Macroprudential Diagnostics

second quarter of 2022

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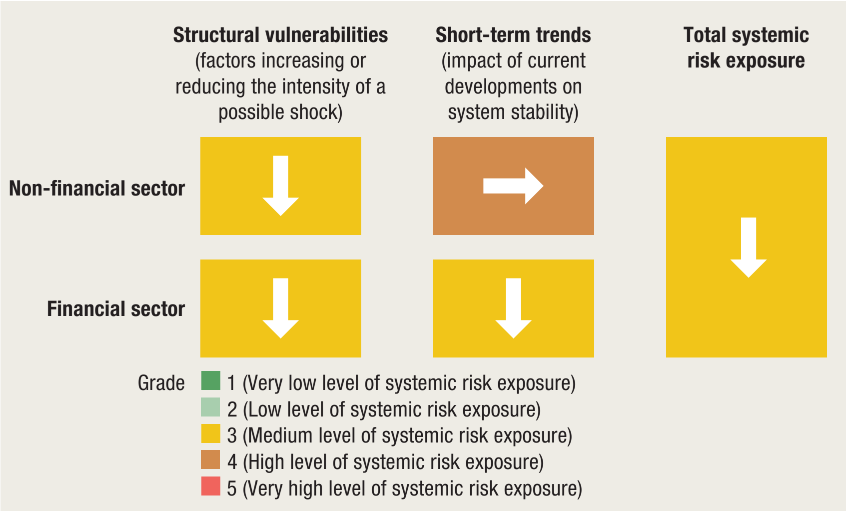
Introductory remarks

The macroprudential diagnostic process consists of assessing any macroeconomic and financial relations and developments that might result in the disruption of financial stability. In the process, individual signals indicating an increased level of risk are detected, according to calibrations using statistical methods, regulatory standards or expert estimates. They are then synthesised in a risk map indicating the level and dynamics of vulnerability, thus facilitating the identification of systemic risk, which includes the definition of its nature (structural or cyclical), location (segment of the system in which it is developing) and source (for instance, identifying whether the risk reflects disruptions on the demand or on the supply side). With regard to such diagnostics, instruments are optimised and the intensity of measures is calibrated in order to address the risks as efficiently as possible, reduce regulatory risk, including that of inaction bias, and minimise potential negative spillovers to other sectors as well as unexpected cross-border effects. What is more, market participants are thus informed of identified vulnerabilities and risks that might materialise and jeopardise financial stability.

1 Identification of systemic risks

High inflation, the global economic slowdown and the surging prices of energy and raw materials, amid supply bottlenecks, have kept the short-term risks in the non-financial sector at an elevated level. The continuation of war in Ukraine, to which the EU responded by imposing sanctions on imports from Russia, led to further difficulties in economic relations with Russia, resulting in a direct increase in the prices of key energy products and raw materials and causing a drop in foreign demand for European goods and services. In addition, the coronavirus zero-tolerance policy, coupled with additional structural difficulties, has been weighing down on economic growth in China, putting an additional pressure on supply chains. Therefore, despite the relatively strong domestic economic growth in the first quarter of 2022 due to the recovery of service activities from the effects of the pandemic, the negative risks in the non-financial sector could remain pronounced

Figure 1 Risk map, second quarter of 2022



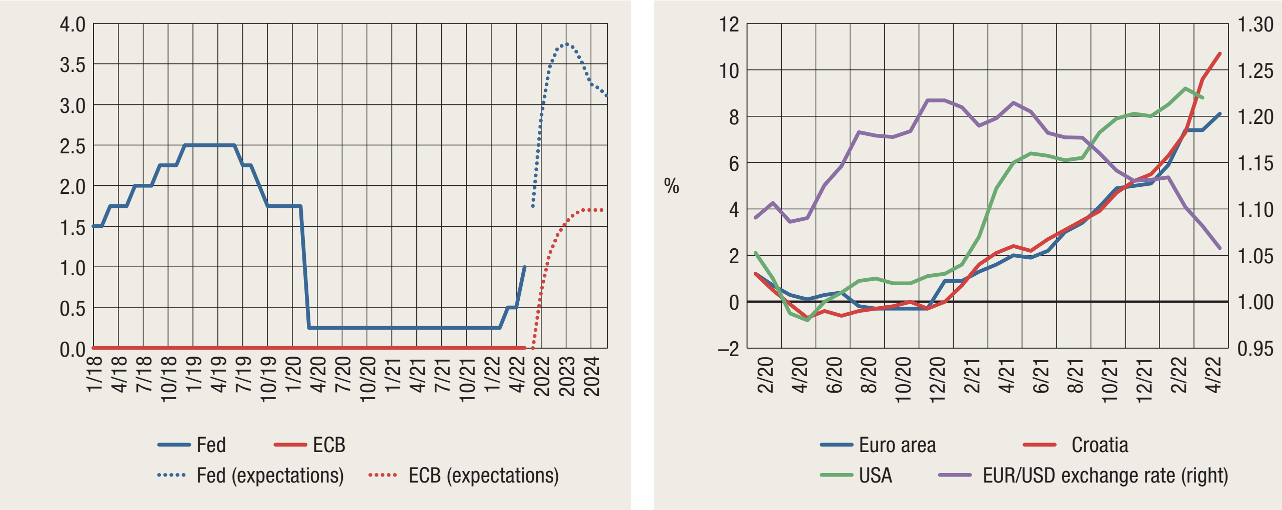
Note: The arrows indicate changes from the Risk map in the first quarter of 2022, published in Financial Stability No. 23.
Source: CNB.

in the upcoming period as well. As opposed to the risks stemming from the macroeconomic environment, owing to the recovery of profitability, a decrease in the share of non-performing loans and a halt in the outflows of deposits faced by some credit institutions exposed to Russia, short-term risks in the financial sector edged down (Figure 1). Structural vulnerabilities were also mitigated by the expected near elimination of currency risk for the domestic economy and the financial system in light of the decision adopted by the EU Council in July on the adoption by Croatia of the euro on 1 January 2023. Thus, the system's overall exposure to systemic risks also trended down.

