a timelier and more frequent basis.

The *KonSens* allows for an easy interpretation for policy makers, public administration, media, companies and the general public. It combines different data origins and dimensions, improves the data base for economic analyses and also enables better reporting, monitoring and surveillance (e.g. FMA, Standard & Poor's). The following individual business cycle indicators are included in the *KonSens*:

¹² Reasons for higher volatility in small states include the typically lower degree of economic diversification, the absence of capable monetary or fiscal intervention instruments, a high share of international trade, and the domestic economy's lack of buffer in case of international demand shocks, see also Box 1.

¹³ Liechtenstein's lead might be counter-intuitive and in contrast to the traditional notion of small countries as "business cycle importers". But, if small states are more sensitively affected by international business cycle shocks, why not earlier as well?

¹⁴ In comparison to other micro states, however, data availability is surprisingly good.

¹⁵ The *KonSens* was supported by initial funding of Liechtenstein's government. The business cycle indicator is available on the website of the Liechtenstein Institute: www.liechtenstein-institut.li/konsens.

- Goods trade: Direct goods exports, direct goods imports
- Employment data: Employed people, inward commuters, unemployed people, job openings
- Business survey (industry/manufacturing sector): Overall situation, capacity utilization, new orders, earnings (indexed)
- Other Indicators: Stock prices, electric power consumption, newly registered cars, overnight stays, consumer sentiment (Switzerland, Austria), consumer prices

All the mentioned variables are subject to potential data transformation. All the quarterly data measured in money units are deflated, those which feature calendar and seasonal effects are adjusted and the trend is removed by taking quarterly growth rates. The aggregated score is obtained by applying principal components analysis, a multivariate statistical algorithm.¹⁶

The first *KonSens* release in August 2019 includes a time series from 1998:Q2 to 2019:Q2. For each quarter, the *KonSens* generates an indexed data point (mean 0, standard deviation 1) which is seasonally adjusted. Since the indicator abstracts from the long-

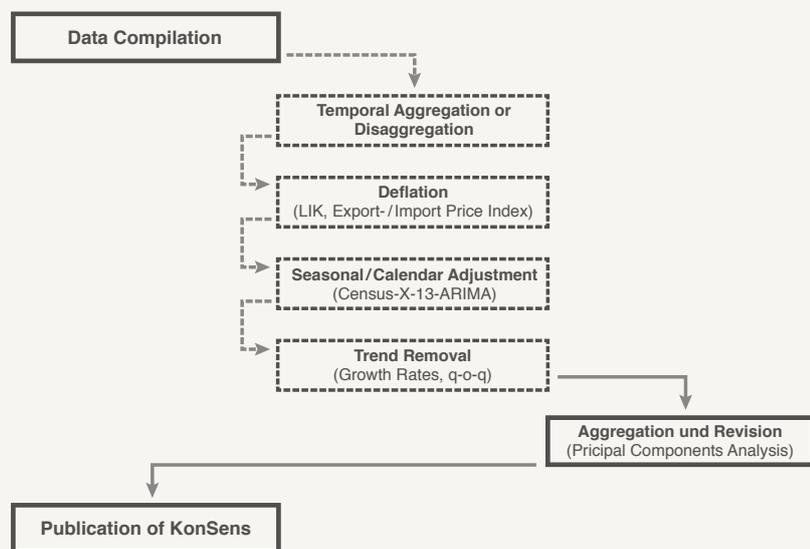


Figure B2.1
Calculation of the *KonSens*
Source: Liechtenstein Institute.

16 For more method details see Brunhart (2019).

BOX 2

Figure B2.2
KonSens – a new business cycle indicator for Liechtenstein (index)
 Source: Liechtenstein Institute.



run growth trend, it can be interpreted as a standardized capacity utilization measure (boom/recession, expansion/contraction etc.) of Liechtenstein's entire economy.

Following a two years lasting business cycle boom, the *KoSens* suggests a slowdown of Liechtenstein's economy towards the end of 2018. While this downturn is well in line with the international environment, the measure has stabilized in the first half of 2019 and currently signals an average capacity utilisation, as its value is close to zero. Compared to the strong slowdown in the global business cycle since

the start of the year, it thus seems that the Liechtenstein economy is in a comparably good state, although the weakening of the economic cycle since its peak in late 2017 is clearly visible (Figure B2.2).

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Financial market developments

Global policy uncertainty has remained elevated throughout 2019. On the back of intensifying protectionism and trade disputes, as well as uncertainties related to Brexit, global policy uncertainty has remained elevated in the past year (Figure 10). While risky asset markets showed increased volatil-

ity in the course of the year, policy uncertainty is not yet fully reflected in stock market volatility.

Following the strong recovery in the first half of the year, the upward trend in stock markets came to a halt during the summer (Figure 11). Weak cyclical developments, with deteriorating macro and earnings data, as well as various policy uncertainties – related to renewed announcements of tariffs on Chinese goods by the US, an increased likelihood

— Global policy uncertainty
— VIX (r.A.)

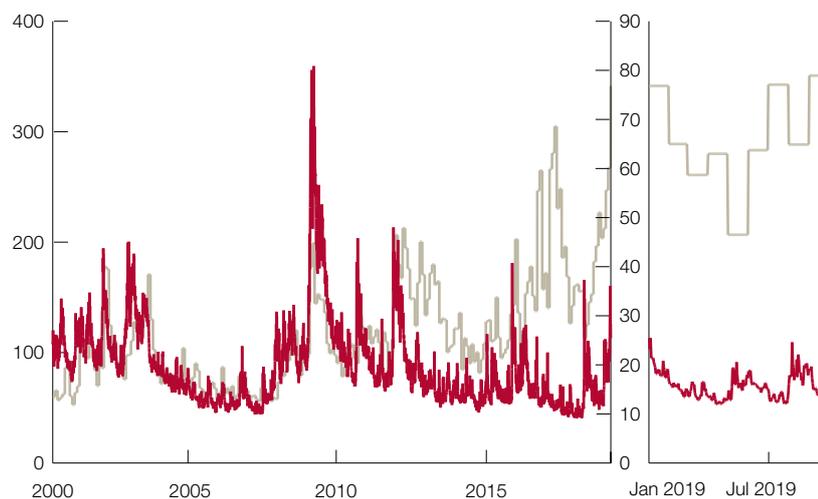


Figure 10
Global economic policy uncertainty and stock market volatility (indices)
Source: Bloomberg. The global policy uncertainty index is based on Baker, Bloom and Davis (2016).

of a no-deal Brexit and political uncertainty in Italy, among others – substantiated the negative market sentiment during the summer. Despite of this adverse environment, however, financial markets avoided a strong correction in light of expectations of a comprehensive set of monetary easing measures on the side of major central banks. The relatively benign trend in stock markets despite of the gloomy macroeconomic developments around the globe suggests that the relatively positive market environment in 2019 was underpinned by looser financing conditions rather than by improving cyclical conditions.

In this respect, the recovery in stock markets was different from the upswing since 2016, when long-term interest rates (and growth expectations) increased in line with stock markets. In 2019, however, negative cyclical developments were associated with expansionary monetary policy decisions, and thus, looser financing conditions.

The European Central Bank (ECB) and the Federal Reserve have reacted with expansionary monetary policy measures to the cyclical downturn. Weak inflation developments, deteriorating growth rates

MACROECONOMIC ENVIRONMENT

Financial Stability Report 2019

- S&P 500
- FTSE 100
- SMI
- Eurostoxx 50
- DAX
- MSCI World

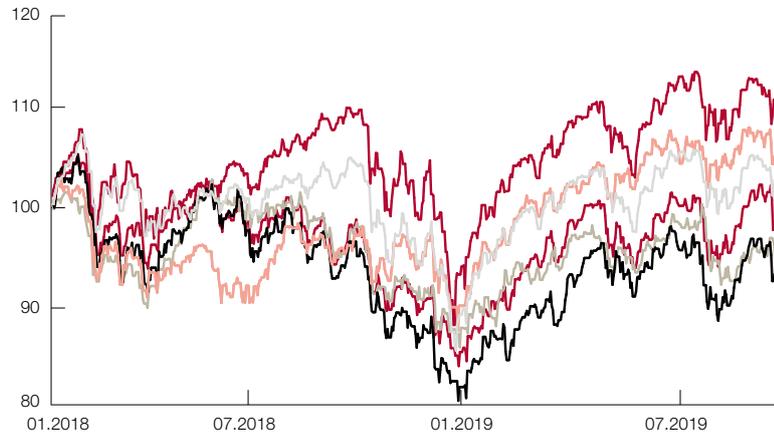


Figure 11
 Stock markets have recovered since the start of the year (indices, 01.01.2018 = 100)
 Source: Bloomberg.

and a decline in long-term inflation expectations have triggered further monetary policy easing by major central banks. The ECB decreased the interest rate for its deposit facility from -0.4% to -0.5% in

September 2019 and announced a new asset purchasing programme, with a volume of EUR 20 billion per month starting in November. While renewed asset purchases are clearly expansionary, the interest

- United States
- Germany
- Japan
- Switzerland
- Italy

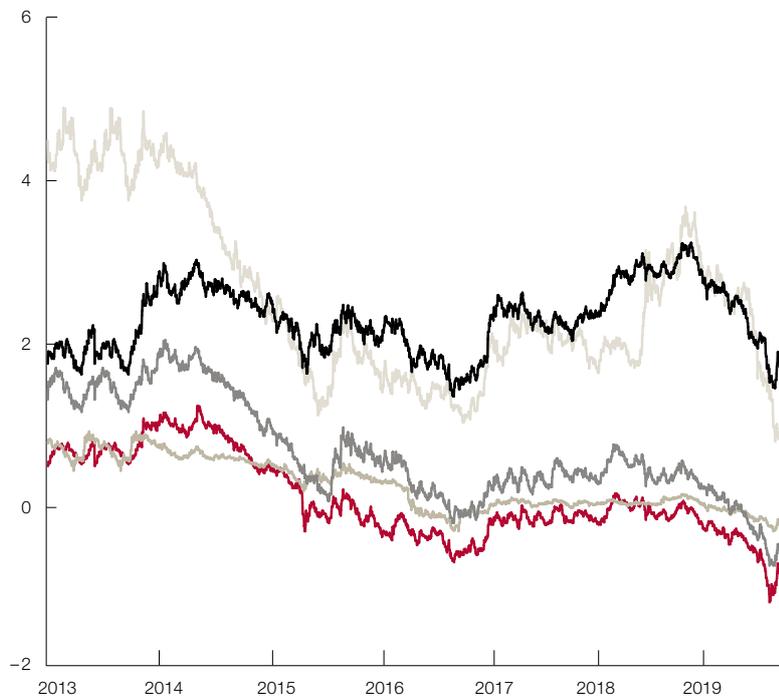
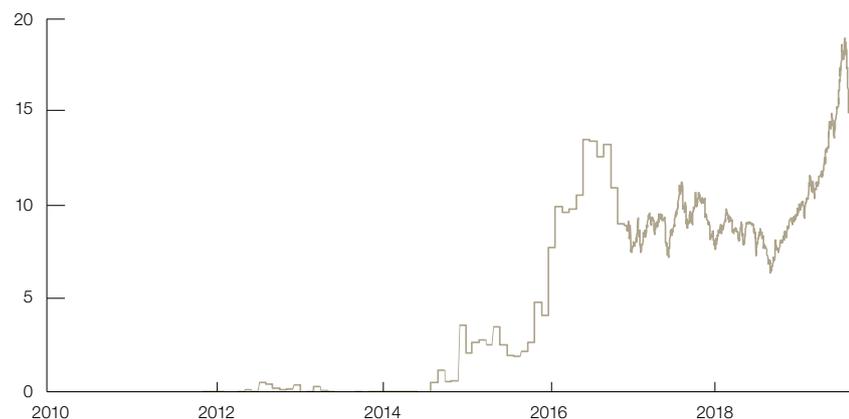


Figure 12
 10-year sovereign bond yields (percent)
 Source: Bloomberg.

rate cut is cushioned by the introduction of a so-called tiered system of interest rates, which removes some pressure from the banking industry suffering from negative interest rates. More precisely, a portion of bank deposits, currently set at six times their mandatory reserves, is exempted from negative interest rates. As a result, the effective costs for the euro area's banking industry due to negative interest rates have actually decreased despite of the interest rate cut by the ECB. According to market expectations, the “low for longer” scenario is particularly pronounced in the euro area, with the EONIA (Euro OverNight Index Average) now expected to

remain negative until mid-2026. The Federal Reserve decreased the federal funds rate in the United States for the third time this year by a quarter percentage point to a range of 1.5–1.75% in October 2019. Interestingly, contrary to market expectations of further interest rate cuts, members of the Federal Open Market Committee (FOMC) had previously assumed no further interest rate changes until 2020 (in their September projections). The SNB has also continued its expansionary monetary policy course, but abstained from further rate cuts in September.

Figure 13
Global volume of bonds with
negative yield (USD trillion)
Source: Bloomberg.



Expectations and materialization of looser monetary policy, weaker nominal growth and flight to safety flows have led to yield compression in both sovereign and high-rated corporate bond markets. 10-year sovereign yields declined sharply both in Europe and the United States in light of the cyclical downturn (Figure 12), with flattening yield curves and short-term interest rate expectations reaching multi-year lows on both sides of the Atlantic. The yield curve in the United States has partly reversed, with the spread between 10-year and 3-month sov-

ereign bonds being in negative territory since May 2019 and the spread between 10-year and 2-year sovereign bonds fluctuating around zero. In light of this inversion of the yield curve, recession fears in the United States have further increased, as negative spreads were reported ahead of every recession in the past few decades.

The global volume of bonds yielding negative returns has reached record levels. In light of increased flows into sovereign bonds and highly

rated corporate bonds, the global volume of bonds recording negative yields has further increased over the summer, with the total volume increasing above USD 16 trillion (Figure 13) in September, i.e. almost 30% of all bonds outstanding at the global level. Negative yields have also extended to corporate bond markets where more than USD 1 trillion worth of bonds trade at negative interest rates globally.

In light of the gloomy international environment, the entire Swiss yield curve – including maturities up to 30 years – has turned negative. Figure 14 shows the developments in the Swiss yield curve in the last 10 years. While markets expected a strong recovery after the global financial crisis in 2009, yield curves have shifted downwards in light of the weak economic recovery over the following years. Surprisingly, however, yield curves have shifted further down over recent months, bringing the entire

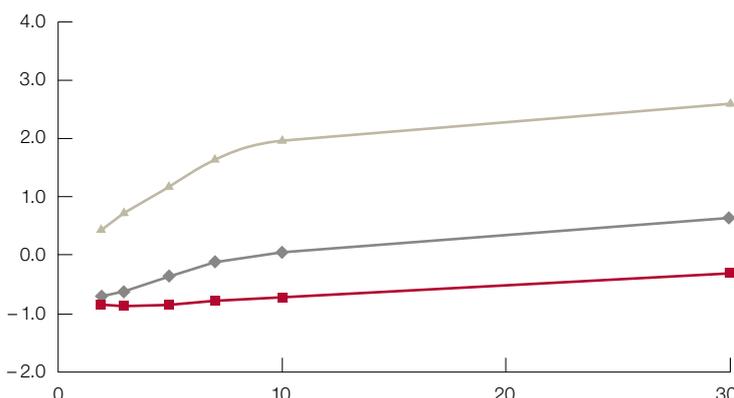
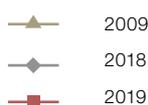


Figure 14
Yield curve in Switzerland
(sovereign yields by maturity)
Source: Bloomberg. The graph shows yield curves on 1 October of the respective years.

yield curve into negative territory. Thus, for earning positive returns, investors have to take on credit risks, as the (sovereign) risk-free rate is negative over all maturities. Similar to Switzerland, the yield curve in Germany also turned negative for all maturities up to 30 years, and even countries like Greece or Italy recorded strong declines in long-term interest rates for their sovereign debt.

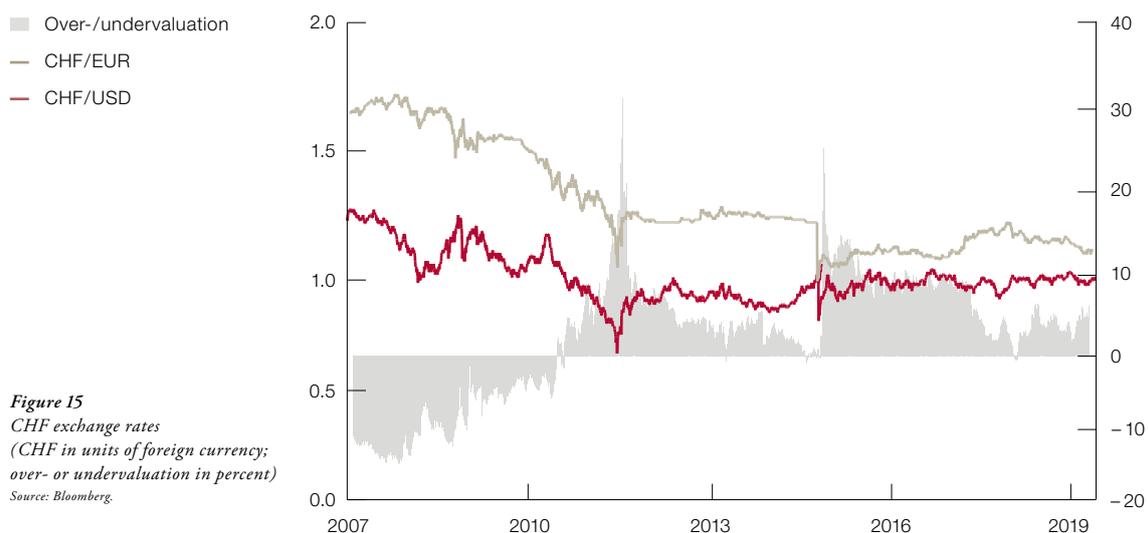
The Swiss franc has recently gained strength again in light of weakening growth in the euro area and rising political tensions across the globe. Following the depreciation of the CHF to a value of 1.20 CHF/EUR in April 2018, the Swiss currency has appreciated again in a deteriorating international economic environment in the course of the past year. As a result, the overvaluation of the Swiss franc has increased once again, although remaining at moderate levels according to purchasing power parity relative to 2015 (Figure 15). Nevertheless, a stronger Swiss franc is associated with increased competitive

pressure particularly for industry and manufacturing sectors in both Switzerland and Liechtenstein.

The current cyclical downturn could be further reinforced by political and policy uncertainty.

While it seems that financial markets have partly got used to increased political uncertainty, with stock market volatility remaining low even in recent months, this does not reduce the adverse effects of elevated uncertainty and rising protectionism on the

real economy. Low global growth, weakening trade activity and elevated levels of political and policy uncertainty are likely to reinforce each other, further amplifying the downward spiral. A weak international environment, associated with subdued global trade activity and thus weak external demand, is particularly challenging for small and open economies like Liechtenstein.



The risk of limited monetary policy space could now materialize in the cyclical downturn. In last year's Financial Stability Report, the risk of a lack of monetary policy space in the next recession was emphasized. Against the background of the weakening international environment, this risk could now materialize, as monetary policy is effectively constrained by the zero lower bound, particularly in the euro area and Switzerland. While central banks

still have monetary policy instruments at their disposal to counter the economic downturn, it is not really controversial that such unconventional instruments are less effective than changes in interest rates. Furthermore, the role of fiscal policy in closing the rising demand gap is also constrained due to limited fiscal policy space in many countries, or also a lack of political will to loosen fiscal policy in the current downturn.

While the overall economic outlook suggests a continuation of the low interest rate environment, an eventual repricing of global risk premia could have serious consequences. Incentivized by the long low-interest rate environment, indebtedness has increased in many countries, with public and private sector debt levels often above the thresholds associated with debt overhangs. In this context, public debt sustainability concerns may resurface. While high debt levels of households and non-financial corporations (NFC) make them vulnerable to an abrupt increase in interest rates, a market repricing could also affect funding conditions of banks, in particular institutions that are dependent on market-based unsecured funding.

Lower yields on safe assets pose severe structural challenges for institutional investors in Swiss and euro area bond markets. In the current environment, insurers and pension funds may have to raise the credit risk of their portfolios to maintain a certain level of profitability (or even to reach positive returns). This structural issue will be particularly challenging in future years, as the decrease in interest rates in 2019 may lead to short-term one-off capital gains arising from higher valuations in the present year. At the same time, the strong effects of lower

yields on the liabilities side of insurers across Europe – associated with strongly negative effects on solvency indicators – is less pronounced for the insurance sector in Liechtenstein, as 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 (fund-linked) life insurance.

