



MACROPRUDENTIAL RISK SCANNER

2023 - 1st Half

Number IX, September 2023



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1 INTRODUCTION

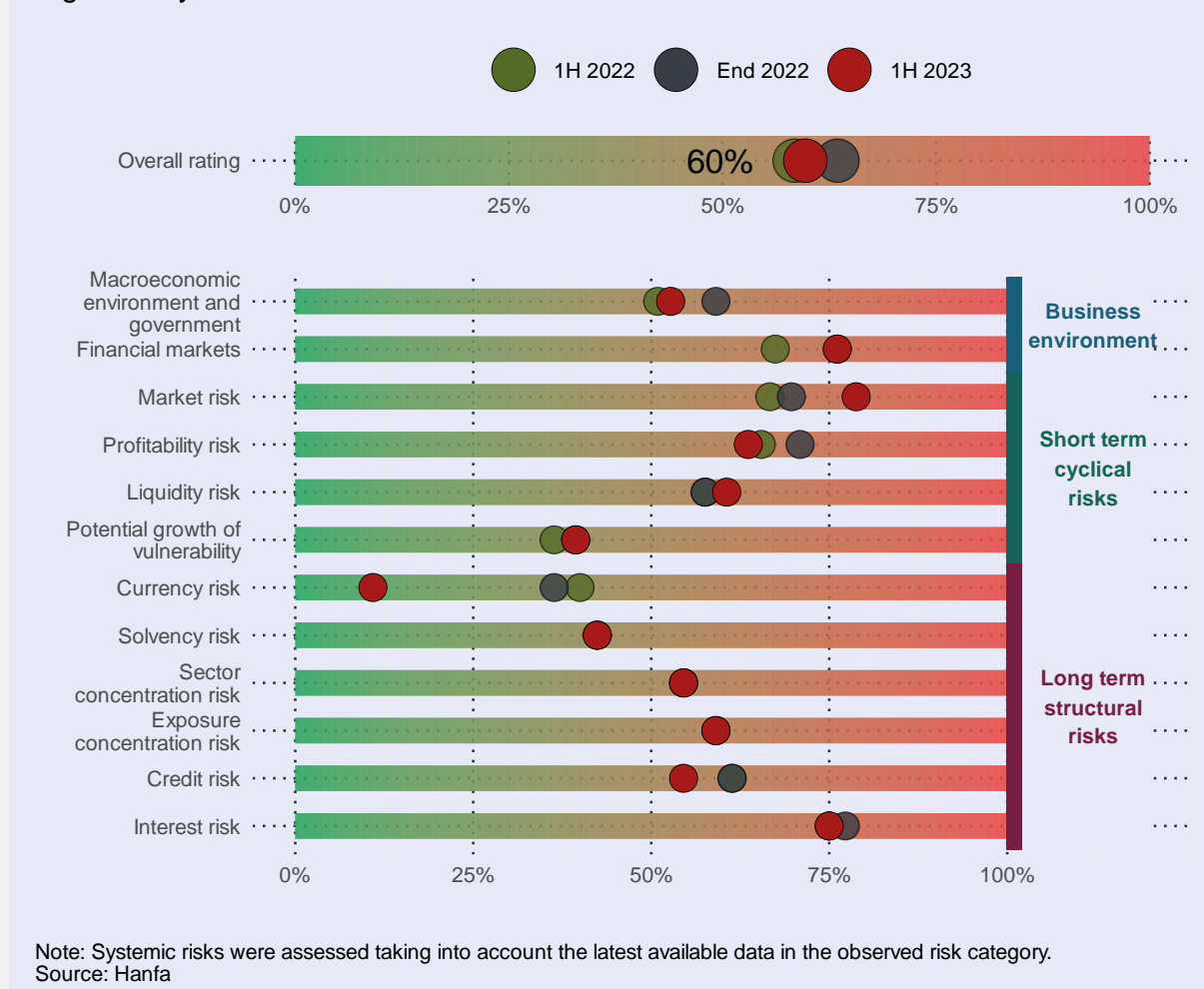
Together with the Croatian National Bank and the Ministry of Finance, the Croatian Financial Services Supervisory Agency (hereinafter: Hanfa) is responsible for the stability of the financial system in the Republic of Croatia, therefore promoting and preserving financial stability, in accordance with 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 materialise in the event of certain shocks in the form of disturbed liquidity and capital positions of financial institutions, disabling the smooth functioning of a part or the entire financial system. Such shocks can be external, i.e. transferred from the international environment, or idiosyncratic, i.e. 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, it is necessary to develop an appropriate set of instruments and tools, i.e. policies aimed at preservation of the stability of the system as a whole, called **macroprudential policies**. Therefore, in the European Union (EU), bodies with macroprudential powers and mandates have been established at the national and international level after the global financial crisis, and frameworks for international cooperation have been developed along with macroprudential tools. Although the initial phase of macroprudential capacity development was primarily focused on the banking sector, the growing share and importance of the non-banking part of the financial system create structural changes and require further development of the macroprudential framework, as well as the expansion to the financial services sector in order to adequately address systemic risk and prevent regulatory arbitrage. In addition, financial integration is constantly deepening, creating the need for a holistic approach, which the system views as an inseparable whole, the key part of which consists of monitoring and addressing vulnerabilities in a cross-sectoral, but also cross-border context.

The publication ***Macprudential risk scanner*** 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 contributes to better understanding of systemic risks, particularly as regards the identification of vulnerabilities and risk transmission channels, encourages action planning and measures that provide adequate protection against the effects of the materialisation of such risks and contributes to greater confidence in the financial system and to the strengthening of the system's resistance to shocks.

Figure 1 Systemic risk matrix - 1st Half 2023



The overall assessment of systemic risks of the financial services sector decreased slightly in the first quarter of 2023, but remains positioned in the zone of elevated systemic risks. A slight slowdown in inflation and the retention of positive labour market characteristics contributed to the reduction of systemic risks in the macroeconomic environment, and the elimination of a large part of currency risk due to Croatia's accession to the euro area at the beginning of the year also reduced the aggregate risk assessment of the financial services sector. Trends in global financial markets were characterised by banking instability in the first part of 2023, which briefly increased systemic risks. However, the volatility of the market very quickly decreased, and the attention of investors again shifted to tightening monetary policy. In the following period, the dynamics and strength of raising interest rates in response to the inflation crisis will be an important determinant of market sentiment, but also of economic growth. The most prominent risks to which the domestic financial services sector is exposed at the end of the first quarter of 2023 remain interest rate risk and related market risks. The existing globally high levels of valuation of financial assets, especially stocks, increase the likelihood of future price adjustments in global financial markets that would cause significant adjustments in the domestic market, increasing the level of systemic risk in the financial services sector.

2 MACROECONOMIC AND FINANCIAL ENVIRONMENT RISKS

2.1 Macroeconomic environment

Although inflation indicators in the Republic of Croatia improved at the beginning of 2023 compared to the previous year, the pressure on price growth has not stopped. At the same time, modest growth of the surrounding economies is expected in the rest of this year, and for some countries a decline in economic activity, which could jeopardise the forecasts of already weak growth of the Croatian economy.

In the first half of 2023, real economic growth continued to slow down on an annual level. At the end of March and June, the annual real GDP growth rates were 2.8% and 2.7%, respectively, the lowest annual growth rates recorded in the last two years (Figure 2.1). While growth was widespread in the first quarter, in the second quarter of 2023 it was led by increase in personal consumption, the largest component of GDP, which grew by 2.3% on an annual level despite inflationary pressures. Short-term economic activity indicators suggest a recovery in consumer sentiment in the second quarter of 2023 as well (Figure 2.2), which is primarily the result of a strong labour market and the return of real net wage growth in the second quarter of 2023. According to the [European Commission's spring forecast](#), no change in the dynamics of growth is expected in 2023, so the domestic economy should remain in a

positive area this year, with personal consumption and investments as the main pillars of economic activity. The realisation of the forecast will largely depend on the results of the tourist season, the containment of inflationary pressures, as well as the economic prospects of major foreign trade partners, some of which are already in a technical recession.