Against the backdrop of growing inflation, the central banks of major economic areas started to shift the course of their monetary policies (Figure 2). While the Fed and some central banks in Europe have already started tightening their monetary policies, the ECB, following a reduction in the net asset purchases and their subsequent full discontinuation, announced its decision to raise the key interest rates by 0.25 percentage points in July 2022, to be followed by an additional and sharper increase in September. The US dollar appreciated against the euro and the other currencies due to its perception as a safe haven currency and to the fact that the growth of interest rates in the USA was faster and started earlier than in other highly developed countries.

The shift in the course of monetary policies of central banks in major economic areas in early 2022 triggered the tightening of global financing conditions, so far most evident in the increased costs of government borrowing, both in Croatia and in the majority of developed countries (Figure 3). The most pronounced rise in the yields on government bonds was recorded in countries outside the euro area witnessing steep increases in key interest rates. The relatively long

Figure 2 Benchmark interest rates of central banks (left panel) and inflation trends in the euro area, USA and Croatia (right panel)



Note: Expectations on 8 July 2022.
Sources: Bloomberg, Eurostat

average public debt maturity and still relatively high financing costs for a part of the existing liabilities have mitigated the effect of the growing yields on the average financing cost for Croatia. Furthermore, the progress made in the process of the adoption by Croatia of the euro has already been partly absorbed in the cost of borrowing, while further beneficial effects may be expected after the successful completion of this process, which will alleviate any additional pressures on the rise in yields amid the tightening of monetary policy.

Global financial markets are facing growing uncertainty. Following the reversal of upward trends in the capital markets at the beginning of the year, the gradual fall in the value of the main global equity indices continued in the second quarter of 2022, with an increase in volatility, which is still less pronounced than at the onset of the COVID-19 pandemic. The crypto-asset market continued to record a steep fall in the same period, with the value of these assets dropping by more than 65% from the record high reached late last year. Further tightening of monetary policies by central banks could put more pressure on additional decrease in the prices of financial assets in the global capital markets, while heightened uncertainty regarding the economic outlook and inflation could inject additional volatility.

Real incomes of households continued their downward trend, with a stable consumption and a slowdown in savings. The average real net wages of persons employed in legal entities in May were 3.3% lower than in the same period last year, resulting in a slight decrease in the total wage bill, despite the growth of employment (Figure 4). Household consumption grew owing to savings built up during the pandemic,

Figure 3 Yields on ten-year government bonds

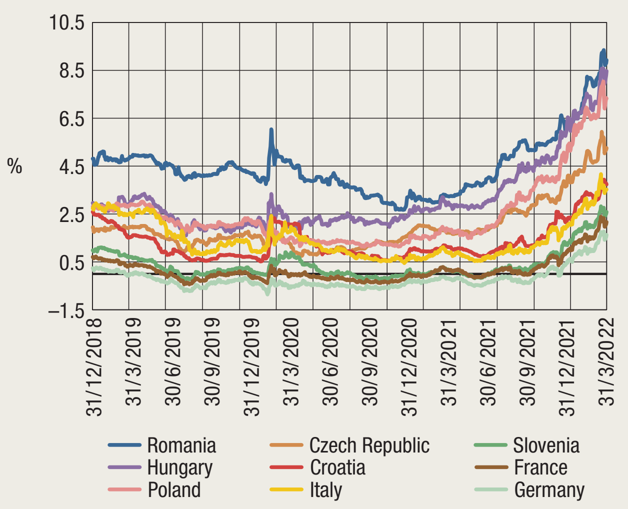
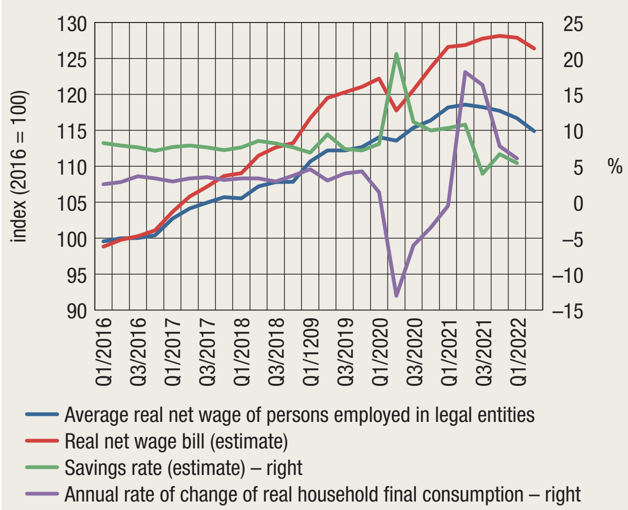


Figure 4 Household income, consumption and savings indicators



Note: The data shown in Figure 4 have been seasonally and calendar adjusted. Real net wage bill is estimated as the multiple of the average real net wage of persons employed in legal entities and the number of persons insured with the Croatian Pension Insurance Institute (CPII). Savings are calculated as the difference between the quarterly disposable income value estimated by using the Chow-Lin method and series of compensation of employees and gross operating surplus and mixed income as indicators and the household final consumption. Savings rate is relativised by household disposable income and does not include adjustments due to changes in pension rights.
Sources: Bloomberg, CBS, Eurostat, CPII and CNB calculations.

despite falling incomes and a decline in consumer confidence. Interest rates on household loans continued to drop, albeit at a slower pace than in the previous years, while a decline in the segment of cash loans also halted. However, the effects of tighter financing conditions are already apparent when it comes to existing loans tied to EURIBOR, and could, gradually and with a time lag, also be reflected in other loans granted at variable interest rates. The decline in real income and the anticipated rise in financing costs fuel risks associated with debt servicing capacities in the forthcoming period.

