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**Article**

## Negative Interest Rates in the Five Eurozone Countries from Central and Eastern Europe

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## Nicolas Reigl and Karsten Staehr Negative Interest Rates in the Five Eurozone Countries from Central and Eastern Europe<sup>1</sup>



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The European Central Bank (ECB) lowered the interest rate on its deposit facility to –0.1 percent on 11 June 2014 and has subsequently pushed it further into negative territory. The policy of negative interest rates is one of the unconventional monetary policy measures introduced in the aftermath of the global financial crisis and the European debt crisis (Dell’Ariccia et al. 2018).<sup>2</sup>

Five small countries from Central and Eastern Europe are members of the euro area. The group is here abbreviated as the CEEA (Central and Eastern Euro Area) and it is comprised of Slovenia which joined in 2007, Slovakia (2009), Estonia (2011), Latvia (2014), and Lithuania (2015). After the accession of these countries to the euro area, the monetary policy decisions of the ECB apply fully to these countries. This article discusses how the ECB’s measures of negative interest rates may have affected financial and economic developments in the CEEA countries.

The pros and cons of the negative interest rates in the euro area have been debated keenly (Siegel and Sexauer 2017; Eisenschmidt and Smets 2017; Dell’Ariccia et al. 2018; Financial Times 2019). It has been argued that the measure was necessary to improve financial conditions and bring inflation back to its target, but also that it may lead to financial instability, spark high inflation, and unfairly disadvantage savers.<sup>3</sup>

Academic studies have considered the possible ways that negative interest rates can impact a number of variables. A key question is the extent and speed with which lower policy rates have been passed through to the deposit and lending rates of banks. It is generally found that the pass-through has been relatively muted, although the results depend on the specific interest rates considered (Eggertsson et al. 2017; Dell’Ariccia et al. 2018; Eisenschmidt and Smets 2018; Altavilla 2019). Studies have found that the negative rates have been passed through to bank rates in the

core of the euro area to a larger extent than elsewhere in the area, probably reflecting the extent of excess liquidity in the banking sector in various parts of the euro area (Eisenschmidt and Smets 2018).

Other studies have considered a wider set of developments in the financial sector. Studies have shown that lending volumes have not been adversely affected by the negative interest rates and may indeed have expanded (Jobst and Lin 2016; Altavilla et al. 2019). Financial stability concerns may arise if banks are unable to reduce their deposit rates to below zero and interest margins end up being compressed. Heider et al. (2019) find that lending volumes held up in Sweden, but the banks took larger risks in their lending and this could over time jeopardize financial stability. However, Boungou (2020) does not find that negative interest rates have led to more risk-taking by the banks. Nucera et al. (2017) and Demiralp et al. (2019) contend that the effect on lending volumes depends on the business model of the bank. Lopez et al. (2018) conclude that negative interest rates have had little effect on the profitability of banks.

Academic studies have also considered the macroeconomic effects of negative interest rates. Christensen (2019) finds that the introduction of negative interest rates has generally lowered interest rates of all maturities and so has led to a downward shift of the yield curve. Perhaps surprisingly, Hameed and Rose (2018) find that there has been no discernible effect on exchange rates in the countries that introduced negative interest rates. The impact on economic growth is uncertain though. Eggertsson et al. (2017 and 2019) posit that a scenario where bank lending margins are compressed and lending volumes reduced is realistic and that the result may be lower economic growth. Ulate (2019) finds that cuts in the interest rate are always expansionary, though less so when the rate turns negative.

The studies of the effects of negative interest rates have typically focused on developments in the countries in the core euro area, or those in Southern Europe that were most affected by the global financial crisis (Dell’Ariccia 2018; Eisenschmidt and Smets 2018). Studies have largely overlooked the consequences for the new members of the euro area from Central and Eastern Europe, with the key exception of Damjanovic (2019). This is unfortunate, since the CEEA countries exhibit a number of particularities. First, the financial sectors in these countries are at quite an early stage of development with most banks foreign-owned and thus tied to events abroad. Second, the process of economic convergence implies that the countries are generally experiencing relatively fast trend growth in GDP per capita and this may result in inflationary pressures, a phenomenon sometimes labeled the dynamic Penn effect.<sup>4</sup> Third,

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<sup>2</sup> Denmark was the first country to introduce negative interest rates in 2012 after the global financial crisis (Christensen 2019). Switzerland introduced negative interest rates in 2015, Sweden in 2015, Bulgaria in 2016, Hungary in 2016, and Japan in 2016.

<sup>3</sup> The debate on negative interest rates and their consequences for pensioners and other savers has been particularly active in Germany (Bloomberg 2019).

<sup>4</sup> Degler and Staehr (2019) find evidence of the dynamic Penn effect in the sample of EU countries from Central and Eastern Europe.

the CEEA countries often have cyclical positions that differ markedly from those of the large countries in the core euro area. Finally, the public finances in these countries are typically on a sounder footing than those in many other euro-area countries.

This paper discusses some of the financial and economic effects in the five CEEA countries that may be associated with the negative interest rates in the euro area.

