HANFA

MACROPRUDENTIAL RISK SCANNER

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1 Introduction

Along with the Croatian National Bank and the Ministry of Finance, the Croatian Financial Services Supervisory Agency (hereinafter: Hanfa) is responsible for the stability of the financial system in the Republic of Croatia, therefore promoting and preserving financial stability, in accordance with the Act on the Croatian Financial Services Supervisory Agency, is one of the basic goals of its work. A ***stable financial system*** implies the smooth functioning of all its segments (financial institutions, markets, services and infrastructure) in the process of resource allocation, risk assessment and management, and carrying out payments, as well as its resistance to sudden shocks.

Financial stability can be disrupted by the processes that arise and develop within the system, creating vulnerabilities that may materialize in the event of certain shocks in the form of disturbed liquidity and capital positions of financial institutions, disabling the normal functioning of a part or the entire financial system. Such shocks can be transferred from the international environment, but they can also be generated by domestic macroeconomic and financial developments, economic policy or changes in the institutional environment. Therefore, any risk to which the system is exposed and which can have adverse effects on the functioning of the entire financial system or its part, thus causing a serious negative impact on the real economy, represents a ***systemic risk***.

Over the past few years, global progress has been made in the area of understanding and consequently identification, evaluation and monitoring of systemic risks of the financial sector. However, in order to prevent the identified risks in time, and to mitigate the effect of their materialisation, an appropriate set of instruments and tools, i.e. policies aimed at ensuring the stability of the system as a whole, in short ***macro-prudential policies***, had to be developed. In the European Union (EU), bodies with macro-prudential powers have been established at the national and international level, and frameworks for international cooperation have been developed along with macro-prudential tools. Although the focus of macro-prudential policies has so far been primarily on the banking sector, the growing share and importance of the non-banking part of the financial system creates structural changes and requires further development of the macro-prudential framework. In addition, financial integration deepens, creating the need for monitoring and addressing vulnerabilities in the cross-sectoral and cross-border context.

This publication therefore seeks to provide insight into the process of identifying, assessing and monitoring the evolution of systemic risks in the financial services sector under Hanfa's supervision, in order to timely take appropriate measures to prevent their materialisation and the impairment of the financial system stability. This will also contribute to a better understanding of systemic risks, particularly in the vulnerability identification and risk spreading segment, it will stimulate action planning and measures that provide adequate protection against the materialisation of such risks and contribute to greater confidence in the financial system and strengthening the system's resistance to shocks.

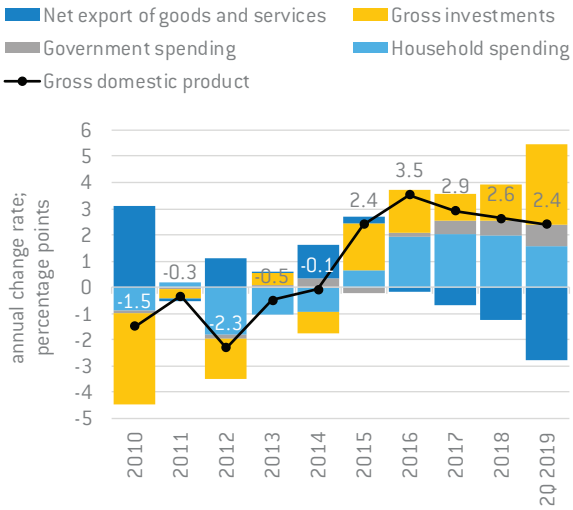
2 Macroeconomic overview

The still relatively favourable domestic cyclical developments and conditions in international financial markets support the tendency to reduce macroeconomic imbalances. However, the risks manifested by the slowdown in global and especially European economic growth and the significant volatility in the financial markets in the context of high uncertainties and tensions could reflect relatively quickly on the domestic environment and highlight the (unfavourable) structural features of the domestic economy. In addition to having a significant impact on the domestic real sector, global developments also have a significant impact on the financial sphere through the interest rate channel and the associated risk of a possible price revaluation of certain asset types. Although the profitability of intermediaries and funds in the financial services market[1] whose investments are concentrated in the form of sovereign debt is still relatively satisfactory, as existing portfolios mature, the current extremely low interest rates could significantly affect their operations (profitability, investment models and strategies, risk appetite, domestic bias, etc.), especially since the poorly active domestic capital market does not offer enough of adequate investment opportunities.

The slowdown in mid-year tourist traffic growth and partial problems in merchandise exports slowed down the annual dynamics of the overall growth of the Croatian economy in the second quarter of 2019. Gross domestic product in this period was 2.4% higher than last year, which represents a slowdown compared to the beginning of 2019.[1]

Aggressive return of some Mediterranean countries to the tourism services market, changes in consumer preferences towards more temporally and spatially dispersed and higher-quality services, infrastructural constraints, workforce problems and general tightening of competition have all contributed to a slowdown in the number of tourist arrivals and the number of overnight stays on the annual level[2]. The slightly worse dynamics of physical indicators in tourism was partly offset by higher prices, so foreign exchange inflows from services in the first half of 2019 amounted to about EUR 2.7bn, which is 4.9% more than in the same period last year. At the same time, export of goods increased by 5.7% during the first six months of 2019. Most of this growth was realized in the EU market, while export to the USA (42.7%), as well as to neighbouring countries (22.2%) also recorded a significant increase, while export to Eastern market (China, Russia) is still marginal[3]. Despite stronger growth of goods export to third countries due to the high integration of the Croatian economy with the EU economy (almost 70% of

Figure 1 Real growth of GDP and contributions to the growth



Source: CBS

1 The financial services sector includes the capital market, pension and investment funds, investment firms, insurance companies and leasing and factoring companies.

2 The number of tourist arrivals in the first seven months of 2019 increased by 4.1% on the annual level (6.6% in the same period in 2018), while at the same time the number of overnight stays increased by 0.7% (5.3% in the same period in 2018).

3 It makes up only 1.8% of total goods export.

goods exports continue to be realized in trade relations with EU countries, most notably with Germany and Italy), it is reasonable to expect that a slowdown in the EU market will reflect on the export performance of domestic companies and have a limiting effect on the dynamics of overall economic growth. Although export growth has been achieved in almost all industries (except petroleum products and furniture), problems in the field of shipbuilding and oil production determine the relative stagnation of aggregate industrial production[4].

As foreign demand for goods and services grew substantially slower than imports in the first half of 2019, domestic demand, with household spending being the dominant component, determined overall economic activity during the second quarter of 2019. Continuous growth of household spending is stimulated by developments in the labour market[5], transfers of secondary income from abroad and intensification of household borrowing, primarily through general purpose cash loans (11.5% annual growth), but also through new housing borrowing (annual growth in housing loans stands around 4%), which is linked to cyclical trends in the real estate market, whose prices, according to the CNB's estimates, are increasingly moving away from fundamentally justified levels. Extremely low interest rates on deposits in the context of a significant banking system liquidity reduce the propensity to save, so the major part of disposable income spills over into consumption, which was 2.7% higher in real terms in the first half of 2019 than in the previous year.

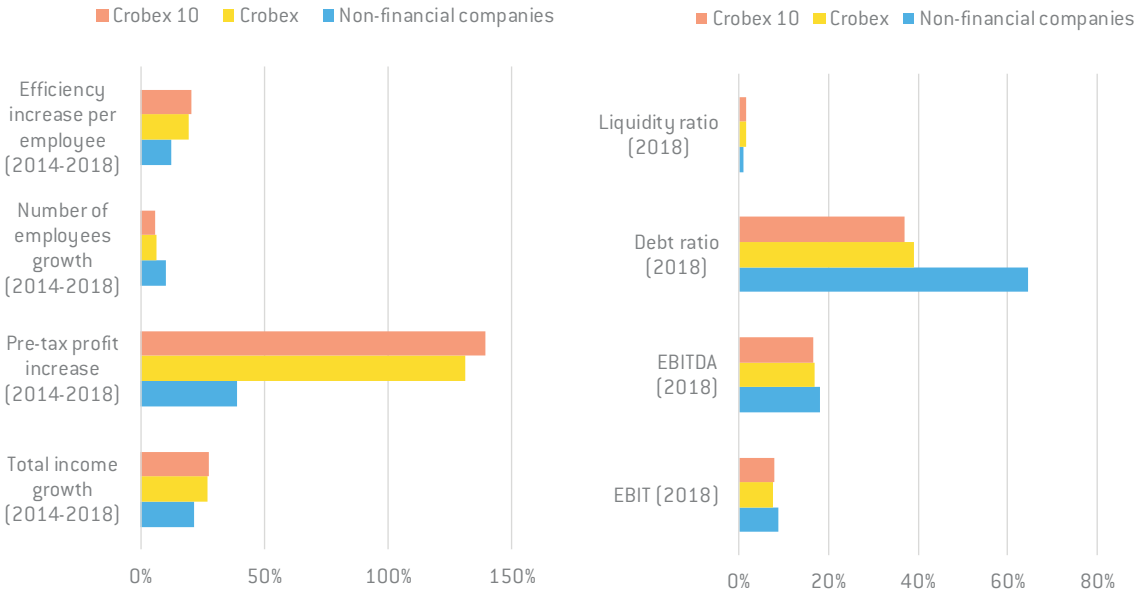
Such growth in total consumption-based economic activity resulted in a 6.7% annual increase in nominal income from taxes and contributions during the first five months of 2019, with income from VAT, the main budget filling channel, up by 9.1%. In addition to the still positive cyclical trends, which automatically fill the government budget via tax channel, the simultaneous growth of foreign aid (EU) of 65.1% resulted in a 12.3% increase in total income. This created room for increase of government spending in the form of expenditures for goods and services of 39.7%, within which investment in fixed non-financial assets increased by 49.2%. This is also the most dynamic component of total investments in the first half of this year, which increased by 9.7% on the annual level in real terms, inducing a 9.5% increase in construction activity during this period. Apart from infrastructure investments (growth of 10.6%), they are supported by the revival of housing construction (growth of 8.8%) associated with rising real estate prices, which, in addition to improved macroeconomic fundamentals and consumer optimism, are influenced by government subsidies.