Looking ahead, risks of abrupt corrections in financial markets remain elevated. In the face of high political and policy uncertainty and the strong cyclical downturn, the risks of strong financial market corrections are substantial. In addition, highly leveraged firms that have benefited from the low interest environment in recent years face a higher risk of downgrades and widening risk premia in a recessionary environment with declining earnings. The risk of a correction in safe asset prices is less pronounced, at least in the short term, in light of the weak economic outlook and the high degree of monetary policy accommodation. Nevertheless, a benign scenario associated with a strengthening macro outlook and fading expectations of further monetary policy easing could lead to a reassessment of low yields on higher-rated bonds, which would have negative short-term effects on bond valuations.

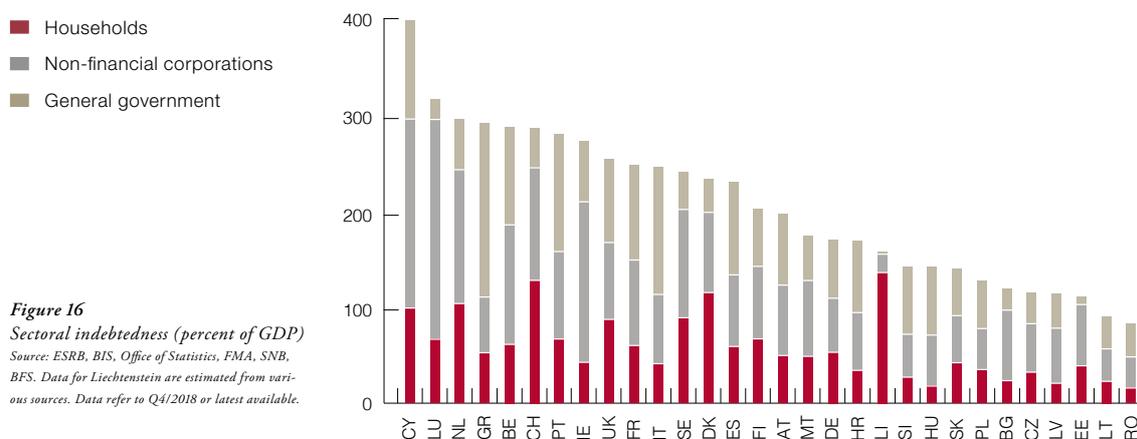
LIECHTENSTEIN'S NON-FINANCIAL SECTOR

Overview and international comparison

Available data points to a relatively low overall indebtedness of Liechtenstein's non-financial sector. In contrast to the very detailed public sector accounts, data on private indebtedness – both for non-financial corporations (NFCs) and private households – do not exist in its usual consolidated form for Liechtenstein. The following analysis is thus based on various data sources, including tax statistics and the FMA's internal supervisory statistics.

The total debt ratio – defined as the sum of the indebtedness of both the (non-financial) private and public sector to GDP – is relatively low in Liechtenstein, estimated at around 157% of GDP at the end of 2018 (Figure 16).

When taking into account its high level of economic development, Liechtenstein's overall indebtedness remains low. The economic literature on the finance-growth nexus suggests a strong and robust positive relationship between financial development (i.e. financial deepening which is associated with higher debt levels) and economic growth.¹⁷ As a



result, countries with higher levels of economic development, as typically measured by GDP per capita (p.c.) levels, usually exhibit higher levels of debt, as their financial sector is more developed. More precisely, higher incomes are typically associated with elevated levels of debt in an economy. Figure 17

shows this empirical relationship for the EEA member countries. While the positive correlation between overall indebtedness of the non-financial sector and GDP p.c. is clearly visible, some countries exhibit relatively high levels of debt relative to their economic development (including, for instance,

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

LIECHTENSTEIN'S NON-FINANCIAL SECTOR

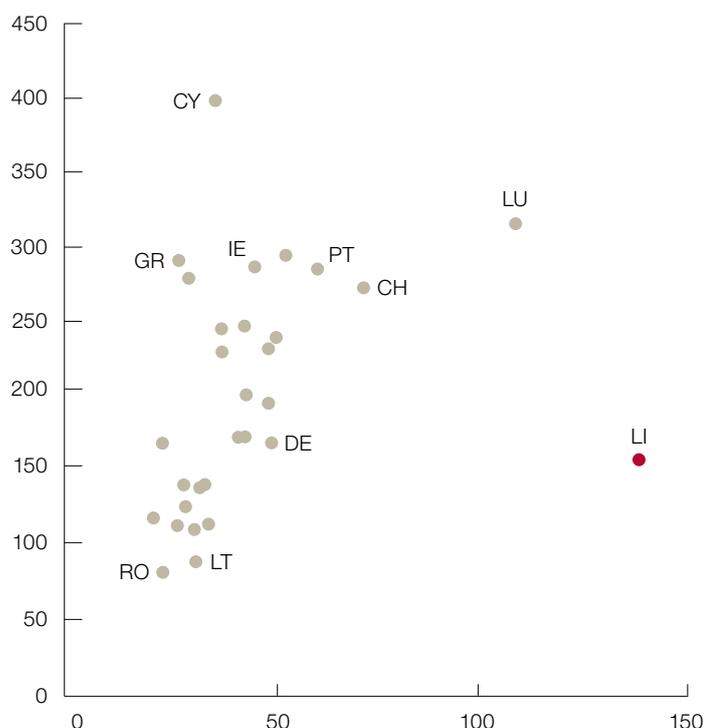
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Cyprus, Greece and Ireland). Liechtenstein, on the other hand, is an outlier in the opposite direction, i.e. the high level of economic development (GDP p.c.) is accompanied by a relatively low overall indebtedness of the non-financial sector.

Private indebtedness is, however, highly concentrated in the household sector. In contrast to the low overall debt level in the economy, data from tax

authorities show a high indebtedness of private households, amounting to approximately 136% of GDP at end-2018. While the lion's share of private household debt consists of mortgages, lombard loans may also represent a non-negligible share of household debt. The high headline number is, however, not fully comparable to other countries. As explained in detail below, within-household sector debt is also considered in this statistics, which is not the case in

Figure 17
Indebtedness and economic development
 (x-axis: GDP per capita (PPP); y-axis: total debt of the non-financial sector in percent of GDP)
 Source: ESRB, BIS, Office of Statistics, FMA, SNB, BFS, CIA World Factbook. Data for GDP p.c. (PPP) refer to 2017 or latest available.



other countries' debt statistics. Furthermore, on the back of moderate tax rates, high disposable income increases debt sustainability relative to other countries, and the relatively high debt ratios are also accompanied by high (net) household wealth. Still, the high stock of household debt is one of the main risks in the banking sector, and various policies targeting this issue have been introduced in recent years

(for further details, see the following section and Box 3 on Liechtenstein's real estate sector).

On the contrary, virtually zero debt of the public sector and very low debt ratios in the NFC sector contribute to the overall stability of the economy. The NFC sector has a very low debt ratio, also due to corresponding tax incentives. In total, the NFC

debt-to-GDP ratio is estimated at approximately 21% of GDP by end-2018. In a similar vein, public finances are characterized by a very prudent fiscal policy. Following a remarkable fiscal consolidation package after the global financial crisis, the public sector recorded considerable budget surpluses over the last few years. Furthermore, the public sector has virtually no debt, but relatively large liquid financial reserves, which is an important factor of stability for the financial sector and the economy as a whole.

Households

While household indebtedness is elevated in Liechtenstein, available data are likely to overestimate the debt burden relative to other countries. Based on tax statistics, household indebtedness is estimated at around CHF 8.97 billion (136% of GDP) in 2018¹⁸, with the lion's share of household debt consisting of mortgages. These numbers suggest a comparably high indebtedness of CHF 230,000 per inhabitant, potentially raising concerns about the sustainability of household debt. Headline numbers are, however, not only likely to overestimate risks in the household sector, but are also not directly comparable to other countries. The household debt statistics are based on tax statements by households (supplemented by data from the banks' reporting system for the last year), with a significantly broader definition than standard definitions of household debt, e.g. from Eurostat. More precisely, household debt statistics are typically calculated on a consolidated basis (i.e. credit within the household sector is not considered). On the contrary, debt statistics

in Liechtenstein are based on tax statements, and credit within the household sector (even within a single household or a family) is recognized as a liability, since the taxable unit is the corresponding person and not the household.

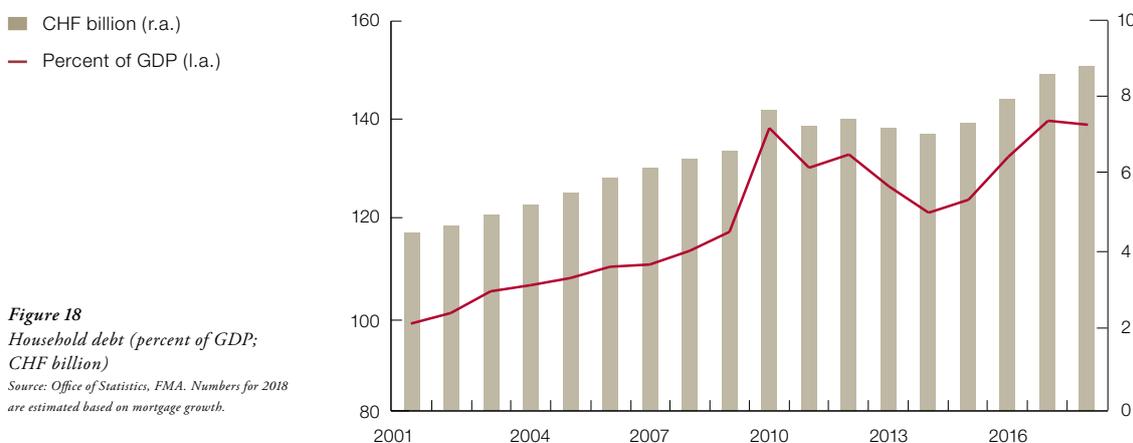
Alternative data sources point to a lower household debt-to-GDP ratio, but may in turn underestimate household debt. Banks' loans to private households amounted to CHF 6.3 billion (or around 95% of GDP) by end-2018. While this figure does not take into account credit within the household sector (thus increasing comparability with international data), it also excludes cross-border credits by households and is hence likely to underestimate the debt ratio. Since only debt statistics based on tax statements are available as a time series, we proceed with the former definition of household debt. It is nevertheless important to keep in mind that the figure overestimates household debt systemically relative to other countries.

While definitional issues lead to an overestimation of household debt, some structural characteristics and legal restrictions imply that risks may be lower than suggested by the reported headline debt figures. First, high job security and continuously low unemployment rates over the past decades lead to high planning certainty for the household sector in Liechtenstein in terms of household income, implying that the sustainable level of household debt is higher than in other countries. Second, relatively low taxation on household income leads to higher disposable income, thus further improving the sustainability of household debt relative to countries with higher tax rates. Third, banks follow prudent lending standards (see Box 3) and asset quality has

¹⁸ Since neither debt statistics nor GDP numbers are available for 2018, this headline figure is based on internal estimations, as explained in last year's Financial Stability Report.

continued to be favorable, with non-performing loan (NPL) ratios remaining at very low levels. Fourth, high household debt is accompanied by high household wealth, and data from tax authorities suggest that households in the highest debt decile also show the highest (net) wealth. From the three largest banks, a further distinction of the purpose of the credit is available. While residential mortgages indeed compose the lion's share of debt (around 79%), consumer loans play a negligible role. Against this background, it seems likely that the remaining share is (at least partly) also a result of lombard credits, which are usually well collateralized with financial securities.

The low interest rate environment has incentivized households to increase their leverage. The low interest rates – including negative base rates – in recent years imply strong incentives for household to take up credit. While the decrease in interest rates implied some windfall gains particularly for the household sector in the last couple of years, the large majority of credits (and mortgages) exhibit fixed interest rates, leading to a gradual pass-through of interest rate changes over time.



The downward trend in household debt following the global financial crisis has reversed to some extent in recent years. After peaking at 135% of GDP in 2010, household debt has followed a declining trend relative to GDP in the following years, reaching a trough of 120% in 2014. Since then, however, the household debt-to-GDP ratio has increased again, reaching an estimated 136% of GDP in 2018

(Figure 18). While data are based on tax statistics and thus not comparable to other countries, the renewed debt increase must be monitored closely in the near future. In particular, the household debt increase (based on the tax statistics) is not in line with the declining mortgage growth rate in recent years, as shown in Box 3 below. The two opposed signals from the two different data sources should

be analyzed profoundly, so that macroprudential policy is able to react in a timely manner if deemed necessary. While the credit gap turned negative in light of the decrease in the household debt ratio after the global financial crisis, data from tax statistics now point to a slightly positive credit gap at the end of 2018. However, the FMA has not proposed to activate the countercyclical capital buffer at this stage, as risks are still assessed to be limited against the background of low mortgage growth over recent years and prudent lending standards of banks.

While the high indebtedness of households implies certain vulnerabilities to an abrupt interest rate increase, the direct impact on the economy would likely be limited. The large share of fixed interest rate mortgages implies that an abrupt interest rate increase – e.g. due to a repricing of global risk premia or a faster monetary tightening than currently envisaged by financial markets – would not affect Liechtenstein's households immediately, but only gradually over time. Such additional time for adjustment, both for the household sector and the banks facing

the corresponding credit risk, is an important risk mitigating factor in the case of Liechtenstein, as the impact would take full effect only gradually with the renewal of expiring mortgages. Furthermore, domestic demand plays a relatively minor role in Liechtenstein's small and open economy, dampening any procyclical effects of a downturn in the financial cycle. Thus, even a marked increase of the households' saving rate would have negligible demand effects, thus limiting the impact on the broader economy. Overall risks are hence limited despite the high household indebtedness, also because household balance sheets are assessed to be sound. The very low debt ratio of NFCs and the non-existence of public debt (but large public reserves) further contribute to the overall stability of the financial sector.

BOX 3 Liechtenstein's real estate sector

Market activity in Liechtenstein's real estate sector has remained relatively low. As highlighted in last year's Financial Stability Report, Liechtenstein's real estate sector is characterized by some structural specifics complicating a comprehensive comparison with other countries. Legal restrictions on the purchase of real estate – in absence of a legitimate interest, e.g. in case of already existing property within the family – lead to relatively low market activity. In 2018, a total of 756 real estate transfers took place (2017:850), of which only 361 (around 48%) were purchases. As a transfer of property within the family or an “equivalent” barter of property is not subject to approval, many real estate transactions are not purchases, but transfers by barter, donation or heritage. Against the background of methodological difficulties associated with the very low number of purchase transactions, there are no price indices

available, neither for house purchases nor rents.¹⁹ Nevertheless, available data on building activity, vacancy rates, mortgages growth and banks' lending standards allows us to conduct a comprehensive risk assessment of the real estate sector in Liechtenstein.

Building activity has continued its slight downward trend, with total annual construction costs receding from the temporary peak in 2017. The total number of construction projects has peaked at 921 in 2009, and has followed a downward trend in recent years, with 439 new projects in 2018 (Figure B3.1). While the majority of these projects concerns changes in existing buildings, 142 new projects were recorded in 2018. The declining number may partly reflect an increase in multi-family homes and a declining number of single-family houses. As a result, the annual number of approved new apartments – 303 in 2018 – has only declined slowly over the past few years. Following a temporary volatili-

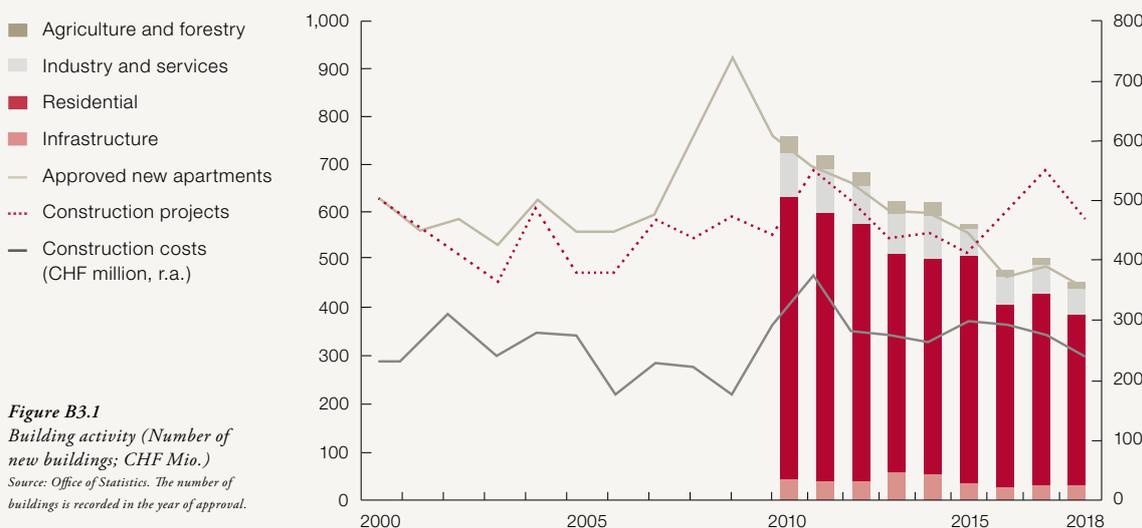


Figure B3.1
Building activity (Number of new buildings; CHF Mio.)
Source: Office of Statistics. The number of buildings is recorded in the year of approval.

¹⁹ The government and the Office of Statistics have recently launched a joint project to examine possibilities to develop such a real estate price index for Liechtenstein.

ty-induced spike in 2017, total construction costs have declined again in 2018, from CHF 564 million to CHF 462 million.

Despite of the increasing number of residential units since 2010, the vacancy rate has remained broadly stable in the past few years. The total number of apartments increased from 18,509 in 2010 to 20,838 in 2018. Since 2014, both the number of not permanently inhabited residential units (including old houses and holiday homes) as well as vacant res-

idential units (i.e. apartments available for sale/rent) has remained relatively stable. The number of vacant (available) apartments rose by 37 to a total of 849 in 2018, with the vacancy rate hovering around 4% in the last few years (Figure B3.2). While this vacancy rate may appear elevated compared to other countries, it is once again likely due to structural particularities. Anecdotal evidence suggests, for instance, that rent prices are quite sticky even in the case of long vacancy periods. One reason is the low interest rate environment, resulting in low debt-ser-



Figure B3.2
No. of apartments and vacancy rate
(Number of apartments in thousands; vacancy rate in percent)
Source: Office of Statistics, own calculations.

vice-to-income ratios and a high sustainability of the respective mortgage loans, i.e. landlords are not dependent on the rental income to service their debt.

Total mortgage growth has remained low. Historical time series of mortgage debt include cross-border credit to Switzerland (i.e. loans of Liechtenstein banks to the whole Swiss franc currency area), while Liechtenstein and Switzerland are reported sepa-

rately since 2016. Headline numbers show that mortgage growth has declined markedly from 8.8% in 2010 to 1.3% in 2018 (Figure B3.3). While cross-border mortgages to Switzerland reported even slightly negative growth (−0.5%) in 2018, domestic mortgages (including residential real estate and other real estate) continued to grow at a moderate rate of 2.4%.

BOX 3

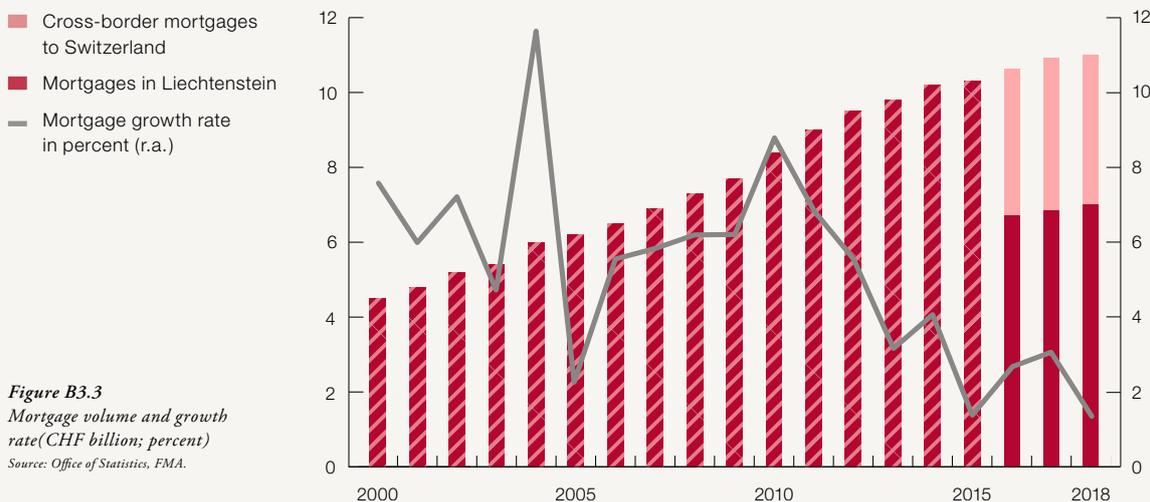


Figure B3.3
Mortgage volume and growth rate (CHF billion; percent)
Source: Office of Statistics, FMA.