Despite continued momentum in the housing market, the anticipated tightening of financing conditions could partly influence the weakening of activity in the market. The annual rise in real estate prices accelerated to 13.5% in the first quarter of 2022, from 7.3% in 2021. Further strengthening of foreign demand, a new round of applications for subsidised housing loans in March and April[1] and accelerated inflation have additionally stimulated real estate investments and reinforced demand on the real estate market. Influenced by a new round of the government subsidy programme, utilised housing loans rose considerably in May and their annual growth rate accelerated to 9.5% in June from 8.1% in April. The growth in residential real estate prices in the preceding period, coupled with limited supply, increasingly fuels the acceleration in the growth of construction costs. However, the uncertain economic outlook, as well as tighter financing conditions, followed by

1 According to the data from the Croatian Agency for Transactions and Mediation in Immovable Properties, a total of 5518 applications have been granted so far, 20% more than in the previous round.

potential exacerbation of the household debt servicing burden, increase the risk of a reversal in the real estate market.

Despite disruptions in global supply chains and the continued rise in the prices of energy products, other raw materials and consumables, domestic corporations continued to perform well. The latest financial data point to a recovery in the income of non-financial corporations in 2021, as well as further growth in revenues in the first half of 2022, especially in the area of service activities. A sharp rise was also recorded in total loans to corporates, growing by 11.4% on an annual basis in May. This was particularly pronounced in the manufacturing and energy sectors, where corporates need additional financing in order to invest in working capital. Despite the still very favourable financing conditions for corporates, their financing costs could increase in the upcoming period as central banks continue to normalise their monetary policies.

High capitalisation and liquidity of banks at the beginning of 2022 have contributed to the maintenance of financial stability, while the anticipated rise in interest rates could increase banks' interest income. Compared to the audited data at the end of last year, total capital ratio edged down in the first quarter of 2022, standing at 25.6%. The high level of total capital ratio primarily stems from the decrease in risk weight by investment in liquid assets and lower provisions due to improved asset quality, as well as relatively small dividend payouts following the lifting of the restriction of distributions in September last year. Banks' financial results continued to improve in early 2022, while the liquidity coverage ratio and the stable funding ratio remained stable and above the prescribed requirements, despite temporary outflows from certain banks in March. The normalisation of the ECB's monetary policy could spur a gradual increase in banks' interest income, albeit with a simultaneous increase in the interest rate risk for corporates and households and interest rate-induced credit risk for banks. In addition, the adoption of the euro, which will, compounding the loss of a large portion of income from currency exchange, also generate short-term administrative and operating costs, at the beginning of next year will almost completely eliminate banks' systemic risks stemming from currency risk and currency-induced credit risk.

2 Potential risk materialisation triggers

The prolonged war in Ukraine and the sanctions affecting trade flows of key energy products, as well as the lock-down in China, could exacerbate disruptions in the supply of raw materials, as well as of semi-finished and finished products. The ensuing rise in prices, especially of energy products, could put further pressure on the economy. Potentially persistent high inflation could exert additional pressure to adjust household expenditures and investments in the non-financial corporate sector.

Lingering high inflation could bring about faster and sharper tightening of central banks' monetary policies, leading to further tightening of global financing conditions. The ECB has announced a gradual increase in key interest rates. However, uncertainties regarding the persistence of inflation will also be reflected in the future course of monetary policy. Faster tightening of monetary policy in the case of more persistent inflationary pressures could result in stricter financing conditions and restrict access to loans to the economy, which would have negative effects on debt repayment capabilities. The effects of the tightening of monetary policy have been curbed by the relatively low total debt of the non-financial sector and the increase in fixed interest rates. However, a considerable rise in interest rates could make debtors with variable interest rates vulnerable.

The increase in the costs of energy and raw materials in such adverse scenario could make operations of a part of corporations more difficult. The effect of the rise in costs on corporate operations will depend on the ability of corporates to offset higher costs by raising the prices of their products and services. The increased volatility of input prices could generate loss for those corporations that will not be able to adjust their selling prices. On the other hand, the strengthening of inflation expectations could spur a rise in prices also by those corporations that have not yet faced a significant rise in costs. In an extremely adverse scenario, corporations could also face a shortage of certain inputs, as well as a decline in international demand, due to a deteriorated global economic outlook. Finally, inflation has a negative effect on the disposable income and consumption. Coupled with a weakened foreign demand, this could result in a considerable slowdown of domestic economic activity.

Fiscal indicators improved considerably in 2021 as a result of economic recovery and the expiry of extraordinary support measures aimed at fighting the consequences of the pandemic. However, the effects of the disruption in the macroeconomic and geopolitical environment could have an unfavourable impact on their future trends. Growing inflation and the rise in energy prices automatically increase the government revenues from tax and excises over the short term. Furthermore, a stronger nominal growth in GDP decreases the public debt-to-GDP ratio. However, the increase in price levels puts pressure to the expenditure side of the budget as well. This brings about a rise in the prices of goods and services procured by the government and builds up pressure for an increase in wages in the public sector. Given the structure of the increase in prices, most pronounced in the segment of energy products and food, there is a need to direct fiscal support to the most vulnerable households and corporates. The costs of government borrowing have increased, while the movements in borrowing costs could be particularly sensitive in the case of countries like Croatia with a high level of public debt. The growth in government borrowing costs could also have a negative effect on the banking system, further increasing banks' lending to the government, which would reinforce the already very high degree of interconnectedness between the government and the banking sector. In addition, the current geopolitical uncertainties and the war in Ukraine could generate additional costs for the government budget, such as higher costs for programmes aimed at substituting energy sources, the rise in the costs of reception of refugees and potential higher investment in Croatia's defence abilities.

Elevated inflation, an uncertain global economic outlook and the rise in interest rates have reinforced the risks of a reversal in the real estate market. High inflation and the increase in construction costs could continue to fuel the climb in real estate prices. On the other hand, the rise in interest rates could decrease housing affordability and investment demand for residential real estate, which would have an unfavourable impact on market liquidity and prices. However, moderate exposure of credit institutions to the real estate market relative to own funds alleviates systemic risks arising from vulnerabilities accumulated in the real estate sector.