Years-long positive economic developments are reflected in the performance indicators of domestic non-financial companies (from 2014 to 2018, total income increased by 21.4% and pre-tax profit by 38.9%, Figure 2). Despite higher efficiency and higher revenue growth, companies are still heavily laden with debt at the aggregate level (the debt ratio stood at 64.5% in 2018), which, despite significantly lower interest expense on debt, limits the investment potential of the domestic non-financial sector. Better business performance is clearly differentiated in the segment of companies that finance their business not only through conventional borrowing, but through the capital market as well, although equity investments have a relatively low share in total investments of non-banking financial intermediaries and funds (about 10% of total assets of intermediaries and funds in the financial services market). All this indicates a continuation of the trend of moderate growth of the Croatian economy in the first half of 2019, based on domestic consumption and investments in infrastructure (primarily public), while the export of goods and services is relatively slowed down by the fluctuations in foreign demand and problems in the business operations of certain industries that need longer-term solutions.

4 The average annual growth over the first seven months of 2019 is 1.3%.

5 Employment increase of 1.6% and average net salary increase of 2.6%.

Figure 2 ¦ Performance indicators of non-financial companies

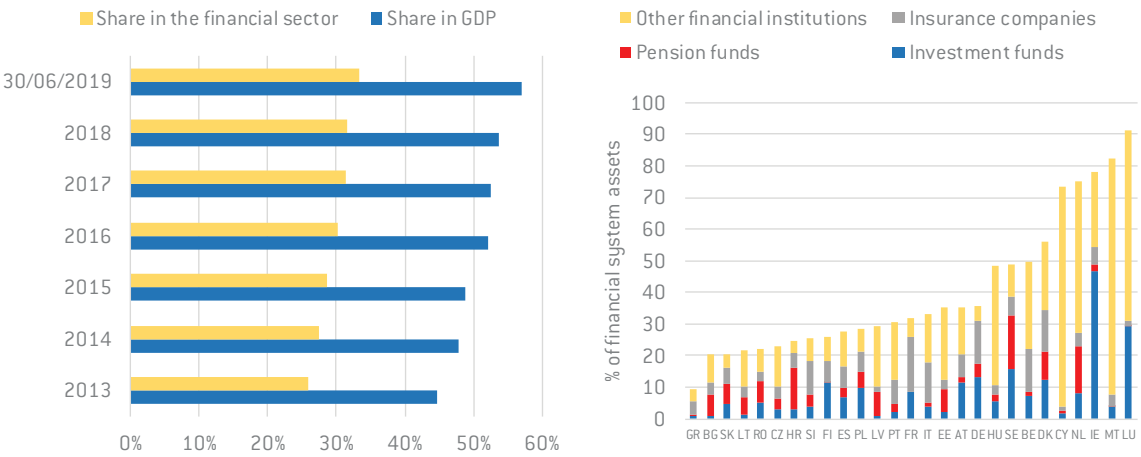


Source: FINA

3 Overview of risks in the financial services sector

The importance of the financial services sector in Croatia has been steadily increasing for almost ten years, and this trend continued throughout the first half of 2019, bringing assets under the management of intermediaries in that market to 33% of total assets of the financial system, or 57% of GDP. Pension funds are the main generators of growth, primarily through new payments, but also returns that are still satisfactory, generated primarily through investments in sovereign debt securities. The dominance of pension funds in the system is what makes Croatia stand out in comparison to other EU countries, while the relative importance of the financial services sector in Croatia is comparable to that of the sector in Central and Eastern Europe. The relatively small and poorly active domestic capital market represents the restriction on significant expansion of the financial services sector , so in the environment of low and declining returns on the most common form of investment (government bonds), financial intermediaries are gradually turning to foreign markets and non-traditional investments.

Figure 3 Size of financial services sector



Note: Data for the first quarter of 2019 are presented, with the financial sector including monetary financial institutions in addition to the financial services sector.

Sources: CNB, CBS, ECB and Hanfa

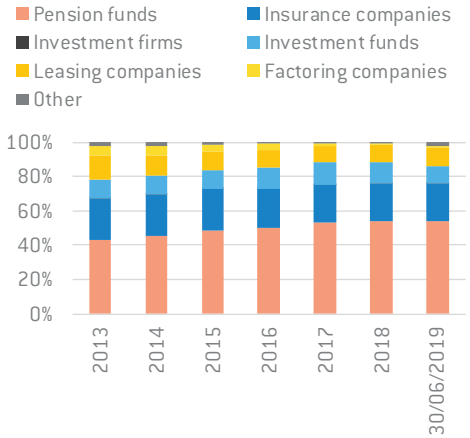
3.1 Concentration

The financial services sector is dominated by pension funds, which manage more than half of the sector's total assets (Figure 4). Continuous payments of contributions, given the still dominant phase of the accumulation of funds in the pension system, are one of the main determinants of the sector's growth. Expected intensification of second- and third-pillar pension payments over the coming years, along with negative demographic trends, will limit this automated growth, so investment strategies and profitable opportunities will determine the sector's outlook on a larger scale.

Insurance companies are the second most important intermediaries in the financial services market with a stable share of the system assets of around 20%. The attractiveness of insurance poli-

cies, beyond legally binding vehicle and vessel insurance or insurance distributed under the lending process, is significantly dependent on how the users of financial services understand such products given they are more complex than, for example, bank loans. This is particularly pronounced if insurance policies include a savings component, such as life insurance, or if the investment risk is borne by the policyholder (unit-linked policies). The business of insurance companies is essentially cyclically dependent, so overall economic opportunities determine the growth of this segment of the financial services sector.

Figure 4 ¦ Pension funds and insurance companies manage about 75% of the assets of the financial services market



Source: Hanfa

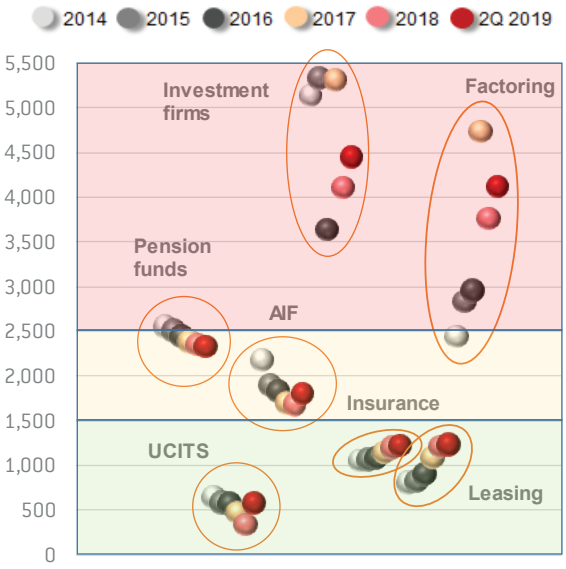
The concentration of individual industries in the financial services market is generally low or moderate, although a very slight tendency of concentration increase has been observed in recent years (Figure 5). However, it is far from levels that would suggest an uncompetitive market.

During the first half of 2019, the concentration increased in almost all segments of the financial services market, with the level of competitiveness being lowest in the factoring and investment firms segment.

Continued consolidation of factoring[6] in the first half of 2019 further reduced the competitiveness

6 One company whose share in the total assets of the factoring sector was just under 5% was liquidated during the first half of 2019.