Mortgage growth in residential real estate (RRE) has picked up somewhat in 2018, but remains at moderate levels. Following almost zero growth in 2017 (+0.2%), mortgage loans in RRE in Liechtenstein increased by 4.4% to CHF 5.5 billion in 2018. RRE mortgages, thus, represent the lion's share of total domestic mortgages (79%), followed by manufacturing and industry (8%), office and commercial buildings (8%), vacant building grounds (4%) and agricultural land (less than 1%). Consequently, the relatively high household indebtedness is primarily a result of the high volume of RRE mortgages to private households.

The stabilization in Liechtenstein's real estate market – including the slowdown of mortgage growth – is also due to targeted policy measures. To counter the boom in real estate and an increase in mortgage growth following the global financial crisis, the legal framework regarding owner's equity, affordability and amortization was adjusted in 2015. In general, the LTV ratio for mortgages for residential real estate and income property must not exceed 80%. In exceptional cases ("exceptions-to-policy", ETP),

where the LTV-ratio exceeds 80%, banks have substantially higher reporting requirements on the corresponding loans. Additionally, at loan origination, a long-term imputed interest rate (usually amounting to between 4.5% and 5%) aims at ensuring affordability of new loans, and new mortgages have to be amortized to a maximum LTV ratio of 66% within 20 years. Furthermore, the risk weights for RRE loans are slightly more restrictive than in the "standard" CRR framework. For mortgages with an LTV between 66% and 80%, risk weights amount to 50% (instead of 35%), while mortgages with an LTV larger than 80% lead to risk weights of 100% (in line with the CRR).

Lending standards of Liechtenstein banks have remained prudent. The vast majority of RRE loans – about 74.2% – exhibit a loan-to-value (LTV) ratio of below 66% (Figure B3.4). A further 24.6% of the total volume of RRE mortgages has a LTV ratio of between 66% and 80%, while approximately 1.2% exceed the LTV ratio of 80%. Overall, the average LTV of all RRE mortgages in Liechtenstein amounted to 48.3% at end-2018, unchanged from

the previous year. Remarkably, the share of new RRE mortgages exceeding a LTV ratio of 80% is virtually zero (down from 1.8% in 2017), confirming a continuing improvement of lending standards in the past few years. In the case of non-RRE mortgages, banks report two LTV categories, i.e. below and above 50%. As shown in Figure B3.4, the total volume of non-RRE mortgages is relatively low compared to the RRE portfolio. About 48% of non-RRE mortgages exhibit a LTV ratio higher than 50%.

Current data on mortgage affordability suggests that Liechtenstein households could be vulnerable to a significant interest rate shock. As explained above, banks also have to report loans as ETP in case of limited affordability. While there are no exact legal guidelines for such internal restrictions, banks' usually verify whether an interest rate increase to 4.5% or 5% would imply a debt service burden exceeding a third of household income. While the assumptions of such a "mini stress test" are very

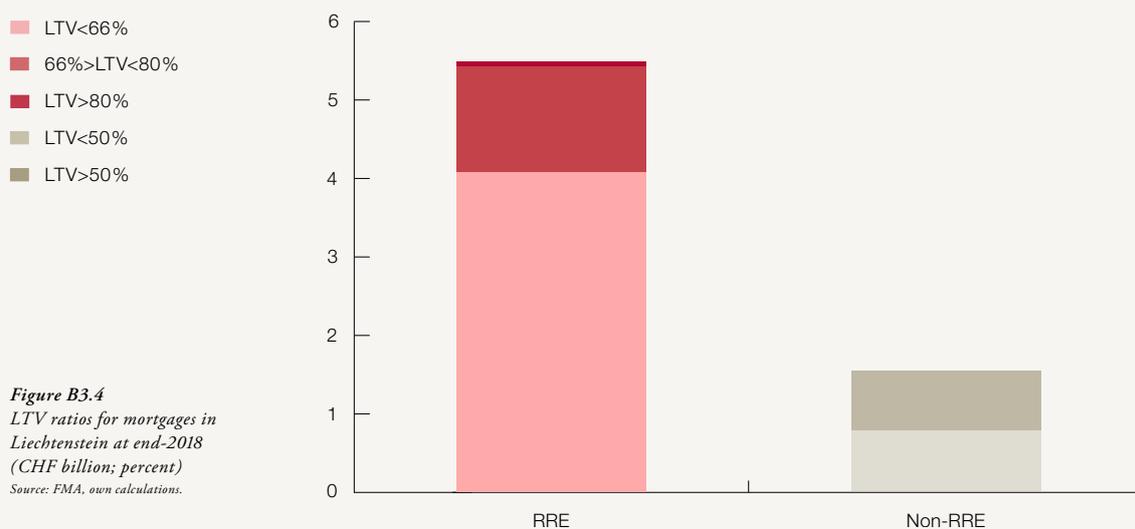


Figure B3.4
LTV ratios for mortgages in Liechtenstein at end-2018 (CHF billion; percent)
Source: FMA, own calculations.

severe in light of the current low interest environment and a long history of low interest rates in Swiss francs, it is nevertheless remarkable that around 26% of total RRE loans in Liechtenstein belong to this ETP category. Although LTV ratios are relatively low, this number implies that a significant share of Liechtenstein households could be vulnerable in case of such a strong interest rate shock.

Notwithstanding the high household indebtedness, risks in Liechtenstein's real estate sector are assessed to be limited. First, current data on building activity, mortgage growth and lending standards do not indicate a credit boom in Liechtenstein. Second, data from tax authorities suggest that debt is largely concentrated among households with large wealth. Third, legal restrictions on the purchase of real estate lead to quite low market activity. Since the space that is available in Liechtenstein is quite limited, demand for real estate that is available for

BOX 3

sale has remained continuously high. Finally, the number of persons that are allowed to establish their main residence in Liechtenstein is severely limited. Demand for such approvals would be substantial due to the relatively moderate taxation in Liechtenstein. Both the legal restrictions on the purchase of real estate as well as immigration restrictions imply that any materialization of risks in the housing market could be targeted with specific relaxations of the corresponding limitations. This implies additional room of maneuver in the case of a crisis relative to other countries. Nevertheless, in light of the high indebtedness of the household sector, it is sensible to continue the regular monitoring of Liechtenstein's RRE sector. In case of an increase in real estate related risks, additional risk-mitigating policy measures could be proposed by the newly created Financial Stability Council.

While more data on Liechtenstein's real estate market would generally be desirable, the tiny size of the country raises questions about the meaningfulness of collecting more and additional indicators. The very limited number of purchasing transactions would imply a very volatile price index, complicating any interpretation of price-based indicators. At the same time, however, data availability regarding banks' lending activity has further improved. In particular, since end-2018, data regarding banks' lending standards (e.g. LTV ratios, exception-to-policy loans etc.) is now part of banks' regulatory reporting on a quarterly basis. Based on the analysis of this substantial pool of regulatory data, risks related to Liechtenstein's real estate and mortgage market are closely monitored by the FMA.

Non-financial corporations

The strong contribution of the manufacturing and industrial sector to GDP differentiates Liechtenstein from other financial centers. The economy is well diversified, with the manufacturing and industrial sector's share in GDP being almost twice as high (around 43%) as the share of the financial sector (around 23%). The high share of small and medium size enterprises further contributes to the strong economic diversification of Liechtenstein's economy. Combined with its high capitalization (and low leverage), the well diversified NFC sector is, thus, an important stabilizing factor both for the small economy and its relatively large financial sector.

Specific tax incentives for corporations contribute to a low debt-to-GDP ratio of the non-financial corporate (NFC) sector in Liechtenstein. While data availability is limited, as no consolidated debt statistics are available (similar to the household sector), leverage in the corporate sector can be estimated based on supervisory statistics (i.e. exposures of Liechtenstein banks to the domestic corporate sector), complemented by the volume of issued bonds by NFCs. Total exposures of Liechtenstein banks to the domestic NFC sector amounted to CHF 1.1 billion at end-2018. Additionally, debt securities have to be considered as NFC debt. According to the debt securities statistics by the BIS²⁰, the total outstanding securities by NFCs in Liechtenstein amounted to approximately CHF 300 million at the end of the year 2018. Total NFC debt is therefore estimated at around CHF 1.4 billion or 21% of GDP (down from 25% of GDP in the previous year). Since cross-border credits from foreign banks are not included in this estimate, the figure is likely to

(slightly) underestimate the overall indebtedness of the NFC sector in Liechtenstein, although it seems likely that cross-border credits play only a minor role in Liechtenstein's NFC sector. The low indebtedness of the NFC sector is mainly due to specific tax incentives. More precisely, equity costs of (currently) up to 4% are tax-deductible, i.e. high equity reduces the corporate tax on profits. As a result of these tax incentives, balance sheets of the corporate sector feature high equity shares and relatively low debt.

Public sector

Public finances are in very good shape. Liechtenstein's public finances continue to be remarkably sound. Following an ambitious structural reform package after the global financial crisis, the Liechtenstein government successfully cut government expenditures while gradually increasing revenues. As a result, Liechtenstein has reported budget surpluses again since 2014 (Figure 19). The public sector has virtually zero debt (in 2017, total gross debt amounted to CHF 36 million or 0.6% of GDP), but large financial reserves. At end-2017, net financial reserves increased to CHF 6.05 billion (about 92% of GDP) at the general government level, of which CHF 2.10 billion were at the state level, CHF 0.68 at the community level, and CHF 3.27 billion in social insurances.

The fast and decisive implementation of necessary structural reforms after the global financial crisis confirms an efficient decision-making in economic policy. Policy-makers countered the deterioration in budget balances in light of low global growth and

20 Bank for International Settlements, see <https://www.bis.org/statistics/secstats.htm?m=6%7C33%7C615>.

LIECHTENSTEIN'S NON-FINANCIAL SECTOR

Financial Stability Report 2019

structural changes in Liechtenstein's economy by a severe fiscal consolidation program and structural reforms. While the increase in public expenditures in 2012 (Figure 19) was mainly due to one-off effects related to the stabilization of the occupational pension of the state sector, the austerity package led to a significant decrease in public expenditures relative to GDP. Measures mainly focused on the expenditure side, including strong efficiency gains in public administration, cuts in the redistribution of revenues to the community level and a reform of the state pension system. As a result, Liechtenstein returned to budget surpluses in recent years, with the budget surplus amounting to 3.1% of GDP in 2017, a slight

decrease from the year before (3.2%). Preliminary data for 2018 at the state level point to a lower surplus, which is however solely due to adverse financial market developments (i.e. slightly negative returns on the financial reserves).

While the primary budget surplus²¹ has improved from CHF 11 million to CHF 61 million from 2017 to 2018 at the state level²², the investment performance (i.e. asset returns) turned slightly negative, weighing on the headline fiscal balance in 2018. Data on the general government level are not yet available for 2018, but operating balances on all government levels have remained sound. Also, in light

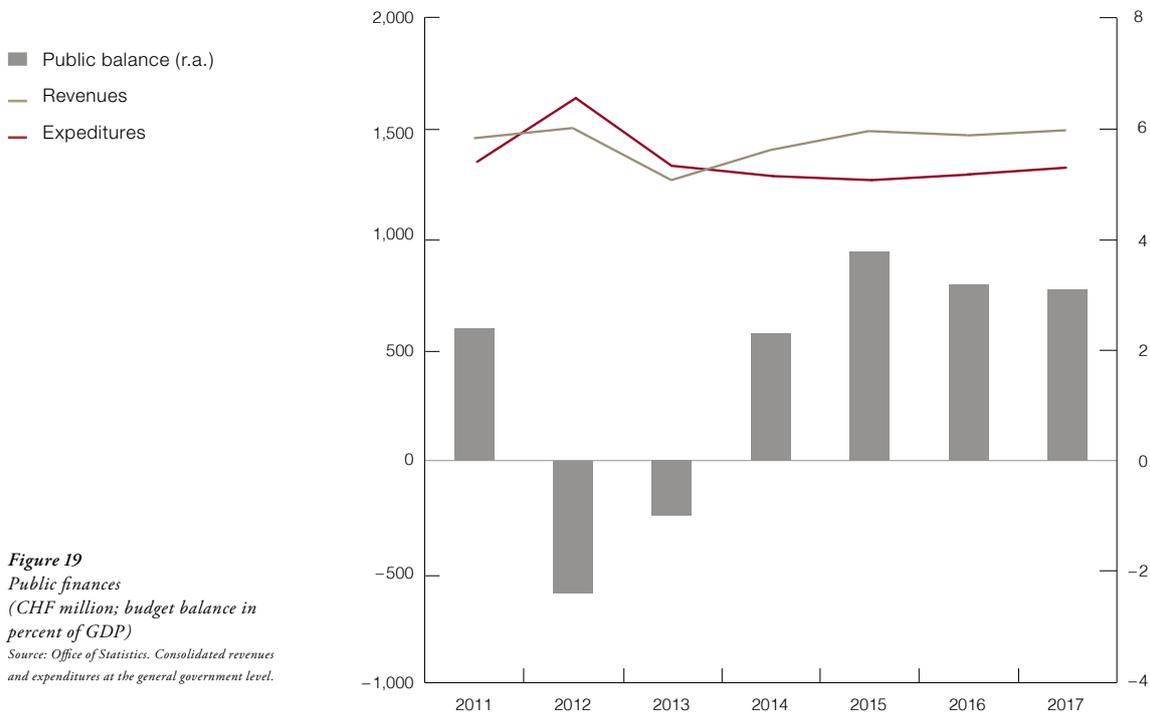


Figure 19
Public finances
(CHF million; budget balance in percent of GDP)
Source: Office of Statistics. Consolidated revenues and expenditures at the general government level.

²¹ Defined as revenues minus expenditures, excluding interest payments and revenues from financial assets.

²² Data for the general government level (including communities and social insurances) are not yet available for 2018.

of the structural reforms mentioned above, the level of public expenditures amounted to 20.5% of GDP in 2017, the lowest level among European countries.

Contrary to other parts of the economy, data on public finances are widely available and very detailed. Public expenditures are very transparent in Liechtenstein, both at the state and community level. Main sources of revenues are the wealth and income tax (26%), the profit tax (29%) and the value added tax (22%), pointing to a quite diversified revenue side of the public budget (Figure 20). The comprehensive reporting combined with strong elements of direct democracy in the political system lead to a close surveillance of public finances by the public. Against the background of the comprehensive data sources and the very sound fiscal policy approach in the past few years, an in-depth analysis of the public sector seems unnecessary in the context of this report.

The focus of fiscal policy differs from other countries, as countercyclical policy would be mostly ineffective in light of the extremely small and open economy. While the soundness of public finances is

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

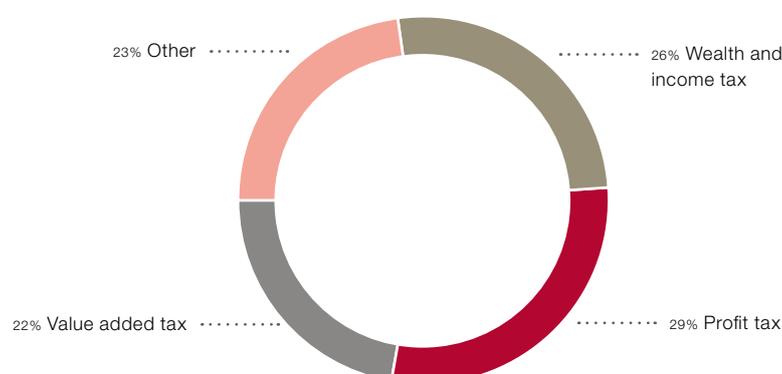


Figure 20
Revenues by tax type
(percent of total tax revenues
in 2018)

Source: Office of Statistics.

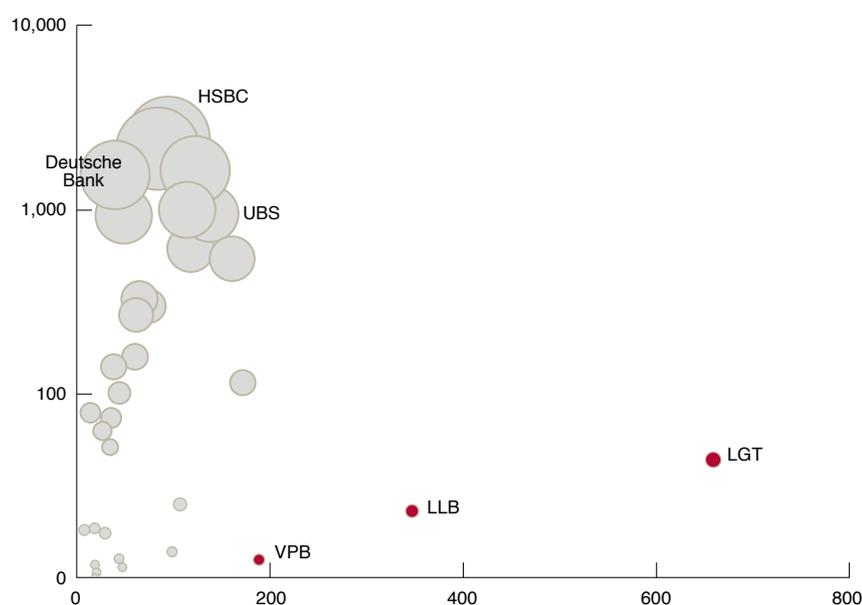
LIECHTENSTEIN'S BANKING SECTOR

Structural features

Since the banking sector as a whole as well as the biggest banks are very large relative to Liechtenstein's GDP, both an efficient supervision at the bank level and a strong focus on macroprudential supervision is indispensable. Total assets of Liechtenstein's banking sector amounted to CHF 86.3 billion at end-2018 at the consolidated level, corresponding to roughly 13 times the country's GDP. On an individual bank level, the accumulated assets amounted to CHF 67.3 billion at the end of last year. As the lion's share of Liechtenstein's banking sector is under domestic ownership²³, the FMA needs to address the related "too-big-to-fail" (TBTF) problem at the national level in order to mitigate risks for Liechtenstein's economy. Furthermore, the large

banking sector is highly concentrated, with three domestic ("other") systemically important institutions representing 91% of total assets of the banking sector. As a result, the three systemically important institutions in Liechtenstein's banking sector are not only extremely large relative to Liechtenstein's economy, but also the three largest institutions relative to the respective headquarter country's GDP in the entire EEA (Figure 21). For instance, the assets of the LGT Group – Liechtenstein's largest banking group – amounted to 6.5 times the country's GDP, well above the average size of the whole banking sector in other EEA countries. Against this background, stability of the banking sector is key for the whole economy, even though total assets of the three largest banks remain relatively small in comparison to large European banks. Consequently, both the large banking sector as well as the dominating role

Figure 21
Banks' size relative to GDP
(y-axis: total assets in CHF billion (in logs); x-axis: assets as percent of the country's GDP)
Source: Bloomberg, banks' annual reports, FMA, Eurostat. Sample: Besides Liechtenstein (where all three O-SIs are shown), only the biggest G-SII or O-SII in each EEA country and Switzerland is considered, respectively. The size of the circle is proportional to total assets.



23 In terms of size, Luxembourg's banking sector is even bigger relative to GDP than Liechtenstein's, with total assets amounting to more than 1,500% of the country's GDP. In contrast to Liechtenstein, however, an overwhelming share of bank assets are from foreign controlled branches and subsidiaries, i.e. these banks are not domestically owned.

of these three institutions has to be taken into account when designing and applying macroprudential instruments.