Figure 2.1 Despite the slowdown in economic growth, Croatia registered higher growth than most EU countries in the second quarter of 2023

Annual rate of change in real GDP and the characteristics of the distribution of the annual rate of change in real GDP, 2Q 2023, in %

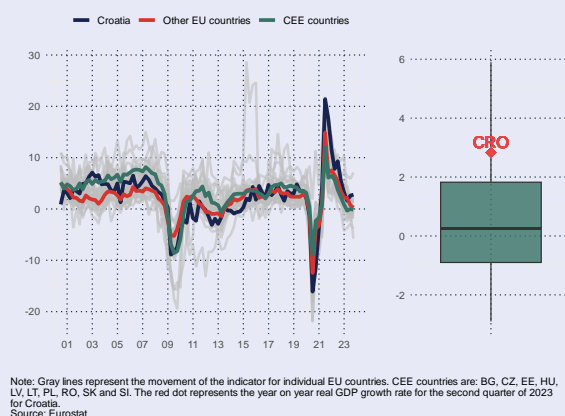
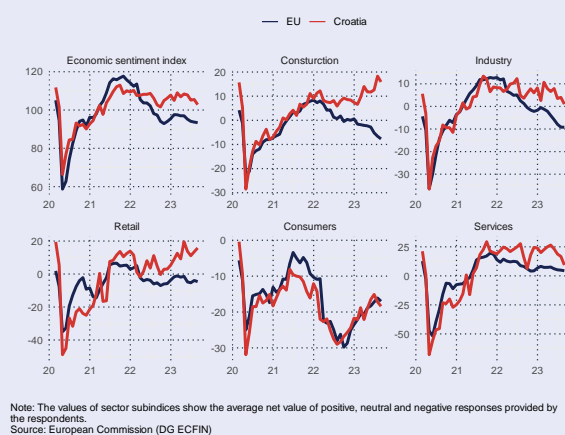


Figure 2.2 The recovery of suppressed consumer sentiment under the influence of a strong labour market kept the overall sentiment above the European average

Economic sentiment indicator and its components, 100 = long-term average indicator value



Inflation dynamics will continue to have a key impact on the growth of the economy in the coming period.

Although slowed down, the inflation dynamics is still not close to the target levels.

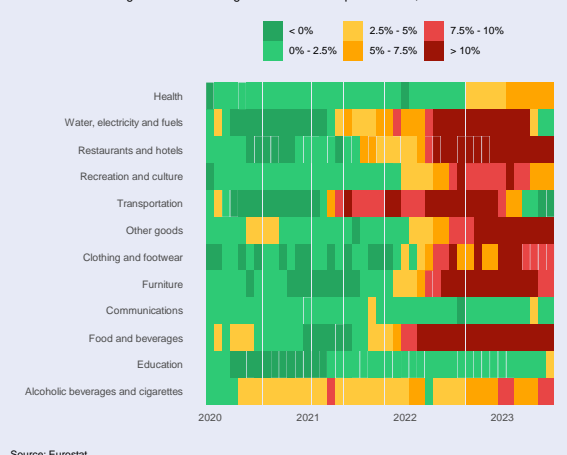
At the end of June, the annual inflation rate stood at 8.3%, falling, after a one-year period, to less than 10% (Figure 2.4). The food category remained the largest contributor, while the impact of energy significantly decreased compared to the beginning of 2022, due to the base effect with regard to the normalisation of energy prices in the second half of 2022, as well as government interventions that seek to protect households and the economy from price increases. In mid-March, the government adopted the **fourth aid package** in the amount of EUR 1.18 billion, most of which was related to easing the rise in energy prices. In addition to energy prices, global production and transport chains stabilised¹, and the gap between producer and consumer prices almost completely disappeared (Figure 2.4). And while supply-side problems are slowly subsiding, demand-side factors are becoming more pronounced, making it difficult for inflation to return soon to target levels that would be a prerequisite for monetary easing.

Even in the context of rising financing costs and slowing economic growth, the labour market is showing strength and resilience.

From December 2022 to June 2023, the unemployment rate decreased further (by 1.1 p.p., Figure 2.5) and is at its lowest level (5.6%) in 23

years. A similar trend is expected in the coming months due to seasonal effect and increased tourism activities, which is indicated by the decrease in the number of online vacancies (Online Vacancy Index) in May². In addition to unemployment decrease, the first five months of 2023 saw a continued nominal growth in net wages (+11.0%), and the slowdown in the growth of the general price level also contributed to an increase in the average net wage in real terms (+2.9%) for the first time since November 2021 (Figure 2.5).

Figure 2.3 Larger part of the market basket continues to show high growth rates
Annual rates of change in the main categories of consumer price indices, in %



Closing the gap between nominal and real wages will support the demand and make it harder to alleviate core inflation in the short term. Core inflation, although down from the end of last year (by 1 p.p.), was high at 9.6% in May and was significantly higher than that recorded in the euro area (by 4.8 p.p., Figure 2.4). The containment of core inflation in the coming period will thus be even more challenging, especially

¹ The **Global Supply Chain Pressure Index** has been in continuous decline since early 2023, and was at its lowest level since records began at the end of May 2023.

² At the end of May, the Online Vacancy Index decreased by 2.3% on an annual level and 1.2% on a monthly level, primarily due to seasonal employment in the tourism sector.

given consumer expectations regarding inflation, which, although partially "deflated", are still above "neutral" inflation rates.

Figure 2.4 Decrease in producer prices eased inflationary pressures, but there is little room for further price reduction
Growth rates of core inflation, producer and consumer prices, in %

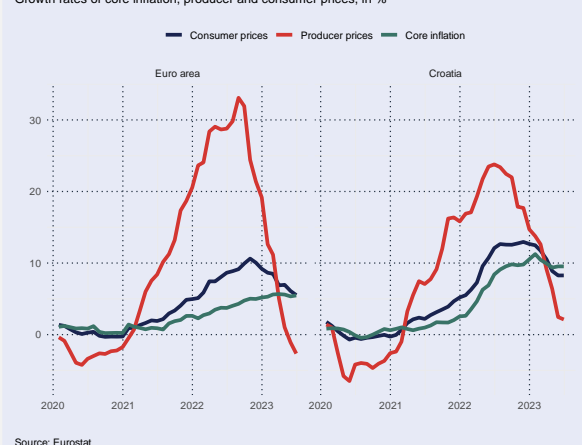
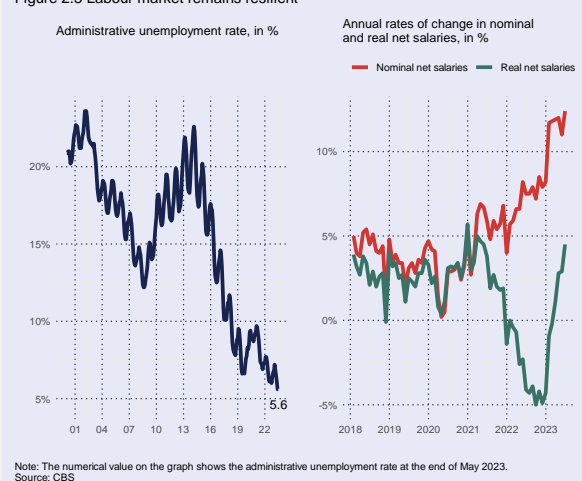


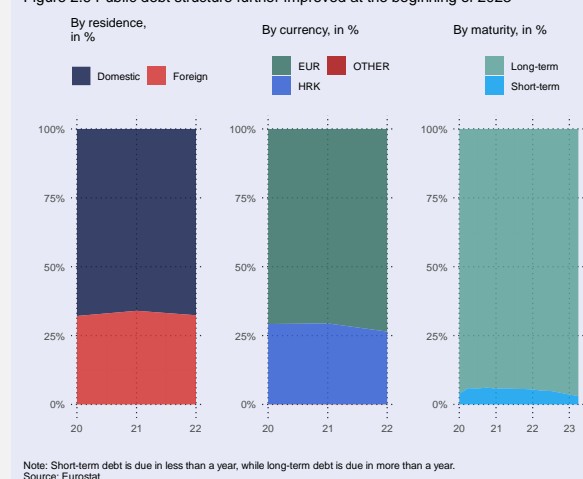
Figure 2.5 Labour market remains resilient



Fiscal indicators continued to improve due to continued growth in economic activity, but also increased nominal tax revenues caused by increased price levels, which compensated for the increase in the expenditure side of the budget. At the end of March 2023, the general government debt amounted to 69.5%, which is a decrease of as much as 6.4 p.p. on an annual basis. In absolute terms, public debt increased by 4.5% in the first three months of 2023, which is a consequence of the simultaneous reduction of foreign debt

by EUR 1.2bn and an increase in domestic debt by EUR 3.9bn. This further improved the public debt structure as the share of external public debt was reduced to 30%, while the currency structure of public debt was also improved with the introduction of the euro (Figure 2.6).

Figure 2.6 Public debt structure further improved at the beginning of 2023



The said decrease in general government indebtedness was determined by the growth of the tax base, primarily consumption and the total mass of wages, but also the revenue from the newly introduced tax on extra profit. In the first five months of 2023, income tax revenue surged strongly (78.2% relative to the same period of the previous year), almost reaching 2022 levels. This growth in total general government revenues (19.9%) outweighed the growth of total expenditures (15.5%), which grew primarily under the influence of increased expenditures on pensions and salaries of employees, but also expenditures for the 4th package of government aid measures to mitigate inflationary effects and rising energy prices.