Figure 5 ¦ Concentration indices of the financial services sector



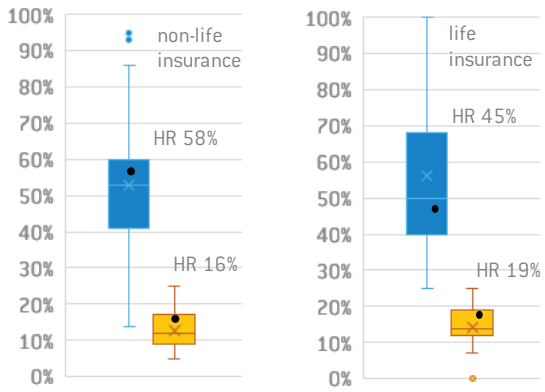
Note: The level of intersectoral concentration is represented with the Herfindahl-Hirschman Index, where higher values indicate higher levels of market concentration. Although there is no generally accepted scale according to which markets are classified as having low/high concentration, the US Department of Justice considers markets with index value up to 1500 as competitive, while those with index value above 2500 are considered highly concentrated.

Source: Hanfa

of this industry, and the same change was observed with investment firms due to the strong increase in assets of one company. Although the concentration in these industries measured by market share is high, the level of competitiveness in factoring and investment services is not low, given that these services are also provided by credit institutions, which are leaders in certain segments of the financial services market (e.g. custody services).

The insurance sector also saw a slight increase in concentration due to the growth of assets of the largest companies (by HRK 2.8bn compared to the end of 2018). Comparatively, the domestic insurance sector is more concentrated relative to the median concentration level in the EU, especially in the non-life insurance segment (Figure 6). Mergers, growth of assets and liquidation i.e. termination of one company are the reasons for the increase in the concentration of investment funds.

Figure 6 ¦ Concentration of insurance sector in the EU (end of 2017)



Note: Concentration was measured by the proportion of the largest three (blue box plot) i.e. five (orange box plot) companies in the total gross premiums written.

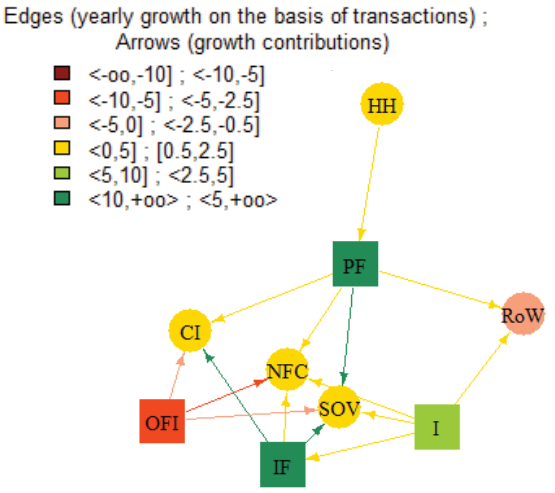
Source: EIOPA

3.2 Interconnection

The financial services sector has been continuously growing for the last ten years in terms of assets under management of the providers of these services. In the period from 2012 until now, pension funds, investment funds and insurance companies recorded the highest average rates of growth of financial assets on the basis of transactions (12.5%, 23.3% and 5.6% respectively), while financial assets of other intermediaries slightly decreased (Figure 7). Such increase in the financial assets of funds and insurance companies was primarily aimed at increasing the exposure to government through debt financial instruments that generated relatively high returns during this period, and to a lesser extent towards non-financial companies and credit institutions. At the same time, no systematically significant increase in interconnections between individual segments of the financial services sector was noticed during the observed period.

Direct exposure through equity, debt and cash forms of financial assets was generally less than 5% of total financial assets of each sector at the beginning of 2019. Insurance companies had somewhat larger exposure (up to 15% of financial assets) towards investment funds, determined by their internally set investment strategies. Consequently, at the end of March 2019, financial intermediaries were not significantly interconnected (Figure 8).

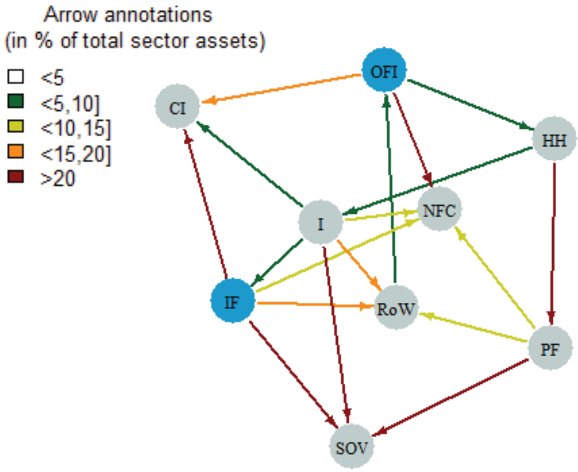
Figure 7 ¦ Pension and investment funds and insurance companies record the highest growth rates of financial assets (from 2012 to 1Q 2019)



Note: Colours of tips (i.e. arrows) indicate the annual growth rates of a particular sector (that is, contributions to the growth of a particular sector) based on transactions from March 2012 to March 2019. The squares indicate sectors of Hanfa's supervised entities. Interrelationships between sectors that are not supervised by Hanfa are omitted for better transparency.

Source: Hanfa's calculation according to data from financial accounts (CNB)

Figure 8 ¦ Mutual exposure of financial intermediaries and exposure to other institutional sectors



Note: Blue circles indicate Hanfa's supervised entities. The interconnection of the sector through financial assets as at 31/03/2019 is shown. Interrelationships between sectors that are not supervised by Hanfa are omitted for better transparency.

Table of sectors' abbreviations:

PF	Pension funds
IF	Investment funds
I	Insurance
OFI	Other financial institutions
CI	Credit institutions
HH	Households
NFC	Non-financial companies
SOV	Government
RoW	Rest of the world

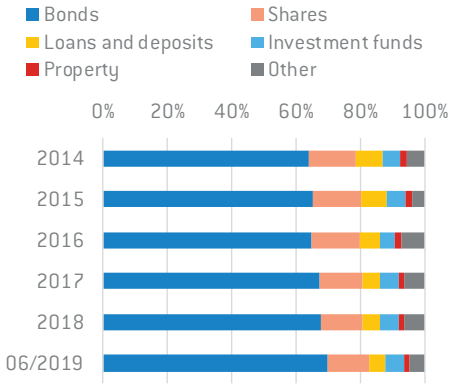
Source: Hanfa's calculation according to data from financial accounts (CNB)

In addition to the direct interconnection of industries from the financial services market, there is also their indirect connection through certain forms of investment, which is significantly more important. Relatively high returns on sovereign debt over the previous multi-year period, legally determined investment limits, conservative investment strategy and limited or unrecognised investment alternatives resulted in significant exposure of insurance companies and pension and investment funds to the state (Figures 8 and 9). At the beginning of 2019, receivables from government arising from financial investments amounted to between 47.1% of financial assets of insurance companies and 67.5% of financial assets of pension funds[7]. The concentration of investments in the form of sovereign debt instruments in a low interest rate environment exposes financial service providers to the risk of reinvestment given the significantly lower returns that government securities generate today (the issuance interest rate is on average 3 pp lower than in the period from 2010 to 2016).

In search of higher returns on investment, financial service providers are increasingly turning to the non-financial companies sector, both domestic and international. Despite a slight upward trend in investment in the non-financial companies sector, intermediaries on the financial services market in mid-2019 were moderately exposed to domestic non-financial companies and abroad. Positive cyclical trends reduce the risks of the non-financial companies sector (Figure 10), but the still high level of debt in the context of low

7 At the level of the entire financial services market, investments in government bonds account for 50% of the financial assets of the market.

Figure 9 ¦ Investment structure of financial services sector with respect to investment type

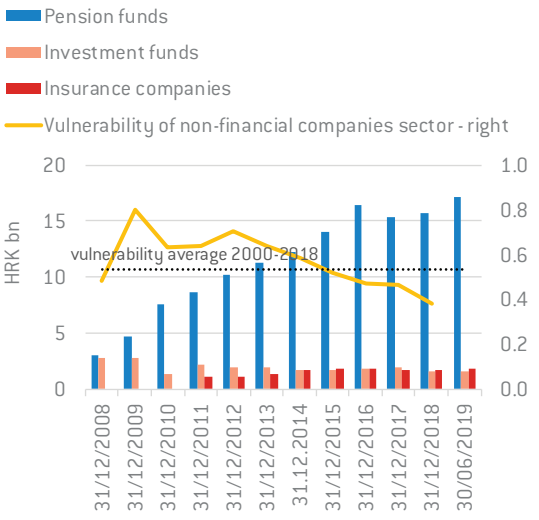


Note: Only investments by insurance companies, pension funds and investment funds are shown, which together account for almost 90% of the assets of the financial services market. Source: Hanfa

Izvor: Hanfa

costs of new debt acquisition is a vulnerability that, in circumstances of increased risk aversion, may worsen the financial picture of that sector. In accordance with the nature of their business, leasing and factoring companies were more significantly exposed to domestic non-financial companies in the amount of more than 50% of financial assets.

