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INFLATION: CAUSES, OUTLOOK AND MONETARY POLICY RESPONSE, WITH A FOCUS ON THE CASE OF SERBIA

Inflacija – uzroci, izgledi i odgovori monetarnih politika,
s posebnim osvrtom na Srbiju

Abstract

The paper elaborates on world inflation drivers and monetary policy responses in 2022, with a particular focus on Serbia, including factors underpinning global inflation in both short and long run. Reining in inflation was among the key challenges for economic policy makers across the world in 2022, and was particularly pivotal for monetary policy. Reflecting a mix of acute external shocks, in 2022 inflation turned out more persistent and stronger than expected initially, whilst in the case of Serbia it was largely dictated by global supply-side factors. As shown by NBS analyses, around 50% of the departure of actual from projected inflation in Serbia was due to a significant deviation of global prices of oil, inflation in euro area, primary agricultural commodity prices and the agricultural season at home from the assumptions used in the projection model. While pronounced oscillations of imported inflation (expressed in dinars) in the earlier years (2010 and 2012) were largely determined by the dinar's volatility against the euro (two-thirds almost), now, in an environment of preserved relative stability of the exchange rate, they are a consequence of the growth in euro area consumer prices. Responding to mounting inflationary pressures, central banks embarked on monetary policy tightening. A more robust response came from those central banks whose economies faced inflationary pressures generated not only by supply-side factors, but also by domestic demand and higher labour costs. Though global inflation is expected to slow in the coming period, estimates prevail that it will not return to the exceptionally low pre-pandemic levels in the medium run.

Keywords: *inflation, monetary policy, geopolitical tensions, energy products, food prices*

Sažetak

U ovom radu analiziram faktore globalne inflacije i odgovore monetarne politike u 2022, s posebnim osvrtom na Srbiju. Dajem i pregled aktuelnih razmatranja faktora koji će opredeliti kretanje globalne inflacije u narednom periodu, i u kratkom, i u dugom roku. Obuzdavanje inflacije bilo je među ključnim izazovima za nosioce ekonomske politike širom sveta tokom 2022, a pre svega za monetarnu politiku. Zbog preplitanja nekoliko jakih šokova iz međunarodnog okruženja inflacija se u 2022. pokazala jačom i postojanijom od inicijalno očekivane, pri čemu je u slučaju Srbije u najvećoj meri bila posledica delovanja globalnih faktora na strani ponude. Analize Narodne banke Srbije pokazuju da se oko 50% odstupanja projektovane od ostvarene inflacije u Srbiji duguje značajnijem odstupanju između svetskih cena nafte, inflacije u zoni evra, cena primarnih poljoprivrednih proizvoda, kao i domaće poljoprivredne sezone od pretpostavki korišćenih u modelu za projekciju. Dok su visoke oscilacije uvozne inflacije (izražene u dinarima) ranijih godina (2010 i 2012) u velikoj meri bile opredeljene volatilnošću deviznog kursa dinara prema evru (gotovo dve trećine), sada, u uslovima očuvane relativne stabilnosti dinara prema evru, posledica su rasta potrošačkih cena u zoni evra. Reagujući na rastuće inflatorne pritiske centralne banke su zatezale monetarne uslove, pri čemu su izraženiji stepen reakcije imale centralne banke gde su, pored faktora sa strane ponude, inflatorno delovali i domaća tražnja i povećani troškovi rada. Iako se u narednom periodu očekuje usporavanje globalne inflacije, prevlađuju ocene da se u srednjem roku inflacija neće vratiti na izrazito niske nivoe iz perioda pre pandemije.

Ključne reči: *inflacija, monetarna politika, geopolitičke tenzije, energenti, cene hrane*

Introduction

Having moved at exceptionally low levels for almost a decade, global inflation struck an upward path in 2021, triggered by a sudden rise in demand amidst the opening of a large number of economies with the easing of COVID-19 measures. Supply did not go in step with rising demand in the short run, creating supply chain bottlenecks and pushing up the prices of international container transport and primary commodities (oil, agricultural commodities and metals), and generating strong cost-push pressures on producer prices. Inflation movements were also driven by substantial fiscal and monetary support introduced in a number of countries in the first stage of the pandemic, or even before. Still, it is indisputable that the absence of measures during the pandemic would have had more far-reaching consequences for economies. Since October 2021, global inflationary pressures have also been stoked by the energy crisis in Europe due to elevated gas demand as economies were recovering, and by the bad weather, which was depleting gas storages. Multiple increases in carbon tax rates in the EU worked in the same direction.

As inflationary pressures were generated mainly on the supply side, in late 2021 and early 2022 most central banks and international financial institutions forecast the easing of pressures as of mid-2022, as also indicated by the stabilisation of global prices of primary commodity goods and the unwinding of supply chain disruptions. Nonetheless, the rise of geopolitical tensions and start of the Ukraine conflict sparked a new wave of global price hikes for energy and primary commodities. As a result, instead of slowing, inflation accelerated globally.

Even though central banks undertook significant monetary policy measures to curb inflation, some even at the cost of hard landing, in a number of countries, due to additional costs, inflation in 2022 touched the levels not seen in decades. Therefore, throughout 2022, central banks were constantly increasing inflation projections and expectations regarding the inflation peak, including the projected level of the terminal rate. In such an environment, inflation's return to the target, without significantly hampering economic activity, is considered to be the greatest challenge since the global economic crisis of 2008.

Given that even in late 2022 inflation remained the key challenge for economic policy makers across the world, primarily monetary policy makers, this paper deals with global inflation drivers in 2022, with a particular focus on Serbia, and sheds light on the inflation-curbing measures undertaken in 2022 and the inflation outlook.

Global inflation drivers in 2022: Energy and food prices

Against the backdrop of aggravated oil and energy supply, primarily from Russia, and following the start of the conflict in Ukraine, the first quarter of 2022 saw the *global oil price* topping USD 120 per barrel. As the USA decided to continue releasing oil from the Strategic Petroleum Reserve, and after oil exports from Kazakhstan were renewed and oil demand in China plummeted due to new pandemic-related lockdowns, the oil price touched around USD 107 per barrel in late March and in April. However, amid pronounced geopolitical tensions and concerns over oil supply globally as OPEC+ plans to step up output did not materialise, the oil price shot past USD 126 per barrel in the first half of June, up by 74% y-o-y. Since then, the global oil price has been on a decline amidst mounting recessionary pressures, but continued to generate global inflationary pressures in the remainder of 2022.

The tightening of geopolitical tensions between the West and Russia reflected even more strongly on *gas prices*, given Europe's high dependence on Russian gas imports, with gas storages being largely depleted. With the outbreak of the Ukraine conflict, the European natural gas benchmark price (Dutch TTF) exceeded EUR 100 per MWh (from around EUR 81 per MWh on average since early 2022), i.e. around USD 1,200 per 1,000 cubic metres of gas. In late March 2022, it reached around EUR 120 per MWh, four times more than in mid-2021, when it struck an upward path (Figure 1). In August, it hit a record high of EUR 330 per MWh, as gas flows via Nord Stream 1 were suspended. Although natural gas deliveries were stopped in September because of the pipeline leaks, the natural gas price fell to EUR 164 per megawatt-hour as gas storages were filled more than expected. In late October, under the impact of softer demand due to unseasonably

mild weather, the natural gas price fell to mere EUR 28 per megawatt-hour. As the heating season set in, in November and December the natural gas price moved at a higher level (EUR 117 per megawatt-hour on average in December), but was much below the mid-year figure. Still, unable to fully switch to another market or other type of energy in the short run, Europe dependence on Russian gas remains, and this adds uncertainty to energy price movements going forward.