The business model of Liechtenstein banks primarily focuses on private banking and wealth management services, although net interest income has also increased in the past year. Based on reported income sources (from the individual bank perspective), private banking and wealth management services are the most important source of earnings for Liechtenstein's banking sector (Figure 22), with a contribution of almost half of total income (41%). While private banking activities are increasingly conducted at an international scale, with large local banks also expanding into Asian markets, the lion's share of bank lending is regional business within the Swiss franc currency area. Net interest income represents 31% of the total income statement of Liechtenstein banks and has in absolute terms increased by 11% from 2017 to 2018. Against the background of the low interest rate environment both in Europe and in the Swiss franc currency, this positive development of interest income is notable from a regulatory perspective. The positive development of inter-

est income could be attributed to an increased credit volume, the transfer of negative interest rates to consumers or an increased focus on the US market, with its more profitable interest rate structure. Anecdotal evidence suggests that the latter may have played an important role in the last year, as deposits in US dollar could have been invested in profitable US treasuries, thereby earning a considerable interest rate margin. Income from trading transactions (mainly foreign exchange and derivative transactions for customers) – another traditional retail banking service – makes up 17% of the total income structure. Income from real estate (1%) and income from securities (1%) remains inconsiderable due to the prevailing business model of Liechtenstein banks. Other ordinary income contributes 9% to total income, confirming that banks follow specialized business models besides the conventional banking activities, including the launch and management of investment funds or trading activities. Liechtenstein banks have traditionally relied on their business model of private banking and wealth management, but have avoided the more risky field of investment banking.

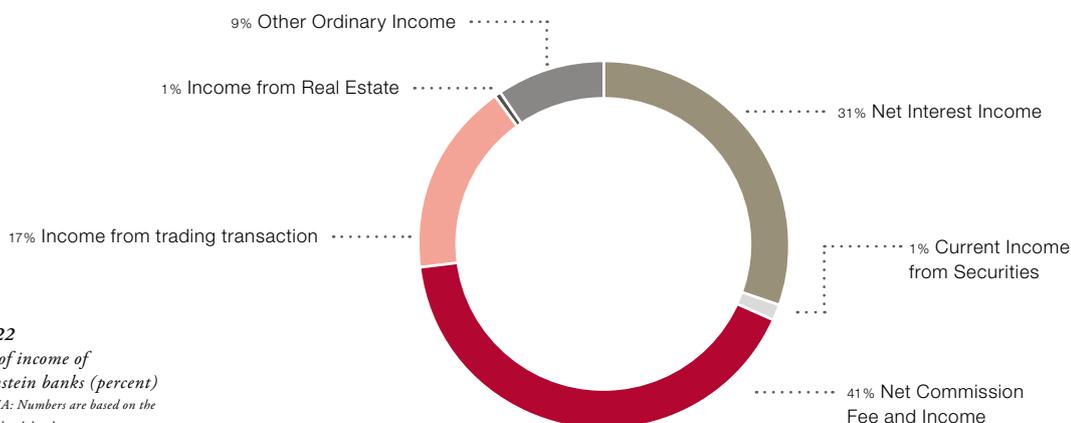


Figure 22
Sources of income of Liechtenstein banks (percent)
Source: FMA: Numbers are based on the individual bank level.

The banking sector plays an important role in Liechtenstein's economy and has followed a growth course in recent years. At the individual bank level, total employment amounts to approximately 2,700 employees, around 75% of them working in Liechtenstein.²⁴ While this number underlines the importance of the banking sector, the share of about 7% in total employment once again underlines the well-diversified economy in Liechtenstein. Total employment, including foreign group companies, amounted to 6,148 employees at the end of 2018.

Profitability

While bank profits declined substantially after the global financial crisis, profitability has improved in the last few years, also in light of strong growth in foreign markets. The banking sector was severely hit by the global developments of 2008, with plum-

meting profits (Figure 23) on the back of a steep decline of assets under management (Figure 24). Profitability remained subdued for some years in light of a sluggish global recovery on the one hand and increasing international regulatory pressure on the other hand, which was associated with significant additional expenses. While profitability of domestic banks has recovered substantially in the past four years, the contribution of foreign group companies has also become an important income source for the banking sector.

Foreign activities of Liechtenstein banks have increased in recent years. 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, with a substantial decline in assets under management (AuM) due to the market downturn and increasing regulatory

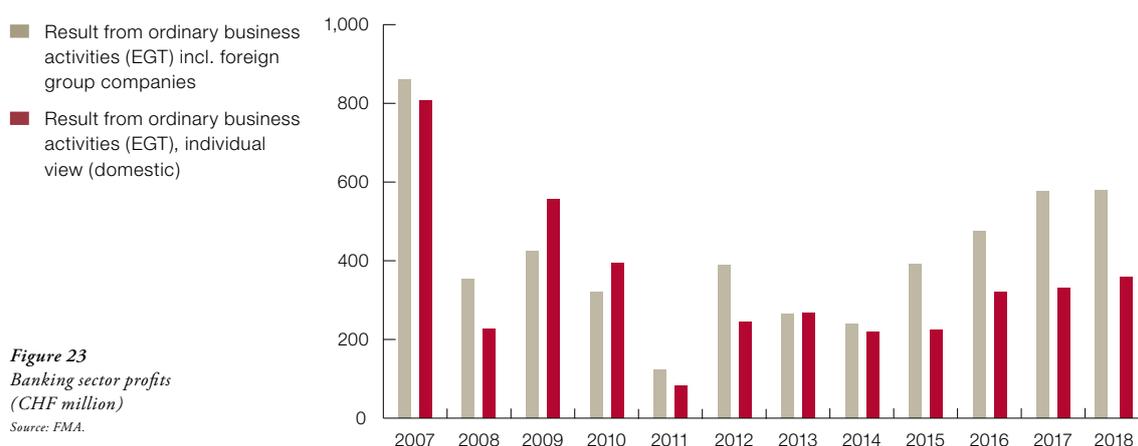


Figure 23
Banking sector profits
(CHF million)
Source: FMA.

24 The remaining 25% are employed in foreign branches, while employment in foreign group companies is not included in this number.

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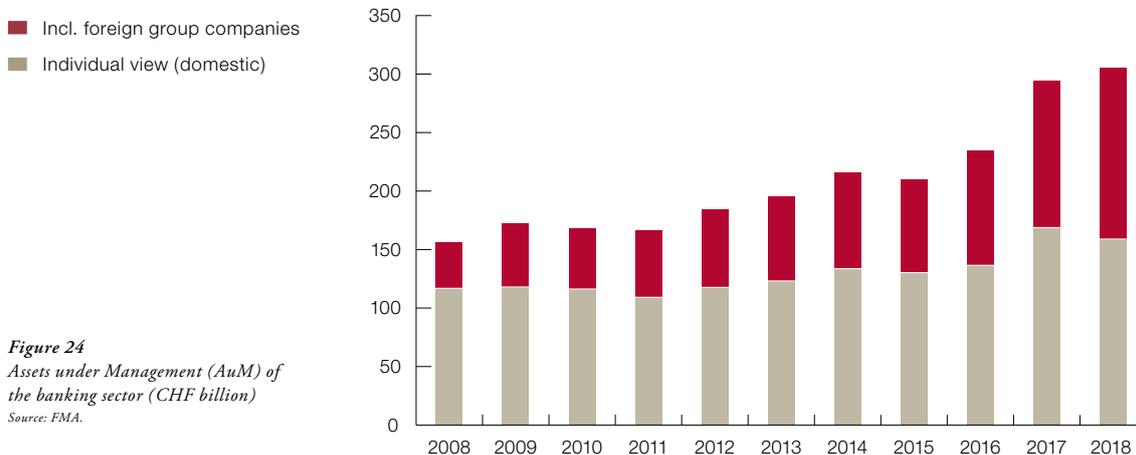


Figure 24
Assets under Management (AuM) of the banking sector (CHF billion)
Source: FMA.

pressure, the banking sector has expanded considerably in recent years. The positive development of AuM (Figure 24) is due to net money inflows, positive market developments and acquisitions abroad. The assets under management are well diversified across the globe, highlighting the international interconnectedness of Liechtenstein's banking sector.

In light of the high capitalization, profitability indicators of Liechtenstein banks do not stand out among European peers. Despite having specialized business models, Liechtenstein banks do not rank among the most profitable ones in comparison to other European countries (Figure 25). The tax system incentivizes high equity ratios, which is also an important factor for the high capitalization of the banking sector. At the same time, however, high equity ratios dampen key profitability figures such as return on equity (RoE). In this context, RoE amounted to 6.7% on a consolidated basis in 2018, with the return on assets (RoA) at 0.62%. While the profitability indicators are around the EU average in this international comparison, the business model of Liechtenstein banks implies that banks are not as vulnerable to the decline in interest rate margins as in other countries. Nevertheless, the “low for longer”

environment still implies a very challenging business environment going forward.

Efficiency indicators do not only reflect the high regulatory pressure, but also point to further room for improvement. The relatively high cost-income ratio (CIR, Figure 26) in Liechtenstein must be put into perspective, as private banking and wealth management are very staff-intensive businesses and, thus, associated with relatively high labor costs. The high regulatory pressure has been extremely challenging for small banks and related expenses – e.g. compliance costs – have pushed the CIR upwards. Staff costs in compliance, especially in the anti-money-laundering and regulatory units, internal audit and risk management have increased significantly over the last years. The global competition will remain challenging, and a below-average value in this specific efficiency indicator suggests further room for improvement in certain key areas in the banking sector, particularly in light of the increasing trend in this ratio over recent years. Overall, despite some heterogeneity across individual banks, Liechtenstein's banking sector is fairly profitable and the outlook remains stable.

■ Return on equity
(RoE, I.A.)

◆ Return on assets
(RoA, r.A.)

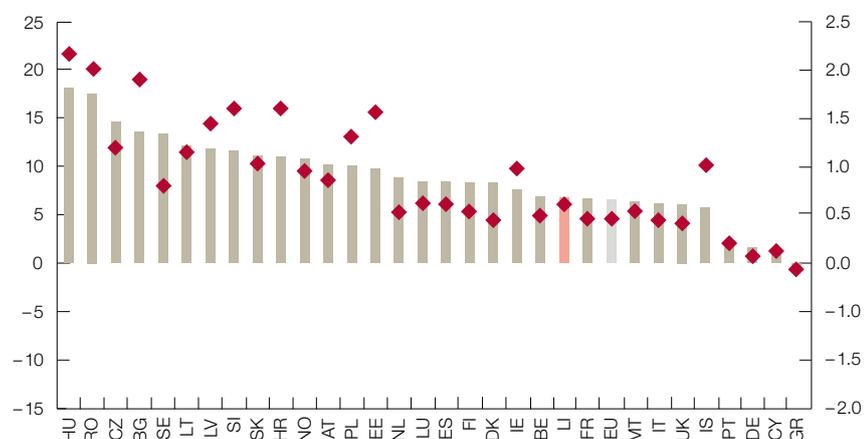


Figure 25
Banking profitability
(2018 in percent)

Source: EBA Risk Dashboard; FMA, own calculations. Data is based on 2018-Q4 or latest available.

■ Cost-income ratio

--- EU average

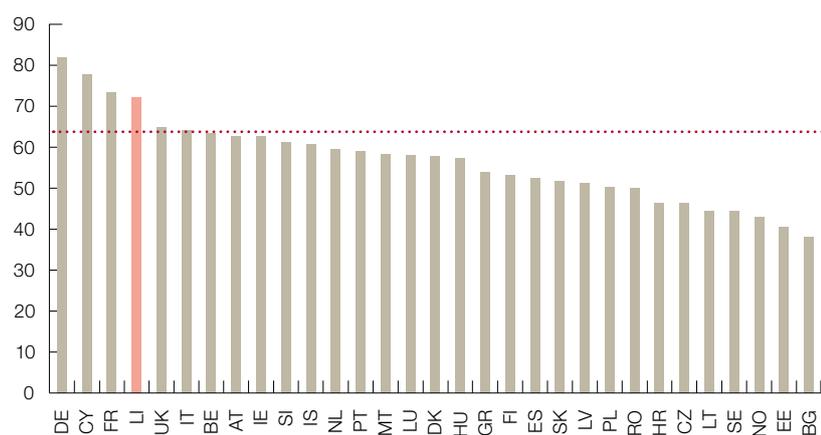


Figure 26
Banking sector's efficiency:
Cost-income-ratio (percent)

Source: EBA Risk Dashboard; FMA. Data is based on 2018-Q4 or latest available.

Capitalization and asset quality

Liechtenstein's banking sector is well capitalized, but banks' surpassing capitalization has diminished in recent years. On a consolidated basis, the weighted Tier 1 capital ratio stood at 18.8% at the end of 2018 (previous year: 20.7%), solely consisting of Common Equity Tier 1 (CET1) capital. While the decline was partly due to the adverse financial

market developments at the end of the year, the CET1 ratio has significantly increased again since end-2018 to 20.3% by mid-2019. The capitalization is still substantially higher than the EU average, particularly when taking into account the recovery of capitalization rates during the last year. The high equity is also incentivized by the corporate tax structure and contributes to a stable banking sector. Nevertheless, contrary to international developments, the capitalization of the Liechtenstein banking sec-

tor has followed a downward trend in recent years. As a result, banks' outstanding capitalization – from an international perspective – has diminished to some extent (Figure 27). While the decrease can be explained by strong growth and foreign acquisitions of Liechtenstein's banks, being in line with their respective growth strategies, the declining capitalization must be closely monitored from a regulatory perspective, as lower capitalization is generally not beneficial for the banking sector's overall resilience.

The high capitalization of the banking sector is also confirmed by the leverage ratio. The FMA has identified the LGT Bank AG, the Liechtensteinische Landesbank AG and the VP Bank AG as “other systemically important institutions” (O-SIIs) in Liechtenstein. As mentioned above, the banking sector in Liechtenstein is highly concentrated, with the balance sheets of the three O-SIIs contributing more than 90% to the total size of the banking sector. While the three O-SIIs are rather small on an international scale, it is nevertheless interesting to com-

pare the capitalization of Liechtenstein's systemically relevant institutions to their peers in other countries.²⁵ Liechtenstein's O-SIIs do not only stand out with their CET1 ratios of close to or exceeding the 19% threshold, but also based on their high leverage ratios. Since the banks apply the standardized approach to measure credit risks, the ratio of risk-weighted assets (RWA) to total assets is relatively high, amounting to 40% at end-2018. Thus, the difference to EU and Swiss banks is even more pronounced when comparing the corresponding leverage ratios. In Liechtenstein, all three O-SIIs exceed a leverage ratio of 7%, which is significantly higher than the minimum ratio of 3% envisaged by Basel III.

The application of the standardized approach (StA) for calculating the risk inherent in the banks' exposures implies that the banking sector's capitalization may be underestimated in cross-country comparisons. Since Basel II, banks are allowed – subject to supervisory approval – to use internal risk-based (IRB) models to determine their risk weights, and

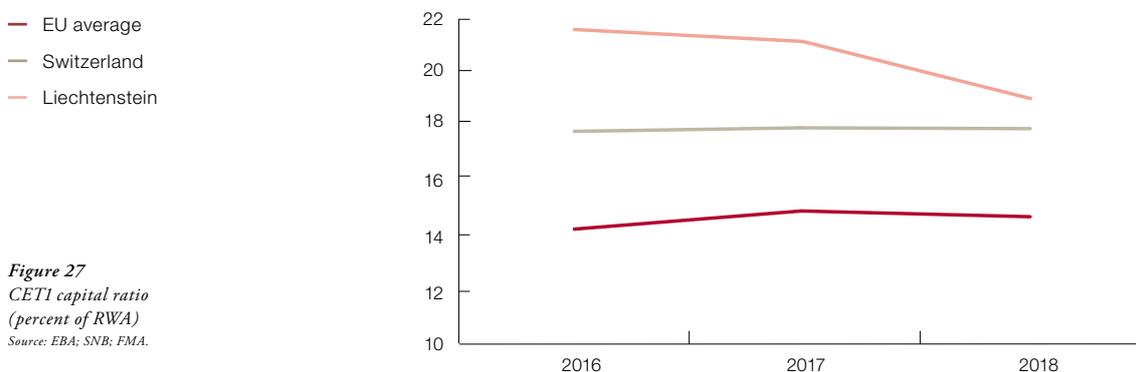


Figure 27
CET1 capital ratio
(percent of RWA)
Source: EBA; SNB; FMA.

²⁵ Total assets of the largest banking group in Liechtenstein (LGT Group) amounted to roughly CHF 43.4 billion at end-2018, less than a tenth of total assets of each of the two largest banks in Switzerland (Credit Suisse AG, UBS AG).

thus, their regulatory capital requirements. The aim of the IRB approach was to increase the risk-sensitivity of the capital allocation, which should be appropriately reflected in banks' risk weighted assets. Alternatively, banks are allowed to use a simpler, standardized approach (StA) for calculating the risk inherent in their exposures by using a predefined risk weight table. In general, smaller and less complex banks usually apply the StA, including all Liechtenstein banks. As shown in Box 4, the risk weight heterogeneity across European jurisdictions is very high and suggests that the application of the StA in Liechtenstein is likely to lead to an underestimation of capitalization indicators relative to other countries where large banks use the IRB approach. More precisely, even though banks already show above-average capitalization rates relative to their European peers, the headline numbers may still underestimate the resilience of the banking sector due to the applied (standardized) risk weights.

Asset quality has also remained favorable, with non-performing loans (NPLs) at very low levels. At end-2018, the NPL ratio of the banking sector amounted to a mere 0.6%, among the lowest values across European countries (Figure 28). The low level has to be seen in light of the stable development of Liechtenstein's economy in the past few decades. While Liechtenstein's GDP features significant volatility in light of the tiny size of the economy (see also Box 1), 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. In recent years, policy-makers have reacted to the increasing indebtedness of the household sector, and key indicators suggest that risks have remained broadly stable in the past few years. Generally, the continuously low level of NPLs also confirms the prudent lending standards of banks in Liechtenstein, which have further tightened in recent years.

■ NPL ratio
 ... EU average

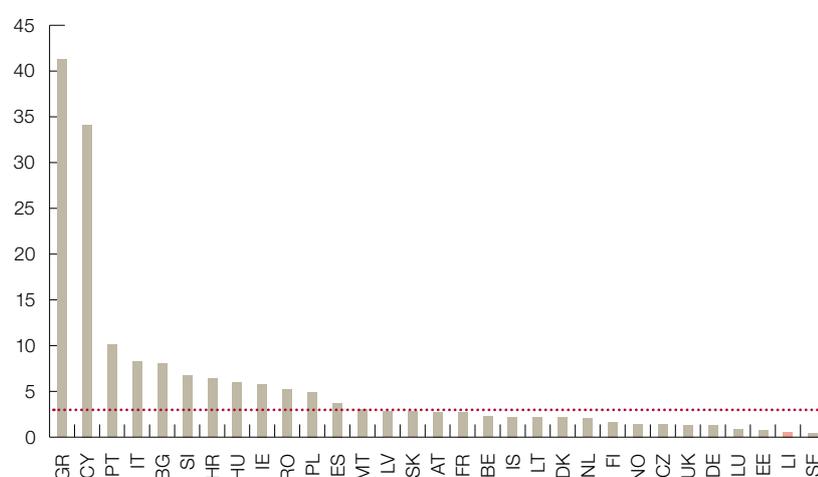


Figure 28
 Non-performing loans (NPLs)
 (percent)

Source: EBA Risk Dashboard, FMA, SNB. Data is based on 2018-Q4 or latest available.

BOX 4 Heterogeneity of credit risk weights in the European banking sector

Besides the amount of capital, risk weighted assets determine banks' own funds requirements. In this context, the comparability of the corresponding risk weights is often questioned due to the heterogeneity across different jurisdictions and banks. Since Basel II, banks are allowed – subject to supervisory approval – to use internal risk-based (IRB) models to determine their risk weights, and thus, their regulatory capital requirements. The aim of the IRB approach was to increase the risk-sensitivity of the capital allocation, which should be appropriately reflected in banks' risk weighted assets (BCBS, 2001). Alternatively, banks are allowed to use a simpler, standardized approach (StA) for calculating the risk inherent in their credit exposures by using a predefined risk weight table. In general, smaller and less complex banks usually apply the StA, including all Liechtenstein banks.