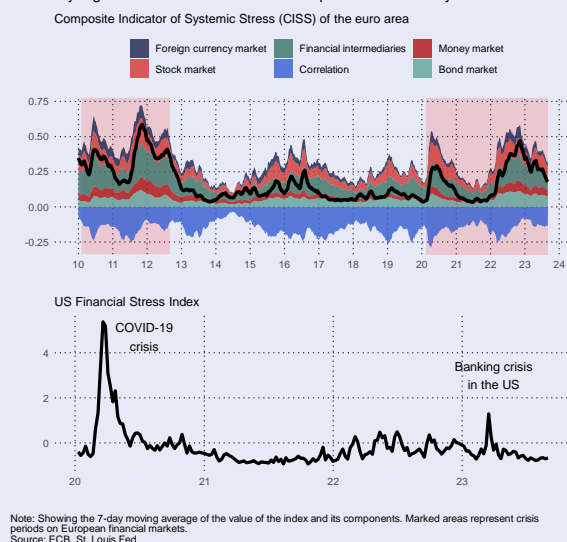
According to the European Commission's forecast, the relative debt-to-GDP ratio is expected to continue to fall to 63% by the end of 2023. At the same time, the budget deficit should not deepen significantly, therefore it could reach 0.5% of GDP at the end of 2023. Despite positive projections, the coming period will certainly be challenging for fiscal policy makers. Growing budgetary needs due to aid and subsidies to mitigate the impact of prices on the private sector will continue to put pressure on the expenditure side, and if the period of elevated inflation continues, pressures on pension and salary adjustment with rising inflation are not excluded either. The further tightening of monetary policies of the leading central banks and the resulting growth in yields that raise financing costs have not created any more pronounced pressures for the time being, as current interest rates remain lower than those for which the debt matures.

2.2 Financial environment

The first half of 2023 was marked by uncertainties in banking markets on both sides of the Atlantic, as well as economic and geopolitical uncertainties that suppressed the indications of a recovery in market sentiment from the beginning of the year. Despite these instabilities, the resilience of the macroeconomic environment exceeded the expectations of investors, with most classes of financial assets recording value growth, and with visible positive

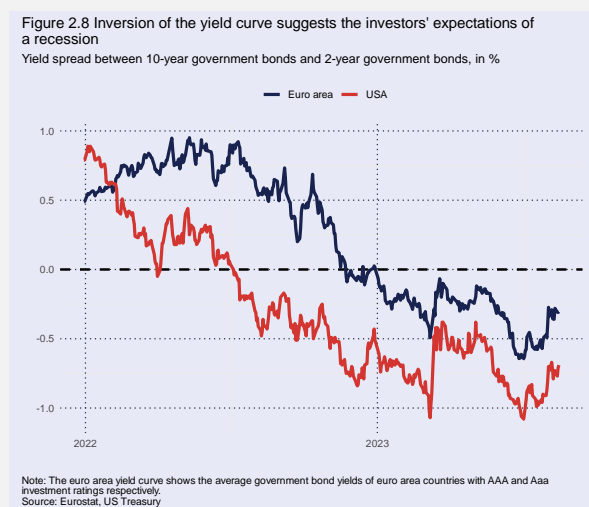
trends in the domestic capital market. The growth of central bank benchmark interest rates was in line with market expectations, which, with the weakening of inflationary pressures, contributed to the growth of valuation of riskier asset classes. Despite the existing macroeconomic imbalances, the global risk premium remains suppressed, however, the indications of more pronounced systemic stress make it subject to revision, which keeps the risk of price corrections in financial markets at an elevated level.

Figure 2.7 Stronger stress increase due to the banking crisis was prevented by the timely regulators' reaction and sufficient capitalisation of the system.



The beginning of 2023 was marked by an improvement in investor sentiment owing to a fall in energy prices, lower inflation rates, positive corporate performance and predictable growth in reference interest rates, which created room for growth of valuation in global financial markets. The slowdown in the growth of GDP and inflation rates in the USA and the euro area was interpreted by market players as a desired monetary policy outcome that could accelerate its

turn in an expansionary direction. The positive expectations of investors were halted by the collapse of three American regional banks in early March, which contributed to the increase of systemic risk in global financial markets³ (Figure 2.7). These events briefly delayed further valuation growth, however, the rapid response of regulators prevented the spread of panic among depositors and investors, so the recovery in stock markets continued.



Central banks stressed their persistence in containing inflation and, despite volatilities in the banking system, continued to implement restrictive policies. The Fed raised interest rates by 25 basis points on four occasions, with the current interest rate range at 5.25-5.50%, while the ECB's benchmark interest rate was raised to 3.75% in early August⁴. Negative expectations of market players are also

visible through the inversion of the yield curve of risk-free government bonds, with both curves becoming steeper since the beginning of the year reflecting market expectations of a recession and repositioning of some investors in longer-maturity assets (Figure 2.8). At the height of the US banking crisis, yields on shorter maturities fell by nearly 1 percentage point, reflecting investors' views on a possible monetary policy shift to reduce pressure on financial stability. However, the Fed's raising of interest rates at the end of March removed this possibility and let investors know that achieving price stability was the primary goal. The second quarter of 2023 was marked by a rise in interest rates on bonds with shorter maturities, reflecting the rise in the risk premium connected with the US public debt limit⁵ and the rootedness of inflation in the euro area.

The continuation of restrictive monetary policy and government financing costs constrains the growth prospects of the global economy in the short term, but a gradual adjustment of portfolios to new monetary conditions and a reduction in the inflation rate would support the profitability of the domestic financial services sector in the medium term. The ECB's raising of interest rates in the first half of the year contributed to a rise

³ The collapse of the Silicon Valley Bank (SVB) triggered a crisis of confidence in the American banking system, followed shortly by the fall of the financial institutions Signature Bank and First Republic, which partly affected European banks by the collapse of Credit Suisse.

⁴ This refers to the interest rate on a cash deposit at which banks can deposit excess funds overnight at the central bank.

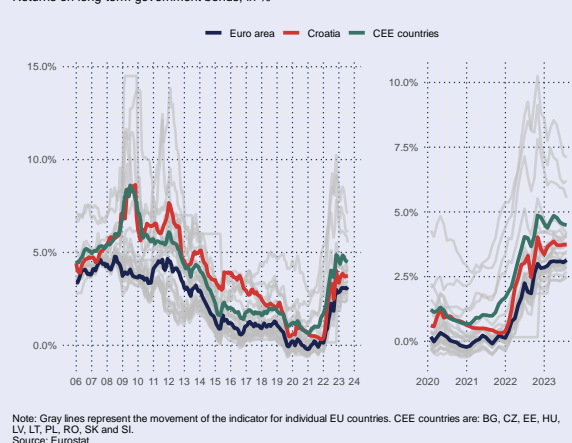
⁵ The political conflict over the public debt limit ended in early June with an agreement between Democrats and Republicans, raising the U.S. borrowing limit.

in returns on government bonds, with euro area countries' average returns at 3.14% at the end of July, an increase of 30 basis points since the beginning of the year. Unfavourable financing conditions will be emphasised in the refinancing of maturing bonds, as most of the past due debt was issued at significantly lower interest rates that could disproportionately affect the perceived riskier euro area countries and lead to fragmentation of the European bond market. This further emphasised the relatively favourable structure of the public debt of the Republic of Croatia, characterised by a low proportion of short-term debt, debt denominated in foreign currency and the representation of foreign investors (Figure 2.6). In the first seven months of 2023, returns on Croatian government bonds reflected an increase in reference interest rates, ending at 3.74% at the end of July (Figure 2.9). Despite the increase in risk-free interest rates, the risk premium of the Republic of Croatia remained at a relatively low level compared to the CEE countries, highlighting the benefits of entering the euro area as well as positive trends in the general government sector (for more details, see Chapter [2.1 Macroeconomic Environment](#)).

The 2023 trends in the domestic bond market were significantly impacted by the issue of national government bonds available to a large number of citizens, for which the demand was remarkable. This issue of government bonds in the

amount of EUR 1.5bn contributes to diversification of government bond investor types on the supply side, while on the demand side it provides natural persons with an alternative form of investment and potentially improves the market dynamics (price discovery)⁶ of the domestic capital market. Despite these positive trends in the government debt market, the uncertain global environment emphasises the risk of a potential spike in the global risk premium and sudden leaps in bond returns, which can indirectly affect the decline in the value of existing assets of the financial services sector in the Republic of Croatia, predominantly invested in this financial instrument.