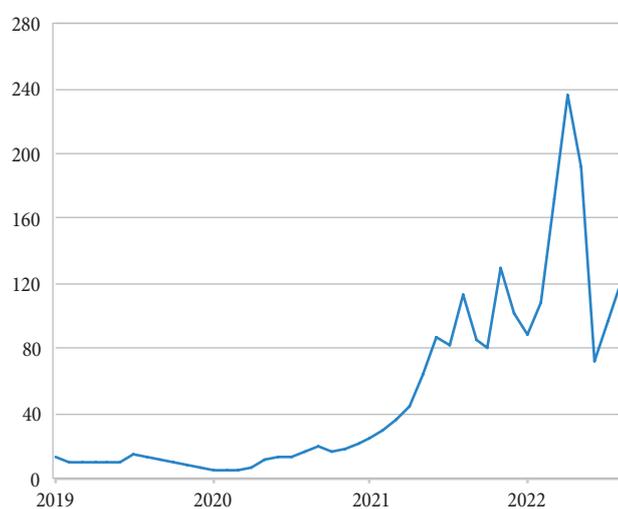
The price of electricity, as another source of energy, followed the natural gas price trend (Figure 2). According to Deutsche Börse data, it reached close to EUR 700 per MWh in late August 2022, being its historical high level, and then declined in the months that followed, mirroring the movement of natural gas prices. However, as in the case of gas, its level remains multiple times higher compared to previous years.

World food prices were on an upward trajectory from the second half of 2020. In March 2022, according to FAO Index, they touched record high, having risen by 34% y-o-y. In the rest of 2022, they declined moderately, for several reasons. Elevated supply of primary agricultural commodities with the arrival of the new agricultural season had a soothing effect, as did the build-up of recessionary pressures globally given that global primary commodity prices largely follow the production cycle phase. However, compared to the pre-pandemic period (February 2020), in

late 2022 food prices edged up by around 30%. As in the case of some other products, among the most important factors underpinning the initial growth of food prices was containment measures easing and a consequent rise in global demand, to which supply was not able to respond fast, which is why global supply disruptions did not bypass the world food market either. Moreover, transport costs were on a rise, fuelled not only by pent-up demand and restrictive sanitary measures, but also by rising global oil and petroleum product prices. Additional inflationary pressures on food prices came with the start of the conflict in Ukraine as Russia and Ukraine are important global producers of primary agricultural commodities. UNCTAD data show that Ukraine and Russia together account for around 25% of global supply of barley and wheat, as well as 14% of corn [14, p. 3]. Food production costs were also stoked by much higher prices of mineral fertilisers obtained through chemical processing of oil and gas. Market concerns over food affordability and the validity of the Black Sea grain deal amid mounting geopolitical tensions, including the effects of drought during the summer months of 2022 in most of Europe, exerted an additional pressure on the prices of food, notably grains.

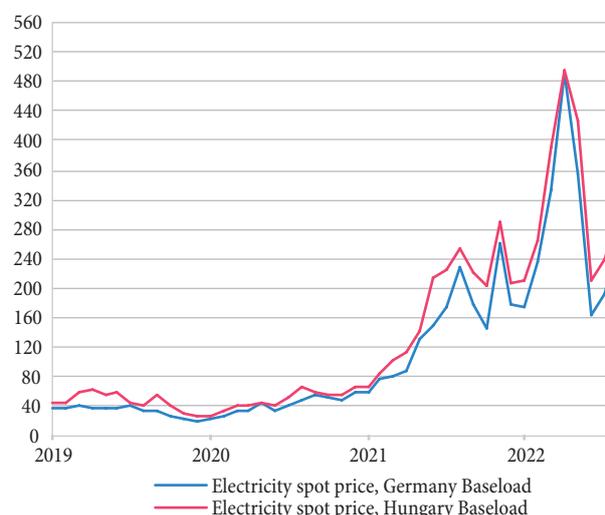
Specific drivers of inflation

Figure 1: Natural gas price in the TTF Hub (monthly average, in EUR/MWh)



Source: Refinitiv

Figure 2: Electricity prices, Germany and Hungary Baseload (monthly average, in EUR/MWh)



Source: Refinitiv

Though rising global energy and food prices and the effect of disrupted global supply chains underlie the current inflation growth in almost all countries in the world, the strength and durability of inflationary pressures are also determined by country-specific factors, such as macroeconomic fundamentals, labour market conditions, structure of consumer demand, fiscal and monetary policy stance, capital flows, exchange rate pressures etc. Though it is generally estimated that inflation is led by global supply-side factors, in the meantime, in several economies demand-side factors gained in importance. In some countries such as, for instance, the USA and central European countries (the Czech Republic, Hungary), demand and labour market conditions generated inflationary pressures even before the pandemic, but they were temporarily interrupted with lockdown effects at the start of the pandemic.

Overall, domestic demand, when at a high level, directly generates not only inflationary pressures, but also facilitates the transmission of higher cost pressures from producer to prices of final goods. Accommodative monetary and fiscal policies, including tight labour market conditions, i.e. rising wages and declining unemployment, are a part of an array of factors that can prop up domestic demand. Wages, as a factor of inflation, do not produce effects only on the demand side, but also on the supply side since, in an environment of persistently higher inflation, pressures on employers to increase wages are getting stronger, notably in shortage occupations. Excessive wage growth can generate further inflationary pressures, which may trigger further growth in inflation and a real decline in wages, bringing about new wage growth and, eventually, evolving into an inflation spiral. Still, according to the IMF World Economic Outlook of October 2022 [5, pp. 51-69], in the current conjuncture, in addition to price and nominal wage growth, the path of real wages was fairly flat or falling, which may produce disinflationary effects, diminishing the real costs of enterprises. Twenty-two similar episodes exhibiting high inflation have been recorded in the past 50 years, with long-lasting inflationary spirals being rare and ending mostly with inflation's slowdown, whilst nominal wages accommodated several quarters later.

Moreover, when global uncertainty and risk aversion are running high, and particularly if central banks of

advanced economies are tightening monetary conditions, capital flows invariably shift from emerging to advanced economies. The same is happening now, in a polycrisis environment, as shown by the slowest pace of borrowing in a hard currency at the global financial market since 2015 [4, p. 16], portfolio investment outflows, and a significant rise in yields on emerging market local currency securities. As a result, and particularly if its macroeconomic fundamentals have weakened and imbalances deepened, a country may also see a build-up in depreciation pressures. Depreciation has a direct impact on inflation as imported products expressed in the local currency are becoming more expensive, or an indirect effect, through changes in relative prices, when the local currency depreciates excessively and demand for domestic products increases, creating inflationary pressures.

Global inflation trends and monetary policy response

In the period 2015-2020, almost none of the advanced countries recorded inflation beyond 5%, while the share of emerging economies¹ with inflation exceeding 5% was around 30% (Figure 3). Since 2021 the situation has changed significantly. Specifically, of the total number of 40 advanced economies, around 40% recorded inflation beyond 5% at end-2021, while according to the IMF's October 2022 estimates, this percentage increased to 80% at end-2022. As for emerging economies (153 of them), at end-2021 this share was even higher, at around 60%, only to increase to 80% by end-2022. During 2022, in many advanced economies inflation trended at levels that had not been recorded in decades. Thus, before starting to slow down in July, in June 2022 the US inflation came at 9.1% y-o-y, being the highest level from 1981. Inflation in the euro area approached 10.6% y-o-y in October, its highest level since the euro area was established, while in Germany it came at 11%, an unprecedented level in 50 years. Thereafter, inflation slowed in the euro area as well – to 10% in November and 9.2% in December, while in Germany it fell from 10% in November to 8.6% in December. Nevertheless, it is still early to say that inflation has struck

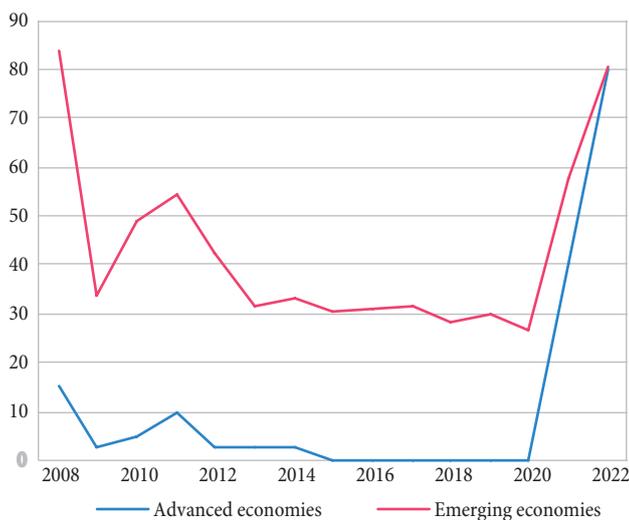
¹ Countries were grouped in line with the IMF's classification.

a sustainable downward trajectory, especially bearing in mind that core inflation has not started to descend.