Figure 10 ¦ Equity investments and the vulnerability indicator of the non-financial companies sector



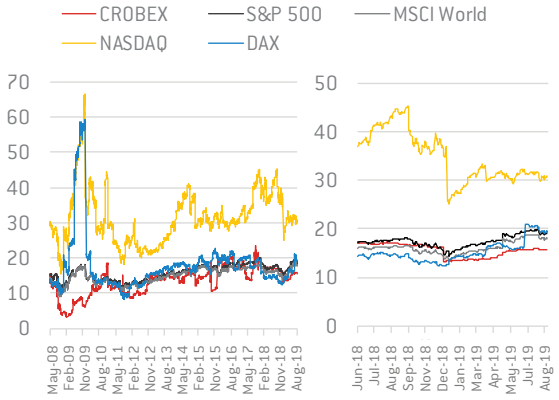
Note: The vulnerability of non-financial companies sector was assessed using three indicators: liquidity indicator, solvency indicator and inertia indicator. For more information, see CNB (2019) Financial stability, No 20

Sources: CNB and Hanfa

3.3 Market risks

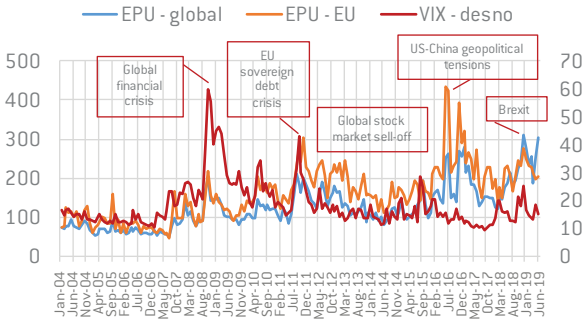
Risks in global equity markets remained high during the second quarter of 2019, continuing the trend from the beginning of the year. This is a reflection of years of market price expansion from the fundamental level, which show a high sensitivity to changes in the investment sentiment (Figure 11), weak economic growth prospects, and significant geopolitical tensions and uncertainties (Figure 12).

Figure 11 ¦ P/E ratios of most important stock indices



Source: Bloomberg

Figure 12 ¦ Market sentiment trend - EPU indicator and VIX indeks

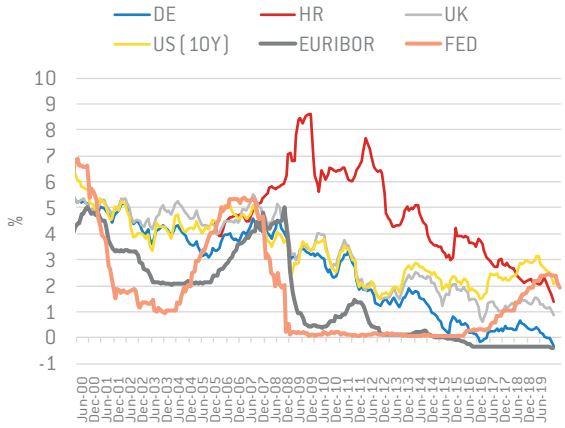


Note: EPU indicator measures economic uncertainty generated by economic policies. It consists of three components: the first component quantifies media coverage on topics related to policies contributing to economic uncertainty, the second component reflects the number of tax law provisions that should expire in the coming years, while the third component uses discrepancies between economic forecasts as a basis for economic uncertainty. VIX index shows the expected volatility of the equity market. It is disseminated by the *Chicago Board Options Exchange* (CBOE).

Sources: Economic Policy Uncertainty (http://www.policyuncertainty.com/) and Bloomberg

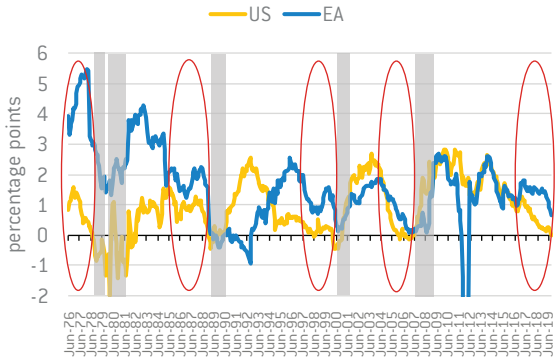
Macroeconomic and market trends, as well as expectations, were reflected in the expansionary activities of monetary centres that are drawing interest rates into hitherto unrecorded, negative territory (Figure 13). Under such circumstances, the signals of a new recession (Figure 14) can very quickly reverse the investment sentiment and cause significant price adjustments, a rise in risk aversion and turning to relatively safer forms of investment, which would have a significant impact on the revaluation of the existing bonds portfolios of financial intermediaries that dominate total investments.

Figure 13 ¦ Returns on ten-year government bonds and trends of reference interest rates



Sources: Eurostat, Bloomberg and St. Louis FED

Figure 14 ¦ Yield curve inversion has historically been a reliable crisis indicator



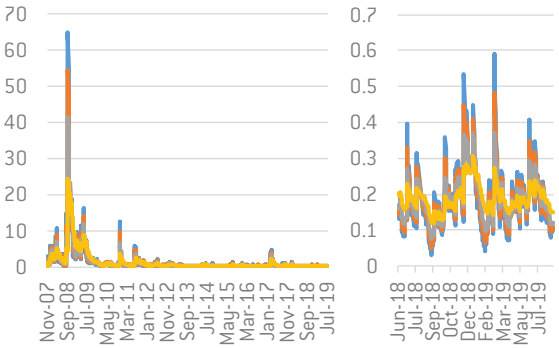
Note: The curves in the figure indicate the difference between returns on 10-year and 2-year government bonds, while gray-marked areas indicate recessions in the USA (more on the definition at https: // fredhelp.stlouisfed.org/fred/data/understanding the data / recession bars /). Red areas indicate the periods in which the inversion of yield curve on US bonds occurred.

Sources: St. Louis FED and ECB

In such global conditions, market expectations of further reductions in reference and risk-free interest rates cause prices of long-term bond investments to rise, which in turn has a spiral effect on the amount of interest rates. The low cost of financing, on the other hand, emphasizes the risks arising from the high debt of the private as well as the public sector and the prevailing strategies of generating returns with the high risks taking by financial intermediaries.

During the second quarter of 2019, the Croatian capital market recorded a 25% quarterly increase in turnover within the order book. With the exception of CROBEXconstruct and CROBEXtransport, all indices have increased. Given the low levels of activity that would reflect fundamental factors, the high integration of international financial markets and the cross-border provision of financial services, the domestic capital market is vulnerable to developments in international markets caused by high levels of geopolitical and economic risks and investor expectations. The trend of the VIX[8] Volatility Index indicates disruptions that the announcement of a no-deal Brexit caused on the global financial markets (Figure 12), and these disruptions also spilled over into the Croatian stock market, albeit to a much lesser extent given the low level of activity in the domestic market (Figure 15).

Figure 15 ¦ Volatility of CROBEX index slightly increased in 2019



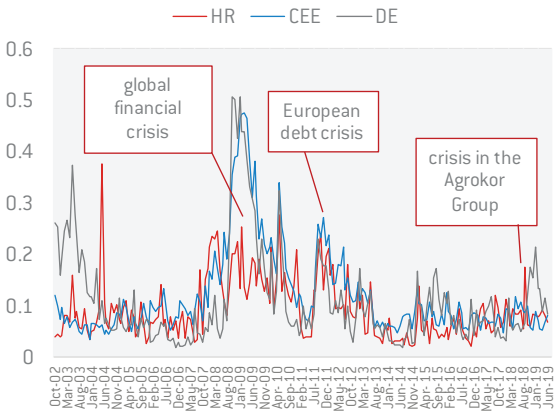
Note: Individual curves show the volatility of the CROBEX index with various smoothing parameters. The CROBEX index volatility was estimated using the EWMA model. The exponentially weighted moving average (EWMA) model is a type of statistics for monitoring time series, using data in a way that the most recent samples are weighted most highly while the most distant samples contribute very little.

Source: Hanfa's calculation according to data from the Zagreb Stock Exchange

8 Volatility measure implicated by options on S&P500 index.

Consequently, in the second quarter of 2019, the domestic stock and bond market was relatively stable, with no indications of a systemic market risk (Figure 16).