Figure 2.9 Risk premium of Croatian government bonds remained at relatively lower levels compared to CEE countries
Returns on long-term government bonds, in %



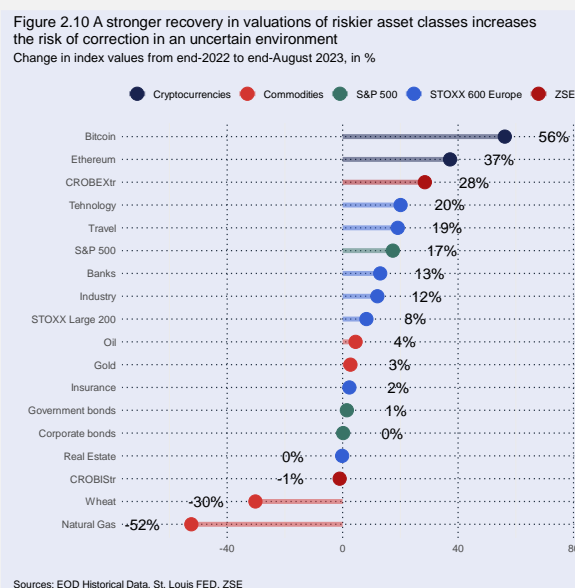
Despite rising risk-free interest rates, valuations of most classes of financial assets registered significant increase since the beginning of the year. This raises concerns about possible overvaluation in some segments of the market, but also indicates a suppressed risk premium in stock

⁶ The issue of national government bonds collected EUR 1.3bn, with more than 43 thousand citizens participating.

markets. All of this opens up the possibility of a sudden and disorderly price correction in the event of shocks. Following the rise in corporate earnings due to a fall in energy prices at the end of 2022 and an expected slowdown in central bank interest rate hike dynamics, market valuations recorded a noticeable increase in the first half of 2023, reflecting a decrease in market risk aversion (Figure 2.10). Strong growth was also recorded by the technology sector, influenced by the accelerated development of artificial intelligence and the breakthrough opportunities that this technology provides. The banking sector also grew considerably, almost 13%, despite the aforementioned volatility in the American and European markets, supporting regulators' views on sufficient capitalisation and resilience of the system. Real estate companies recorded a stagnation in valuation due to the worsening of financing conditions and reduced demand for commercial real estate, while the price of energy products dropped the most at the end of the winter period and due to decrease in demand and the successful diversification of sources of energy supply to European countries.

The growth of valuation was also recorded on the domestic capital market, where the CROBEX stock index recorded an increase of 22.6% since the beginning of the year (Figure 2.11). The largest contributors to

the market take-off were the industry sector and the transport sector, with an increase of 51% and 17% respectively since the beginning of the year. One of the factors for accelerating growth was the redirection of investors' funds into several more liquid shares, which made the turnover of the first five and first three shares 68% and 54% of the total turnover during August 2023, emphasising the increased concentration of the domestic capital market. Despite the increase in trade concentration, the overall liquidity of the domestic stock market improved during the first half of 2023, mainly due to the increase in efficiency and resilience indicators⁷ (Figure 2.12).



The overall increase in returns on the global bond market, driven by the rise in reference interest rates and the worsening of the USA public finances, also affected the performance of the domestic bond index CROBIS, which fell by 1.3% since the beginning of the year,

resilience represents the ability to quickly correct market prices back to fundamentals after a price distortion.

⁷ In the context of capital markets, efficiency refers to low transaction costs which are reflected in the narrow range between the purchase price and the sale price, while

thus remaining at very low levels. Given the high exposure of the financial services sector to sovereign bonds, such developments potentiate the increase of market risk through a decline in bond valuation in the short term, however, the expected higher coupon payments can stimulate the profitability of domestic institutional investors in the medium term.

Although domestic stock valuations cannot be considered overestimated (for more details, see [Box 1 Do the fundamentals justify equity market valuations?](#)), recession signals in the euro area and the possible further tightening of financing conditions by the ECB expose the portfolios of domestic investors to potential corrections, increasing the level of systemic stress to which the domestic financial services sector is exposed.

Figure 2.11 Increase in valuation on the domestic stock market while retaining a high level of trade concentration

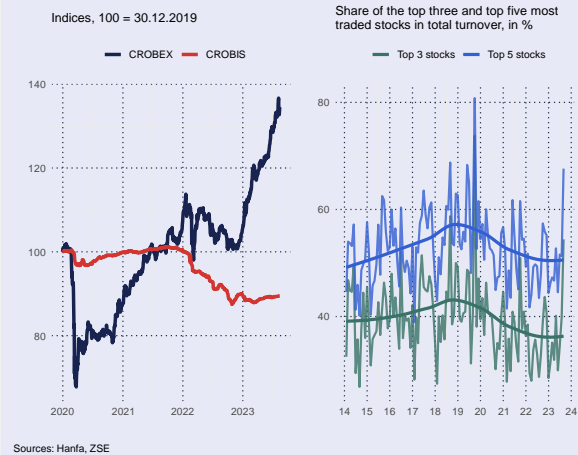
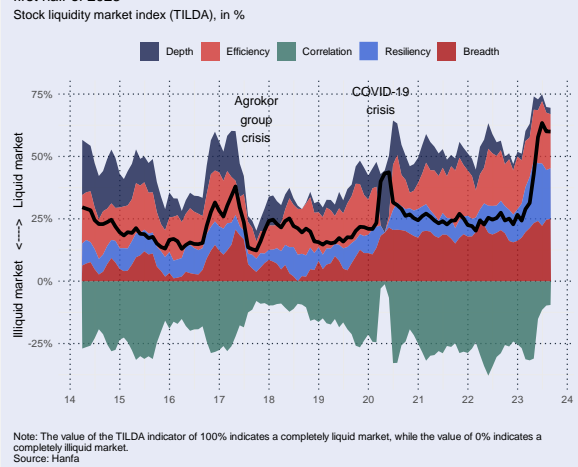


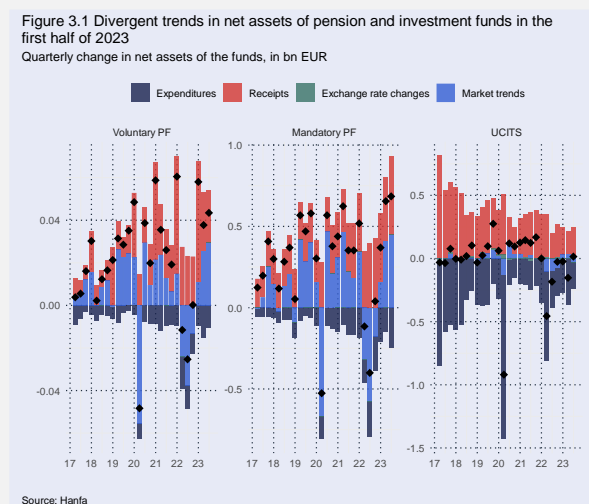
Figure 2.12 Improvement of domestic stock market liquidity indicator in the first half of 2023



3 FINANCIAL SERVICES SECTOR RISKS

3.1 Short-term risks

The exposure of the financial services sector to short-term cyclical risks did not change significantly in the first half of 2023 and remained at an elevated level. The rise in prices on equity markets caused a mild recovery in net assets and returns of pension funds. The returns of UCITS also recovered, but due to negative net outflows their net assets further decreased in the first half of the year. Despite the recent recovery in financial market values, uncertainties in the macroeconomic and financial environment remain high and weigh on the profitable potential of institutional investors.



Driven by positive market trends in the first half of 2023, pension funds' net assets increased by 7.6% to reach EUR 20.0bn at the end of June. Stable payments into funds, as well as positive market valuations contributed equally

to this increase (Figure 3.1). Despite rising returns, net assets of UCITS continued to decrease in 2023, reaching EUR 2.0bn at the end of June, representing a decrease of 6.4% compared to the end of 2022.

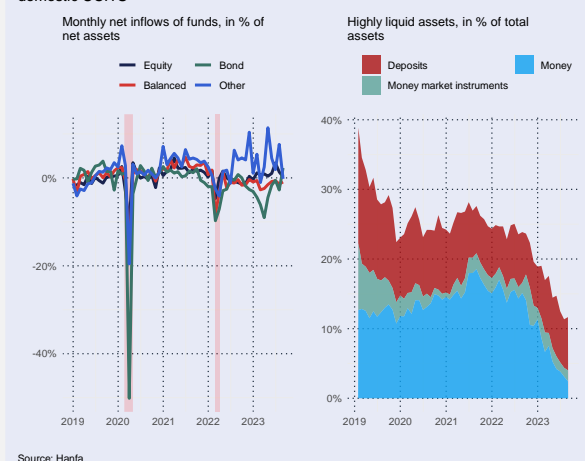
Liquidity pressures on investment funds, generated in the context of the US banking crisis and increased market uncertainty, stabilised in the second quarter of 2023. Increased requests for disbursement were again the most pronounced in the segment of bond UCITS (Figure 3.2.), but they were successfully amortised by very high liquidity stocks. Although still relatively high (11.7% of total assets at the end of August), liquidity stocks were significantly reduced compared to the previous period, making UCITS vulnerable to potential new episodes of liquidity pressures. In the first half of the year, the net amount of EUR 140.8m was withdrawn from UCITS, i.e. 6.5% of net assets at the end of 2022. At the same time, the net outflow of funds in this period was limited to bond funds characterised by a pronounced investors' risk aversion. Net payments to balanced and equity funds stagnated during the first half of 2023.

In the context of increasing interest rates, insurance companies did not see an increase in requests for early termination of contracts and therefore liquidity stocks remained at high levels. The share of liquid in total

assets at the end of March 2023 remained at a high level of 62.2% (Figure 3.3). Although the liquidity of the entire system is satisfactory, some companies are still less liquid due to their increased exposure to immovable property and loans, which are characterised by relatively lower liquidity, which makes them vulnerable to potential negative market trends, as well as liquidity shocks. Particularly vulnerable are the companies that base most of their business on long-term contracts in the life insurance sector, which, in the context of rapidly increasing interest rates and thus increased competitiveness of alternative forms of savings, may prove less stable than perceived. In macroeconomic environment of very high inflation and reduced household disposable income, life insurance is further exposed to the risk of potentially reduced inflows of funds, but also increased likelihood of early termination of contracts adversely affecting its liquidity protection.