Inflation at end-2022 was outside the target tolerance band in all of the observed 32 countries that officially pursue an inflation-targeting regime, and Switzerland was the only to record inflation below 5% (Figure 4). Of the observed countries, Turkey had the highest inflation, reflecting the effects of the depreciating lira in addition to global factors, followed by Ghana, Moldova, Ukraine and Hungary. Taking into account the inflation factors, in its October 2022 projections the IMF estimated that inflation would not return within the target tolerance band in inflation-targeting countries, or in the euro area and

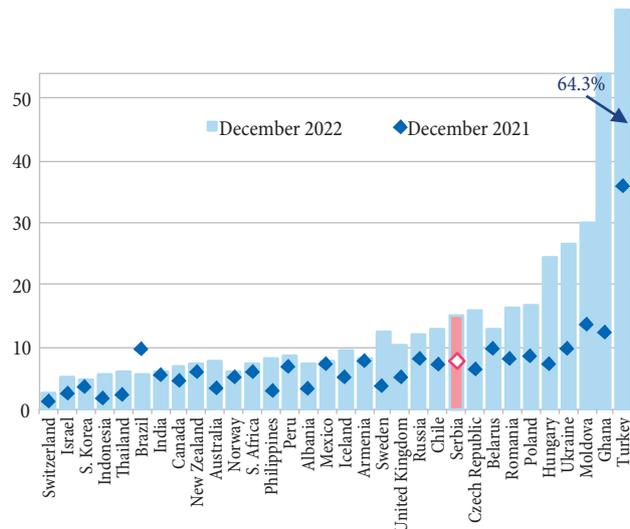
the USA in 2023. It still expects 2023 inflation to subside, reflecting previous tightening of monetary policy and the expected dissipation of the effects of elevated global energy and food prices, as well as subdued demand against the backdrop of stronger recessionary pressures globally. Speaking specifically about Central European countries that conduct inflation-targeting regime (Poland, Czech Republic, Hungary and Romania), the latest available central bank projections place average inflation in 2023 between 9% (Czech Republic) and 17% (Hungary), which is significantly above previous expectations, while Consensus Forecasts (Figure 5) also has similar projections for this group of countries. Despite significant monetary policy

Figure 3: Share of countries with inflation over 5% (by years, in %)



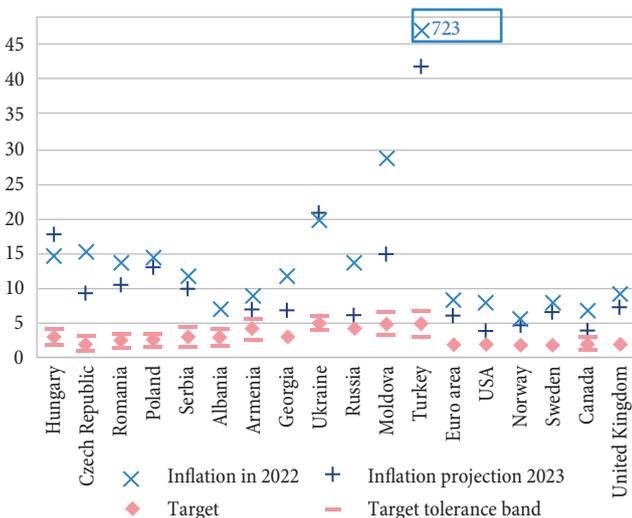
Source: IMF, WEO October 2022

Figure 4: Y-o-y Inflation in inflation targeting countries (in %)



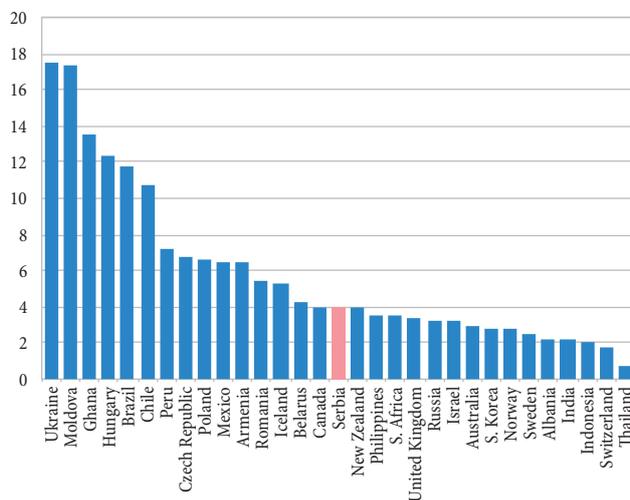
Source: central bank websites

Figure 5: Projected average inflation for 2023 (in %)



Source: Consensus Forecasts

Figure 6: Change in policy rate in 2021 and 2022 (in pp)



Source: central bank websites

tightening by their central banks, inflation in this group of countries is not expected to enter the target band by the end of 2023.

In response to mounting inflationary pressures, all central banks in the observed inflation-targeting countries lifted their policy rates during 2021 and/or 2022, in line with conditions in their domestic markets. There were also some central banks that initially lifted their policy rates only to trim them later (central banks of Russia, Turkey and Moldova in December 2022). Of the observed countries (Figure 6), Ukraine and Moldova lifted their policy rates the most, while policy rate increases were also relatively substantial in Central European countries (Hungary, Czech Republic, Poland). Thus, for instance, between June 2021 and end-2022, Hungary raised its policy rate by 12.4 pp to 13%, while the Czech Republic lifted it to 7%, (total increase by 6.75 pp). Starting from Q4 2021, the Polish also raised its policy rate, by 6.65 pp to 6.75%, where it has stood since September 2022. The response of these central banks was more robust as both domestic demand and increased labour costs had an inflationary effect in these countries.

Factors of inflation in Serbia and the NBS's monetary policy response

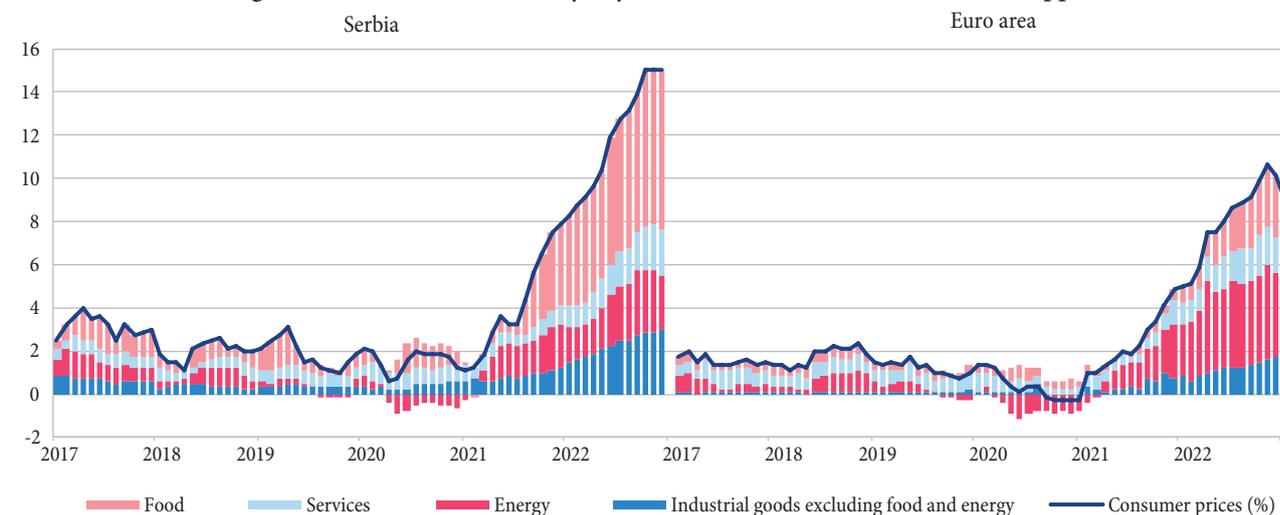
The inflation rate in Serbia stood at 15.1% y-o-y in December 2022. Almost 70% of this was the contribution of food and energy prices, which indicates that global cost-push

pressures are the major factor underpinning inflation in Serbia (Figure 7).