3 Recent macroprudential activities

In the second quarter of 2022, the CNB made no changes related to the instruments of macroprudential policy, given that it has been assessed that the existing instruments are currently appropriate to deal with the established systemic risks and vulnerabilities of the Croatian financial system. In accordance with the recommendations of the European Systemic Risk Board (ESRB) on the reciprocation of macroprudential measures taken by other European Economic Area (EEA) countries, the CNB examined the relevant exposures of Croatian credit institutions to countries whose measures have been recommended for reciprocation and found such exposures to be at very low levels. Bosnia and Herzegovina and Montenegro kept their status as third countries material for the domestic financial system. As systemic risks and vulnerabilities in the EEA countries continue to grow, macroprudential policy measures have been further tightened, mostly aiming at the build-up of cyclical risks, especially those associated with housing market.

3.1 The countercyclical capital buffer rate remained at 0.5%

In light of the increase in cyclical vulnerabilities, the announced countercyclical capital buffer rate remained at 0.5%. The regular quarterly analysis of the development of systemic risks, the movements of the specific credit gap indicators for the Republic of Croatia and the composite indicator of cyclical systemic risk suggest the continuation of the upward phase of the financial cycle. Intensified bank lending activity and the rise in the housing prices continue to be the main contributors to the build-up of cyclical risks. Heightened uncertainty, followed by inflationary pressures and the tightening of financing conditions, as well as by a deteriorating global economic outlook, have not yet slowed down the accumulation of cyclical risks. The countercyclical capital buffer rate set in early 2022 at 0.5%, to be applied until the end of March 2023, has been assessed as still appropriate and will continue to apply in the third quarter of 2023. As the competent macroprudential authority, the CNB will continue to monitor the evolution of cyclical systemic risks and will, depending on domestic and global economic and financial developments, adjust the countercyclical capital buffer rate or adopt other measures within its competence.

3.2 Actions taken at the recommendation of the European Systemic Risk Board

In the first half of 2022, several new national macroprudential policy measures have been recommended for reciprocation by ESRB. The CNB did not prescribe the reciprocity of these macroprudential measures given that the relevant exposures of domestic credit institutions currently do not exceed the prescribed materiality thresholds. The measures concern those sought for reciprocity by the Netherlands, Lithuania and Belgium, which have been included in the list of national measures recommended for reciprocity by the ESRB[2]. The **Dutch** central bank sought reciprocation of the measure under Article 458 of the Capital Requirements Regulation[3] concerning credit institutions authorised in the Netherlands, using the internal ratings-based (IRB) approach. The measure sets the minimum average risk weight in relation to their exposures to natural persons secured by residential property in the Netherlands, depending on the ratio of the loan amount to the value of the pledged real estate (LTV ratio). For each individual exposure item, a 12% risk weight is assigned to the portion of the loan not exceeding 55% of the market value of the property that serves to secure the loan, and a 45% risk weight is assigned to the remaining portion of the loan. The minimum average risk weight of the portfolio is calculated as the exposure-weighted average of the risk weights of the individual loans. The measure entered into force in the Netherlands on 1 January 2022.

Lithuania and Belgium sought reciprocation of a sectoral structural systemic risk buffer for exposures secured by residential immovable property. In **Lithuania**, a 2% systemic risk buffer rate is applied for all exposures to natural persons resident in the Republic of Lithuania that are secured by residential property. The measure entered into force on 1 July 2022. In **Belgium**, a 9% sectoral structural systemic risk buffer rate applies to credit institutions using the IRB approach for exposures to natural persons that are secured by residential property in Belgium. The measure entered into force on 1 May 2022.

With regard to the three measures recommended for reciprocity, the ESRB recommended the application of an institution-specific materiality threshold. In accordance with the *de minimis* principle, by

2 Recommendation (ESRB/2015/2) on the assessment of cross-border effects of and voluntary reciprocity for macroprudential policy measures.

3 Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012 (CRR).

applying the exemption regarding the materiality threshold, **the CNB will not prescribe the reciprocity of the macroprudential measures concerned.** The regular analysis of the data on the Croatian banking system has shown that on 31 December 2021, domestic credit institutions had no material exposures in any of the three countries concerned that would require the reciprocation of these measures.

The CNB launched a public consultation on the repeal of the reciprocation of the Belgian macroprudential measure that expired in Belgium. The sectoral structural systemic risk buffer rate that entered into force in Belgium replaced the measure that applied up to that point under Article 458 of the Capital Requirements Regulation, which was also aimed at vulnerabilities associated with the housing market and concerned additional risk weights for mortgage loans granted to Belgian citizens for real estate in Belgium, applying to credit institutions using the IRB approach. The measure was in force from April 2018 to April 2022 and was reciprocated in the Republic of Croatia, even though it was not in use since the exposures of domestic credit institutions did not exceed the prescribed materiality threshold. Following the expiry of the measure in Belgium, the CNB launched a public consultation on the repeal of the decision[4] on the reciprocity of this measure, after which the reciprocity will no longer apply.

The review of the exposures of the Croatian banking sector to other ESRB member countries whose macroprudential measures have not been reciprocated by the CNB has shown that the exposures remained at very low levels and that there was no need for their subsequent reciprocation. The review was carried out in June, in line with the obligation undertaken by the CNB when adopting the decisions on the non-reciprocity of the measures adopted by France, Sweden, Luxembourg and Norway. The CNB will, once a year, continue to monitor the level of exposure to all countries that adopted macroprudential measures recommended for reciprocity by the ESRB.

The analysis of the materiality of third countries for the banking system in the Republic of Croatia has once again, as in the previous years, identified Bosnia and Herzegovina and Montenegro as material third countries. The analysis was carried out in the second quarter of 2022, in accordance with the Recommendation of the ESRB[5], with the purpose of establishing material exposures of domestic credit

4 Decision repealing the Decision on the reciprocity of the macroprudential policy measure referred to in the Recommendation of the European Systemic Risk Board of 16 July 2018 amending Recommendation ESRB 2015/2 on the assessment of cross-border effects of and voluntary reciprocity for macroprudential policy measures (ESRB/2018/5).

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

institutions to third countries and recognising or setting countercyclical capital buffer rates for these exposures. Further to the determination of Bosnia and Herzegovina and Montenegro as material third countries, an analysis was also made of the developments in cyclical pressures in these countries, and it has been found that there is currently no risk of excessive credit growth that would require regulatory response in relation to Croatian banks exposed to these markets.