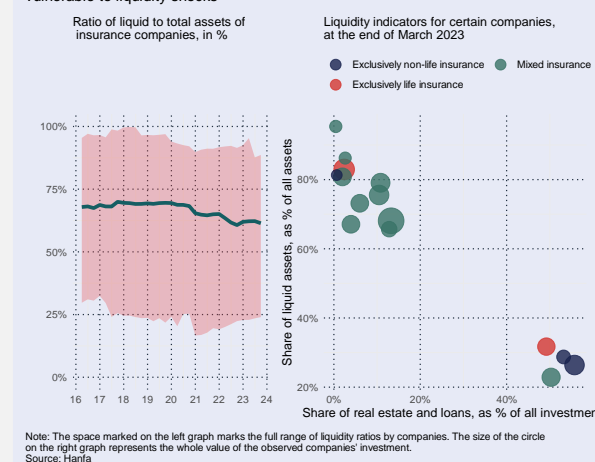
financial assets and thus in the returns of pension funds. The general recovery of investment sentiment and market prices in the first eight months of 2023, which also marked the domestic stock market (for more details, see Chapter **2.2. Financial environment**), led to an increase in the value of units in mandatory pension funds to historically high levels (Figure 3.4). Given that the recovery in 2023 was most pronounced in stock markets, category A mandatory pension funds (which also have the highest share of equity investments) also recorded the highest returns in the first eight months of 2023 (10.6%), and thus the value of Mirex A exceeded the value from the end of 2021 by as much as 10 percentage points. The returns of relatively more conservative categories B and C were also positive (6.5% and 1.3% respectively). These returns were sufficient for the Category B (the most significant category size-wise) to replace the losses of the previous year and reach the level of the end-2021.

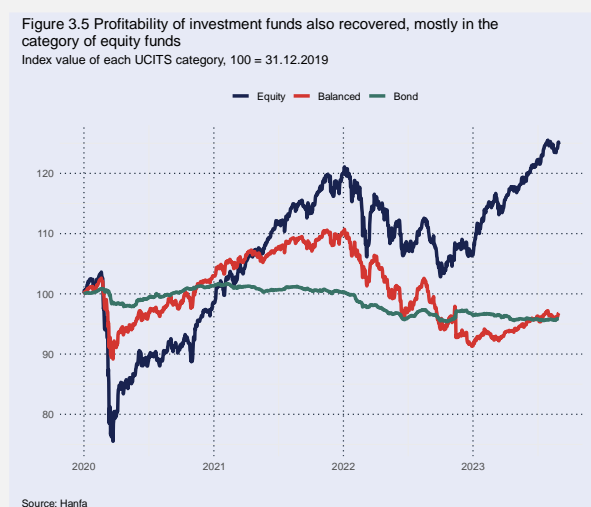
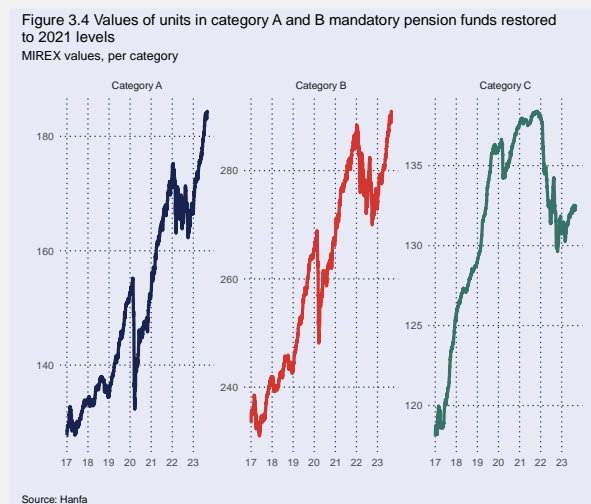
Figure 3.2 Increased requests for disbursement reduced the liquidity stocks of domestic UCITS



After losses that marked 2022, the beginning of 2023 saw a strong recovery in the market values of

Figure 3.3 System liquidity is high, however, some insurance companies are vulnerable to liquidity shocks



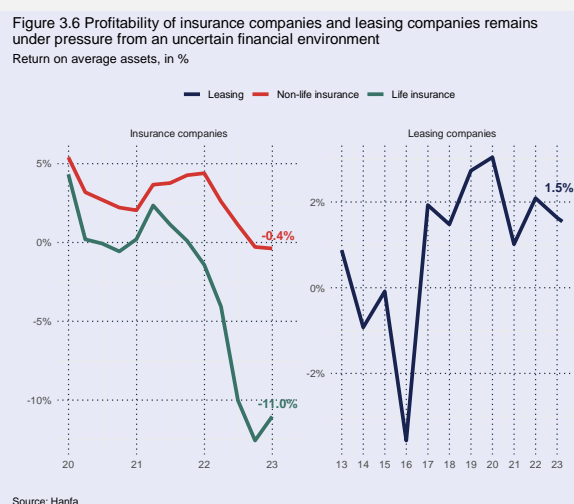


Optimistic trends in financial markets also boosted the growth in returns of all categories of UCITS. The average return of UCITS in the first eight months of 2023 amounted to 4.6%. The lowest average return growth of 0.9% was recorded by bond funds, while balanced and equity funds recorded average returns of 5.0% and 17.5%, respectively.

Although these market trends had a positive effect on the performance of pension and investment funds, operating circumstances remain exposed to increased systemic risks, primarily interest rate and market risks, which will largely depend on the resilience of economies in a tightened

monetary environment and still relatively suppressed market risk premium.

Despite signs of a slowdown in the economy, leasing companies' operations continued to grow at the beginning of 2023, in terms of value and the number of new contracts. In the first three months of 2023, the number of new contracts increased by 15.5% and their value by 29.6% compared to the same period of the previous year. This increase was mostly driven by growth in the financial leasing segment, which accounts for 87% of the value of active contracts, which increased by 28.7% compared to the same period last year. The profitability of leasing companies did not change significantly in the first quarter of 2023, and the return on average assets (ROAA) stood at 1.5% at the end of March 2023 (Figure 3.6).



At the beginning of 2023, the new accounting standard IFRS 17 entered into force, the introduction of which brought, in addition to changes in the financial reporting of insurance companies, certain implications for

their operations and potentially for exposure to systemic risks (for more details on these implications, see the thematic box in the publication **Macroprudential Risk Scanner, No 6**).

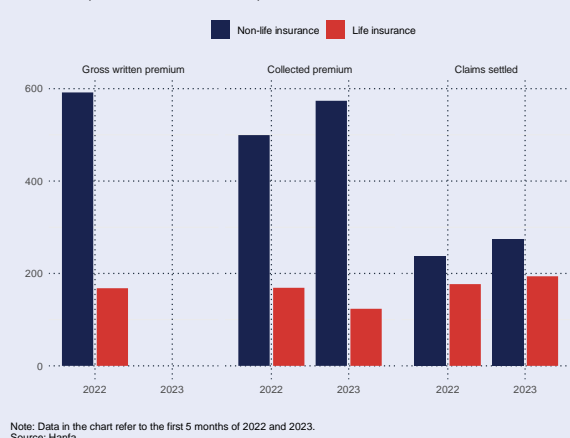
An important reporting change relates to the monitoring of the amount of the non-life insurance premium by switching from reporting on the gross premium written to reporting on the premium amount actually collected (Figure 3.7). The premium collected in the first five months of 2023 for non-life insurance amounted to EUR 573.8m, which is an annual growth of 14.9%⁸. This is mainly the result of the increase in the general price level and the consequent increase in the amount of claims paid (EUR 272.9m, i.e. 14.8%), which is reflected in the correction of the price lists of insurance companies and the value of the policies themselves.

The low demand for life insurance products continued in 2023, and in the first five months the premium collected amounted to EUR 123.5m, a decrease of 26.9% compared to the same period of the previous year. Given the environment of high inflation, rising interest rates and reduced real disposable household income, which are expected to continue this year, the downward trend in life insurance operations is likely to continue, which will, along with the simultaneous increase in claims paid (EUR 193.9m in the first five months of 2023, i.e. 9.6% more than the year before), create

additional pressures on ensuring the profitability, and possibly liquidity, of this insurance business segment.