A major contribution to inflation came from *food prices* (7.5 pp). The increase of both processed and unprocessed food prices exceeded the overall price growth. Food prices were driven up by increased costs in food production attributable to rising prices of fuel, mineral fertilisers, packaging, etc., but most of all to the rise in the prices of primary agricultural commodities at global market (corn, wheat, soybean, etc.) as key raw materials in food production. These prices in the local commodity stock exchange mirrored the movements in the international market (Figure 8), despite the fact that in one part of 2022 the export of cereals was temporarily banned in order to ensure full supply of the domestic market. In addition, movements in their prices were also affected by the drought in Serbia and in other parts of Europe. This had a major negative effect on yields of autumn cultures. Furthermore, yields of fresh vegetables and fruit were also lower as the drought turned out to be stronger than in 2021, which is why their prices went further up in 2022, despite the high base from 2021. Combined, all of this drove food prices (notably processed food) further up in 2022 relative to 2021 as well as to the long-term average (Figure 9).

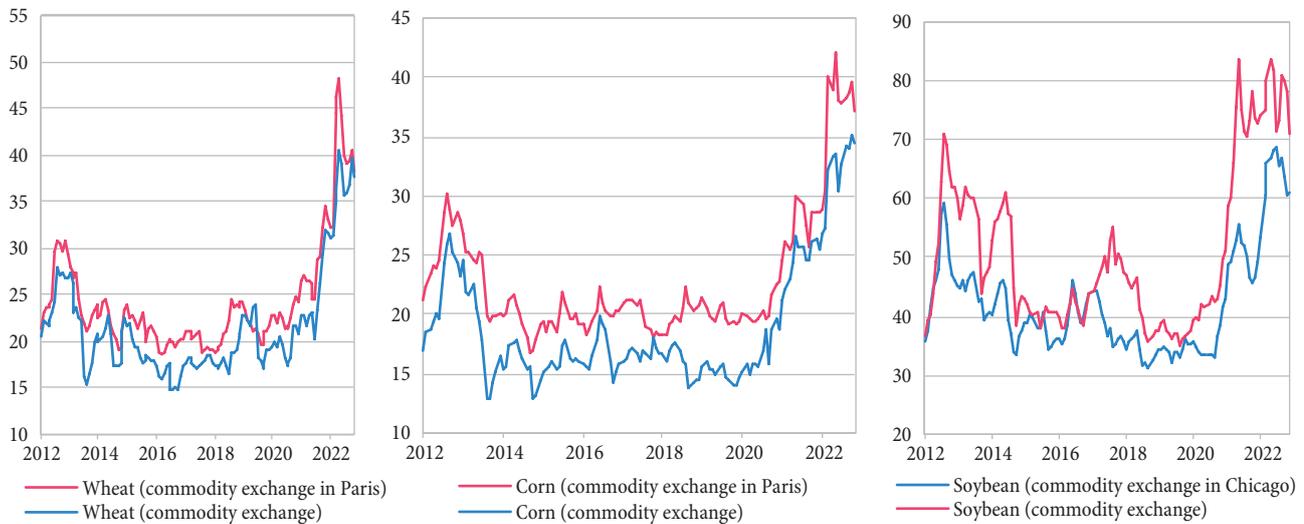
As for *vegetable and fruit prices in Serbia*, the NBS's analyses showed that yields of fruit and vegetable, which in large extent are dependent on weather conditions, predominantly determined oscillations in prices of fruit

Figure 7: Contributions to the y-o-y inflation in Serbia and euro area (in pp)



Source: SORS, Eurostat and NBS calculation

Figure 8: Wheat, corn and soybean prices in the international and local market (monthly average, in RSD/kg)

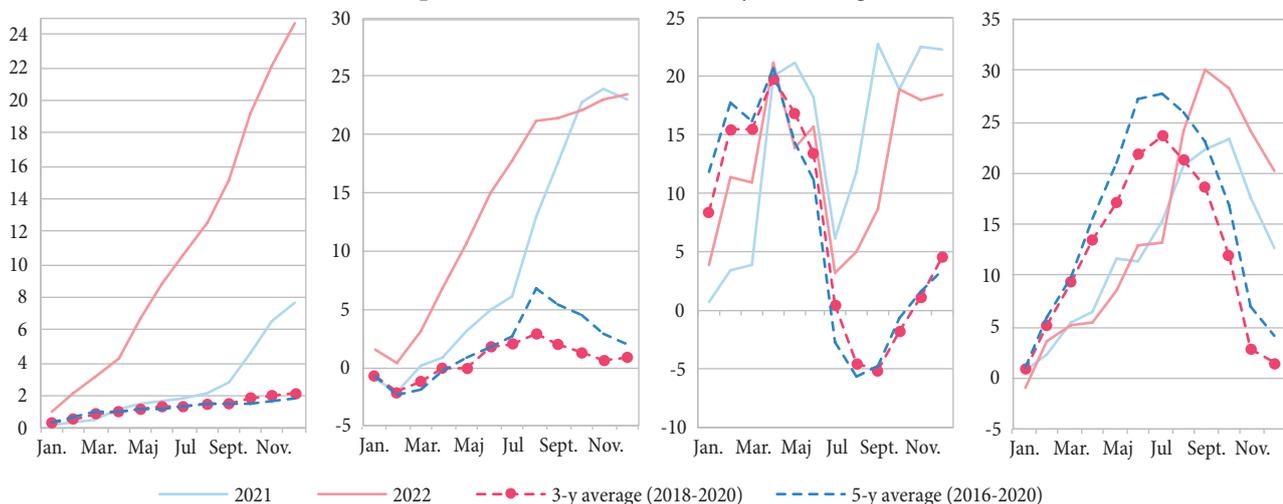


Source: Euronext, CBOT, Novi Sad Commodity Exchange and NBS calculation

and vegetable and deviations from seasonal trends [9, p. 13]. Analysis of fruit and vegetable price movements over the past fifteen years and departures of the average temperature in a specific month from the multiyear average for that month in the Niš and Novi Sad areas (the main producers of fruit and vegetable in Serbia) revealed a statistically significant correlation between average temperatures in December and January and prices of vegetables in January and February respectively, and also between temperatures in April and prices of fruit in May. As expected, this correlation is negative [10, pp. 68-69]. This implies that an air temperature which is larger than the multiyear average in December or January is supportive

to greenhouse production, resulting in decline of prices of vegetable in the next month. Similarly, low temperatures in the spring months have a strong negative correlation with fresh fruit prices – low temperatures and frost are lowering fruit yields and causing rise in prices of fruit. Contrarily, the correlation between prices of fruit and vegetable and summer months temperatures is positive (correlation coefficient higher than 0.5), because above-average temperatures are linked with the drought, causing vegetable (tomatoes, primarily peppers, cabbage) and fruit prices to retain at the same level, or to decline less than would be seasonally expected. This largely explains why there was no significant seasonal fall in vegetable and

Figure 9: Cumulative food price growth in the domestic market in 2022 - comparison with 2021 and multiyear average (in %)



Source: SORS and NBS calculation

fruit prices as of June 2022, though it is typical for this period of the year.

The second important factor behind inflationary pressures in Serbia in 2022 were *energy prices*. Growth in global oil prices translated onto retail prices of petroleum products at home, and during 2022 their largest contribution was recorded in July (1.8 pp). Then, under the impact of decreasing global oil prices, and with the strengthening of global recessionary pressures, y-o-y growth in petroleum product prices also slowed down to 0.6 pp in December. Moreover, the Serbian Government's decision to trim excise tax by 10–15% during 2022 and limit retailers' margins resulted in 0.2–0.3 pp lower inflation in Serbia through that channel. Nevertheless, as electricity and gas prices rose at a global level and their availability diminished, household energy prices (electricity and gas) also went up in the domestic market to avoid large losses for energy companies, which contributed 0.5 pp to inflation growth. Still, their prices were adjusted minimally, i.e. considerably less compared to the global market where they rose several times. Additionally, if the entire amount of the increase had been shifted onto consumers, their direct and indirect effects on inflation and economic activity would have been enormous. A direct contribution to inflation also came from solid fuel prices, which kept up with price movements of the same group of products in the global market, given the fact that these are alternative types of energy, and that demand for these types of energy increased against the backdrop of higher gas and electricity prices.