A growing body of literature suggests unwarranted risk weight heterogeneity in banks' IRB models used to assess their credit risk. These heterogeneities in IRB models can be attributed to banks' efforts to underreport risk weights in order to overstate their capital ratios (see, for instance, Behn et al. 2016, Mariathan and Merrouche 2014, Turk-Ariss 2017 or Döme and Kerbl 2017). These studies show that underreporting risk weights has far reaching implications for banking regulation and supervision. In addition, the literature finds evidence that risk weights also depend on differences in banks' and

supervisory implementation standards. In this context, international bodies such as the Basel Committee of Banking Supervision (BCBS), the European Banking Authority (EBA) as well as the European Central Bank (ECB) have strengthened their harmonization efforts to ensure a level playing field by making risk weights comparable across jurisdictions. In the context of finalizing the Basel III framework, the BCBS has revised its so-called “output floors”²⁶ to limit the regulatory capital benefits that banks gain when using internal models (BCBS, 2017a). In addition, some jurisdictions in Europe (e.g. Belgium, Croatia, Finland, Ireland, Luxembourg, Norway, Poland, Romania, Slovenia, Sweden and the United Kingdom) have already adopted macroprudential measures to address too low risk weights in the banking sector by establishing so-called risk-weight floors (ESRB, 2018). Liechtenstein has introduced slightly higher risk weights in the StA for certain exposures secured by mortgages on immovable property instead of the risk weights indicated in Article 125(2) of the Capital Requirements Regulation (CRR) to mitigate risks from the residential real estate sector.

From a financial stability point of view, it is necessary to ensure the comparability of risk weights and capital ratios across different jurisdictions, as unwarranted risk weight variability can have severe consequences in case of a financial downturn. Against this background, we examine and compare risk weights at the country level in the European Economic Area (EEA) both as calculated under the StA and the IRB approach. We base our analysis on

²⁶ *Output floors provide a backstop that limits the extent to which banks can lower their capital requirements relative to the standardized approach. In aggregate, banks' risk-weighted assets cannot fall below 72.5% of the RWA computed by the standardized approach. This limits the capital gain from using internal models to 27.5% (BCBS, 2017b).*

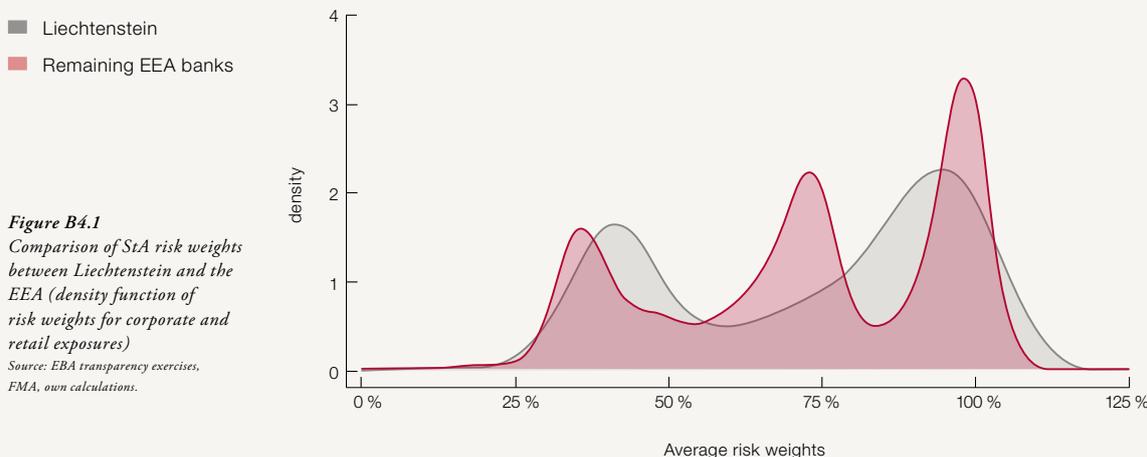


Figure B4.1
Comparison of StA risk weights between Liechtenstein and the EEA (density function of risk weights for corporate and retail exposures)
Source: EBA transparency exercises, FMA, own calculations.

the last four published transparency exercises of the EBA²⁷ and complement this dataset with national supervisory data on the Liechtenstein banking sector.

Standardized risk weights for corporate and retail exposures between Liechtenstein banks and banks headquartered in the EEA vary (mainly) due to differences in banks' business models and, thus, the underlying risks in their portfolios (Figure B4.1). While the density function of risk weights for banks in the EEA countries additionally peak at 75% (besides 35% and 100%), we do not observe this peak for Liechtenstein banks²⁸, most likely because loans are either secured by real estate property or by the respective client portfolio (i.e. lombard loans). Liechtenstein has a number of macroprudential policy measures in place to limit risks from the residential real estate sector. These measures include stricter risk weights for residential real estate loans in Liechtenstein with an LTV between 66% and

80%, which at a minimum is set at 50% in Liechtenstein, compared to the 35% defined in the CRR. However, the share of loans with an LTV larger than 80% amounts to only 1.2% of all loans, while the share of loans with an LTV ratio between 66% and 80% receded from 27.3% in 2015 to 24.6% in 2018 not least due to the above mentioned higher risk weights and various borrower-based policy measures. While the slightly higher risk weights for certain loans in residential real estate may be another potential reason why Liechtenstein banks' risk weight distribution is not characterized by a peak at 75%, the differences in the density functions across the two subsamples are driven by varying business models across banks and countries, as the standardized approach does not allow for discretion.

Substantial differences are observable in corporate and retail risk weights based on the IRB or the StA approach. Figure B4.2 depicts value-weighted kernel

27 See <https://eba.europa.eu/risk-analysis-and-data/eu-wide-transparency-exercise/2018/results> for an overview of the data. We consider all transparency exercises since 2015.

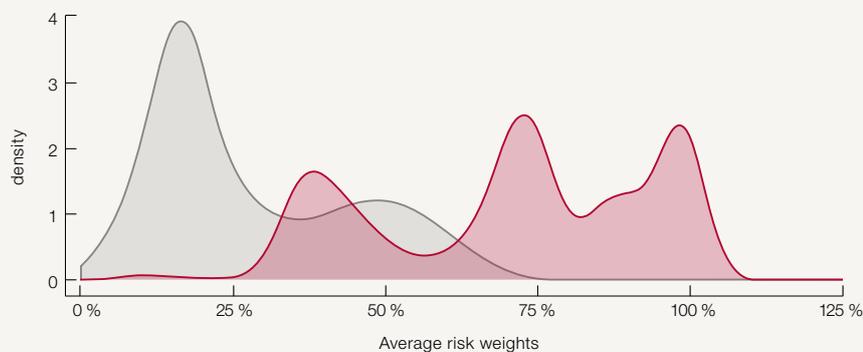
28 In general, private household loans receive a risk weight of 75% according to the CRR, while there are more detailed regulations for residential real estate loans. Moreover, risk weights for corporate loans vary depending on the credit assessment, but unrated corporates have a risk weight of 100%.

BOX 4

■ IRB
■ StA

Figure B4.2
Comparison of StA and IRB risk weights in the EEA (density function of risk weights for corporate and retail exposures)

Source: EBA transparency exercises, FMA, own calculations.



density estimates over the entire IRB and StA portfolios.²⁹ Figure B4.3 presents a breakdown of risk weights as calculated under the StA and IRB approach by the headquarter country. There are some countries (e.g. Cyprus, Estonia, Hungary and Liechtenstein) with only a single red boxplot, indicating that banks headquartered in those countries do not have banks that apply the IRB approach. In addition, the grey dots represent the share of IRB exposures³⁰ in the portfolio of the banks.

StA risk weights for corporate and retail exposures are concentrated around 35%, 75% and 100% (Figure B4.2), while IRB risk weights are denoted by a much broader range of values. Additionally, IRB risk weights are, on average, substantially lower than StA risk weights. In fact, for some countries, there are hardly any overlaps between the two distributions. While StA distributions are similarly dis-

tributed, IRB risk weights vary substantially across countries. For example, Finland and Luxembourg are denoted by the lowest weighted³¹ average IRB risk weights at around 9% and 10%, respectively, while Greece (69%), Portugal (41%) and Italy (36%) have the highest risk weights as of June 2018. It should not come as a surprise that those countries that were most severely hit by the financial crisis in 2008 have the highest risk weights when calculated under the IRB approach. Nonetheless, the most important takeaway from this simplified and stylized comparison is that banks with a higher share of IRB exposures tend to have substantially lower risk weights and, thus, report a higher capital ratio. The difference between the weighted average IRB risk weight³² (24%) and the average StA risk weight (48%) amounts to roughly 20 percentage points.

²⁹ By using a weighted distribution, a large exposure receives a higher weight in the distribution, which should prevent a skewed distribution in which banks have many small portfolios with a low risk weight.

³⁰ Based on June 2018 data.

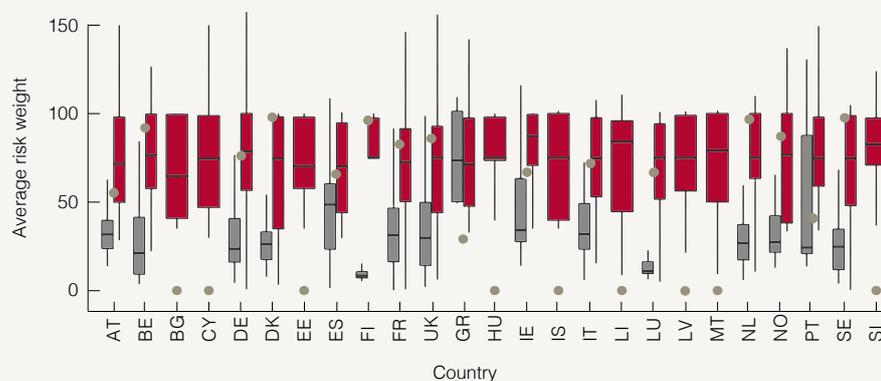
³¹ For calculating the arithmetic means, we weight it by the value of the exposure amount of the portfolio per country.

³² While the figures only show corporate and retail exposures, these numbers refer to banks' total exposures.

- IRB share in percent
- IRB
- StA

Figure B4.3
Comparison of IRB and StA risk weights in the EEA countries (distribution of StA and IRB risk weights for corporate and retail exposures by headquarter country)

Source: EBA transparency exercises, FMA, own calculations. Outliers are not presented in the boxplot.



On average, the application of the IRB approach implies significant capital savings. Assuming a minimum regulatory capital requirement of at least 10% for large banks³³, the different calibration approaches would lead to an average capital saving of at least two percentage points for banks using the IRB approach when (cautiously) assuming a reduction of risk weighted assets by 20%. Obviously, such a comparison is too simplistic, but may nevertheless be helpful to understand potential implications of applying the IRB approach. Nonetheless, we infer that the intensity to which a bank is using the IRB approach partly determines the risk weight and, consequently, the capital level at least to a certain extent.

Recent banks' capital ratio increases can either result from rising capital and/or lower RWA. Banks' common equity Tier 1 (CET1) ratio is defined as the CET1 capital divided by the risk-

weighted assets (RWA). Thus, to understand the contributions of these two factors to banks' CET1 ratio changes, we analyse whether European banks were able to build up more CET1 capital (which we call the CET1 capital contribution, i.e. by increasing the numerator) or whether banks lowered their RWA (the RWA contribution, i.e. by decreasing the denominator). Lower RWA would, in turn, also increase banks' CET1 ratio. We find that in most countries the mean CET1 ratio of banks increased between December 2014 and June 2018 (Figure B4.4). While the mean CET1 ratio of all banks in the EBA sample³⁴ stood at 12.4% in December 2014, it increased to 14.5% as of June 2018. In Figure B4.4, the CET1 ratio by headquarter country is depicted by the light brown (for December 2014) and black (for June 2018) dots. In addition, the bars for each country shows the contributions of changes in the CET1 capital (grey bars) and the RWA (red bars) to

³³ The minimum capital requirement follows from the Basel III accords and the CRR/CRD IV. It varies between banks and jurisdictions.

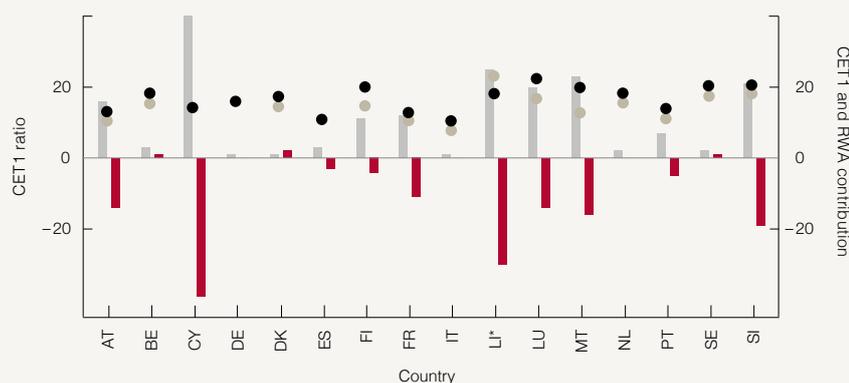
³⁴ This number also includes those banks not displayed in the graph. We did not include all countries in the graph as for some countries there is an insufficient number of reporting banks.

BOX 4

- CET1 capital contribution
- RWA contribution
- CET1 ratio in December 2014
- CET1 ratio in June 2018

Figure B4.4
Contributions to CET1 ratio changes between 2014 and 2018 (CET1 ratio in percent; contributions in percentage points)

Source: EBA transparency exercises, FMA, own calculations. Outliers are not presented in the box-plot. *For Liechtenstein we have used a comparison between December 2016 and December 2018.



the overall change in the CET 1 ratio, i.e. the sum of the two bars is equal to the CET1 ratio change between 2014 and 2018, so that we are now able to deduce where the capital changes result from.

In the majority of countries, banks increased both their capital as well as their RWA over the selected time period, resulting in overall higher CET1 ratios. There are only a few countries (i.e. Belgium, Denmark and Sweden) that also decreased RWA besides (marginally) increasing the capital. This development either indicates a deleveraging process in the banking sector or suggests that banks simply reduced their risk weights. A potential risk weight decrease might result from banks' incentive to use "lower" estimates than suggested by the underlying

risk to embellish their capital ratios. Such an effect has been found by the related literature (i.e. Behn et al. 2016, Bruno et al. 2016) and has already been (partly) addressed by international regulatory bodies such as the EBA, the BCBS and the ECB as well as by national supervisors by introducing respective macroprudential measures.

Overall, our analysis highlights that the IRB approach tends to result in lower risk weights. This descriptive finding has been confirmed in several empirical studies, which show that banks that use the IRB approach to calculate their regulatory capital tend to overstate their capital ratios by reducing risk weights. Another issue of using IRB models is that the estimates for the IRB models are backward

looking and, hence, do not take into account a deteriorating economic cycle, which might imply severe shocks to banks' capital ratios in the case of a recession. Furthermore, an important question that arises in this context is whether micro- and macroprudential policy makers should aim at further increasing the resilience of the banking sector by also targeting non-risk sensitive leverage ratios. As non-risk weighted capital ratios over the past few years only slightly increased from 4.9% to 5.3% between December 2014 and 2018 for European banks, the data might suggest that the resilience of the European banking system could be lower than indicated by the commonly reported capital ratios in terms of RWA. In contrast, however, the Liechtenstein banking sector is characterized by a leverage ratio of 7.1% as of end-2018. These numbers further support the argument that the Liechtenstein banking sector is characterized by higher risk-weights compared to the EBA sample.

Supervisory efforts to lower the variability in risk weights and to limit poor risk assessments should be further encouraged, particularly for banks that use the IRB approach. These measures should include, among others, additional capital measures, regulatory floors for model outputs as specified in the framework of Basel III as well as other harmonization efforts to address the issue of (too) low risk weights. For Liechtenstein, the issue of risk weight heterogeneity is not directly relevant, however, as no bank currently applies the IRB approach to determine the respective risk weights.

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Liquidity and funding

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 66.2 billion at the end of 2018 on a consolidated basis (i.e. 77% of total assets). On the other hand, market-based funding plays a minor role in Liechtenstein, representing only 4% of total liabilities. As a result, the loan-to-deposit ratio amounted to approximately 68% at end-2018, which is very low compared to other European countries (Figure 29), generally indicating low funding risks for the banking sector.

Standard liquidity indicators also point to a stable banking sector, and Liechtenstein banks enjoy access to Swiss National Bank (SNB) funding on the same terms as their Swiss counterparts. Liquidity indicators also reflect the strong funding base of Liechtenstein banks, with the average (weighted) Liquidity Coverage Ratio (LCR) amounting to 176% at end-2018 (Figure 30). 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), which is also an important stability factor for Liechtenstein's banking sector.

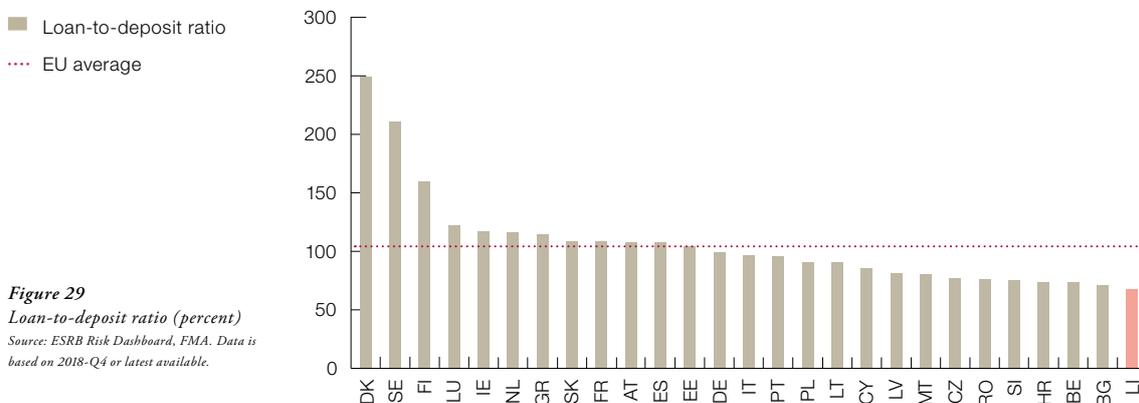


Figure 29
 Loan-to-deposit ratio (percent)
 Source: ESRB Risk Dashboard, FMA. Data is based on 2018-Q4 or latest available.

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. The SNB has defined five Swiss banking groups as systemically important by decree, and Liechtenstein's institutions are too small to qualify when considering the Swiss currency area as a whole. Furthermore, the SNB guidelines on monetary policy instruments state explicitly that the emergency liquidity assistance by the SNB requires certain conditions, including that the bank or banking group seeking credit must be of importance for the stability of the financial system. While Liechtenstein banks have access to SNB funding on the same terms as their Swiss counterparts, including the liquidity-shortage financing facility, the SNB guidelines imply that access to emergency liquidity assis-

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

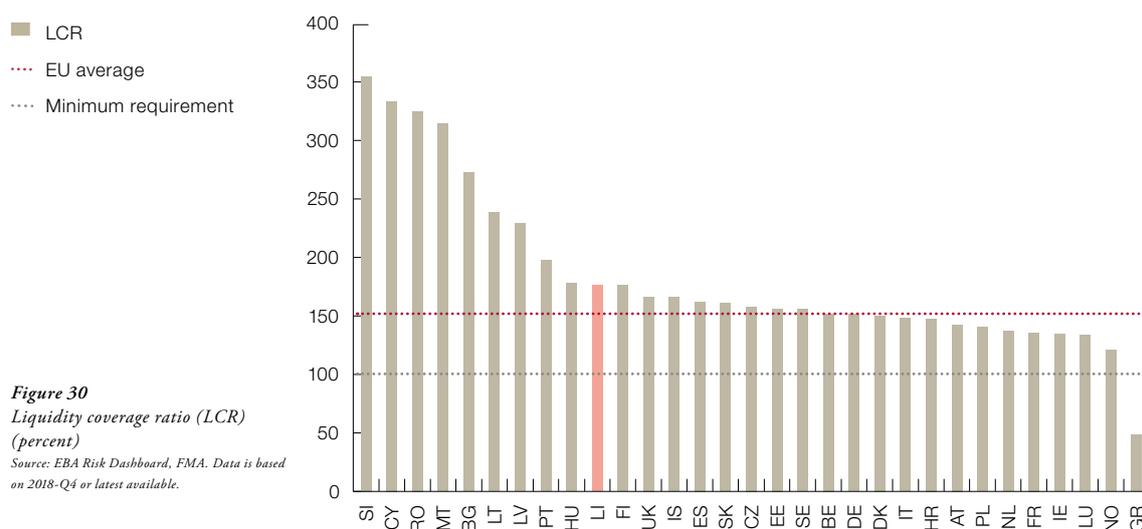


Figure 30
Liquidity coverage ratio (LCR)
(percent)
Source: EBA Risk Dashboard, FMA. Data is based
on 2018-Q4 or latest available.