Figure 3.7 Collected life insurance premium further reduced in the first five months of 2023

Gross written premium, collected insurance premium and claims settled, in EUR million



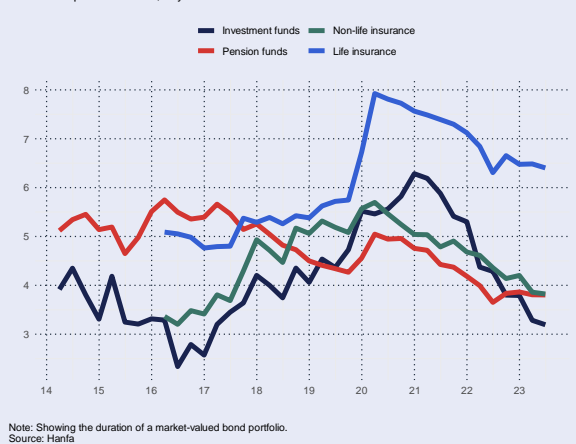
3.2 Long-term risks

Given that inflation is firmly kept at levels much higher than targeted, interest rate risk remains the most pronounced structural risk to which the domestic financial services sector is exposed in the middle of 2023. Despite partial materialisation in 2022 and the continued rise in interest rates at the beginning of 2023, in the second half of the year, depending on core inflation trends, the peak of the cycle of raising interest rates by central banks could be reached, but they could likely remain at such elevated levels. The impact on global financial markets and thus investors' profitability will depend primarily on the relationship between their expectations and the achieved monetary policy intensity by the end of the year. The capital stock of the

⁸ The data on the premium collected were assessed on a one-off basis for analytical purposes.

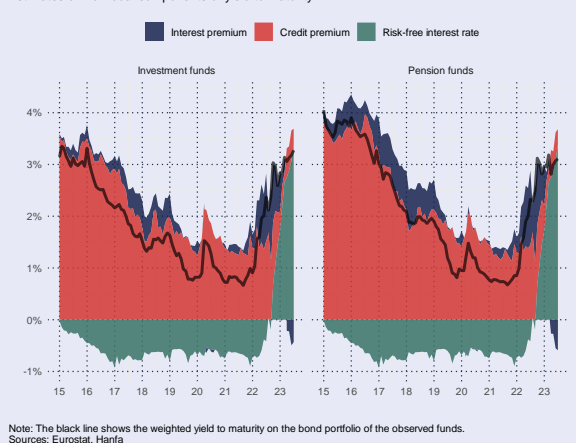
domestic financial services sector remained at satisfactory levels, allowing absorption of potential additional losses.

Figure 3.8 Exposure to interest rate risk decreased in the recent period, but exposure to risk of further interest rate growth is still high
Duration of portfolio bonds, in years



Note: Showing the duration of a market-valued bond portfolio.
Source: Hanfa

Figure 3.9 Growth in yields to maturity of the bond portfolio suppressed interest rate and credit risk premiums
Estimates of individual components of yield to maturity



Note: The black line shows the weighted yield to maturity on the bond portfolio of the observed funds.
Sources: Eurostat, Hanfa

As inflationary pressures largely exceeded the 2022 expectations, interest rate rise continued in the first half of 2023. The effects of the tightening of monetary policies by central banks are visible, but to achieve the planned medium-term inflation containment targets, it is necessary to keep interest rates at elevated levels. The materialisation of interest rate risk in the financial services sector affected a significant fall in the value of bond portfolios, which, with a share of over

60% of total investments, still constitute the dominant investment class of the sector. Despite the decline in value in the bond market, the value of pension funds' bond investments at the end of June 2023 was by EUR 697.3m higher than at the end of 2022. The reason for this were continuous (and increasing) payments by new and existing users, as well as the fact that around 35% of the bond portfolio is valued at amortised cost, the value of which is not affected by interest rate increase.

The trend to reduce the maturity of bond investments continued in the first half of 2023, thereby reducing the sector's exposure to potential additional materialisation of interest rate risk.

Although in the recent period all sectors reduced the durability of their interest bearing assets by two to three years (Figure 3.8) and thereby reduced exposure to interest rate risk, it remains at elevated levels. The duration of bond portfolios of pension funds, UCITS and insurance companies is between three and four years, which means that in the scenario of an additional 1% increase in interest rates, they would face a decrease in the value of the existing bond portfolio between 3% and 4%. Interest rate risk is even more pronounced in the life insurance segment, whose investments, due to the nature of its operations, are characterised by a longer duration exceeding 6 years. The recent increase in reference interest rates, despite the short-term negative effect on the value of existing bond investments, will nevertheless in the medium term

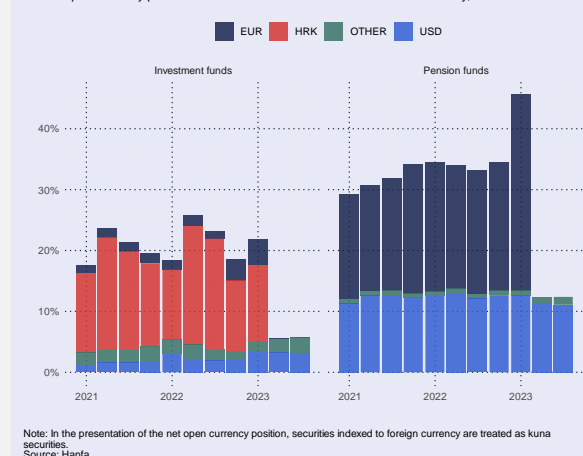
increase the coupon returns on new bond investments, which are again becoming an interesting and competitive investment class.

In addition to interest rate risk, portfolios of institutional investors are exposed to very high market risk.

Despite increasingly pronounced indications of a slowdown in the global economy, as well as still high inflationary pressures (for more details, see Chapter [2.1 Macroeconomic environment](#)), financial markets showed stubborn optimism in the first half of 2023, which led to a strong recovery in stock valuations (for more details, see Chapter [2.2 Financial environment](#)) and, indirectly, a recovery in profitability indicators for domestic institutional investors (for more details, see Chapter [3.1 Short-term risks](#)). These trends indicate a suppressed global risk premium, which is also reflected in the example of bond portfolios of domestic pension and investment funds (Figure 3.9). By looking at the decomposition of yields to maturity (for more details about the calculation methodology, see the thematic box in the publication [Macroprudential risk scanner, No 7](#)) it is evident that the recent increase in yields is solely the result of an increase in the risk-free rate, i.e. an increase in central bank reference interest rates. The interest rate risk premium and credit risk premium were at historically low levels at the end of June 2023. Moreover, the interest rate risk premium was in a negative area due to the negatively inclined yield curve. Entering the euro area and improving

the credit rating of the domestic government revenue to historically high levels make the domestic bond market more resilient to a sudden change in the market perception of credit risk, which could increase if the currently suppressed global risk premium is revised.

Figure 3.10 Accession to the euro area significantly reduces currency risk
Funds' open currency position in currencies other than the funds' base currency, in % of net assets



Croatia's entry into the euro area in early 2023 reduced its exposure to foreign exchange risk to historical lows.

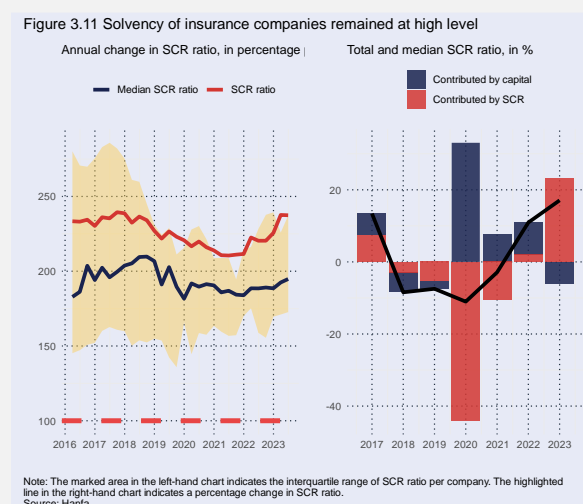
The average open net currency position of investment and pension funds decreased from 21.8% (end 2022) to 5.7% for investment funds, and from 45.7% to 12.4% for pension funds (Figure 3.10). Most of the remaining net open position is constituted by the exposure to the US dollar, which is becoming the dominant currency risk bearer of the entire financial services sector. The EUR/USD exchange rate reached its short-term peak at the end of October 2022, driven by misalignment between the monetary policies of the Fed and the ECB, when the dollar value exceeded the euro value. The growth of interest rates in the euro area and the catching up of the Fed's benchmark interest

rates led to a convergence of the exchange rate towards its medium-term average of EUR 0.9 per USD 1, around which it fluctuated during the first half of 2023. Consequently, domestic institutional investors did not record any significant fluctuations in the value of assets.

Despite the still relatively favourable macroeconomic trends in the first half of 2023, the likely slowdown of the economy and the deterioration of financing conditions keep the exposure of the financial services sector to credit risk at a slightly elevated level. The trend of decreasing the share of non-performing receivables in total receivables of leasing companies remained at the end of the first quarter of 2023, so that share amounted to only 1.1%, which is by 0.6 p.p. lower than at the end of 2022. The coverage of non-performing placements also decreased significantly compared to the end of 2022, but is still at a relatively high level of 62.3%.