However, the rise in energy prices which are included in the consumer basket affects inflation in Serbia, as in other countries, not only directly but indirectly as well. Indirect effects of higher prices of oil, gas and electricity, which are mirrored by producer prices of a broad group of products and are also incorporated in the prices of products imported from the EU, are probably even stronger than the direct effects, but are difficult to isolate and quantify. On all these grounds, growth in imported inflation in Serbia (approximated through prices in the euro area, expressed in dinars), together with growth in of primary commodities prices at global market and other production costs, was the key determinant behind movements in the industrial products prices (without food and energy) which

are close to the core inflation category (Figure 11). Still, while high oscillations in imported inflation (expressed in dinars) in previous years (2010 and 2012 in particular) were largely determined by the volatility of the RSD/EUR exchange rate (almost two-thirds), now, in the conditions of relative stability of the dinar to the euro, they are solely the consequence of rising consumer prices in the euro area.

Also, by building the underground gas storage facility in Banatski Dvor as well as launching the TurkStream, Serbia provided higher supply of the natural gas, thus minimising even more the drastic potential adverse effects of global energy prices. In addition, thanks to contracts signed with Russia at favourable terms, Serbia pays much cheaper price for gas compared to other countries in Europe [13, p. 31]. Though the electricity price for corporates is market-determined, the Government decided to first limit this price at EUR 75 per MWh, and then, as these prices continued up on the global market, to EUR 95 per MWh, to prevent that the global energy crisis, impose negative effects on the economy at home.

Despite rising on account of higher producer prices and imported inflation, core inflation in Serbia is still significantly below headline inflation (Figure 10), which suggests that demand-side factors and tighter labour market conditions are not the prevailing factor of the current inflation rise in Serbia. This is also indicated by the fact that producer prices of industrial products for the home market (15.3% in November and 13.3% in December, y-o-y) did not fully translate onto consumer prices of industrial products (which simultaneously posted growth of 10.3% and 10.7% y-o-y, respectively), as evident in Figure 11. Further, though domestic demand in 2021 and in the H1 of 2022 strongly raised, the NBS assessed that it did not give rise to major inflationary pressures, given that production capacities and employment rose in parallel. The same is also indicated by the output gap assessment that is a measure of demand side pressures. According to this assessment, until the end of the projection horizon the output gap will stay in negative territory, i.e. until end-2024, suggesting that disinflationary pressures from the demand-side will remain during the course of projection horizon, although this effect will gradual weaken. Also, though the wage bill posted relatively robust growth of

16.4% in October (20% in the private sector), this rise is somewhat lower once the IT sector is excluded, as its high y-o-y growth of 12.3% (15.2% in the private sector, which is close to inflation growth) is partly attributable to the base effect because of the inclusion of this sector in the Tax Administration records. Moreover, though some occupation groups recorded workforce shortages, overall the unemployment rate has remained above the natural unemployment rate and there is room for its further decrease without generating significant inflationary pressures.

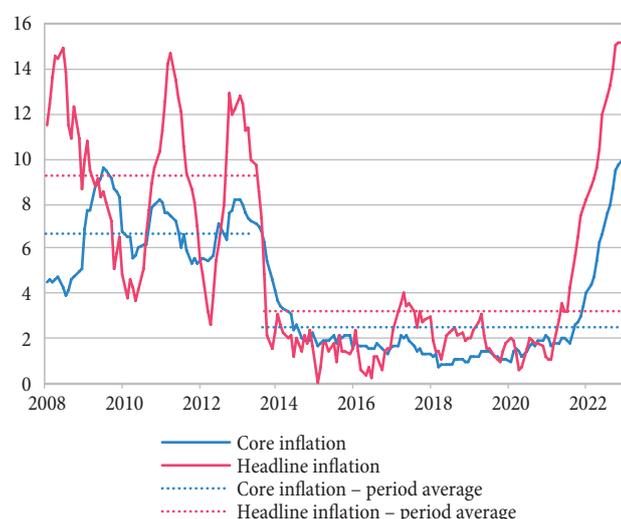
The NBS’s response to inflationary pressures was gradual but continuous. Having assessed the nature of these pressures, in October 2021 the NBS embarked on moderate monetary policy tightening, firstly by raising the effective repo rate. This had been made possible by the turnaround and changes introduced to the monetary policy framework in December 2012. Since then, repo auctions have been conducted at the variable multiple interest rate method, allowing monetary conditions to be adjusted as needed, even between two meetings of the NBS Executive Board, by changing the weighted average repo rate while keeping the main interest rates unchanged. This has provided us with important flexibility in monetary policy conducting.

Once the effective rate was raised from 0.11% at end-September 2021 to a level almost equal to the key policy rate (1% at the time) in April 2022, we initiated a cycle of key policy rate hikes. Since April, the key policy rate has

been raised repeatedly, by a total of 400 basis points to 5.0% in December 2022 and 5.25% in January 2023 (Figure 12).

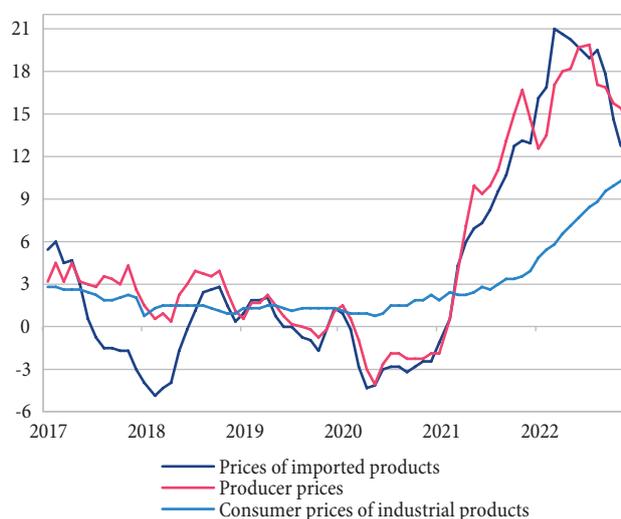
In making our decisions, we took account of the fact that inflation in Serbia is mostly led by shocks in the international environment which pushed up global prices of food and energy. These are mostly supply-side shocks, on which monetary policy has a rather limited impact. The goal of the measures was to limit the second-round effects of elevated global prices of energy and food on other prices that could come via inflation expectations, and to prevent excessive growth in loan demand, in order to return inflation to the target tolerance band within the projection horizon. Anchored medium-term financial and corporate sectors inflation expectations (three years ahead), which increased by 3% each to 4% (financial sector) and 5% (corporate sector), confirm that we have been largely successful in limiting the second-round effects and preempting a larger pass-through to the prices of other products and services. Also, the rise in the key policy rate passed through to the dinar money market interest rates and, by extension, to dinar lending rates. In December 2022, interest rates on newly granted dinar loans to corporates measured 5.9% (2.6 pp more than in September 2021), while rates on dinar household loans equalled 12.3% (3.9 pp more than in September 2021). This is consistent with the monetary policy impulse until October and signals that monetary policy transmission via the interest rate channel is efficient. In the bank lending survey for Q3,

Figure 10: Headline and core inflation movements (y-o-y rates, in %)



Source: SORS and NBS calculation

Figure 11: Imported inflation, producer prices and industrial product prices (y-o-y rates, in %)



Source: Destatis, FAO, Bloomberg, Eurostat, SORS and NBS calculation

banks assessed household demand for loans, notably cash loans, to have subsided [12, p. 7].

The relative stability of the dinar against the euro has been preserved even in the conditions of pronounced global uncertainty, acting as an important deterrent of a higher pass-through of elevated prices at global market to prices at domestic market. In 2022, in nominal terms, the dinar appreciated by 0.2% against the euro. From May until end-2022, the NBS net purchased EUR 3.27 bn via interventions in the interbank FX, offsetting the whole amount of FX sales from the beginning of 2022. At the level of 2022, the NBS bought foreign exchange worth EUR 1 bn net. By contrast to the dinar, the currencies of some inflation-targeting countries of the region weakened against the euro (Figure 13), even though their central banks tightened monetary policy – in 2022 the Hungarian and the Polish currencies lost 7.7%, and 1.9%, respectively.