Figure 16 ¦ CLIFS indicator of systemic stress - comparison of Croatia with comparable markets

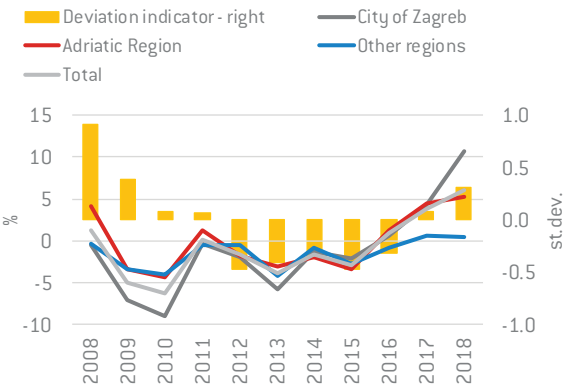


Note: The CLIFS index is a systemic risk indicator that includes six measures. These measures cover equity markets, bond markets and foreign exchange markets. The trend shown applies to Croatia, the countries of Central and Eastern Europe and Germany.

Source: ECB

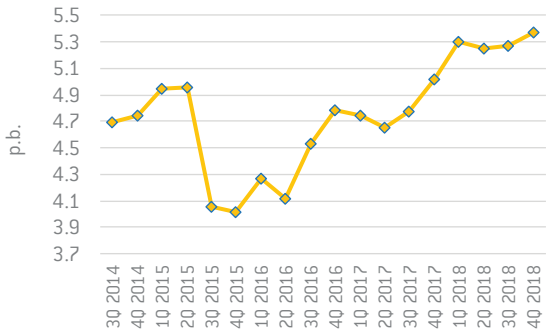
Investments in the real estate market represent an alternative to the investments in the capital market. The real estate market has seen a significant recovery in recent years in the form of prices increase, especially in some of the most attractive regions and cities, which are estimated to be moving further and further away from the level determined by macroeconomic factors (Figure 17).

Figure 17 ¦ Annual growth rates of residential real estate prices and deviation of prices from the level based on macroeconomic fundamentals



Sources: CBS and CNB

Figure 18 ¦ Difference between returns on commercial real estate investment and returns on ten-year government bonds

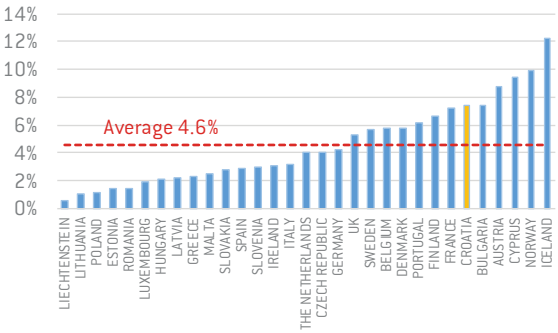


Note: The difference in returns shown is only an indication of the trend in return on investment in commercial real estate and government bonds, since the data on returns on real estate investment are estimated and are not necessarily representative of the entire commercial real estate market in Croatia.

Sources: Bloomberg and Propertas

Prices are rising not only in the residential real estate market, but also in the commercial real estate market, so returns on investments in commercial buildings are decreasing. Despite these trends, investments in real estate are still comparatively more profitable than traditional financial investments (Figure 18). Therefore, in combination with relatively greater freedom to invest than other financial intermediaries, insurance companies maintained their real estate investments at a comparatively high level of 7.4% of total investments (Figure 19), far exceeding the average exposure of the EU insurance companies in the real estate market.

Figure 19 ¦ Insurance companies' investments in real estate (1Q 2019)



Note: The exposures to the real estate market shown do not include indirect exposures to that market and real estate investments required to perform the business operations of insurance companies.

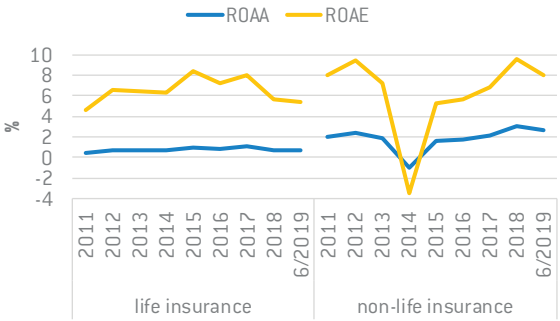
Source: EIOPA

Investor risks persist with respect to certain financial products, although ESMA has extended the ban on selling binary options and CFD restrictions to retail investors. Following a public consultation and several analyses, the Hanfa Board also decided to permanently ban binary options trading and permanently restrict CFD trading[9].

3.4 Profitability and capitalisation

The profitability of financial service providers and funds is at satisfactory levels, although the low interest rate environment continues to burden their business operations, encouraging further search for returns and taking on potentially greater risks. Generating adequate returns is particularly challenging for companies in the life insurance segment (Figure 20), given their long-term commitments with respect to high-guarantee policies concluded in the past[10].

Figure 20 ¦ Profitability of insurance companies



Source: Hanfa

Increased claims expenditures in 2019 resulted in a slight decline in the profitability of non-life insurance companies, which is also evident through a slight increase in the combined ratio[11] (Figure 21).

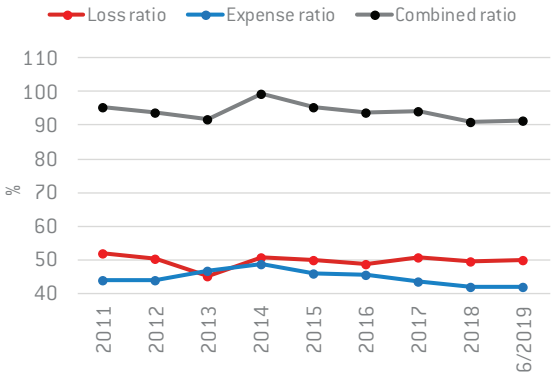
9 https://narodne-novine.nn.hr/clanci/sluzbeni/2019_07_71_1509.html

10 Technical provisions modelled for life insurance policies that carry some level of guaranteed returns make up about 89% of total technical provisions for life insurance (2Q 2019).

11 The combined ratio is the sum of the loss ratio (the ratio of expenses related to claims and earned premiums for the relevant period) and the expense ratio (the ratio of all operating expenses and earned premiums for the relevant period).

Through several years of reducing operating costs, insurance companies reduced their combined ratio to levels same as those before the liberalization of the compulsory traffic insurance market, so that as of the end of 2017, it stood slightly below the median value of the combined ratios of EU insurers, which stands around 95%.

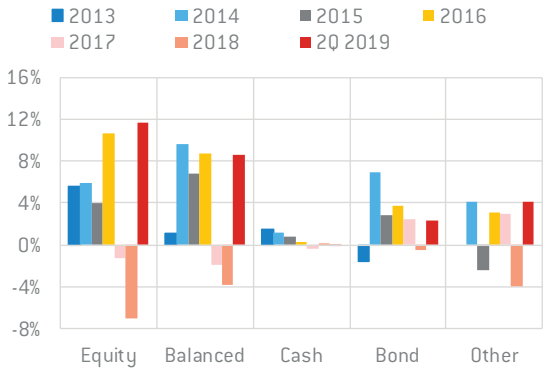
Figure 21 ¦ Gross ratios for non-life insurance



Source: Hanfa

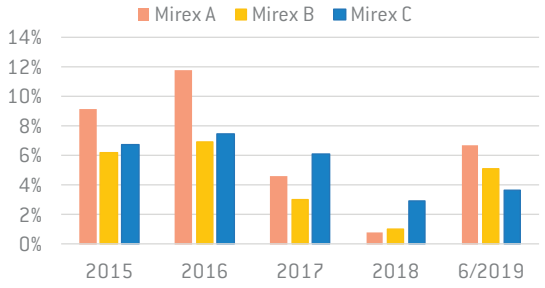
The rise in prices on equity markets in 2019, after the volatile 2018, with comparatively rather high returns generated by domestic sovereign debt securities, especially older issues, resulted in an increase in the returns for the entire domestic fund industry in the first half of 2019, following losses in 2018 caused by negative trends in the international capital markets and the crisis in the Agrokor Group (Figures 22-25).