Despite negative forecasts, interest rate growth increased the capitalisation of the financial services sector at the beginning of 2023. Analyses from the previous year suggested that the solvency indicators of the insurance sector could be disrupted once Croatia becomes a member of the euro area at the beginning of 2023. The expected increase in technical provisions and the implicit decrease in own funds, and

hence the SCR ratio due to the shift to a lower risk-free interest rate for the euro, did not materialise. This is due to higher than expected rise in risk-free interest rates (which also affected a significant increase in the interest rate on the basis of which companies discount their liabilities), leading to a relative convergence of kuna and euro interest rates at the end of 2022. The capitalisation of the system was also positively affected by the recapitalisation of four companies totalling EUR 65m,⁹ which made the reduction in own funds less pronounced than initially expected. At the same time, certain capital requirements were reduced as a result of the transition to euro, positively affecting the total SCR ratio, which increased by as much as 17.1 p.p. at the end of the first quarter of 2023, compared to the end of the previous year, reaching a level of 238.2% (Figure 3.11).



The capitalisation of leasing companies, measured by the share of capital and reserves in total assets, stood at 11.2% at

available for sale, which amounted to a total of EUR 424m at the end of 2022.

⁹ The recapitalisation was carried out due to losses resulting from the revaluation of assets

the end of the first quarter of 2023 (decrease by 1.4 p.p. compared to the end of 2021). Despite the decrease, this remains a relatively high capital stock, which strengthens the resilience of the leasing sector in times of increased systemic risks.

BOX 1 DO THE FUNDAMENTALS JUSTIFY EQUITY MARKET VALUATIONS?

The ratio between the market price of a share of a company listed on the stock market and the net earnings of the company, or price-to-earnings ratio (P/E ratio), is one of the most important indicators of market valuation that signals investors' expectations for both a particular share and the overall market. The calculation of the P/E ratio for the domestic CROBEX index can show the level of relative overestimation or underestimation of CROBEX components, and thus the level of risk of potential valuation adjustments. The estimated P/E ratio for CROBEX does not indicate that the domestic stock market was overheated and valuably inconsistent with the earnings of the companies in mid-2023. However, it should not be neglected that the increased sensitivity to shocks in the real sector in view of structural weaknesses in the domestic capital market is a source of potentially more intense fluctuations in the P/E ratio, and thus the growth of risks to which the financial services sector is exposed.

1 Motivation

Valuations on stock markets are continuously driven by a number of factors ranging from general (e.g. macroeconomic and monetary environment, investment sentiment

and expectations, global risk premium) to specific (for example, issuers' earnings, prospects for further growth, news relevant to the company's operations). Under the efficient market hypothesis, market prices of securities should reflect perfectly all available information and expectations for an individual company at any given moment, i.e. the market is rapidly adjusting to all newly arrived information. In other words, the discounted cash flow method requires that the value of a given share is equal to the present value of future cash flows. Assuming the share is held on a continuous basis, this would mean that the price of a given share is at a given moment equal to the present value of any future dividends that the company may generate from its operations. In a practical environment, the assumption of continuous holding of a share is not realistic, and therefore the price of a share is influenced by the expectation of investors about the value that they can realise in the future by selling it, which in addition to "fundamentals" is influenced by a number of external factors. Therefore, this theory simplifies the actual trends observed in the markets in view of the frequent occurrence of behavioural phenomena affecting the behaviour of investors and thus contributing to short-term deviations of market valuations from

values based on fundamentals¹⁰. In addition, investors' expectations of future profitability are another factor that creates a discrepancy between valuation and current business indicators.

Fundamentals, i.e. business indicators of companies are an important determinant in the process of evaluating individual shares. The term fundamentals in the context of securities analysis mainly refers to indicators of liquidity, solvency, profitability and operational efficiency of a company. The analysis of these indicators gives a broader picture of a company's operations and provides insight into the potential of its future growth, i.e. the ability to generate increasing revenues and earnings in the future. These elements are essential for investors inclined to long-term equity investment, i.e. value investing, who rely on the assumption of the necessary return of volatile equity valuations to the fundamental value in the long term.

In view of these limitations, the evaluation and monitoring of indicators that compare market valuations with the accounting and financial indicators (i.e. fundamentals) of issuers provide important information about investor sentiment, as well as the capital market

itself. From the perspective of monitoring systemic risk exposure, an efficient market that is aligned with fundamentals implies a lower probability of creating speculative price bubbles that are associated with the risk of potentially stronger and disorderly adjustment, thus threatening the potential stability of the financial system. Finally, an efficient market supports an efficient allocation of investments in sustainable enterprises, thus stimulating the overall growth of the economy.

2 CROBEX and issuers' earnings

Market indices are most often used to assess general trends in a particular stock market, which provide a representative aggregate picture of the price trends of all or a certain subset of quoted shares on the market¹¹. Trends in the domestic stock market are approximated in the CROBEX price index, which was established in 1997¹² and includes 15 to 25 issuers, with stocks having to meet certain criteria to be considered as potential components of CROBEX¹³. In order to avoid disproportionate representation of the largest issues on the market, restrictions were introduced on shares in the overall index, which are currently set at 10%.

¹⁰ For a list of numerous topics regarding behavioural finance, see [Park and Sohn \(2013\)](#).

¹¹ Market subgroups are most often classified by sector, geographic location, market capitalisation size and investment strategies.

¹² It is important to note that CROBEX is a price index that does not include dividends in its calculation, unlike the CROBEXtr index.

¹³ These concern the admission to the regulated market, the number of days in which that stock was traded and the absence of an ongoing bankruptcy settlement or liquidation of the issuer. The stocks are then ranked according to two criteria: the share in free float market capitalisation and the share in realised turnover within a certain time interval with weights of 50%. For more information, see [zse.hr](#).

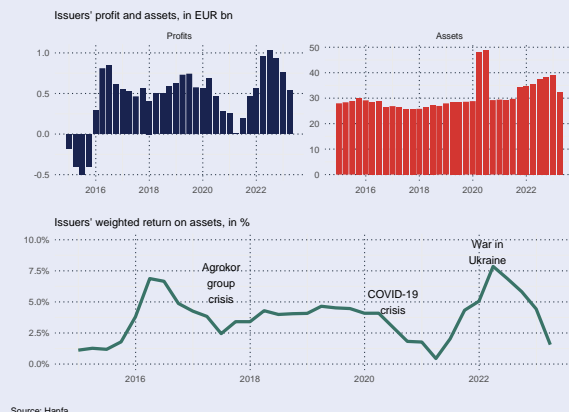
Figure 1 No capital market recovery in the years after the global financial crisis
Value of CROBEX index, 1000 = 1.7.1997



The movement of the CROBEX index over the past decade reflected economic stagnation, the impact of external shocks, but also structural shortcomings of the domestic capital market (Figure 1). The propulsive period of high market activity, and ultimately irrational optimism, was abruptly interrupted by the 2008 global financial crisis, which in one year wiped out nearly two thirds of market value. The years-long economic crisis that followed and lasted until 2015 hampered a possible recovery of the market in the coming decade. A short-term upswing and signs of recovery were halted by the crisis in the Agrokor Group in 2017. The impaired investor sentiment in the following years is also evident in the low level of activity in the stock market, whose slight recovery in 2019 was promptly interrupted by the beginning of the coronavirus epidemic, during which CROBEX recorded a strong decline of almost 34% in just a few weeks. The index returned to pre-pandemic levels at the end of 2021, however, the restrictive monetary environment, the war in Ukraine and

the slowdown of the global economy have a disincentive effect on the value of CROBEX, which nevertheless registered a pronounced growth of 16% in the first half of 2023 (for more details, see Chapter 2.2 **Financial environment**).

Figure 2. Issuers' profitability has proven sensitive to external shocks



The profitability of companies that constitute CROBEX has moved in the past decade at a similar pace to the index itself (Figure 2). The insolvency of Agrokor Group at the beginning of 2017 had a negative impact on the aggregate profitability of issuers, in view of Agrokor's involvement in various activities, but also the fact that some companies were the constituents of CROBEX¹⁴ at the time. The profitability of companies recovered slightly until early 2020, when it recorded a significant drop of 3.6 p.p. under the impact of the COVID-19 crisis. Another reason for the decline in profitability was the short-term inclusion of two banks in the index, which significantly increased assets compared to profits. The banks were excluded from the composition of the index during the next review. This also points to the impact that changes in the composition of the index may

¹⁴ The Agrokor Group companies that were involved in CROBEX are Ledo, Vupik and Belje.

have on the indicators of “market fundamentals”, which do not have to follow the overall movement of a company's performance. With the opening of the economy and the recovery of private consumption in 2021, CROBEX components recorded a very high return on assets of 7.9% in early 2022. However, the inflationary pressures, tightening financing conditions and the Russian invasion of Ukraine caused input prices to rise in 2022, reflecting the decline in the issuer's profitability which amounted to 1.5% in the first quarter of 2023.

3 Price relative to fundamentals

Price-to-earnings ratio (P/E ratio) is one of the basic indicators used in the analysis of the relative value of shares. The multiplier is calculated as the ratio between the market price of the share and the net earnings per share, most often taking the average of the earnings realised over a given time interval.