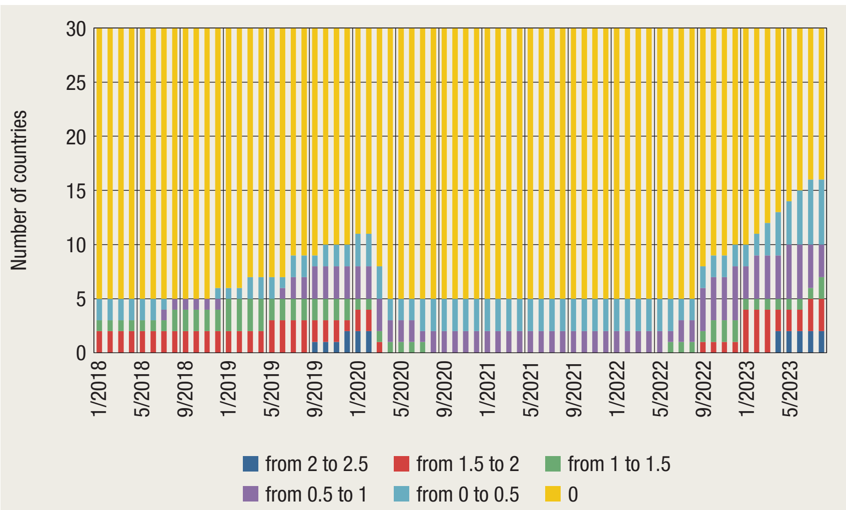
3.3 Implementation of macroprudential policy in other European Economic Area countries

In the first half of 2022, European Economic Area countries mostly tightened their macroprudential policy measures. The measures were primarily aimed at mitigating the risks associated with the residential real estate market and involved increasing the countercyclical capital buffer rate or introducing a sectoral structural systemic risk buffer for exposures secured by residential property.

In response to the continued build-up of cyclical systemic risks, several EEA countries raised their countercyclical capital buffer rates, either as a way to gradually rebuild the buffer or to gradually return to the rates that had applied before they were decreased following the outbreak of the pandemic. Even though the non-zero countercyclical buffer rate is currently applied by only five ESRB countries (ranging from 0.5% to 1.5%), according to the latest announcements, their number should increase to sixteen by 1 August 2023 (Figure 5 and Table 1). There is a growing number of countries that have been actively using this instrument, with higher rates than those previously applied, even relative to the period preceding the outbreak of the pandemic.

For the first time, increases in the countercyclical capital buffer rate from zero level have been announced by **Croatia** (0.5% from March 2023), **the Netherlands** (1% from May 2023) and **Hungary** (0.5% from 1 July 2023). The Hungarian central bank decided to activate the countercyclical buffer in order to increase the resilience of credit institutions to the growing risks associated with the overvaluation of real estate and strong lending to both households and corporates, undaunted even against the background of uncertainty caused by the war in Ukraine. In the Netherlands, raising the rate to 1% is a first step towards the target level of 2%, which has been assessed in the new methodological framework for the countercyclical capital buffer as appropriate in a standard risk environment, taking into account the inherent uncertainty involved in measuring systemic risks in a complex financial cycle susceptible to sudden and strong changes. The additional capital buffer is introduced in response to the growing indebtedness, increased risk-taking by non-bank financial intermediaries and record-high commercial real estate prices. Minimum prescribed risk weights depending on the LTV ratio have also been introduced due to the accumulation of risks associated with the housing market. **Ireland** employed the same strategy and in early 2022 revised its approach to the calibration of the countercyclical buffer rate, setting the target rate at 1.5% in a standard risk environment, taking account also of the fact that Ireland is small and open economy, vulnerable to changes in investor sentiment and the international environment. The first step in reaching the target level was the announced increase in the countercyclical buffer rate to 0.5%, applicable as of June 2023. Cyclical risks in Ireland mostly arise from mismatches between supply and demand in the housing market, expected to result in a further acceleration in the growth of residential real estate prices, with a still moderate credit growth. In **Sweden**, the announced countercyclical capital buffer rate was raised from 1% to 2%, effective as of June 2023, reaching its target level amid the continued growth in household indebtedness and the fast-growing debt of non-financial corporations. **Slovakia** also raised its countercyclical buffer rate from 1% to 1.5%, applicable as of August 2023. The reason behind this decision is the fact that the composite indicator used to assess cyclical risks in Slovakia reached almost its record high as a result of the acceleration in the lending to households and corporates, as well as amid the continued strong growth in residential real estate prices. The **Czech Republic** and **Norway** also increased their announced countercyclical buffer rates. Having already been increased several times, these rates

Figure 5 The countercyclical capital buffer rate applicable in European Economic Area countries by 1 August 2023



Note: The rates after July 2022 refer to rates whose application was announced and which enter into force by 1 August 2023.
Sources: ESRB, notifications from central banks and websites of central banks as at 1 July 2022.

will be set at 2.5% in both countries as of April 2023. The Czech Republic raised the rate in response to the growing risks associated with the housing market and banks' potential underestimation of risks. In Norway, raising the rate to 2.5% marks the targeted return to the pre-pandemic level, which has been assessed as appropriate to ensure the resilience of the banking sector to financial cycle reversals amid long-lasting high levels of accumulated cyclical risks. Following its announcement in December, in March **France** adopted a decision to return the countercyclical buffer rate to its pre-crisis level of 0.5% as of April 2023. Although the benchmark rates in France point to a need for an even higher rate, in light of the uncertainty caused by the war in Ukraine, the financial cycle is expected to slow down and the credit gap is expected to shrink in the following months, and thus the 0.5% rate is deemed appropriate. Two countries (**Iceland and Estonia**) announced the activation of the countercyclical buffer as early as in the second half of 2021.