Figure 22 ¦ Average annual returns of UCITS weighted by the share in assets



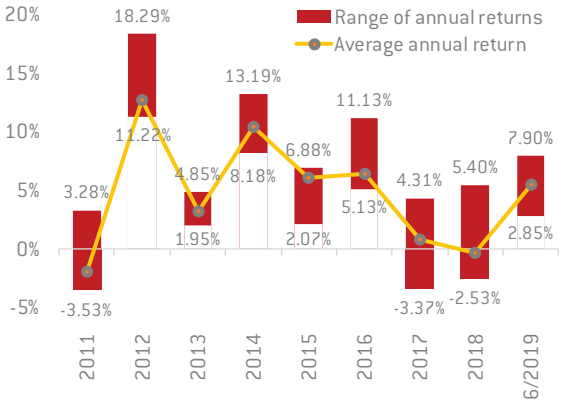
Source: Hanfa

Figure 23 ¦ Annual returns of Mirex indices



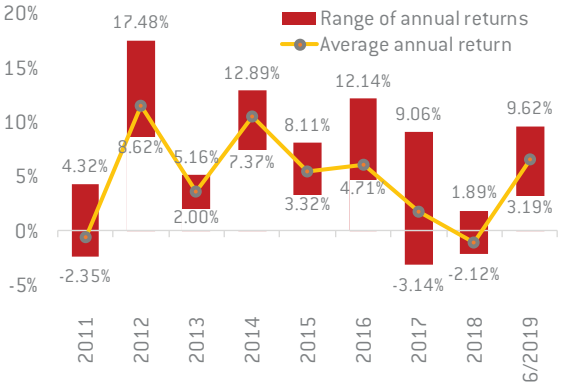
Source: Hanfa

Figure 24 ¦ Returns of open-ended voluntary pension funds



Source: Hanfa

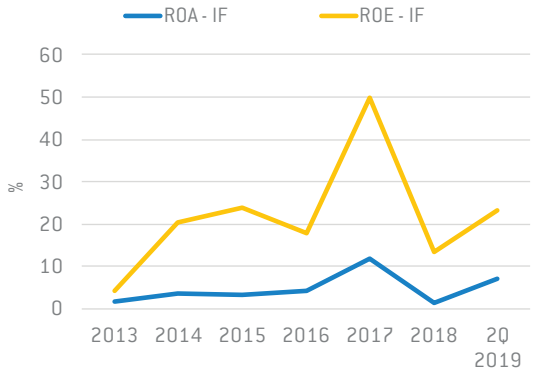
Figure 25 ¦ Returns of closed-ended voluntary pension funds



Source: Hanfa

Lack of action in the domestic capital market has led investment firms to seek returns on foreign markets, so during the last period the income from trading in this segment has increased (Figure 26).

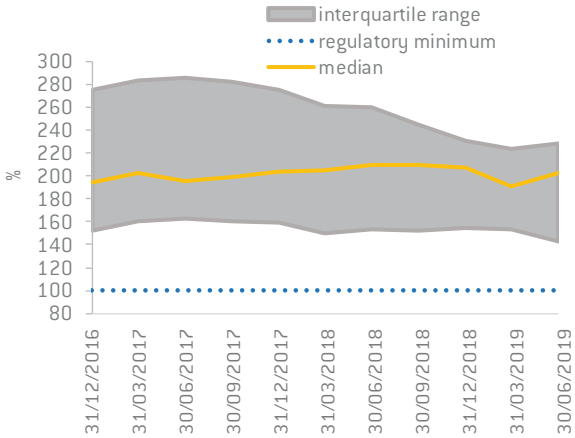
Figure 26 ¦ Profitability of investment firms



Note: Profitability indicators for second quarter 2019 are annualised.

Source: Hanfa

Figure 27 ¦ Solvency ratios of insurance companies



Source: Hanfa

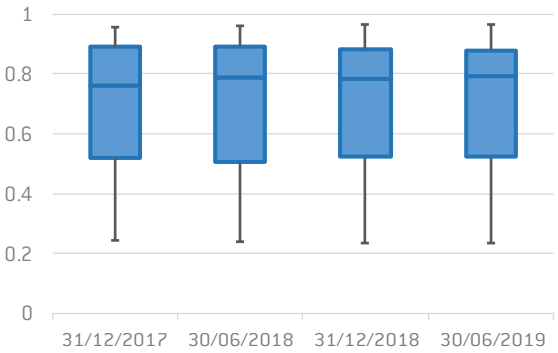
Despite the lower profitability, solvency indicators[12] of the insurance sector are relatively stable, with a median solvency ratio well above the regulatory minimum[13] (Figure 27).

The increase of the credit rating of the Republic of Croatia at the beginning of 2019, reduced the risk factor in the calculation of capital requirements for concentration risk and range risk related to sovereign bonds issued in foreign currency. This largely contributed to the expansion of the upper part of the solvency ratio distribution relative to the previous quarter. The reduction of this factor will surely greatly influence the planned investment strategies of insurance companies with high exposure to sovereign bonds issued in foreign currency, whose capital adequacy without the application of transitional measures in calculating capital requirements for this risk (increasing the risk weight for the calculation of capital requirements from 50% to 100%) would be severely impaired in the next year without taking any risk mitigation measures.

3.5 Liquidity risk

Liquidity of the financial services sector did not change significantly during the first half of 2019, compared to the previous year (Figure 28). The median share of liquid assets in total assets of insurance companies increased only slightly during this period (from 78.4% at the end of 2018 to 79.2% in mid-2019). Domestic insurance sector is comparatively more liquid compared to the average of European insurers (it stood at 67% at the end of 2018), which is the result of the relatively higher representation of investments in bonds of domestic insurers, relative to the EU companies. Regardless of the credit risk (rating) of the issuer, government bonds are considered to be the most liquid form of investment, same as cash and deposits.

Figure 28 ¦ Liquidity ratios of insurance companies



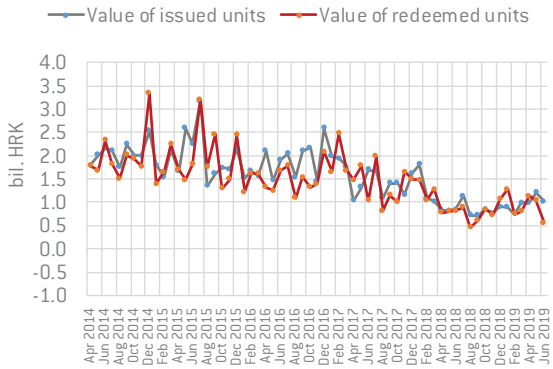
Source: Hanfa

12 Solvency 2 defines two levels of required capital: Minimum Capital Requirement (MCR) representing the minimum allowed capital level and Solvency Capital Requirement (SCR) representing the level of capital that enables an insurance or reinsurance undertaking to absorb almost all adverse events and solvent business operations considering the underwriting risk.

13 An insurance company is obliged to have eligible own funds covering the Solvency Capital Requirement and Minimum Capital Requirement, i.e. maintain the ratio of eligible own funds to SCR and MCR above 100 %.

The liquidity of UCITS is also stable with regard to the balance of payments into funds and withdrawals from funds (Figure 29). Since mid-2018, there has been a noticeable upward trend in investor activity in investment funds.

Figure 29 ¦ Trading in UCITS units



Source: Hanfa

3.6 Operational risks

Cyber risk

Cyber threats still pose a significant risk to the stability of the global financial system. In the past several years, financial distribution channels have gone through a rapid transformation and digitalisation process, which led to fewer traditional branches and improved internet services. The same trend has been observed in Croatia. P2P[14] lending, e-money issuers and other FinTech companies have been offering their increasingly popular services through applications and web interfaces. Empirical research has shown that cyber attacks are most common in the area of financial services, and focus primarily on applications and web interfaces[15]. However, even though cyber attacks themselves do not represent a systemic risk[16], combined with economic vulnerabilities and risks taken by market participants in their business operations (e.g. interest rate risk, investment risk, etc.) cyber risk could be one of the triggers for the systemic crisis, i.e. its catalyst. Financial infrastructure is the most vulnerable and irreplaceable part of the financial system, as is the case in Croatia, where certain financial services and processes crucial for the functioning of the entire system are concentrated and take place within one systemically important entity (Zagreb Stock Exchange, Regos, CDCC). This, combined with a high level of interdependence and concentration (of entities within and outside the financial system), lack of transparency as regards interconnectedness and heavy reliance on data, is the source of potential systemic effect of isolated cyber attacks on certain points of the financial infrastructure.

As regards supervision and the strengthening of resistance to cyber attacks, many EU Member States have applied or are applying IT security-testing frameworks. In order to ensure coherent application and a level-playing field on cyber resilience for regulated entities and financial infrastructures within the EU, the European Supervisory Authorities have adopted guidelines and advice on a coherent cyber resilience testing framework for important financial market participants and the entire EU financial sector[17]. Hanfa, as a member of ESMA's Cyber Contact Group, will continue monitoring potential cyber risks.

Geopolitical risk

Financial markets have become extremely sensitive to geopolitical risks, which reached high levels in the second quarter of 2019 (Figure 11). Global geopolitical causes for market uncertainties and fluctuations, partly also reflecting on the Croatian capital market, are Middle East tensions arising from incidents between the USA and Iran, European fragmentation and trade tensions between the USA and China. Risks regarding global trade discussions between the USA and China are projected to be high in the next quarter, while geopolitical risk in EU remains at moderate levels following recent results of both European and national elections.