The preserved relative stability of the dinar is particularly important considering that many emerging economies have faced portfolio investment outflows, despite much higher yields on local-currency government securities, while capital flows were redirected towards advanced economies as they, at the same time, tightened their monetary policies in response to mounting inflationary pressures. Analysis of yields on 10-year local-currency government securities reveals that the yields on Serbia’s

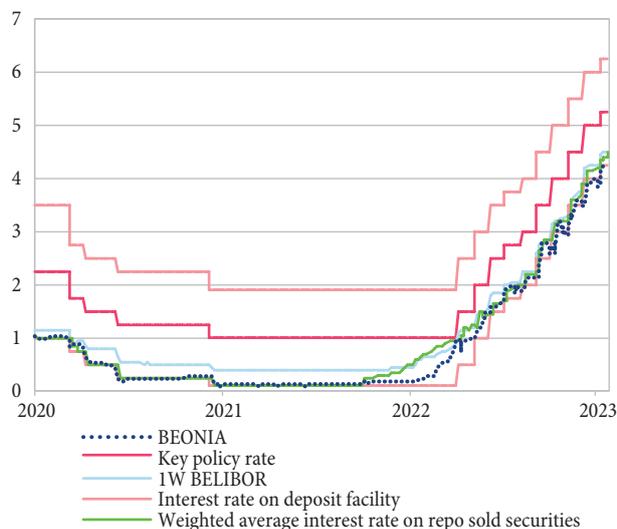
government securities increased less than for inflation-targeting Central European countries. Average yields on 10-year local-currency government securities increased in December 2022 relative to December 2021 to 8.69% in Hungary (from 4.47%), 8.15% in Romania (from 5.39%), 6.63% in Poland (from 3.32%), and 6.97% in Serbia (from 4.20%).

Inflation projections

It is indisputable that inflation outturns have trended above the projections of central banks, including the NBS, as a consequence of global shocks generated by a multidimensional crisis, unprecedented in recent history. One of our text boxes in the November 2022 Inflation Report provided an in-depth analysis of the factors that are causing the difference between the projected and actual inflation in Serbia in 2021 and 2022, looking at projections since November 2020 and their underlying assumptions [11, pp. 17-20].

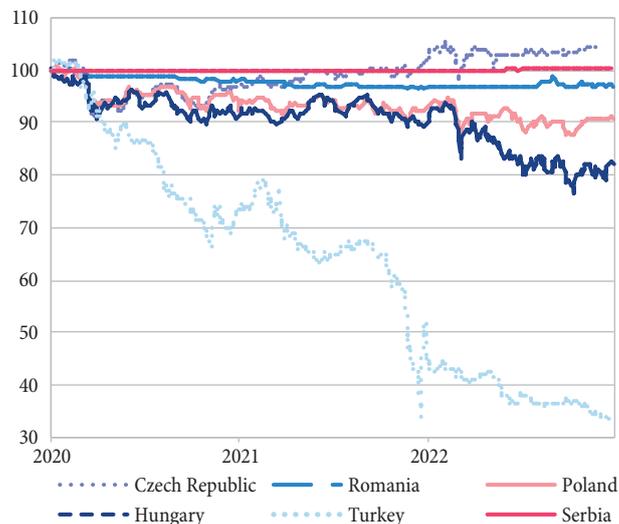
The results of the analysis revealed that, for one quarter ahead, the highest deviation between the projected and actual inflation happened in projections made in February and May 2022, i.e. in the period after the crisis in Ukraine broke out. The main causes of these deviation came from the huge differences between the primary

Figure 12: Monetary policy reaction of NBS (in %)



Source: Thomson Reuters and NBS

Figure 13: Exchange rates of national currencies in countries with IT regime against the euro* (daily data, 31 Dec 2019 = 100)



Source: NBS and central bank websites.
* Growth indicates appreciation

Figure 14: Assumed and actual movement of Brent oil price (USD/barrel)

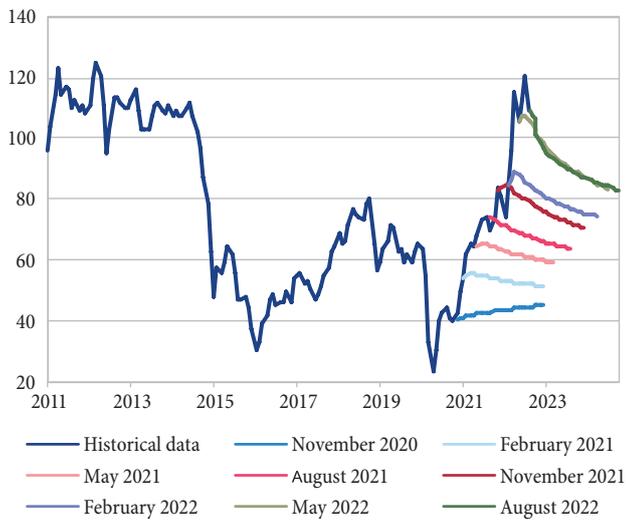
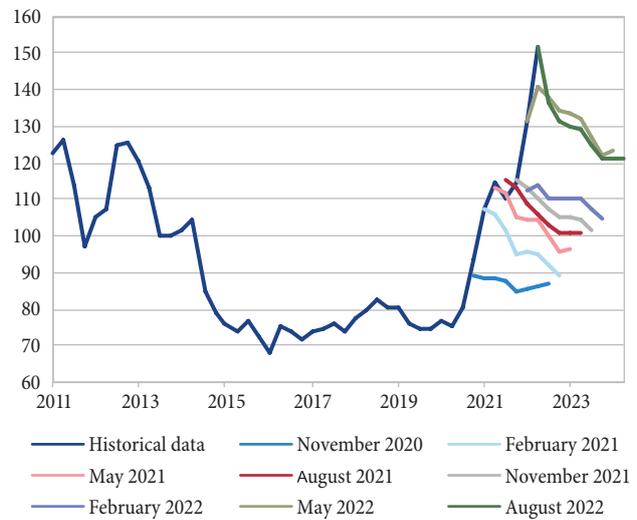


Figure 15: Assumed and actual movement of global primary commodity prices (Q4 2013 = 100)

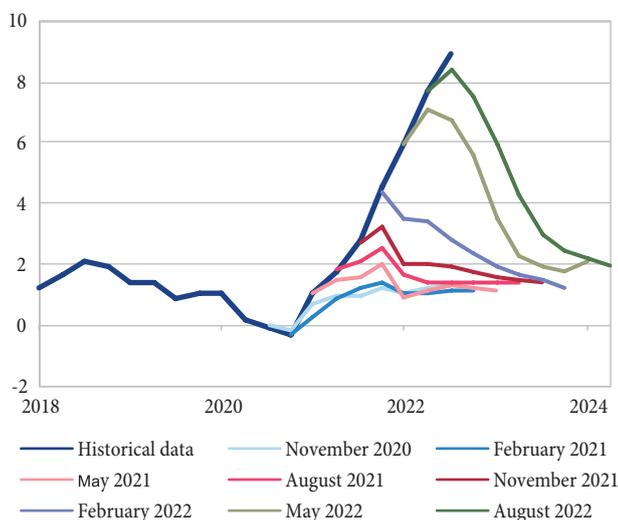


commodity and energy prices from the world market, and the assumptions for these prices that we put in our projections, for which we use their market futures and estimates of international institutions that are relevant for this purpose. This is standard central banks practice to use market futures and estimates of international institutions (IMF, World Bank, Consensus Economics, etc.) as assumptions for their projections, which, at the time, did not assume new shocks, but expected energy and commodity prices to calm down and fall gradually over the projection horizon (Figures 14 and 15). Since global energy prices skyrocketed and supply bottlenecks

persisted, the euro area inflation in this period was also constantly above the ECB projections (Figure 16). The fact that the euro area is our most important trading partner is causing the euro area inflation to be an important factor of domestic inflation. Therefore, the departure of recorded from projected inflation in the euro area is also causing that recorded inflation in Serbia is higher than projected (Figure 17).