LIECHTENSTEIN'S NON-BANK FINANCIAL SECTOR

Insurance sector

Insurance companies in Liechtenstein benefit from direct market access to the countries of the EEA and to Switzerland. At the end of 2018, 20 life, 15 non-life and three reinsurers operated from Liechtenstein. 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).

Growth in the insurance industry continues to be driven by non-life insurances. In 2017, premium income of the non-life sector exceeded the premium income of life insurances for the first time. Total premium income of insurance undertakings in Liechtenstein amounted to CHF 5.42 billion in 2018, up from CHF 5.17 billion in the previous year. While non-life premium income increased by 10.1% to CHF 3.02 billion, life insurance premiums decreased by -1.6% to CHF 2.34 billion. The market share of non-life insurances increased to 56%, life insurances contributed 43% and reinsurances 1% to the total premium income (Figure 31).

■ Non-life insurance
■ Life insurance
■ Reinsurance

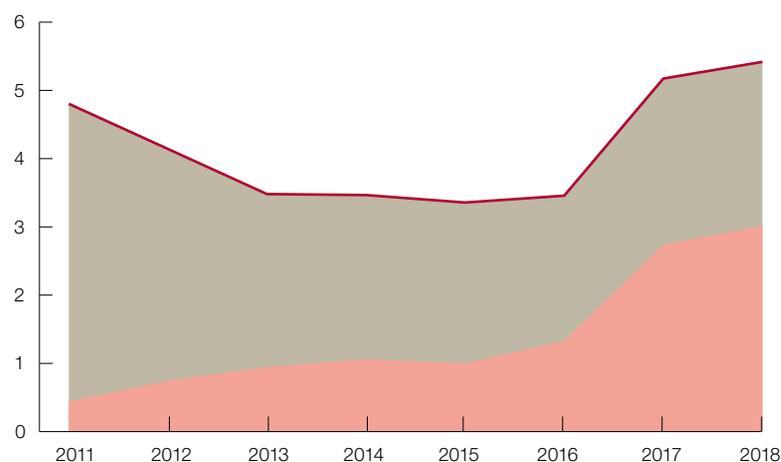


Figure 31
Premium income of insurances
(2018 in CHF billion)
Source: FMA.

Cross-border provision of services represents the lion's share of insurance revenues. The main markets for Liechtenstein insurance undertakings in 2017 were Italy (15.4%), Switzerland (13.0%), Germany (13.0%) and Ireland (12.6%, Figure 32). International activities highlight the attractiveness of Liechtenstein as a location for insurance companies seeking access to both the EEA and Switzerland.

Indicators suggest limited systemic risks in the insurance sector, not least due to prevalent business models. Under the risk-based Solvency II supervisory system, insurance undertakings in the EEA must meet high requirements in terms of capital adequacy to ensure that companies can meet their obligations vis-à-vis policy holders even in extraordinary situations. At the end of 2018, the average solvency

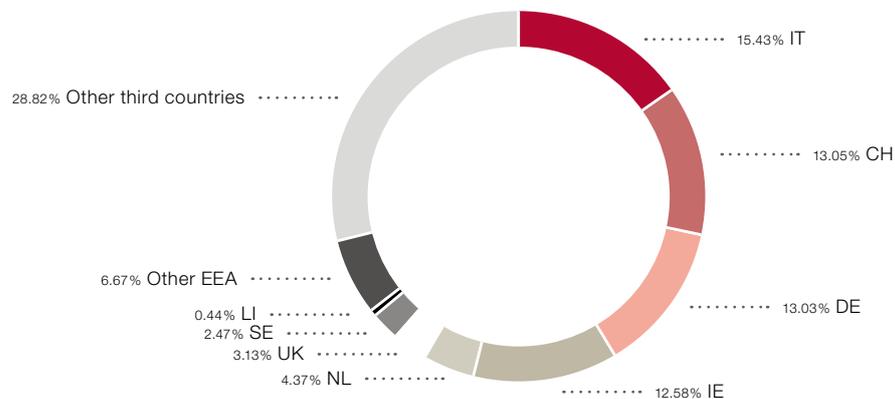


Figure 32
Premium income by country
(2017 in percent)
Source: FMA.

ratio amounted to 211%, almost unchanged from the previous year (213%). All insurance undertakings fulfilled the solvency capital requirements, with the exception of two companies. In those two cases, the shortfall was eliminated by a capital increase in January 2019 and a recovery plan set up by the FMA. The average assets over liabilities ratio amounted to 114% at the end of 2018, a slight increase from 2017 (112%). In contrast to other countries, life insurances in Liechtenstein hardly suffer from the low interest environment, as guaranteed products are rare in Liechtenstein and the bulk of capital investments is attributable to investments managed for the account and risk of policy holders as part of unit-linked (i.e. fund-linked) life insurance.

While the insurance sector has also grown in terms of employment, it still remains small compared to the banking sector. At the end of 2018, the insurance sector reported a total of 971 employees (both domestically and abroad), up from 867 employees in the previous year (+12.0%). While this number highlights the economic significance of the insurance business for Liechtenstein's financial sector, it

is relatively small compared to the banking sector, which employed 6,148 people by year-end 2018, barely half of them working in Liechtenstein.

Pension schemes

Liechtenstein's pension system is built on three complementary 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 (voluntary) pillar, i.e. individual pension provision, serves to close provision gaps that cannot be covered by the first and second pillar.

While the public pension system (AHV/IV) recorded negative returns in light of the financial market turbulences in 2018, structural reforms in previous years ensure the stability of public pensions. Following two years of positive investment income in 2016 and 2017, the public pension system recorded considerable negative returns in 2018, leading to an overall negative annual result. Financial reserves declined by 4.1% to CHF 3.04 billion by the end of the year. Besides the negative contribution from financial market developments, this was also partially due to a revision of the legislation in context of the fiscal consolidation package in previous years. The pension reform increased the retirement age by one year to 65 and raised the contributions from employers and employees, but also decreased the state contribution to the public pension system significantly. It is therefore expected that the expenditures of the public pension system will exceed revenues in the next years, which was already the case in 2018. The structural legal framework therefore implies that the public pension system has to generate positive returns to keep financial reserves stable, as expenditures for pensions exceed the sum of contributions from employees, employers and the state. In 2018, this income-expenditure gap (excluding the profit/loss from financial investments) amounted to around CHF 17 million. Nevertheless, the large financial reserves accumulated in the past guarantee a stable public pension system. At the end of 2018, financial reserves could cover pension payments for approximately 10.2 years (down from 11 years at end-2017). Since the financial market correction was temporary at the end of the year, the outlook for 2019 is clearly positive. A more detailed analysis is available in the annual report published

by the public pension's administration office (AHV).³⁵

The second pillar – i.e. occupational pension provision – plays an important role and is administered by 18 different pension schemes. 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 substantially over the past few years, from 33 in 2010 to 18 foundations in 2018. This consolidation trend is both due to the challenging financial market environment (i.e. long period of low interest rates) and increased regulatory requirements, leading to higher administration costs. We expect that this consolidation trend will continue in the near future, as larger pension funds can benefit from scale effects. The large pension capital of the second pillar relative to the country's GDP underscores the great overall economic importance of the occupational pension scheme. Total assets of the pension scheme amounted to CHF 6.73 billion at end-2018, corresponding to approx. 102% of Liechtenstein's GDP.³⁶ This figure does not only show the overall well-positioned retirement system in Liechtenstein, but it also emphasizes the significance of Pillar two for the provision of pensions.

Notwithstanding the challenging financial market environment and some variance across the 18 different pension schemes, indicators point to an overall stable occupational pension system. At end-2018, the average cover ratio – i.e. the ratio of available assets to liabilities – stood at 104.4%, down

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

36 Since there are no data available for 2018, we calculate the ratio based on internal estimations of potential GDP for 2018.

from 107.8% in the previous year. Once again, the financial market correction at the end of the year led to a worsening in some key risk indicators, with the cover ratios of the 18 pension schemes ranging between 93.1% and 115.2% at the end of the year. The median return on assets deteriorated from 6.6% in 2017 into negative territory, amounting to -4.4%, with none of the pension schemes reporting positive returns. In light of the financial market recovery since the start of the year, the decline in cover ratios is however expected to be temporary. Going forward, similar to other countries, the low interest environment will continue to pose a major challenge to the occupational system in Liechtenstein. Since a detailed risk assessment report on the occupational pension system is published annually by the FMA³⁷, a more detailed analysis of pension schemes is omitted at this point.

Investment funds and assets management companies

Despite of its relatively small size, the fund sector plays an important role. In Liechtenstein, 16 management companies (ManCos) are authorized to manage UCITS (“undertakings for Collective Investments in Transferable Securities”), AIF (“Alternative Investment Funds”) and IU (“Investmentunternehmen”), a domestic fund regime. The large majority of investment funds are now set up as either UCITS (59% of net assets) or AIF (37%). In contrast, IU funds play only a minor role in Liechtenstein, with their overall market share dropping into single digits in 2018 (4%) in light of the new European regulation entering into force.

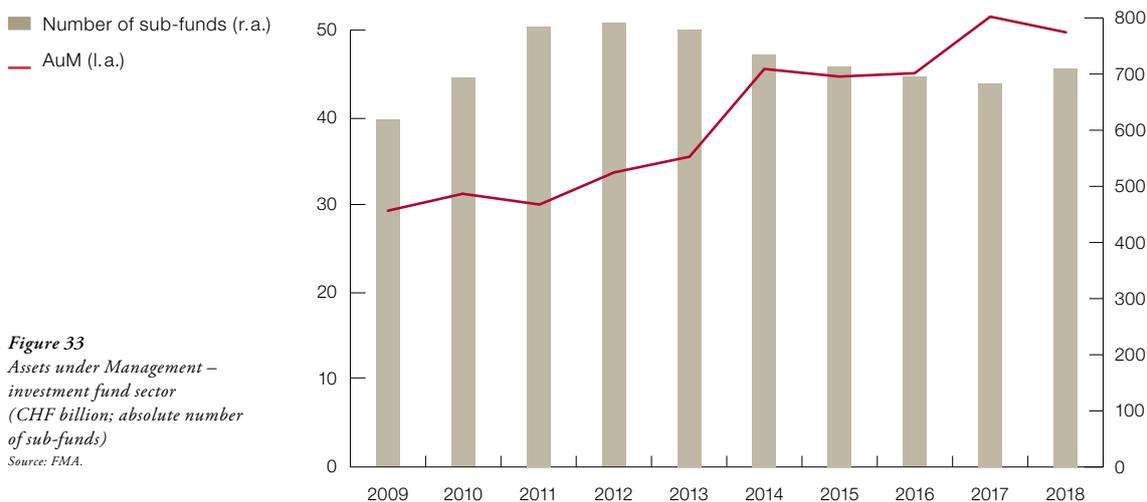


Figure 33
Assets under Management –
investment fund sector
(CHF billion; absolute number
of sub-funds)
Source: FMA.

³⁷ Available on the FMA website, see <https://www.fma-li.li/de/fma/publikationen/betriebliche-personalvorsorge-in-liechtenstein.html>.

In light of adverse financial market developments, total assets held by investment funds declined somewhat in 2018. Following the steady growth of assets under management (AuM) over the past few years, assets have declined to CHF 50.42 billion at end-2018, a decrease of 6.3% from the previous year. On the contrary, the number of subfunds increased by 27 to a total number of 710 at the end of the year, the first increase following five consecutive declines over the past years (Figure 33)

The investment fund sector is closely linked to the banking sector. ManCos of the three largest banks, i.e. LGT Group, LLB Group and VPB Group, jointly manage approximately 80% of the assets under management (AuM), with the remaining independent ManCos being significantly smaller. Although the number of employees has increased steadily over time (2018: 230 employees), the sector has remained small compared to other sectors of the financial services industry in Liechtenstein.

Liechtenstein's investment fund sector is partially dependent on foreign fund promoters. The country has developed a large private label fund industry, with almost two thirds of investment funds falling into that category. Liechtenstein is particularly interesting to Swiss fund promoters. Due to Liechtenstein's close link to Switzerland and a variety of legal agreements implemented, Swiss promoters frequently use Liechtenstein vehicles to gain access to the EEA market.

Asset management companies, i.e. MiFID investment firms, also play a significant role in Liechtenstein. By the end of 2018, asset management companies (AMCs) reported CHF 38.74 billion in assets under management (AuM), a decline by 4.6% from the previous year (Figure 34). AMCs employed 676 people at the end of 2018. The strong increase in employees – a rise by approximately 80% since 2009 – illustrates the significance of asset management in Liechtenstein's financial sector. In summary, ManCos

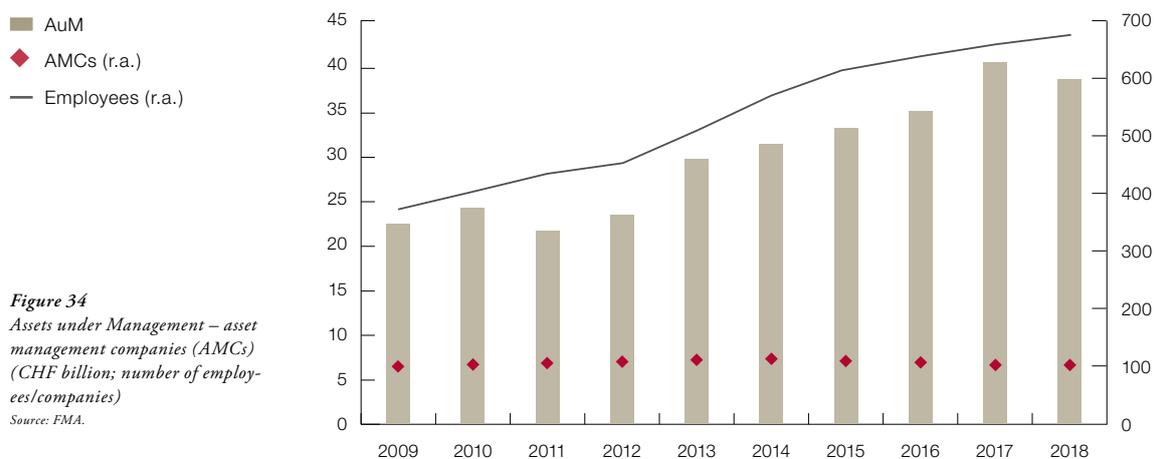


Figure 34
Assets under Management – asset management companies (AMCs)
(CHF billion; number of employees/companies)
Source: FMA.

and AMCs contributed approximately 2.3% to total employment in Liechtenstein's economy.

In its role as a complement to the banking sector, the investment funds sector is relatively low-risk compared to other sectors in the financial industry.

While the sector shows concentration risks in terms of fund size, the largest subfunds are managed by ManCos tied to Liechtenstein's three banking groups. In this context, it seems obvious that the sector mainly acts as a complement to the banking sector, with risks remaining relatively limited. Further risk-based indicators, such as key figures regarding the funds' liquidity position, will be available in the near future. While we do not expect to detect major risks in terms of liquidity, this additional information will allow us to monitor liquidity risks more closely, contributing to the overall stability of the funds sector.

Fiduciary sector

While the number of fiduciaries and fiduciary companies has remained almost constant in the past year, available numbers point to a continued decline in the sector's significance. By the end of 2018, 395 fiduciaries and fiduciary companies were registered in Liechtenstein, almost unchanged from the previous year (2017:396). Meanwhile, the total number of foundations and trusts in Liechtenstein has continued its downward trend in 2018, decreasing to less than 13,000 entities by the end of the year – a decline by almost 75% since 2009. Apart from

these numbers, the far-reaching self-regulation of the sector implies that – in contrast to other sectors of the financial system – no extensive regulatory reporting is available, and publicly available data also lacks detailed information about the sector.

A revision of the Due Diligence Act coming into force in 2017 has significantly strengthened the AML/CFT³⁸ supervision framework by introducing various risk-based elements to the supervisory process. Since the beginning of 2018, financial intermediaries – including fiduciary companies – have the obligation to submit risk data to the FMA, including the number of business relationships with politically exposed persons, with beneficial owners from third countries with strategic deficiencies or with simplified due diligence. The introduction of these risk-based elements has substantially strengthened the accuracy and efficiency of the respective supervisory tasks in the context of AML/CFT, as the focus of supervisory inspections can now be decided based on this data. For instance, if a financial institution administrates a large number of business relationships with beneficial owners domiciled in high risk countries, these business relationships might be subject to a thematic inspection. Furthermore, the sample size to be inspected by mandated audit firms also depends on a firm-specific risk-profile generated from the submitted data, and both the frequency and the scope of ordinary inspections are determined by the respective risk assessment.

The newly submitted data in 2018 and 2019 – based on the revised Due Diligence Act – confirm the decline in business relationships in the fiduciary sector. The total number of business relationships in

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

the Trust and Company Services Providers sector decreased by almost 10% on an annual basis. Nevertheless, data indicates that the decline has slowed down somewhat, and – despite of the decrease in the total number – new business relationships have been established in the past year. In this context, it seems likely that the well-developed financial center in Liechtenstein – including banks, insurances, investment funds, asset management companies and the fiduciary sector – enjoys a competitive advantage in certain areas due to its “one-stop-shop” approach, particularly in wealth structuring. The almost constant number of fiduciaries and fiduciary companies, combined with the decreasing number of foundations and business relationships, suggests the assumption that while the business environment may have become more competitive, the increased legal certainty is probably associated with extra effort – and thus revenues – from existing client relationships. In other words, the fiduciary sector may have become more specialized in recent years.

The FMA has strengthened its AML/CFT supervision by concentrating the respective efforts in a single division. Recent cases in European countries have shown that effective anti-money laundering measures are essential for reputation and thus market access. Money laundering incidents attract a great deal of media attention and are accompanied by a loss of trust on the part of customers and partners. The FMA reviewed its AML supervision and reorganized it as of 1 April 2019. The FMA's anti-money laundering mechanism, which previously had been spread out among the four supervisory divisions, is now being concentrated with the Anti-Money Laundering and Designated Non-Financial

Businesses and Professions (AML/DNFBP) Division. The division has been strengthened in terms of personnel and performs risk-based money laundering supervision in all financial sectors. For more details on the reorganization and the focus on AML supervision, please see the following sections.

A revision of the Professional Trustees Act (TrHG) is currently underway, extending the FMA's supervisory responsibilities regarding the fiduciary sector. While the FMA's competence was significantly strengthened through a revision of the Professional Trustees Act (TrHG) in 2014, the fiduciary sector is still largely self-regulated. More precisely, the FMA is currently responsible for granting, withdrawing and revoking licenses, for maintaining the register of license-holders and for conducting inspections. Moreover, the FMA collaborates with domestic and foreign authorities and protects clients by combating abuse, and levies fees and supervision tax. Apart from that, the responsibility of the FMA in the fiduciary sector is mainly limited to AML/CFT issues.

The amendment of the Professional Trustees Act (TrHG) addresses identified weaknesses and strengthens the governance in the fiduciary sector. As one important part of the enhanced Financial Centre Strategy³⁹, published in February 2019, and as a consequence of emerging weaknesses, also pointed out by the FMA in last year's Financial Stability Report, Liechtenstein's government is taking the necessary steps to revise the supervision framework in the fiduciary sector. The government takes into account the changing framework conditions with the aim of contributing to the long-term positive development of the Liechtenstein fiduciary sec-

39 *The Financial Centre Strategy is available online at <https://www.regierung.li/ministries/ministry-for-general-government-affairs-and-finance/integrated-financial-centre-strategy/>.*

tor. The government's legal proposal aims at facilitating the prevention of any form of abuse by expanding the FMA's competences and responsibilities. In particular, the revision strengthens the governance within the trust business, bolsters the solvency of trustees and trust companies, and also introduces tighter accounting principles as well as mandatory external audits. The legislation amendment is publicly available as a draft document and is expected to be discussed in parliament before the end of the year.