14 Peer-to-peer lending is a loan given by a private person to another private person.

15 Kopp et al. (2017): Cyber Risk, Market Failures and Financial Stability, MMF Working Paper, WP/17/185

16 Danielsson et. al. (2016): Model Risk of Risk Models, Journal of Financial Stability 23, 79-91

17 https://eba.europa.eu/documents/10180/2551996/JC+2019+25+%28Joint+ESAs+Advice+on+a+coherent+cyber+resilience+testing+framework%29.pdf

At the same time, Europe is still facing the risk of a no-deal Brexit. The second quarter of 2019 was marked by the appointment of the new UK prime minister, which increased the likelihood of a no-deal Brexit. Negative sentiment had an impact on the volatility of the currency rate and caused fear regarding economic growth, while capital markets mostly grew due to reduced trade tensions in the EU (FTSE index rose by 5.4% and Eurostoxx by 5.3%). Lack of obvious movements on financial markets in the second quarter of 2019 related to Brexit, along with the appointment of the new prime minister and the new attitude of the Government towards Brexit, may lead to new uncertainties on capital markets both in the EU and Croatia in the following quarter. By participating in the work of ESMA, Hanfa took part in the preparation of the Multilateral Memorandum of Understanding, to be concluded between representatives of EU-27 (and EEA) supervisory authorities and the UK's Financial Conduct Authority (FCA) in the no-deal Brexit scenario.

Financial services market as the source of systemic risks

Systemic risk is a concept mostly related to the banking sector, primarily due to the dominant representation of this sector in the financial system, but also due to its role in the latest global financial crisis. However, despite the fact that the entire traditional insurance business entails less risk compared to the banking sector[18] and that systemic events occur much less frequently in that part of the financial sphere, the insurance sector as part of the system may also be the source of and/or the catalyst for risks of systemic nature[19]. The increase in insurers' assets and partly changed business models of insurance companies also led to the increase in potential contribution of that sector to the development of systemic risk[20]. Therefore, it is important to regularly monitor and analyse insurance sector risks and their nature for the purpose of taking timely action and shaping key macroprudential policies, addressing cumulation of systemic imbalances in an adequate manner and preparing financial entities for absorbing any instability. The following text provides a short theoretical overview of the evolution of (systemic) risks in this sector and of their transmission channels, including recent vulnerabilities of the European and Croatian insurance sector.

Systemic risk trigger in the insurance sector, as is the case with other financial institutions, may be found in macroeconomic (e.g. economic slowdown and unfavourable labour market trends, which might lead to the increase in lapse rate), financial (changes in returns, interest rates, capital market and real estate market prices) or non-financial environment (demographic changes, cyber attacks, climate changes). However, whether an initial disturbance will develop into a systemic event, depends on specific risk profiles and vulnerabilities of individual insurers and their interconnectedness, but also on characteristics of the entire system.

There are two possibilities for such initial shock to grow into systemic instability (Figure 1). In the first scenario, the initial shock disturbs the smooth functioning of a single, but systemically important financial institution, which might cause difficulties in the functioning of the entire financial system (domino effect) due to its characteristics (size, complexity, uniqueness and connectedness to other entities).[21] In the other case, a group of financial not necessarily systemically important institutions might pose a threat to the financial stability (tsunami effect) due to their similar activities or exposure to certain instruments/issuers on the same markets.[22]

18 EIOPA: Systemic risk and macroprudential policy in insurance

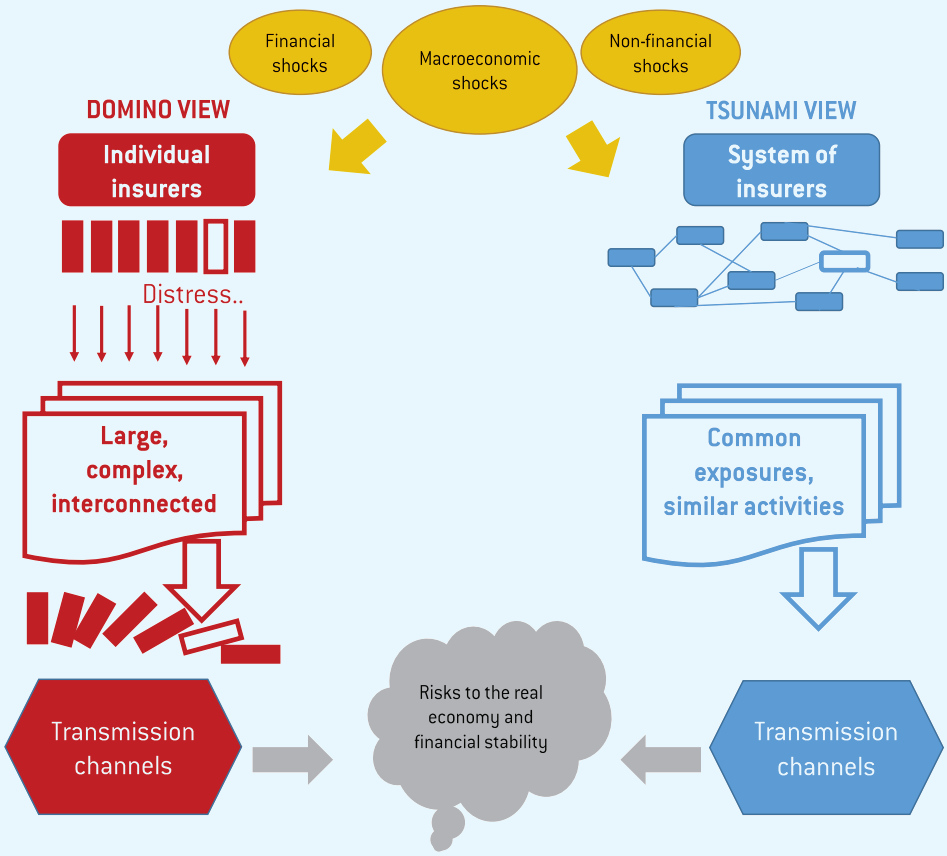
19 Billio, M., Getmansky, M., Lo, A. W., and Pelizzon, L.: Econometric measures of connectedness and systemic risk in the finance and insurance sectors. Journal of Financial Economics, v.104, no.3, 2012, pp.535-559 and Weiß, G. N. and Mühlnickel, J.: Why do some insurers become systemically relevant? Journal of Financial Stability, v.13, 2014, pp.95-117

20 At EU level, insurance companies' assets increased almost twofold over the last decade.

21 Identification of Global Systemically Important Insurers (GSIIs) is one of the tasks of the International Association of Insurance Supervisors (IAIS), which improves the methodology for identifying GSIIs on an on-going basis.

22 For example, if insurers invest predominantly in bonds, any sudden correction of their prices may have far-reaching consequences on the entire financial system.

Figure 1 ¦ Systemic risk in the financial system



Sources: IMF and Hanfa

Channels through which initial shocks may spill from the insurance sector onto the rest of the financial system and real economy are similar to those relating to other financial institutions. However, there are two most important channels that need to be mentioned, namely the contagion channel and fire-sale channel, as a specific channel of contagion.

Direct or indirect contagion among financial institutions is a significant channel through which impacts of the initial shock can multiply. Direct contagion among financial institutions is a result of direct connections between the insurer and other financial institutions, while indirect contagion results from similar investment policies, which make institutions exposed to the same or similar asset categories, whose price changes may lead to disruptions in their regular business operations. Account should also be taken of the internal integration of the entire system of financial services providers, which means that insurers are not isolated from disturbances experienced by other financial market participants. For example, under market stress, insurers may face liquidity problems, which intensify through the indirect channel of contagion. A sudden and involuntary asset sale by a systemically important insurer or by a sufficient number of smaller insurers may cause not only reputational risks, but also market disruptions and, as a result, price declines due to the market's difficulty in absorbing the sale, thus making funding even more difficult. Interaction of funding liquidity risk and market liquidity risk may lead to illiquidity spirals, increased market volatility and market disruptions. This channel is especially significant for smaller, less liquid markets, such as the market in Croatia.

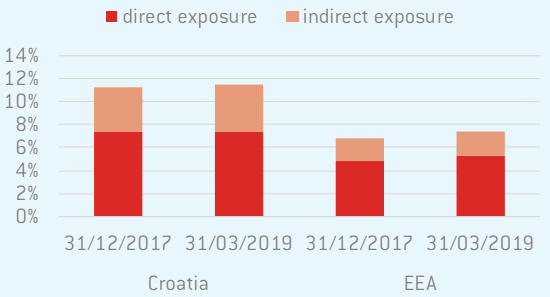
However, it should be kept in mind that channels of disturbance transmission are closely intertwined under stressed conditions; therefore, under the stress scenario initial shocks will have diverse impacts on business operations of insurance

companies, as well as and other financial services providers. Complex global integration and interconnectedness of the entire financial system face regulators with the challenge of discovering any potential channels for the transmission of shocks among institutions.