Lithuania, the first EEA member country to announce the introduction of a sectoral structural systemic risk buffer for exposures secured by residential real estate in late 2021, was soon followed by Belgium, Germany and Slovenia as from the beginning of 2022. In **Belgium**, the applicable buffer rate as from 1 May 2022 stands at 9% and applies in the same scope as the previously applied measure of higher risk weights in accordance with Article 458 of the Capital Requirements Regulation (see paragraph 3.2). It concerns retail exposures secured by residential real estate in Belgium and applies only to credit institutions using the IRB approach to credit risk measurement. The measure is aimed at mitigating the long-lasting vulnerabilities associated with the housing market, reflected in the sharp rise in housing loans with banks' potential underestimation of risks, high indebtedness of households and prolonged residential real estate overvaluation against the backdrop of tough competition in the housing loan market. In **Germany**, a 2% structural systemic risk buffer rate will apply as of 1 February 2023 for all exposures to natural and legal persons secured by residential property in the country, provided that such collateral decreases capital requirements for banks. This measure is a part of the package that seeks to alleviate housing market-related vulnerabilities, which also includes the countercyclical capital buffer rate of 0.75% and the announcement of supervisory expectations about applying prudent credit standards in granting new loans (see Macroprudential Diagnostics No. 16). Starting from 1 January 2023, **Slovenia** will start applying a sectoral structural systemic risk buffer rate of 1% for all retail exposures to natural persons secured by residential real estate and of 0.5% for all other retail exposures to natural persons. The purpose of the measure is to alleviate the risks arising from the rapid rise in residential real estate prices that has led to their overvaluation, followed by a sharp rise in loans to households and the increase in banks' exposure to the real estate market, in the environment of still low interest rates that puts banks' profitability at risk. The introduction of this capital buffer is also aimed at offsetting the partial relaxation of the existing borrower-based measures.

The Czech Republic and Slovakia discontinued the application of structural systemic risk capital buffer for SIIs and replaced it with the O-SII buffer. In the Czech Republic, this change entered into force on 1 October 2021, and in Slovakia on 1 January 2022, as a consequence of changes in the EU regulatory framework. Namely, with the entry into force of CRD V[6], the risks associated with the systemic importance of banks can no longer be mitigated by applying structural systemic risk buffer, as has been done in these countries so far. Instead, these risks are mitigated only by using the capital buffer for (global or other) systemically important institutions. These changes have had no effect on the total amount of capital requirements in Slovakia, while in the Czech Republic four out of five O-SIIs have witnessed a slight decline in these requirements. Estonia deactivated the structural systemic risk buffer. Instead, in mitigating the risks to which it is exposed as a small and open economy, very susceptible to global trends, Estonia will apply the countercyclical capital buffer. This decision is based on the revision of the framework for the implementation of macroprudential policy in 2021, when the central bank of Estonia also passed a decision on the need to maintain a neutral countercyclical capital buffer rate of 1%.

6 Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC.

Table 1 Overview of macroprudential measures applied by EU member states, Iceland and Norway

	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GR	HR	HU	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SI	SK	UK
Capital and liquidity buffers																														
CCoB	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
CCyB rate applied (%)	0	0	0.50	0	1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0.50	0	0	0	1.50	0	0	0	0	0	1.00	0
CCyB rate pending (%)			1.50		2.50	0.75	2.00	1.00			0.50		0.50	0.50	0.50	2.00						1.00	2.50			0.50	2.00		1.50	
G-SII						x			x		x						x					x								x
O-SII	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
SRB	x		x				x			x			x	x	x	x						x	x	x		x	x			
Sectoral SRB		x				x												x										x		
Liquidity ratio														x									x	x			x			
Caps on prudential ratios																														
DSTI	x			x	x			x			x			x		x		x		x	x			x	x	x		x	x	
DTI/LTI					x		x								x					x			x						x	x
LTD																												x		
LTV	x	x		x	x		x	x		x				x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	
Loan amortisation																							x				x		x	
Loan maturity	x				x			x			x							x		x	x	x		x	x	x		x	x	
Other measures																														
Pillar II		x		x																	x						x	x		
Risk weights								x		x			x		x				x	x	x	x	x	x		x	x	x		x
LGD																							x							
Stress/sensitivity test			x	x	x					x					x											x				x
Other measures	x		x		x		x				x		x	x	x						x			x		x	x	x	x	x

Notes: The listed measures are in line with Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms (CRR) and Directive 2013/36/EU on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms (CRD IV). The definitions of abbreviations are provided in the List of abbreviations at the end of the publication. Green indicates measures that have been added since the last version of the table. Light red indicates measures that countries have released in response to the crisis triggered by the coronavirus pandemic.
Disclaimer: of which the CNB is aware.
Sources: ESRB, CNB and notifications from central banks and websites of central banks as at 01 July 2022.
For details, see:
https://www.esrb.europa.eu/national_policy/html/index.en.html and https://www.esrb.europa.eu/home/coronavirus/html/index.en.html.

Table 2 Implementation of macroprudential policy and overview of macroprudential measures in Croatia