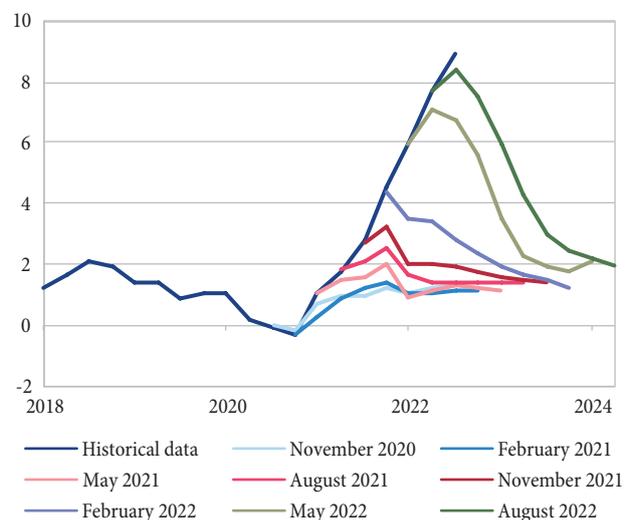
Close to 50% of the difference between the projected one-year ahead inflation and the inflation recorded in 2021 and three quarters of 2022, looking by factor, can be explained by unrealised assumptions for oil prices at

Figure 16: Actual and projected y-o-y inflation in the euro area (in %)



Source: NBS calculation based on the projections of relevant institutions

Figure 17: Actual and projected y-o-y inflation in Serbia (in %)



Source: NBS

global market, inflation in euro area, primary agricultural commodities prices, and domestic agricultural season (Figure 18). Other part of the deviation is related to the indirect effects of these factors, such as the effects of global value chain disruptions, rise in production costs due to electricity price hikes, and other factors from supply-side. Similar deviations of inflation outturns from the projections of central banks of other inflation-targeting countries of the region (Figure 19), both for the current quarter and for one, two and three quarters ahead (analysis on the basis of end-2021 central banks' projections), are another confirmation of difficulties in achieving inflation projection in the circumstances of shocks from the international environment and heightened global uncertainty. The ECB conducted a similar analysis, with similar conclusions, for the euro area [2]. This is consistent with the fact that these deviations are mostly due to common global factors.

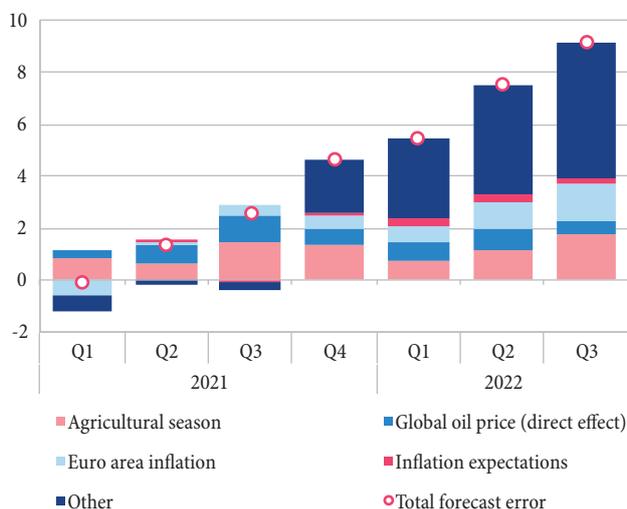
In their October 2022 edition of the World Economic Outlook, the IMF staff analysed their inflation forecast errors [5, pp. 26-29]. The conclusion was that inflation outturns greatly exceeded the 2021 and 2022 projections in both advanced and developing economies and that the forecast errors were larger for 2022. Since the Q2 of 2021, inflation has surprised consistently on the upside, causing constant upward revisions of inflation forecasts in IMF's WEO. The aggregate supply-aggregate demand imbalance was cited as the initial reason behind these errors. Inflation

forecast errors were much larger for developing than for advanced economies, and were the largest in Europe. According to the IMF, core inflation forecast errors mostly drove inflation forecast errors for 2021, reflecting global value chain disruptions and supply-demand imbalances due to faster-than-anticipated recovery. In addition to the market imbalance, another significant factor were the fiscal stimulus packages during the pandemic and tight labour market conditions. Conversely, inflation errors for 2022 mostly reflect a stronger role for energy prices, particularly after the escalation of the geopolitical situation.

Expected inflation in Serbia and worldwide

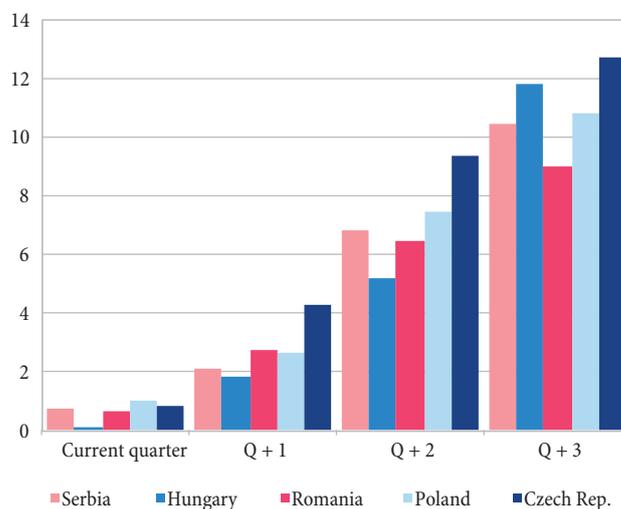
Under the November projection of the NBS, inflation (y-o-y terms) is expected to strike a downward path as of Q2 2023. It is anticipated to fall significantly in H2 2023 and to enter the target tolerance band in H2 2024. In other words, inflationary pressures will persist in the short term. They stem mostly from high imported inflation, but also from elevated costs of food production caused both by global trends and the fact that agricultural yields in Serbia underperformed due to the second drought year in a row. From Q2 2023 onwards, inflation is anticipated to drift down gradually and fall more sharply in H2 2023, helped by several factors. These are primarily the slowing of global inflation amid tightening of monetary policy by

Figure 18: Decomposition of the inflation forecast error for one year ahead (in pp)



Source: central banks of CEE IT countries, NBS calculation

Figure 19: Deviation from Q4 2021 inflation projections (in pp)



Source: central banks of CEE IT countries, NBS calculation

central banks of leading countries and the normalisation of global supply chains, which have, together, already started to work in this direction. Container transport prices have been declining for already a while; there has been a turnaround in most primary commodity prices; mineral fertiliser prices have subsided as well; the energy market, though still influenced by geopolitical developments, has partly stabilised; the global oil price has returned to its early-2022 level; and inflation rates have lately abated in the most advanced economies. If this trend becomes more entrenched, inflationary pressures in Serbia would ease substantially as well and inflation could return within the target tolerance band even sooner than expected. This would be supported by an average agricultural season in 2023, given that crops and vegetable prices surged after two droughty summers. If the agricultural season in 2023 is average and the decline in mineral fertiliser prices, begun in the closing months of 2022, continues, agricultural commodity prices could go down. While the prices of fruits and vegetables would have a direct effect on inflation, the prices of crops, wheat, corn, soybean, etc. would produce an indirect effect, through lower costs of food production.

Another deceleration factor will be the NBS's monetary policy tightening, initiated in October 2021 through average repo rate increase, and continued from April 2022 onwards through key policy rate hikes, from 1.0% to 5.0% in December 2022 and 5.25% in January 2023. Working in the same direction is the policy of safeguarding the relative exchange rate stability, as an important nominal anchor of price stability and the overall macroeconomic and financial stability. In the period behind us we have shown that exchange rate stability is unquestionable even in the most turbulent of times, as were the first four months of 2022, i.e. following the outbreak the Ukraine conflict. Even more important, the high level of FX reserves, which continued up in 2022, rising by EUR 2.9 bn and for the first time exceeding EUR 19 bn, is the best guarantee of exchange rate stability going forward.

Though global inflation is expected to lose steam in the period ahead compared to end-2022, the prevailing estimates are that, in the medium term, it can hardly go back to persistently below-target levels which had been

recorded during many years back, i.e. from the 2008 global economic crisis until 2021. Economists cite several reasons for this, above all the fact that higher and more persistent global inflation could de-anchor medium-term inflation expectations, which would pave the way for an inflationary spiral. Apart from higher inflation expectations, also raising concern is the increased correlation between the relative prices change and inflation. In periods when inflation is low, this correlation is weak, while the transmission of price changes across sectors has now increased, making inflation more widespread across both products and services. There are also signs of deglobalisation coming in place of globalisation, reflecting restrictive trade measures, disrupted global supply chains and sudden cost-push pressures caused by the Ukraine conflict [8], [1, p. 31]. While some of the adjustments in global production chains are estimated as welcomed, the excessive fragmentation of production not only affects inflation, but has an adverse impact on global growth and productivity also. Orientation toward green transition calls for sizeable investment and fuels inflation in the initial stage, but has quite the opposite effect in the long run, as it generates long-term benefits in the form of a sustainable mix of energy sources [10, p. 13]. Finally, unfavourable demographic trends and lower share of youth in total employment indicate that workforce shortages will intensify in the coming years, putting more upward pressure on wages and consequently, inflation [1]. As assessed by Goodhart and Pradhan [3], as well as Juselius and Takats [7], in the absence of substantial productivity growth, demographic factors will increase global inflationary pressures.