Recent vulnerabilities of insurance companies are connected primarily with continuing low interest rates, which reached their lowest levels ever under the influence of cyclical (financial cycle) factors and structural (secular stagnation) factors.[23] Such a prolonged low interest rate environment on global markets puts pressure on the profitability and makes insurers look for more profitable investment opportunities in order to earn sufficiently high returns to meet long-term liabilities (search for yield). Prevailing investment strategies employed by European insurance companies in the last several years have been based on investments in debt securities, particularly in sovereign bonds deemed as relatively safe investment position. Croatia is no exception in this case, as insurers' assets are also primarily invested in domestic sovereign debt securities considering relatively high returns they generate in comparison with the level of risk underwritten (about 64% at the end of the first quarter of this year). However, the continuing decline in returns will force insurers to diversify their portfolios further and include riskier asset classes, which should ensure higher returns in the long run.

Stock markets are an alternative investment option, but there has been no significant rise in stock investments in Croatia, owing partly to increased aversion to risks the insurers are still not willing to take, and partly to scarce supply and low liquidity in the domestic market compared with the ones in Western Europe. As a result, some insurers are turning to foreign capital markets. However, total investments in this market are still significantly lower compared to the European average.[24] An attractive alternative to traditional investment options is the real estate market; therefore, exposure of EU insurers to this market keeps growing (Figure 2).[25] The same trend has been recorded in Croatia, where insurers' investments in real estate are slightly higher than the European average (Figure 19 in Chapter 3.3 Market risks).

Figure 2 ¦ Insurance companies' exposure to the real estate market, presented as a share in total investments



Note: Indirect exposure to real estate is a sum of structured notes mainly exposed to real estate risk (CIC 55), collateralised securities mainly exposed to real estate risk (CIC 65) and loans made with collateral in the form of real estate (CIC 84). Direct exposure relates to total exposure to real estate reduced by indirect exposure and exposure to real estate for own purposes (CIC 93, CIC 95 and CIC 96).

Source: EIOPA

Exposure to real estate market may involve risks for several reasons. On the one hand, the rise of real estate prices, currently recorded in the majority of European countries[26], leads to a decline in returns. This makes a negative impact on the profitability of insurers, which use their investments in alternative asset types, such as real estate, to diversify their portfolios, but therefore also face greater risks. On the other hand, a significant rise in real estate prices that is not based on macroeconomic fundamentals (Figure 17 in Chapter 3.3

23 ESRB: Macroprudential policy issues arising from low interest rates and structural changes in the EU financial system

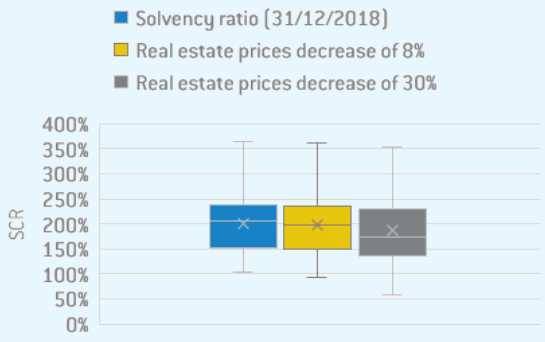
24 At the end of the first quarter of 2019, about 8% of insurers' assets were linked with the stock market in Croatia, nearly half as much as compared to aggregate indicators for the European Economic Area (15%).

25 Compared to end-2017, total real estate exposure, including both direct and indirect exposure, of insurance companies at the European level increased by 11.7% by the end of the first quarter of 2019.

26 According to data from the European Central Bank, residential real estate prices in the euro area increased by 4.2% in 2018, with strong heterogeneity across countries. At the same time, commercial real estate prices came close to 2007 levels (https://www.esrb.europa.eu/ pub/pdf/reports/esrb.report190717_NBFImonitor2019ffba7c155135.en.pdf)

Market risks) increases the likelihood of price adjustments in the future, which in turn may have a negative impact on the value of assets and the capitalisation of insurance companies. It should be borne in mind that financial cycles last longer and have greater amplitudes than business cycles[27], which is also confirmed by historically recorded price adjustments in the real estate market. In addition, in the downward phase of the cycle, market liquidity decreases and credit risk increases, since insurance companies are also indirectly exposed to the real estate market in the form of loans they provide with real estate as collateral. In the event of a sudden disturbance of prices in the real estate market, all of this would adversely affect the insurance sector. However, it should be kept in mind that real estate, especially of commercial type, is a highly heterogeneous category in terms of size and qualitative and location characteristics, and that all of the disturbances described and intertwined in the downward phase of the cycle are first reflected in real estate with "poorer characteristics" (older real estate located in less attractive locations). At the same time, price correction would least affect real estate in more attractive locations. Therefore, when considering the risks arising from the exposure of insurance companies to the real estate market, apart from aggregate indicators, the microstructure of real estate should also be addressed.

Figure 3 ¦ Simulation of the impact of real estate prices decrease on the capitalisation of insurers in Croatia



Source: Hanfa

27 Borio C.: The financial cycle and macroeconomics: What have we learnt?, BIS Working Papers No 395.

Vulnerability analysis of insurance companies' capital positions with respect to a fall in real estate prices by an additional 8%, i.e. 30%[28], in addition to the standardised risk factor of 25% for real estate market exposures used in the SCR calculation, shows that most insurance companies would not have problems in maintaining the solvency ratio above the regulatory level even after simulated significant price reductions. Only one company would not have enough own funds to cover SCR after an additional fall in real estate value, but there would be no systemic effect (Figure 3). Although simulation results suggest that current exposure levels of Croatian insurance companies to real estate market do not constitute systemic vulnerability, considering their capital reserves, it should be pointed out that disturbances in this market never occur isolated from other shocks. Therefore, it is conceivable that, in the case of an unfavourable scenario that would reflect disruptions in the macroeconomic sphere (decline in economic activity, salary reductions, rise of unemployment, etc.), but also in the entire financial market (decrease in stock prices, decline in the value of debt instruments issued by non-high-grade issuers, rise in interest rates and credit risk), a majority of insurance companies and even some segments of the financial services market, due to its interconnectedness, may face difficulties that might lead to the destabilisation of the entire system.

One of the most important tools for identifying vulnerabilities of the financial system is stress testing. It represents a method that aims to test the resistance of the system to sudden shocks, by using one or more stress scenarios. The European Insurance and Occupational Pensions Authority

28 In addition to the shock involving the current 25% fall in real estate value involved in the calculation of the SCR, other shocks were also analysed - those involving an 8% fall in real estate value (the largest fall in prices recorded in a year) and a 30% decline in real estate value (the largest real estate price index correction recorded in the Croatian market).

(EIOPA) has been carrying out stress tests at EU-level on an ongoing basis since 2011.[29]

One of the scenarios included in the last stress testing involves, in addition to the macroeconomic and financial shocks mentioned, a series of natural disasters, given that climate changes have been recognised as a new source of risk whose consequences have not been fully explored yet.

This exercise is important for the Croatian market too, as it reveals potential risks that, in stressful conditions in international markets, are likely to affect Croatia as well.

For the purpose of properly identifying potential domestic vulnerabilities, the Croatian Financial Services Supervisory Agency will nevertheless design stress test exercises specific to the domestic environment, thus expanding the existing range of instruments for managing systemic risks in the financial market services.

29 Four stress tests have been conducted so far: in 2011, 2014, 2016 and 2018. The last test, conducted in 2018, covered a total of 42 insurance companies accounting for abuot 75% of the European insurance market, but none of companies was from Croatia. As opposed to that, the 2016 and 2014 tests included Croatian companies, too, as the aim was to encompas 75% of the market and 50% of the market in each Member State. Information on the tests, including their results, is available at: https://eiopa.europa.eu/financial-stability-crisis-prevention/financial-stability/insurance-stress-test

List of abbreviations

GDP	–	gross domestic product
CEE	–	Central and Eastern Europe
CFD	–	contract for difference
DE	–	Federal Republic of Germany
CBS	–	Croatian Bureau of Statistics
EIOPA	–	European Insurance and Occupational Pensions Authority
ECB	–	European Central Bank
ESMA	–	European Securities and Markets Authority
EU	–	European Union
EUR	–	euro
Fina	–	Financial Agency
Hanfa	–	Croatian Financial Services Supervisory Agency
CNB	–	Croatian National Bank
HR	–	Republic of Croatia
KN, HRK	–	Croatian kuna
MCR	–	Minimum Capital Requirement
IMF	–	International Monetary Fund
bn	–	billion
m	–	million
pp	–	percentage point
VAT	–	value-added tax
Regos	–	Central Registry of Affiliates
RH	–	Republic of Croatia
USA	–	United States of America
SCR	–	Solvency Capital Requirement
CDCC	–	Central Depository and Clearing Company
UCITS	–	undertakings for collective investments in transferable securities
UK	–	United Kingdom