P/E ratio is a metric that can be interpreted in multiple ways. It can be interpreted as the price of shareholder participation in a company's profit unit, which is an implicit measure of the share attraction and its potential for further growth, in the opinion of investors. It can also be seen as the capacity of a share to generate return on shareholders' invested funds, i.e. the number of years needed to cover the capital invested by the earnings of the company. The main purpose of this indicator is to assess the market

overvaluation or undervaluation of a share or the entire market in relation to the fundamentals of companies.

A low P/E ratio may indicate unjustified undervaluation of a share by the market, but also financial problems that have not yet been reflected in profit. On the other hand, a high P/E ratio may indicate an overvaluation of a share in terms of fundamentals or the expected stronger growth of the company in the future. Therefore, the P/E ratio is observed in combination with other financial indicators as well as P/E ratios of other companies from a given line of business, in order to establish the justification, i.e. the realness of the market price. Under normal circumstances, a ratio of 25 or more is considered a high level or overvaluation, whereas a ratio of 15 or less is considered a low level or undervaluation. The long-standing expansionary monetary policy of central banks in the last decade lowered the cost of obtaining funds, thereby stimulating an increase in the general level of share prices and certainly adjusted these limits of overvaluation or underestimation upwardly.

Although informative, the P/E ratio also contains some shortcomings. Disclosed earnings are subject to various accounting manipulations¹⁵, which can mask the true financial position of a company. In addition, a change in the number of shares issued due to corporate actions may affect the overall

¹⁵ This refers to the change in accounting policies and the classification of certain revenues and

expenditures into the category of extraordinary items.

multiplier. Moreover, when constructing the P/E ratio for the entire stock market, companies with net losses are excluded from the composition, which reduces the representativeness of the aggregate ratio.

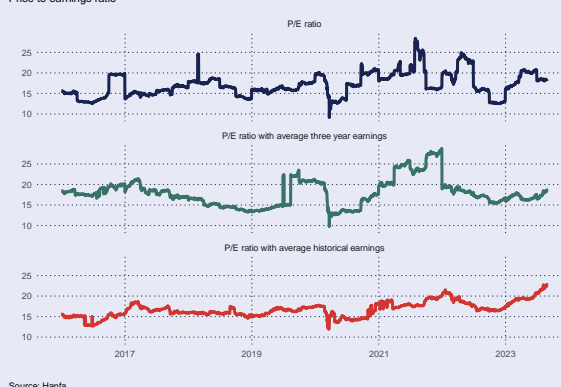
The dynamics of the P/E ratio for the CROBEX index indicate individual overvaluation episodes, but these have proved to be short-lived and are primarily due to the sudden decline in the profitability of companies in the aforementioned crisis episodes. By averaging earnings over a multiannual period, the calculation excludes the effect of the business cycle and short-term episodes that affect the profitability of companies and shows a more concrete picture of the relative compliance of prices on the domestic stock market with fundamentals¹⁶ (Figure 3).

Looking at the indicator based on average three-year earnings¹⁷, the first episode of relative overvaluation was recorded during the second half of 2019. Stocks from the food industry and telecommunications¹⁸ grew strongly owing to positive business results in mid-year, but also to significant turnover increase at a quarterly level of almost 90% in the third quarter of 2019.

The second spike in relative valuations was recorded at the end of 2021 and reflects the classic scenario of separating prices from fundamentals, which was driven by a recovery in market sentiment after the peak of the COVID-19 crisis, accompanied by a relatively slow recovery in corporate earnings.

In the observed period, the values of the P/E ratio were mainly within the limits of fair value. However, it is important to point out that the domestic market is shallow and highly concentrated and is therefore more susceptible to jumps, especially in the case of significant changes in the prices of stocks which are more represented in CROBEX. Such movements may lead to stronger index growth over a certain period and overestimate the ratio compared to the rest of the market.

Figure 3 In the recent period, CROBEX does not show overvaluation relative to fundamentals



¹⁶ This approach is also used by the globally known CAPE ratio (Cyclically Adjusted PE Ratio), designed for the S&P 500 index by [Robert Shiller](#). The downside of this approach is that the indicator responds relatively slowly to significant changes in companies' operations, which are then reflected in their profitability.

¹⁷ If the availability of data so allows, it is advisable to use a longer period to calculate the average

earnings of companies at all stages of the business cycle (through the cycle). For example, CAPE Ratio uses a 10-year period to calculate the average earnings of companies.

¹⁸ Stocks of AD Plastik, Optima Telekom and Ericsson NT achieved double-digit growth in mid-2019.

4 Conclusion

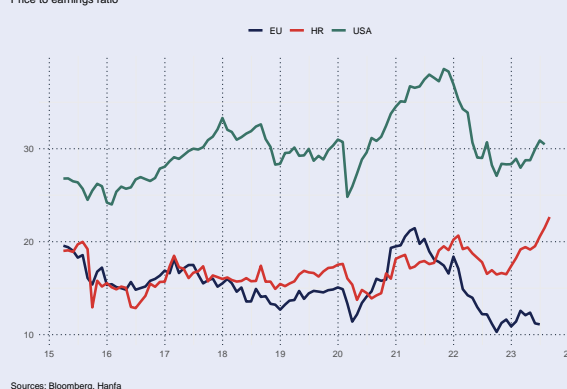
Apart from allowing market valuations to be observed in relative terms in relation to the business operations of companies, the P/E ratio also enables a consistent comparison of valuations on the domestic market with other stock markets. Comparing the domestic capital market with the European capital market shows that they are comparable and showed no signs of overvaluation in the period considered. In other words, both markets have been in a low to moderate valuation zone since 2015, i.e. between 10 and 20 (Figure 4). The US stock market has for some time recorded significantly higher valuations and is continuously in the area of overvaluation, i.e. above 25. This is primarily due to the optimistic expectations of investors regarding future profitability of US companies, especially in the context of growth companies, whose valuations primarily generate expectations of future growth, and only to a lesser extent due to current profits of companies.

P/E ratio on the domestic market at the end of August 2023 stood at 23.4, suggesting an expected annual return on investor capital of 4.3%, which is by 0.9 percentage points higher than the annualised annual return recorded by CROBEX since its beginning, i.e. 3.42%.

While the estimated indicators have some limitations, they suggest that valuations in the domestic stock market are not relatively overestimated in relation to fundamentals, and that despite the recent price jump they are

at the border between the undervaluation zone and fair value. Therefore, valuations on the domestic stock market should not be highly exposed to idiosyncratic systemic risks, the materialisation of which could lead to significant market corrections, which was also evident in the example of the rapid market recovery after the crisis in the Agrokor Group.

Figure 4 Higher concentration of tech companies and high profitability of other sectors contribute to higher valuations on the US stock market



However, since the beginning of the COVID 19 crisis, the market has shown a higher dose of dynamism, accompanied by more pronounced price growth, which culminated in a strong increase of the CROBEX index of 22.6% in the first eight months of 2023, bringing the P/E ratio above the long-term average. This growth occurred in the context of elevated systemic risks and a slowdown in macroeconomic trends, while it remains to be seen whether companies' earnings will justify the recent valuation recovery, suggesting a potential underestimation of risk by investors. In addition, the domestic market is highly integrated in global financial markets and responds relatively strongly to the emergence of systemic stress in global markets, as evidenced by the recent crises of 2008 and 2020. While full

protection of the domestic market against price corrections under the circumstances of systemic shock is not possible, improving the structure of the market in the context of increased

activity, liquidity and competitiveness would enable its greater resilience to external shocks, and thus a relatively faster recovery that would be measured in months rather than years.

LIST OF ABBREVIATIONS

GDP – gross domestic product

CAPE – cyclically adjusted price-to-earnings ratio

CISS – Composite Indicator of Systemic Stress

DG ECFIN – Directorate-General for Economic and Financial Affairs

CBS – Croatian Bureau of Statistics

EC – European Commission

ECB – European Central Bank

EU – European Union

EUR – euro

Fed – Federal Reserve System

Hanfa – Croatian Financial Services Supervisory Agency

HICP – Harmonised Index of Consumer Prices

CNB – Croatian National Bank

IF – investment funds

PF – pension funds

m – million

bn – billion

IFRS – International Financial Reporting Standards

p.p. – percentage point

VAT – value-added tax

P/E – price-to-earnings ratio

ROAA – return on average assets

USA – United States of America

SCR – Solvency Capital Requirement

CEE – Central and Eastern Europe

TILDA – stock liquidity market index

UCITS – undertakings for collective investment in transferable securities

USD – US dollar

ZSE – Zagreb Stock Exchange

Country codes: AT – Austria; BE – Belgium; BG – Bulgaria; CY – Cyprus; CZ – Czech Republic; DE – Germany; EE – Estonia; EL – Greece; ES – Spain; FI – Finland; FR – France; HR – Croatia; HU – Hungary; IE – Ireland; IT – Italy; LT – Lithuania; LV – Latvia; MT – Malta; NL – Netherlands; PT – Portugal; PL – Poland; RO – Romania; USA – United States of America; SE – Sweden; SI – Slovenia; SK – Slovakia

The logo for HANFA features the word "HANFA" in a bold, white, sans-serif font. Above the text is a thin, red, curved line that arches over the letters, resembling a stylized wave or a protective shield.

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