Still, it is encouraging that the first signs of the easing of inflationary pressures are already visible, primarily those associated with energy prices, as also suggested by the latest IMF projection from January 2023, according to which global inflation will fall from 8.8% in 2022 to 6.6% in 2023, and to 4.3% in 2024. However, it will still be above the pre-pandemic level (2017–19) of around 3.5% as disinflation takes time. The IMF projects that, annual average headline inflation will still be above pre-pandemic levels in 82% of countries by 2024, while for the core inflation it would be the case for 86% of countries [6].

Also, the balance of risks to the global inflation prevails in both directions:

- *Faster disinflation:* A sharp fall in the prices of goods, as consumers shift back to services; an easing in labour market pressures in some advanced economies due to falling vacancies. Such conditions could lead to a “softer” landing, implying less monetary tightening.
- *Inflation persisting:* Higher than expected energy and food prices could raise headline inflation and pass through into underlying inflation. Also, persistent labour market tightness could translate into stronger wage growth. Such conditions could de-anchor inflation expectations, implying an even tighter monetary policy.

In the period ahead, the NBS will continue to pursue monetary policy consistent with preserving medium-term price stability and bringing inflation back within the bounds of the $3 \pm 1.5\%$ target over the projection horizon. This will require careful and continuous monitoring and assessment of the impact of all inflation factors coming from the domestic and international environment, as well as a timely monetary policy response where warranted.

Concluding considerations

Throughout 2021, global inflation was on the rise, driven by an upsurge in demand amid the loosening of containment measures and opening of a range of economies, to which the supply was not able to adjust in the short run. Inflationary pressures were also generated by the ample fiscal and monetary support provided in the first stage of the pandemic, in some countries even before its outbreak, but had there not been for such a response, the consequences would have been more far-reaching. In parallel, supply chains were disrupted on a global level, world primary commodities prices skyrocketed (oil, cereals and metals), causing cost pressure on producer prices, while the international container transport also became far more costly. The energy crisis that emerged in Europe in October 2021 has only added to global inflationary pressures.

With inflationary pressures coming mainly from the supply side, the majority of international financial

institutions and central banks expected them to moderate as of mid-2022, as was also signalled by the stabilisation of prices of primary commodities and the easing of global supply chain disruptions. However, instead of the expected slowdown in inflation, we saw global inflation step up due to a new wave of strong hikes in prices of energy and primary commodity that shook the global market amid heightened geopolitical tensions and the outbreak of the conflict in Ukraine.

Generally, it is extremely difficult to make any macroeconomic forecasts in a period of pronounced uncertainties fuelled by numerous intertwined crises, also heavily impacted by geopolitical movements. This particularly holds true for inflation projections, bearing in mind the utterly uncertain and volatile movement of international energy and primary commodity prices, which make global inflation forecasts highly uncertain and exposed to elevated risks. The galloping rise in global prices of energy and primary commodities caused by the energy crisis and the war in Ukraine could not have been anticipated, and these are the key reasons why inflation in Serbia and other countries moved at higher-than-projected levels, especially in 2022.

The analyses of factors behind the departure of actual inflation from its projected path in 2021 and 2022, which covered the projections since November 2020 and their underlying assumptions, show that the greatest deviations of actual from inflation projected for one quarter ahead were recorded for the February and May 2022 projections, i.e. after the start of the crisis in Ukraine. The largest departures from the assumptions used in the projections were seen in energy and primary agricultural commodities world prices, based on the movement of market futures for these products and relevant international institutions estimates, which, assuming no new shocks, envisaged that prices of energy and primary commodities would moderate and gradually decline over the projection horizon. Due to a strong upswing in global energy prices and prolonged halts in global supply chains, inflation in euro area was considerably higher than projected by the ECB. Given that the euro area is our key trade partner and that euro area inflation is also an important factor of domestic inflation, the departure of the actual from

projected inflation in the euro area entailed also a higher than projected inflation in Serbia. That it is difficult to deliver the projected inflation rate in conditions of globally heightened uncertainty and shocks in the international environment is also indicated by similar departures of the actual from central bank-projected inflation rates in Serbia's regional inflation-targeting peers, both for the current quarter and for one, two and three quarters ahead (analysis covered central bank projections from late 2021), consistent with the fact that the departure is largely caused by common global factors.

With a view to curbing inflation, central banks resorted to a robust monetary policy response, some even at the expense of a significant growth slowdown (the so-called hard landing). Monetary policy, however, cannot prevent the first-round effects of external shocks on prices that are directly affected, but can only impact the second-round effects through the channel of anchored medium-term inflation expectations, thereby preventing a major spillover of shocks to other prices. This may be achieved by adequate monetary policy tightening and/or transparent communication with the public regarding inflation factors and the expected inflation profile, as well as by explaining undertaken measures and communicating future steps. One of the dilemmas in the current environment of inflationary pressures is how to calibrate the response, i.e. how to determine the right scope and dynamics of monetary policy tightening. The main challenge is to determine the size of the policy rate increase that would bring inflation gradually down toward the target, without triggering major negative consequences for the economy. The problem is that in the current global environment characterised by high uncertainty, the right measure is a fine line between a more durable overshooting of the inflation target, on the one hand, and extended recession, on the other. In this context, we may ask ourselves which of the two would entail stronger and more durable consequences.

In 2022, 65-70% of headline inflation in Serbia originated from food and energy prices, indicating that inflation in Serbia is largely driven by global cost pressures. Also, the increase in imported inflation (approximated via euro area prices expressed in dinars), along with the

rising global prices of primary commodities and other production costs were the key determinants of the industrial products prices (without food and energy), which are close to the category of core inflation. While high oscillations of imported inflation (expressed in dinars) in earlier years (particularly 2010 and 2012) were to a major extent (almost two-thirds) driven by the volatility of the dinar exchange rate against the euro, this time – in conditions of the preserved relative stability of the dinar against the euro, they are solely the consequence of the rise in euro area consumer prices.

My position as the NBS Governor is that it was necessary for the NBS to tighten monetary conditions since October 2021, even in circumstances where global supply-side factors are prevailing, in order to prevent inflation from taking root, just as it was crucial to maintain relative exchange rate stability even in turbulent times. The scope of the response was calibrated taking into account that in the period observed inflation was mainly driven by global supply-side factors and that inflationary pressures could not be resolved in the short run solely by monetary policy measures, without causing major disruptions to macroeconomic processes. The goal of our measures was to limit the second-round effects of the rise in global prices of food and energy on other prices via inflation expectations, and to prevent excessive loan demand, so that inflation could be brought back within the target band during the projection horizon. The anchored medium-term inflation expectations of financial and corporate sectors which rose from 3% each to 4% (financial sector) and 5% (corporate sector) for three years ahead, confirm that we have largely succeeded in containing the second-round effects and preventing a major spillover onto prices of other products and services.

We judge that the past monetary policy tightening of the NBS will work to slow down inflation, while the preserved relative stability of the dinar against the euro will act as an important nominal anchor of the price and overall macroeconomic and financial stability. We have shown that exchange rate stability is unquestionable even in the most turbulent of times, while FX reserves, which climbed to their all-time high in 2022, remain the best guarantee of exchange rate stability going forward.

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Jorgovanka Tabaković

She graduated from the Faculty of Economics in Priština, on 14 May 1981 as the student of the generation. She was elected Member of Parliament in six parliamentary convocations. From March 1998 until October 2000, she served as Minister of Economic and Ownership Transformation in the Serbian Government. Her book "Monetary Policy – No Final Victories" was published in 2018, "My Answers – a Contribution to the History of Banking in Serbia in 21st Century" in 2020, and another one "The Turning Point – Balance is the Key to Success" in 2021. She has served as Governor of the National Bank of Serbia since August 2012. In June 2018 she was re-appointed for another six-year term of office, starting from August 2018. The reputable Banker monthly declared Governor Jorgovanka Tabaković the best governor in the world and the best European governor for 2020. She is a widow and mother of three children: Ivana, Milena and Nikola.