MACROPRUDENTIAL
POLICY IN
LIECHTENSTEIN

Policy framework and recent policy developments

In light of the large financial sector, macroprudential supervision and policy plays a key role in Liechtenstein, with the Financial Market Authority (FMA), the newly established Financial Stability Council (FSC) and the government jointly being responsible for macroprudential policy. One insight from the global financial crisis is the need to supplement microprudential supervision, which aims at the stability of individual financial institutions, with a macroprudential perspective. Macroprudential supervision should contribute to the stability of the financial system, in particular, by reducing the accumulation of systemic risks and strengthening the resilience of the financial system. It therefore aims to reduce the probability and impact of financial crises, given that such crises have led to high costs in the past – also for the real economy. Financial stability is thus an important prerequisite for securing lending in an economy and, as a consequence, for enabling sustainable growth of the real economy. In addition, the financial sector in Liechtenstein is of disproportionate national economic importance, given the financial sector's high share of gross domestic product compared with other countries, hence further broadening the definition of systemic importance. In absence of a national central bank, ensuring financial stability is defined by law as part of the FMA's mandate. While the FMA honors this commitment with regular analyses on financial stability issues, the conduct of macroprudential policy is a joint responsibility of the FMA, the newly established Financial Stability Council (FSC) and the government. Depending on the instrument, either

the government or the FMA can decide on the introduction and calibration of the corresponding macroprudential instrument, based on the financial stability analyses of the FMA.

Liechtenstein has established a balanced policy framework with a range of macroprudential instruments available to ensure financial market stability. With the implementation of the CRD IV package⁴⁰ in February 2015, European standard instruments for macroprudential policymaking have become available in Liechtenstein to secure the resilience of the banking sector. In line with the CRD IV/CRR regulation, macroprudential supervision can impose additional capital buffer requirements to address systemic risks in the financial system, including a countercyclical capital buffer, a systemic risk buffer and a capital buffer for other (i.e. domestic) systemically important institutions. In addition, the European regulation allows for tighter liquidity provisions, either based on Pillar II or Art. 458 CRR. National authorities can also incentivize banks to tighten credit standards by increasing risk weights for real estate loans. Other instruments, such as restrictions on the leverage ratio or borrower-based measures (i.e. loan-to-value ratio – LTV, loan-to-income ratio – LTI, debt-service-to-income ratio – DSTI, debt-to-income ratio – DTI etc.) are, in principle, available outside the framework of the CRD IV/CRR. This comprehensive set of instruments allows policymakers to react to the build-up of systemic risks and introduce corresponding risk-mitigating policy measures. For an efficient and effective crisis management for banks and investment firms, the Recovery and Resolution Act entered into force at the beginning of 2017. In this context, the resolution authority was also established and is incorporated

40 The CRD IV package refers to both the EU Directive 2013/36/EU ("CRD IV") and the EU Regulation 575/2013 ("CRR").

into the FMA. In addition, the FMA – together with representatives from the government – is also represented on the European Systemic Risk Board (ESRB), to further strengthen Liechtenstein's international integration and enhance macroprudential supervision.

Based on this comprehensive macroprudential policy toolkit, Liechtenstein has introduced an effective policy mix composed of capital buffers as well as lender- and borrower-based measures to improve the systemic resilience of its financial sector and to reduce the build-up of systemic risks. The FMA – which is the responsible institution for macroprudential supervision in Liechtenstein – regularly publishes reports on international economic and financial market developments and calls attention to emerging systemic risks in Liechtenstein. Based on the findings of the FMA's financial stability analyses and studies, the FMA proposes macroprudential measures, recommendations and warnings. The various measures that were introduced in recent years – capital buffers as well as lender- and borrower based instruments – add up to a comprehensive macroprudential policy mix increasing the resilience and the stability of the financial sector. Against this backdrop, Standard and Poor's has yet again ranked the Liechtenstein banking sector among the most stable in the world in 2019. Nonetheless, a close monitoring of the banking sector remains crucial, in particular in the residential real estate sector, as household indebtedness is high relative to other countries, mostly because of mortgage debt, and interest rates for housing loans continue to be low (see Box 3).

In light of strong net asset inflows in recent years and the associated reputational risks, the FMA has reorganized its AML/CFT supervision. Despite negative market developments, assets under management at banks rose by 4% to CHF 305.2 billion in 2018. While the expansion of private banking activities is welcome in terms of profitability, recent cases in European countries have shown that effective anti-money laundering measures are a prerequisite for trust among customers, the reputation of the financial center as a whole, and, eventually, also for market access. Money laundering incidents attract high media attention and are accompanied by a loss of trust on the part of customers and partners. Against this background, the FMA reviewed its money laundering supervision and reorganized it in April 2019. The FMA's anti-money laundering mechanism, which previously had been spread out among the four supervisory divisions, is now being concentrated in the Anti-Money Laundering and Designated Non-Financial Businesses and Professions (AML/DNFBP) division. The division has been strengthened in terms of personnel and performs risk-based money laundering supervision in all financial sectors. This reorganization enhances the effectiveness and efficiency of money laundering supervision within the FMA. The FMA verifies compliance with anti-money laundering legal provisions by financial intermediaries, also based on its own due diligence inspections, and takes rigorous action against violations. Besides these efforts from the regulatory side, financial market players themselves have the responsibility – especially in view of the significant inflows of new money and international sanctions – to strictly observe due diligence obligations in order to prevent money laundering risks and damage to reputation. While AML policy and supervision is not a macroprudential issue, it is nev-

ertheless essential from a macroprudential perspective, as a loss of trust and reputation could have systemic effects in Liechtenstein due to the prevailing business model of domestic banks.

In the area of FinTech and digitalization, a new legislation is underway, aiming at regulating Token and Trusted Technologies (TT) service providers.

To facilitate upcoming innovative business models, the FMA has established a group called “regulatory laboratory/financial innovation” already in 2018. This group serves as a single entry point for all queries regarding FinTech and is also involved in assessing FinTech business models with regard to possible licensing requirements based on the financial market regulation. Liechtenstein was also among the first countries in Europe to approve cryptocurrency investment funds, and one bank in Liechtenstein is following a specialized business model focusing on FinTech services. The government has reacted to the increased interest in FinTech business models, with a new legislation regulating Token and TT service providers, entering into force at the beginning of

2020 (see Box 6). Thereby, the government aims at establishing a higher level of legal security for customers and providers. The legislation is created as technology-neutral as possible, i.e. a number of service providers using TT become subject to regulation, but not the technology itself. While neither the new regulation nor the individual FinTech businesses are a major focus of macroprudential policy at the present – also because the business volume is very limited so far – regulators nevertheless have to take into account related risks for the financial sector as a whole. The FMA aims at assessing FinTech and traditional business models consistently, i.e. as technology-neutral as possible. Besides the large opportunities, there are also considerable risks that have to be examined on a case-by-case basis, in particular, to ensure a high level of investor protection as well as compliance with international AML standards in line with the FMA’s mandate also in the area of FinTech businesses.

BOX 5 Liechtenstein's new legislation on Tokens and Trusted Technologies Service Providers

The Liechtenstein Parliament has recently passed the legislation on service providers for Tokens and Trusted Technologies (TT), i.e. the Tokens and TT Service Provider Act (TVTG). After first announcing the plan to create a legislation addressing the Blockchain economy in March of last year, the Liechtenstein government presented the corresponding “report and application” to parliament in June 2019. Parliament has passed the legislation during its October session and the law will enter into force on 1 January 2020.

The new law aims at defining a legal framework for all applications of the token economy in order to ensure legal certainty for many current and future business models. Therefore, persons and companies that want to provide specific services in the realm of Blockchain and/or Tokens will need to register with the FMA, consequently putting them under the supervision of the regulator. Primarily, the law addresses essential aspects of a token economy such as “generating and storing tokens”. Against this background, it is important to note that the TVTG does not aim at regulating specific business models but rather services and activities that are an underlying part of them. For instance, while operating a crypto exchange per se is not covered by the TVTG, storing tokens or private keys for customers – which most crypto exchanges and, in some cases, also wallet providers or banks do – falls within the scope of the new legislation. In that sense, the TVTG applies to the common business models in the crypto world, i.e. token issuers, custodians, and exchange service

providers. On top of that, as a major difference to legal approaches in other countries, the FMA will also register and supervise service providers such as token programmers or people who verify the legal capacity and the requirements for the disposal over a Token, i.e. somebody who ensures that a beer token can only be purchased by a person of the right legal age.

Supervision activities based on the TVTG will be mostly limited to anti-money laundering. In this sense, the TVTG can also be seen as an implementation of the newest FATF recommendations addressing new technologies stating that “virtual asset service providers” shall be put under AML supervision and also should need to register with or be licensed by the competent authority. Therefore, TT service providers that deal with clients' funds under the Liechtenstein Due Diligence Act and Ordinance will need to comply with all of their rules. Moreover, they will also be subject to the FMA's annual risk analysis as well as on-site inspections.

Importantly, the TVTG will be applicable in parallel to classic financial market regulation. A bank or payment service provider that offers services within the token economy will, therefore, need to register this business activity separately. However, in contrast to known financial market regulation, activities based on the TVTG cannot use the passporting system within the EU.

Strengthening the macroprudential policy framework

While macroprudential supervision is conducted by the FMA, the responsibility for macroprudential policy measures jointly lays with the FMA, the FSC and the government. In absence of a national central bank, ensuring financial stability is defined by law as part of the FMA's mandate according to Article 4 FMA Act. The FMA is the competent authority for macroprudential supervision and, thus, honors its financial stability commitment with analyses and studies on financial stability issues. The conduct of macroprudential policy, however, is a joint responsibility of the FMA and the government. Additionally, the Financial Stability Council (FSC) has been formally established in May 2019 to further facilitate the collaboration between the two players, additionally promoting financial stability in Liechtenstein (see Box 7).

The recently published macroprudential strategy lays out the key features for implementing macroprudential policy in Liechtenstein. The macroprudential strategy aims at fostering the decision-making process and enhancing the accountability and communication to the general public. The ultimate objective of macroprudential policy in Liechtenstein is to materially contribute to safeguarding the stability of the Liechtenstein financial system by reducing the accumulation of systemic risks and by strengthening the resilience of the financial system. The macroprudential strategy is based on the recommendations of the European Systemic Risk Board (ESRB) on the macroprudential mandate of national authorities (ESRB/2011/3) and on intermediate objectives and instruments of macroprudential pol-

icy (ESRB/2013/1). The ESRB recommends establishing a macroprudential strategy, which links the ultimate objective of macroprudential policy with the predefined intermediary objectives and the respective macroprudential instruments. By determining intermediate goals, macroprudential measures become more operational, more transparent and more accountable to the general public. The macroprudential strategy also establishes a framework for the application of macroprudential instruments to pursue the objectives of macroprudential policy by addressing both time-varying and structural systemic risks in the Liechtenstein financial sector. In addition, the tasks and scope of action of macroprudential policy in Liechtenstein and the FSC are outlined. Hence, Liechtenstein's macroprudential strategy captures the essential reference points for fulfilling the key tasks of macroprudential supervision and facilitates its decision-making process.

The publication of the macroprudential strategy increases the awareness of macroprudential policy and supervision and improves the effectiveness of its decisions. In line with the ESRB recommendation, the FSC has discussed and agreed on the macroprudential strategy in Liechtenstein in its first meeting on 5 July 2019. The strategy fosters the transparency and accountability of macroprudential policy. The ESRB also recommends macroprudential authorities to periodically (i.e. at least triennially) assess the appropriateness of the intermediate objectives and to adapt the macroprudential policy strategy in view of the experience gained in operating the macroprudential policy framework, structural developments in the financial system and the emergence of new types of systemic risks. The macroprudential strategy has been published on the FMA website in the "Financial stability and macroprudential policy" section.⁴¹

⁴¹ See <https://www.fma-li.li/en/supervision/financial-stability-and-macroprudential-supervision.html>.

BOX 6 **Liechtenstein's newly established Financial Stability Council (FSC)**

The Financial Stability Council (FSC) is the central advisory board for macroprudential policy in Liechtenstein. The FSC has been legally established in May 2019 to foster financial market stability and to reduce systemic and procyclical risks in Liechtenstein's financial sector. The council's members are representatives of the Ministry for General Government Affairs and Finance (MPF) and the FMA. It is chaired by a member of the MPF. The FSC holds meetings at least four times a year.

The key task of the FSC is to address systemic and procyclical risks to financial stability in Liechtenstein's financial sector in a transparent and comprehensive process, as identified by the FMA in the scope of its monitoring activities. The key objective of macroprudential supervision in Liechtenstein is to safeguard the stability of the financial market in Liechtenstein. A stable and sound financial system as a whole is a prerequisite to fulfill its economic functions. As a consequence, macroprudential policy contributes to the overarching objective of achieving sustainable economic growth in Liechtenstein. To this end, the FSC uses a variety of available macroprudential instruments, warnings and recommendations to reduce the build-up of identified systemic risks. The explicit tasks of the FSC are defined in Article 33b of the FMA Act and include: (i) discussing issues relevant to financial stability; (ii) encouraging cooperation and the exchange of opinions among the institutions represented on the Council in normal times and in times of crisis; (iii) discussing warnings and recommendations of the European Systemic Risk Board; (iv) issuing recommendations to the government or the FMA related to the use of

instruments for safeguarding the stability of the financial market; (v) issuing warnings and recommendations in accordance with Article 33c FMA Act; and (vi) presenting a report to the parliament on an annual basis.

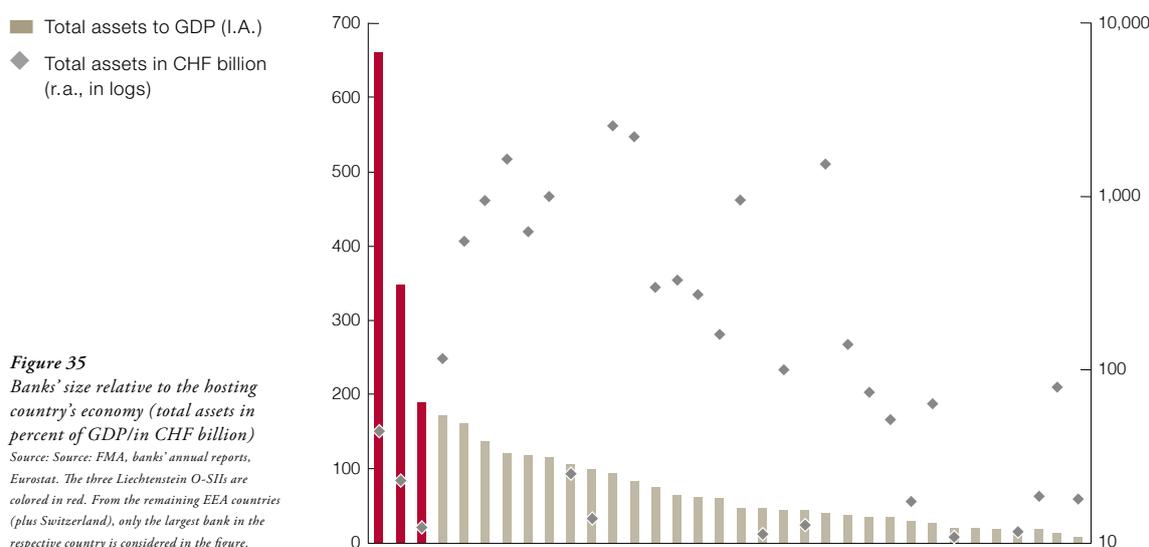
The responsibility for financial stability and macroprudential policy and supervision is spread among several institutions. According to Article 4 FMA Act, the FMA safeguards the stability of the Liechtenstein financial market, the protection of customers, the prevention of abuse, as well as the implementation of and compliance with recognized international standards. Thus, the tasks of the FMA arise from its role as being the competent authority for macroprudential supervision to contribute to safeguard financial stability in Liechtenstein. It can apply macroprudential instruments and issue recommendations and warnings. In addition, the FMA is serving as Secretariat to the FSC and is responsible for providing financial stability analyses and studies for the decisions of the FSC. Thereby, the FMA meets its legal mandate to preserve financial stability and, thus, assumes functions in the area of financial stability that are typically assigned to the central bank in other countries. The government decides on the introduction of macroprudential instruments within the framework of the existing legislation and, thereby, defines the operating framework of macroprudential supervision in Liechtenstein.

Revision of the macroprudential capital framework

Depending on the aggregate risk level, macroprudential capital requirements can be adjusted in line with European regulations. The CRD IV framework requires banks to hold sufficient capital against unexpected losses in order to remain solvent in the event of a crisis. The capital requirements include both Pillar 1 and Pillar 2 requirements, the capital conservation buffer and macroprudential capital buffers, namely the countercyclical capital buffer, the other systemically important institutions (O-SII) buffer and the systemic risk buffer.

In 2019, Liechtenstein has revised its capital buffer framework in line with the CRD IV to adjust it to common standards in other member states in the EEA. In the wake of the revision, both the O-SII buffer and the systemic risk buffer are recalibrated. In 2015, when the CRD IV entered into force, a sys-

temic risk buffer for the three identified systemically important institutions of 2.5% of total risk-weighted assets was introduced, applicable both on the consolidated and individual basis. The systemic risk buffer is applied to those banks and investment firms whose balance sheet exceeds 10% of the sum of total assets of all banks and investment firms located in Liechtenstein, such that the systemic risk buffer covered an important feature of the O-SII buffer. According to Article 4a Banking Act (BankG), the systemic risk buffer serves to “mitigate long-term non-cyclical systemic or macroprudential risks, the realization of which has serious negative consequences for the financial system or the real economy”. Against this background, the Banking Ordinance (BankV) is currently being amended, so that the systemic risk buffer can be determined based on identified systemic risks. In this context, the FMA has recalibrated the systemic risk buffer to be more risk-sensitive to structural systemic risks as proposed in the CRD IV. The systemic risk buffer is used to strengthen the resilience of the banking sector to



possible shocks stemming from structural systemic risks through raising the institutions' loss-absorption capacity. This shifts risks to equity holders and raises solvency, thereby decreasing the likelihood of the materialization of structural systemic risk. The revised Banking Ordinance as well as the newly calibrated systemic risk buffer will be discussed and concluded before the end of the year.

In light of the revision of the banks' capital buffer framework, the FMA has also recalibrated the O-SII buffer. The methodology for identifying an O-SII is based on the EBA guideline (see Box 7). The FMA has identified three O-SIIs in Liechtenstein: LGT Bank AG, Liechtensteinische Landesbank AG and VP Bank AG. The Liechtenstein banking sector is highly concentrated around these three banks with an O-SII score of far above 1,000 basis points for each of the three banks. The total score of the three O-SIIs together make up around 9,000 basis points (out of the possible 10,000 basis points). In this context, Figure 35 compares the total assets of O-SIIs (and G-SIIs) both in absolute numbers and relative to the respective member states' GDP. The graph shows that the three Liechtenstein O-SIIs – despite of their relatively small size in terms of total assets – are the largest banks relative to the respective country's GDP in the whole EEA. The final decision on the size of the O-SII and the systemic risk buffer will be taken in the last quarter of 2019 and the decision will be published on the FMA website. As the systemic risk buffer and the O-SII buffer do not take effect cumulatively (i.e. only the higher of the two buffers applies), a positive number of the O-SII buffer would not increase the overall capital requirement for Liechtenstein banks when assuming the systemic risk buffer to remain unchanged.

Risks at the individual bank level are also regularly assessed in the framework of the annual Supervisory Review and Evaluation Process (SREP). The SREP is an ongoing supervisory process bringing together findings from all supervisory activities performed on an institution into a comprehensive supervisory overview. The SREP framework is built around:

- business model analysis;
- assessment of internal governance and institution-wide control arrangements;
- assessment of risks to capital and adequacy of capital to cover these risks; and
- assessment of risks to liquidity and adequacy of liquidity resources to cover these risks.

Regular monitoring of key indicators is used to identify material changes in the risk profile and to support the SREP framework. The specific elements of the SREP framework are assessed and scored. The outcome of the assessments, both individually and considered as a whole, forms the basis for the overall SREP assessment, which represents the up-to-date supervisory view of the institution's risks and viability. The overall SREP assessment reflects also any supervisory findings made over the course of the previous 12 months and any other development that have led the competent authority to change its view of the institution's risks and viability. It forms the basis for supervisory measures and dialogue with the institution. Tailored to the individual bank, in the SREP decision, the supervisor may ask the bank to hold additional capital, liquidity and/or set qualitative requirements. While the SREP process and decision is not a macroprudential measure, the individual SREP decisions support other supervisory activities and contribute to a thorough and continuous monitoring of banks.