Measure	Primary objective	Year of adoption	Description	Basis for standard measures in Union law	Activation date	Frequency of revisions
Macroprudential measures implemented by the CNB prior to the adoption of CRD IV						
Prior to the adoption of CRD IV, the CNB used various macroprudential policy measures, of which the most significant ones are listed and described in: a) Galac, T., and E. Kraft (2011): http://elibrary.worldbank.org/doi/pdf/10.1596/1813-9450-5772 b) Vujčić, B., and M. Dumičić (2016): https://www.bis.org/publ/bppdf/bispap86l.pdf						
Macroprudential measures envisaged in CRD IV and CRR and implemented by the competent macroprudential authority						
CCoB	Credit growth and leverage following Recommendation ESRB/2013/1	2014	Early introduction: at 2.5% level	CRD, Art. 160(6)	1 Jan. 2014	Discretionary
		2015	Exemption of small and medium-sized investment firms from the capital conservation buffer	CRD, Art. 129(2)	17 Jul. 2015	Discretionary
CCyB	Credit growth and leverage following Recommendation ESRB/2013/1 and implementing Recommendation ESRB/2014/1	2015	CCyB rate set at 0%; announced CCyB rate of 0.5% from 31 March 2022	CRD, Art. 136	1 Jan. 2016	Quarterly
		2015	Exemption of small and medium-sized investment firms from the countercyclical capital buffer	CRD, Art. 130(2)	17 Jul. 2015	Discretionary
O-SII	Limiting the systemic impact of misaligned incentives with a view to reducing moral hazard following Recommendation ESRB/2013/1	2015	Seven O-SIIs identified by review carried out in late November 2021 with corresponding buffer rates: 2.0% for O-SIIs: Zagrebačka banka d.d., Zagreb, Privredna banka Zagreb d.d., Zagreb (1.75% in effective terms), Erste&Steiermärkische Bank d.d., Rijeka, Raiffeisenbank Austria d.d., Zagreb, OTP banka Hrvatska d.d., Split (1.5% in effective terms) 0.5% for O-SII: Addiko Bank d.d., Zagreb, Hrvatska poštanska banka d.d., Zagreb.	CRD, Art. 131	1 Feb. 2016	Annually
SRB	Credit growth and leverage following Recommendation ESRB/2013/1	2014	Two SRB rates (1.5% and 3%) applied to two sub-groups of banks (market share < 5%, market share ≥ 5%). Applied to all exposures	CRD, Art. 133	19 May 2014	Annually
		2017	The level of two SRB rates (1.5% and 3%) and the application to all exposures remain unchanged. Decision (OG 78/2017) changes the method for determining the two sub-groups to which the SRB is applied. Sub-groups are determined by calculating the indicator of the average three-year share of assets of a credit institution or a group of credit institutions in the total assets of the national financial sector (indicator < 5%, indicator ≥ 5%). The review conducted in 2019 determined that the rates for the two sub-groups remain unchanged.	CRD, Art. 133	17 Aug. 2017	At least on a biennial basis
		2020	Under the Decision (OG 144/2020), a uniform buffer rate (SRB) was introduced in the amount of 1.5% of the total amount of exposure. Since the buffers for SIIs and for the systemic risk are additive as of the beginning of the application of the AACIA, there is no more need for the systemic risks stemming from the size of individual credit institutions and banking sector concentrations to be covered by a higher of the systemic risk buffer rate because these risks will be covered by O-SII buffers.	CRD V, Art. 133	29 Dec. 2020	At least on a biennial basis
Risk weights for exposures secured by mortgages on residential property	Credit growth and leverage following Recommendation ESRB/2013/1	2014	Maintaining a stricter definition of residential property for preferential risk weighting (e.g. owner cannot have more than two residential properties, exclusion of holiday homes, need for occupation by owner or tenant)	CRR, Art. 124, 125	1 Jan. 2014	Discretionary
Risk weights for exposures secured by mortgages on commercial property	Mitigating and preventing excessive maturity mismatch and market illiquidity pursuant to Recommendation ESRB/2013/1	2014	CNB's recommendation issued to banks (not legally binding) on avoiding the use of risk weights of 50% to exposures secured by CRE during low market liquidity	CRR, Art. 124, 126	1 Jan. 2014	Discretionary
		2016	Decision on higher risk weights for exposures secured by mortgages on commercial immovable property. RW set at 100% (substituted CNB's recommendation from 2014, i.e. effectively increased from 50%)	CRR, Art. 124, 126	1 Jul. 2016	Discretionary
Other measures and policy actions whose effects are of macroprudential importance and are implemented by the macroprudential authority						
Consumer protection and awareness	Raising risk awareness and creditworthiness of borrowers following Recommendation ESRB/2011/1	2013	Decision on the content of and the form in which consumers are provided information prior to contracting banking services (credit institutions are obliged to inform clients about details on interest rate changes and foreign currency risks)		1 Jan. 2013	Discretionary
		2013	Amended Decision from 1 Jan. 2013 (credit institutions were also obliged to provide information about the historical oscillations of the currency in which credit is denominated or indexed to vis-à-vis the domestic currency over the past 12 and 60 months)		1 Jul. 2013	Discretionary
Information list with the offer of loans to consumers aimed at consumer protection and awareness raising	Raising risk awareness of borrowers pursuant to Recommendation ESRB/2011/1 and encouraging price competitiveness in the banking system	2017	The Information list with the offer of loans to consumers, available on the CNB's website, provides a systematic and searchable overview of the conditions under which banks grant loans. With the Information list, standard information available to the consumers are extended with information regarding interest rates.		14 Sep. 2017	Discretionary
Consumer protection and awareness	Financial stability concerns regarding risk awareness of borrowers	2016	Borrowers are strongly recommended (publicly) by the CNB to carefully analyse the available information and documentation on the products and services offered prior to reaching their final decision, as is customary when concluding any other contract		1 Sep. 2016	Discretionary
Recommendation to mitigate interest rate and interest rate-induced credit risk	Mitigation of the interest rate risk in the household sector and the interest-induced credit risk in the banks' portfolios and enhancing the price competition in the banking system	2017	The CNB issued the Recommendation whereby credit institutions providing consumer credit services are recommended to extend their range of credit products to fixed-rate loans, while minimising consumer costs.		26 Sep. 2017	Discretionary
Additional criteria for assessing consumer creditworthiness in granting housing consumer loans	Credit risk management in housing consumer loans pursuant to EBA Guidelines on creditworthiness assessment (EBA/GL/2015/11) and EBA Guidelines on arrears and foreclosure (EBA/GL/2015/12)	2017	Decision on the additional criteria for the assessment of consumer creditworthiness and on the procedure for the collection of arrears and voluntary foreclosure.		1 Jan. 2018	Discretionary