BOX 7 **Capital buffer for other systemically important institutions (O-SII)**

The other systemically important institutions (O-SIIs) buffer is applied to financial institutions that pose substantial systemic risks to the banking system. The EBA has set out a guideline (EBA/GL/2014/10) to identify O-SIIs by assessing their systemic risks based on a minimum mandatory framework of criteria and indicators. As systemically important institutions can present negative externalities to the broader financial system, identified O-SIIs may require an O-SII buffer of up to 2% of the total risk exposure amount, consisting of Common Equity Tier 1 (CET1) capital.

In their efforts to maximize profits, O-SIIs take decisions which may cause market distortions and create risks to financial stability. These moral hazard problems arise from the assumption of implicit government guarantees given to these systemically important institutions, thereby stimulating excessive risk taking. Their failure might cause significant negative effects to other banks and financial institutions and, thus, might lead to high costs for the real economy and taxpayers. To address these negative externalities, national authorities can impose stricter requirements on these institutions. Thus, the O-SII buffer aims at reducing O-SIIs' probability of default, while the identification criteria analyze the impact of a failure on the financial system. The buffer should also strengthen market confidence regarding the identified institutions through their increased loss-absorption capacity. As systemically important institutions are more likely to be supported by public money in case of a crisis, the buffer reduces the cost for the general public in case of a bank's insolvency. Moreover, the additional capital would act as a cushion for the stability of individual

O-SIIs and the avoidance of consequent "domino effects" in the national banking systems. Therefore, the O-SII buffer also limits the systemic impact of misaligned incentives. A failure to achieve the buffer requirement results in distribution restrictions and the creation of a capital conservation plan.

The EBA guideline proposes a two-step procedure to determine O-SIIs. In the first step, a scoring process is used for each relevant institution at least at the highest level of consolidation to assess their systemic importance consisting of the following criteria: (1) size; (2) importance for the economy (including substitutability/financial system infrastructure); (3) complexity/cross-border activity and (4) interconnectedness with the financial system. Each of these four criteria consists of one or more mandatory indicators as depicted in Figure B7.1. All four criteria are weighted equally with a weight of 25%. Indicators within each criterion are also weighted equally relative to the other indicators within the respective criterion. To calculate the score, the indicator value of each institution is first divided by the aggregate amount of the respective indicator values summed across all institutions in the country. Second, the resulting percentages are multiplied by 10,000 to express the indicator in terms of basis points. To calculate the category score for each institution, the simple average of the indicator scores in the respective category is taken. The overall score is calculated by taking a simple average of all four category scores. An institution is considered as an O-SII when their total score equals or exceeds 350 basis points. This threshold can be reduced or increased by the relevant authorities (to a certain extent) by taking into account the specifics of a country's banking sector. In a second step, optional indicators listed in the EBA guideline can also be taken into account, in addition to these minimum indicators, if the rele-

vant authority assesses the indicators as relevant for adequately capturing systemic risks.

Criterion	Indicator	Weight
Size	Total Assets	25.00%
Importance (including substitutability/financial system infrastructure)	Value of domestic payment transactions	8.33%
	Private sector deposits from depositors in the EU	8.33%
	Private sector loans to recipients in the EU	8.33%
Complexity/Cross-border activity	Value of OTC derivatives (notional)	8.33%
	Cross-jurisdictional liabilities	8.33%
	Cross-jurisdictional claims	8.33%
Interconnectedness	Interbank liabilities	8.33%
	Interbank assets	8.33%
	Debt securities outstanding	8.33%

Figure B7.1
O-SII indicators

The decision regarding the O-SII buffer requirement does not fall within the scope of the EBA guidelines. The CRD IV allows for discretion to national authorities to set the buffer requirement. However, the EBA notes that authorities are expected to base their decision on the systemic importance of the institution, which is assessed according to the methodology defined in the guidelines. Following the discussions in the FSC, the final decision on the size of the O-SII buffer will be taken by the FMA and published on the FMA website before the end of November.

BOX 7

Addressing systemic risks in the real estate sector

The FMA is continuously monitoring the vulnerabilities in the Liechtenstein real estate market. In light of the substantial exposure of domestic banks towards the household sector, high household indebtedness, increasing house prices and substantial mortgage growth, the FMA and the government have implemented a risk-mitigating policy mix to address systemic risks in the residential real estate sector in February 2015. The policy objectives particularly focus on preventing excessive credit growth and leverage in the household sector. To maximize the effectiveness of the policy instruments, both borrower-based and lender-based measures were introduced. The following macroprudential measures targeting the real-estate sector are implemented in Liechtenstein:

- **Cap on the loan-to-value (LTV) ratio:** At mortgage origination or if a mortgage is expanded, the loan-to-value ratio (LTV) must not exceed 80%. A higher LTV ratio is possible in exceptional cases, but such a loan has to be qualified as “exception to policy”, implying stricter reporting requirements.
- **Amortization:** The mortgage has to be amortized so that the LTV ratio falls below two thirds within 20 years.

- **Risk weights:** Liechtenstein has exercised the option to apply slightly higher risk weights instead of the risk weights indicated in Art. 125(2) of the CRR, i. e. for residential properties with an LTV between 66 2/3 percent and 80 percent, the risk weights are set at 50 percent.

The measures are intended to make vulnerable households more resilient and will likely have some dampening effect on total borrowing and house prices. The policy mix has already shown its effectiveness in recent years, especially with regard to the decrease of mortgage lending growth in Liechtenstein (see Box 3).

However, as a consequence of the high and still increasing household indebtedness, the credit-to-GDP gap has turned positive for the first time since 2010. The countercyclical capital buffer (CCyB) aims at counteracting excessive credit growth and at reducing the procyclicality of the financial system. Although the credit-to-GDP gap is the main indicator for the calibration of the CCyB, this rule-based approach is only partly applicable for the Liechtenstein economy and its special features and should, therefore, not be adopted without considering additional indicators.⁴² As this is the case for many countries, the Basel Committee on Banking Supervision (BCBS) and the ESRB suggest complementing the rule-based approach with additional quantitative and qualitative indicators to account for various cyclical systemic risks (e.g. mortgage growth, credit

⁴² The methodology to calibrate the CCyB for Liechtenstein was explained in detail in last year's Financial Stability Report (see Box 7).

development, current account imbalances, soundness of the bank balance sheet, indebtedness of the private sector, mispricing of risks etc.). These additional indicators, however, do not indicate excessive credit growth in the Liechtenstein economy. Accordingly, the Financial Stability Council (FSC) has recommended to the government in its first meeting on 5 July 2019 to leave the CCyB unchanged at a rate of 0% of RWA. Against the background of increasing household debt, the FMA and the FSC will continuously monitor the development of cyclical risks in the financial sector and will adapt the recommendation regarding the level of the CCyB if deemed necessary.

Recovery and resolution

The resolution framework in Liechtenstein is based on the EU's Banking Recovery and Resolution Directive (BRRD). During the past year, the resolution authority within the FMA continued its work on the preparation of resolution plans for Liechtenstein banks with a special focus on identifying suitable resolution strategies. In this context, the resolution authority strategically analyzed domestic institution's essential and systemically important (i.e. "critical") functions, which is a key component of resolution planning. The consideration of the critical functions are particularly important for assessing an institution's resolvability and when performing the *Public Interest Assessment*, in which the resolution authority assesses whether resolution action is necessary in the public interest and whether normal insolvency proceedings would meet the resolution objectives to the same extent.

Furthermore, the resolution authority also focused on implementing new EU standards, such as the adaptation of the bail-in cascade (i.e. the ranking of unsecured debt instruments in insolvency hierarchy – "senior non-preferred or MREL instruments"). Moreover, work on the identification of potential resolution strategies, financial stability implications of a bank's failure, core business lines and critical interdependencies as well as on further improvements with regard to the resolvability of financial institutions progressed. In this context, the resolution authority engages with systemically important institutions in Liechtenstein with the aim of developing a strong resolution planning framework and to encourage banks to consider the Minimum Requirement for Own Funds and Eligible Liabilities (MREL) requirements in their capital planning. Finally, the resolution authority intensified the cooperation with Liechtenstein's competent authority (i.e. banking supervision) with regard to recovery planning and the identification of impediments to resolution.

The build-up phase of the resolution financing mechanism has continued with the total amount of funds equaling CHF 11 million by end-2019. The first contributions from the private sector to the resolution financing mechanism were levied in 2018. The fund will be fully built up by the end of 2027 by which date the target of 1% of covered deposits of Liechtenstein banks will have been raised. In 2017, Liechtenstein banks held covered deposits of CHF 5.8 billion, i.e. the final amount of the fund is expected to amount to approximately CHF 60 million.

Risks and recommendations

Overall, Liechtenstein's financial sector is assessed to be sound and stable, with systemic risks remaining relatively low. While the financial sector is large relative to the economy in Liechtenstein, high capitalization and a solid liquidity position mitigate systemic risks arising from the sector's critical role for the economy as a whole. At the same time, Liechtenstein differentiates itself from other small financial centers, as the strong manufacturing sector reduces the dependence of the economy from the financial sector and its associated vulnerabilities.

Liechtenstein is characterized by important institutional specifics associated with its currency and customs union with Switzerland and its membership in the EEA. Liechtenstein and Switzerland implemented a customs union in the 1920s, and Liechtenstein also introduced the Swiss franc as its currency at that time. An intergovernmental currency treaty entering into force in 1981 regulated the corresponding conditions as well as the rights and duties of the two partner countries in the currency union, thus further increasing the legal security of the currency arrangement. Against this background, Liechtenstein does not have an own central bank and is, therefore, not responsible for conducting its monetary policy. The financial stability mandate, however, is legally established in Liechtenstein, with the FMA taking the leading role in terms of macroprudential supervision and financial stability analysis. The FMA and the government are jointly responsible for macroprudential policy measures, with the newly established Financial Stability Council (FSC) having a consulting role in the policy process. Unlike Switzerland, Liechtenstein opted to become a member of the EEA in 1995, implying that the financial sector is now fully regulated according to EU stand-

ards. The EEA membership is vital for Liechtenstein's international success and efforts, both in the financial sector and the real economy.

The international financial market environment has become even more challenging in the past year. The global economic outlook has deteriorated over recent months, and elevated political and policy uncertainty is posing large downside risks, particularly in the context of the trade conflict and increased protectionism at the global level. In this environment, markets have been increasingly driven by expectations of further monetary policy easing and a flight-to-safety, with sovereign bond yields decreasing further into negative territory. The low interest rates and stretched valuations in equity markets pose challenges for financial intermediaries' profitability, with the probability of increased risk taking also being on the rise. The renewed downward shift of yield curves across the globe could have a positive one-off effect on the asset side of financial institutions' balance sheets, but also reduces future profitability prospects. While Liechtenstein's banking and insurance sectors are less vulnerable to the low interest rate environment than their peers in other countries, recent developments are nevertheless associated with increasing challenges in terms of profitability for the years ahead.

High household indebtedness requires a continuous monitoring of associated systemic risks in the banking sector and the real estate market. Although household debt ratios are not entirely comparable to other European countries, data shows that private households are highly indebted. Associated systemic risks are assessed to be limited, as the high debt level is mainly due to structural specifics and highly concentrated among wealthy households. Furthermore, the overall indebtedness of the economy is very low in comparison to other EU countries, as debt in the

non-financial corporate sector is low and the public sector has virtually no debt. Nonetheless, against the background of the significant increase in household debt in recent years and a high share of loans being in the “exception-to-policy” category in terms of affordability, an in-depth analysis of both the underlying drivers and related risks is essential. Macroprudential measures have already been in place since 2015 to address systemic risks in the mortgage market. Based on the proposed in-depth analysis, the FSC might consider proposing additional measures, i.e. recommending to the FMA and/or the government to tighten existing measures or to introduce additional macroprudential measures ensuring sustainable lending standards and tackling the risks and vulnerabilities in the mortgage sector.

In light of volatile GDP growth and the large financial sector, Liechtenstein’s sound fiscal policy approach should be continued. Fiscal policy in Liechtenstein has put its focus on sound fiscal finances, by continuously increasing financial reserves and by running healthy budget surpluses. By contrast, countercyclical policies play a negligible role in Liechtenstein due to the small and open economy, implying that the fiscal multiplier is very small. The volatile GDP growth rate, which is quite common for a small economy and partly due to the large financial sector, requires certain flexibility in policy-making and the public budget. While the solid and predictable fiscal policy approach should be continued, budget surpluses and rising financial reserves in the last few years have clearly increased the policy leeway for growth-enhancing public investment spending to sustainably boost the real economy in the longer perspective. At the same time, however, government consumption expenses should be kept low to remain flexible and independent from global debt markets. Overall, healthy public finances are essential – also for the financial sector – and serve

as a stability anchor for the whole economy, especially in times of a downturn.

Compliance with international and European financial market regulation is absolutely essential for Liechtenstein’s international integration and the future development of the financial sector. Although the regulatory pressure is challenging both for financial intermediaries and national regulators, the implementation of international standards is without any alternative, particularly for small and open economies with a large financial sector. Thus, being part of a transparent international regulatory framework, such as the EEA, plays a key role to ensure legal certainty, international integration and market access for Liechtenstein’s financial intermediaries. In this context, a further deepening of the collaboration with relevant European authorities and the implementation of the ESRB recommendations should be promoted, also to prevent the build-up of systemic risks. The implementation of relevant international standards – not only in the banking, but also in the non-banking financial sector – is absolutely crucial to mitigate reputational risks and associated spill-over effects within the financial sector. Even in not yet regulated sectors, such as the FinTech realm, compliance with international common supervisory practices is required to secure international recognition of national supervision standards, thus ensuring market access for the whole financial sector in a sustainable manner.

A continuing improvement of structural efficiency in the banking sector is key to safeguard banks’ profitability in the longer term. Liechtenstein banks are not as vulnerable to the low interest rate environment as their peers in other countries, as their business model does not primarily focus on traditional banking activities, but mostly on private banking and wealth management. At the same time,

Liechtenstein banks show around average profitability and also certain room for improvement in terms of efficiency, as indicated, for instance, by a relatively high cost-income ratio. Although lower efficiency indicators are partly due to the respective business model and higher regulatory pressure, continuing efforts to increase structural efficiency is important to ensure a sustainable level of profitability also in the long run.

A risk-adequate capitalization of the banking sector is not only important to ensure the resilience of banks against negative shocks, but is also essential from a reputational perspective. Banks' capital ratios have shown some volatility and have declined – from high levels, but contrary to the European trend – at the end of the past year, not least due to the temporarily negative financial market developments. While capital ratios have increased again in the present year, banks are encouraged to keep their high level of capitalization – by maintaining an adequate management buffer above regulatory requirements – to remain resilient against unexpected developments. A high level of capitalization is also important in light of high net money inflows, as the business model of private banking directly depends on a prime reputation among investors and clients. In this context, the strong international growth strategies of banks in recent years, while welcome from an international diversification perspective, should not be at the expense of lower stability and

downside risks to the Liechtenstein economy. In this regard, the high liquidity and good funding base of Liechtenstein banks – with a very low loan-to-deposit ratio – is an important risk-mitigating factor.

In the area of AML/CFT supervision, a zero tolerance policy is essential to mitigate associated systemic risks in the entire financial sector. Recent international cases of money laundering have shown the associated risks both in terms of stability and reputation for the respective jurisdiction and the financial sector as a whole. The FMA has put an increased focus on AML/CFT supervision by concentrating the supervisory activities in a single division and increasing the respective staff resources. While the whole financial sector is regulated according to common European standards, last year's Financial Stability Report has suggested certain room for improvement, particularly in the fiduciary sector. The government has published a legal proposal to revise the Trustee Act (TrHG). A revision of the supervision framework in the fiduciary sector is welcome in this context. The FMA will follow a zero tolerance policy with regard to AML violations in all supervised financial sectors. Since reputational risks are particularly important in a country focusing on private banking and wealth management, the increased focus on AML issues is also necessary from a financial stability perspective.

Adequate and timely policy reactions to financial stability risks depend both on the availability of appropriate data and the development of an efficient risk-monitoring framework. The availability of macroeconomic and financial data is still limited, also due to the small size of the country. While there are several useful indicators available to assess the resilience of the financial sector and the current economic situation of the economy, a further improvement in terms of data availability is important. The recent publication of *KonSens* – a new cyclical indicator for Liechtenstein’s economy – by the Liechtenstein Institute is therefore particularly welcome. Furthermore, the FMA has increased data availability on both payment transactions and interlinkages across financial sectors. Nonetheless, to sustainably ensure financial stability, additional indicators – for instance, in the area of real estate – and the reporting frequency for economic developments should be further increased. In addition, taking into account the increased interest by the private sector in FinTech businesses, more data on the FinTech sector would also be desirable, thereby enabling an assessment of the market size and the associated risks. Besides increasing data availability, an adequate monitoring of risks in the financial system, not only at the level of individual institutions, but also from a financial stability perspective is a prerequisite for an effective mitigation of identified systemic risks.

The advancement of the macroprudential supervision and policy framework is welcome, and it is now up to the newly established Financial Stability Council (FSC) to use the expanded macroprudential policy toolbox to sustainably guarantee financial stability. The FSC has shown its ambitions by agreeing on a macroprudential strategy already in its first meeting in July 2019. The revision of the macroprudential capital buffer framework, also scheduled for the present year, is a further important step ensuring stability in the banking sector. Since Liechtenstein does not have a national central bank, which is typically mandated to safeguarding financial stability in other countries, macroprudential policy in general and the FSC in particular play an even more important role in Liechtenstein. In this context, the FSC is encouraged to actively use the macroprudential toolbox in the form of warnings and recommendations to ensure a timely reaction to the build-up of systemic risks. Furthermore, the close collaboration with international bodies is also essential. While Liechtenstein and the FMA are well integrated into the European System of Financial Supervision (ESFS), the FMA also explicitly welcomes the initiative by the government to consider a membership in the International Monetary Fund (IMF), as recently suggested in the Financial Centre Strategy published earlier this year.⁴³

⁴³ The Financial Centre Strategy is available online at <https://www.regierung.li/ministries/ministry-for-general-government-affairs-and-finance/integrated-financial-centre-strategy/>.

APPENDIX

List of abbreviations

AIF	Alternative investment fund	MiFID	Markets in Financial Instruments Directive
AML/CFT	Anti-money laundering/Combating the financing of terrorism	m-o-m	Month-on-month
AuM	Assets under management	MPF	Ministry for General Government Affairs and Finance
BCBS	Basel Committee on Banking Supervision	MREL	Minimum requirements of own funds and eligible liabilities
BIS	Bank for International Settlements	NFC	Non-financial corporations
BRRD	Banking recovery and resolution directive	O-SII	Other systemically important institution
CCyB	Countercyclical capital buffer	p.c.	per capita
CET1	Common equity Tier 1	PMIs	Purchasing manager indices
CHF	Swiss franc	q-o-q	Quarter-on-quarter
CIR	Cost-income ratio	RoA	Return on assets
CRD IV	Capital Requirements Directive	RoE	Return on equity
CRR	Capital Requirements Regulation	RRE	Residential real estate
EBA	European Banking Authority	RWA	Risk-weighted assets
ECB	European Central Bank	S&P 500	Standard & Poor's 500
EEA	European Economic Area	SMI	Swiss Market Index
ESRB	European Systemic Risk Board	SNB	Swiss National Bank
EU	European Union	SREP	Supervisory review and evaluation process
Fed	Federal Reserve Bank	SyRB	Systemic risk buffer
FINMA	Swiss financial market supervisory authority	THK	Liechtenstein Institute of Professional Trustees and Fiduciaries
FMA	Financial market authority	TrHG	Professional Trustees Act
FSC	Financial Stability Council	TT	Trusted Technologies
GDP	Gross domestic product	TVTGT	Tokens and Trusted Technologies Service Provider Act
G-SII	Global systemically important institution	UCITS	Undertakings for collective investments in transferable securities
IU	“Investmentunternehmen”		
LCR	Liquidity coverage ratio		
LTV	Loan-to-value		
ManCos	Management companies		

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