Measure	Primary objective	Year of adoption	Description	Basis for standard measures in Union law	Activation date	Frequency of revisions
Recommendation on actions in granting non-housing consumer loans	Financial stability concerns due to credit risk in banks' housing loan portfolios and protection of consumers from excessive debt taking	2019	CNB adopted the Recommendation on actions in granting non-housing loans to consumers, recommending all credit institutions in Croatia that grant consumer loans to apply, in determining a consumer's creditworthiness for all non-housing consumer loans with original maturity equal to or longer than 60 months, the minimum costs of living that may not be less than the amount prescribed by the act governing the part of salary exempted from foreclosure.		28 Feb. 2019	Discretionary
Decision on collecting data on standards on lending to consumers	Establishment of an analytical basis for the monitoring of systemic and credit risk and the calibration of borrower-based measures and for meeting the requirements from the ESRB recommendations on closing real estate data gaps (ESRB/2016/14 and ESRB/2019/3)	2020	Decision introduces a new reporting system which provides for a monthly collection of individual data on all newly-granted consumer loans at the individual loan level and the annual collection of data on all individual consumer loan balances. The collected data will be used for the analysis and the regular monitoring of systemic risk, the monitoring of credit risk, the calibration of macroprudential measures and, where necessary, the monitoring of actions by credit institutions against which measures have been imposed.		2 Apr. 2020	Discretionary
Other measures whose effects are of macroprudential use						
Amended Consumer Credit Act	Financial stability concerns due to interest rate risk and currency risk	2013	Fixed and variable parameters defined in interest rate setting, impact of exchange rate appreciation for housing loans limited, upper bound of appreciation set to 20%		1 Dec. 2013	Discretionary
Amended Consumer Credit Act	Financial stability concerns due to interest rate risk and currency risk	2014	Banks are obliged to inform their clients about exchange rate and interest rate risks in written form		1 Jan. 2014	Discretionary
Amended Consumer Credit Act	Financial stability concerns due to currency risk	2015	Freezing the CHF/HRK exchange rate at 6.39		1 Jan. 2015	Discretionary
Amended Consumer Credit Act	Financial stability concerns due to currency risk	2015	Conversion of CHF loans		1 Sep. 2015	Discretionary
Consumer Home Loan Act	Financial stability concerns due to interest rate risk and currency risk	2017	To establish the variable interest rate, the interest rate structure was defined through reference variable parameters and the fixed portion of the rate; for foreign currency consumer home loans, clients were offered one-off conversion of loans, from the currency a loan was denominated in or linked to, to the alternative currency without additional costs		20 Oct. 2017	Discretionary
Act on Amendments to the Credit Institutions Act	Compliance with the requirements for close cooperation with the ECB and the legal basis for imposing legally binding borrower-based measures	2020	Detailed provisions on the CNB's powers regarding the adoption and implementation of macroprudential measures that for the first time explicitly stipulate borrower-based measures. The ECB may issue instructions to the CNB if it assesses that a Croatian macroprudential measure, which is based on harmonised European rules and aimed at credit institutions, is not strict enough		15 Apr. 2020 (some provisions entered into force on 1 October 2020, with the beginning of close cooperation with the ECB)	Discretionary
Act on Amendments to the Credit Institutions Act	Compliance with CRD V	2020	Regulation of the provisions on capital buffers; increased maximum O-SII buffer rate; sectoral SRB; O-SII buffer and SRB additivity; changes to the notification system; determination of the CNB as the designated authority for the assessment of the adequacy of the risk weights referred to in Article 125(2) or Article 126(2) of Regulation (EU) No 575/2013		29 Dec. 2020	Discretionary

Note: The definitions of abbreviations are provided in the List of abbreviations at the end of the publication.
Source: CNB.

Glossary

Financial stability is characterised by the smooth and efficient functioning of the entire financial system with regard to the financial resource allocation process, risk assessment and management, payments execution, resilience of the financial system to sudden shocks and its contribution to sustainable long-term economic growth.

Macroprudential policy measures imply the use of economic policy instruments that, depending on the specific features of risk and the characteristics of its materialisation, may be standard macroprudential policy measures. In addition, monetary, microprudential, fiscal and other policy measures may also be used for macroprudential purposes, if necessary. Because the evolution of systemic risk and its consequences, despite certain regularities, may be difficult to predict in all of their manifestations, the successful safeguarding of financial stability requires not only cross-institutional cooperation within the field of their coordination but also the development of additional measures and approaches, when needed.

Systemic risk is defined as the risk of events that might, through various channels, disrupt the provision of financial services or result in a surge in their prices, as well as jeopardise the smooth functioning of a larger part of the financial system, thus negatively affecting real economic activity.

Vulnerability, within the context of financial stability, refers to the structural characteristics or weaknesses of the domestic economy that may either make it less resilient to possible shocks or intensify the negative consequences of such shocks. This publication analyses risks related to events or developments that, if materialised, may result in the disruption of financial stability. For instance, due to the high ratios of public and external debt to GDP and the consequentially high demand for debt (re)financing, Croatia is very vulnerable to possible changes in financial conditions and is exposed to interest rate and exchange rate change risks.

List of abbreviations

AACIA	Act on Amendments to the Credit Institutions Act
Art.	Article
bn	billion
b.p.	basis points
CCoB	capital conservation buffer
CCyB	countercyclical capital buffer
CEE	Central and Eastern European
CES	Croatian Employment Service
CHF	Swiss franc
CNB	Croatian National Bank
CRD IV	Directive 2013/36/EU on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms
CRR	Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms
d.d.	dioničko društvo (joint stock company)
DSTI	debt-service-to-income ratio
EBA	European Banking Authority
EBITDA	earnings before interest, taxes, depreciation and amortisation
ECB	European Central Bank
ESRB	European Systemic Risk Board
EU	European Union
Fed	Federal Reserve System
FINA	Financial Agency
FOMC	Federal Open Market Committee
GDP	gross domestic product
G-SII	global systemically important institutions buffer
HANFA	Croatian Financial Services Supervisory Agency
HRK	Croatian kuna
IRB	internal ratings-based
LGD	loss-given-default
LTD	loan-to-deposit ratio
LTI	loan-to-income ratio
LTV	loan-to-value ratio
no.	number
OG	Official Gazette
O-SII	other systemically important institutions buffer
O-SIIs	other systemically important institutions
Q	quarter
SRB	systemic risk buffer

Two-letter country codes

AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
ES	Spain
FI	Finland
FR	France
GR	Greece
HR	Croatia
HU	Hungary
IE	Ireland
IS	Iceland
IT	Italy
LV	Latvia
LT	Lithuania
LU	Luxembourg
MT	Malta
NL	Netherlands
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom

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