We focus our discussion on developments in lending and deposit rates, lending volumes, and house prices, but we also touch on broader economic developments such as the dynamics of economic growth and inflation. The study is exploratory and narrative along the lines of Dell’Ariccia et al. (2018), who consider the effects of negative interest rates on a number of large economies.

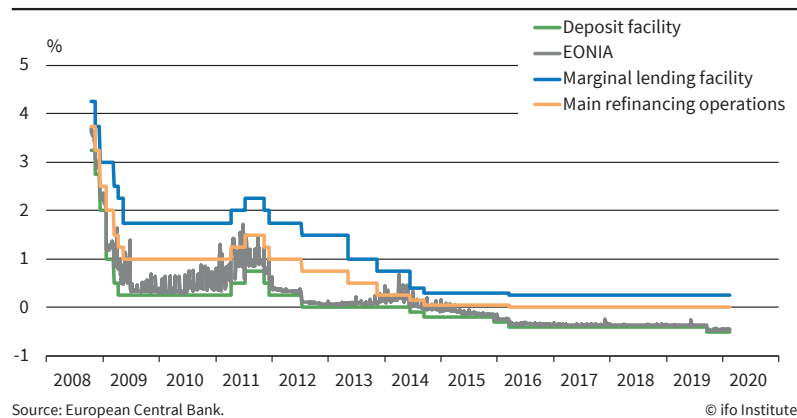
We find that economic developments in the CEEA countries after the introduction of negative interest rates have generally been benign and there have been no uniform signs of overheating. However, risks in the form of rapid lending growth and rising housing prices cast some doubt on the longer-term impact on financial and economic stability.

## NEGATIVE INTEREST RATES IN THE EURO AREA

The ECB sets three interest rates. The deposit rate is the interest paid to banks for overnight deposits at the ECB, the main refinancing rate is used for regular provisions of liquidity to the market, and the marginal lending rate is used for overnight credit to banks. The three interest rates basically provide a floor, a midpoint, and a ceiling for EONIA, the overnight unsecured interest rate in the interbank market of the euro area.<sup>5</sup> Figure 1 shows the three interest rates set by the ECB together with EONIA.<sup>6</sup> After the global financial crisis erupted, the ECB lowered its interest rates markedly. The deposit rate entered negative territory on June 11, 2014 and reached –0.5 percent on 18 September 2019.

Whether it is feasible to keep interest rates negative has been questioned on the grounds that households and corporations may choose instead to hold cash, which carries an interest rate of zero. Handling, storing, and insuring large amounts of cash is impractical and costly, so in practice this does not

**Figure 1**  
**Interest Rates in the Euro Area**



prevent interest rates from being negative. There is evidently a minimum level somewhere under which a large fraction of households and corporations will resort to hoarding cash.<sup>7</sup>

It is important to underscore that EONIA is negative not only because the ECB’s deposit rate is negative, but also because there is excess liquidity in the banking system in the euro area. The ECB has used a large number of unconventional monetary policy measures since the end of 2012 (Jäger and Grigoriadis 2017). Some of these entail purchasing assets such as government bonds or other safe assets that normally appear on the balance sheets of banks and other financial institutions. The unconventional monetary policy measures have in this way funneled liquidity into the banking sector and this has helped drive down the EONIA rate.

Scholars have sought to compute *shadow interest rates*, which are synthetic interest rates that combine conventional interest rates with the implicit or induced effects of unconventional monetary policy measures (Krippner 2013; Wu and Xia 2016). Estimates of the shadow interest rate for the euro area vary substantially over time and across various studies, but since 2015 they have mainly centered around an interval of –3 to –5 percent (Reserve Bank of New Zealand 2020). It may thus be argued that the negative interest rates comprise only a small component of the overall loosening of monetary policy in the euro area since the start of the global financial crisis.<sup>8</sup>

Most intertemporal decision-making, such as consumption and investment choices, is based on the expected *real* interest rate. The nominal interest rate enters this calculation, but so does the expected inflation rate. This means the expected real interest rate can be negative even when the nominal interest

<sup>5</sup> In October 2019, the ECB introduced a new data series for the overnight interbank rate for the euro area called the €STR. The new series will coexist with EONIA until the beginning of 2022.

<sup>6</sup> The starting point of the sample, 15 October 2008, was chosen to coincide with the ECB’s introduction of new procedures for the main refinancing operations. It is shortly after the bankruptcy of Lehman Brothers.

<sup>7</sup> There is some evidence that cash holdings of euros have increased since the introduction of negative interest rates. Financial Times (2020) reports the emergence of large-scale storage arrangements that include insurance of the cash stored and at a lower cost than that implied by the negative interest rate.

<sup>8</sup> This of course overlooks the intricate interactions between the conventional and unconventional policies of the ECB.

rate is positive, so the monetary policy stance cannot be assessed using solely the nominal rate or the shadow rate.

Moreover, the ECB sets the short-term interest rate in the euro area, but lending, deposits, and other financial transactions often use longer-term interest rates that are not directly under the control of the ECB. The relationship between the short-term rates and the longer-term rates, customarily captured by the yield curve, is of key importance for how effective monetary policy, including the use of negative interest rates, is. It is, however, very difficult to isolate the effect of the negative interest rate policy on longer-term interest rates from the effects of other ECB policies such as asset purchases and forward guidance.

Finally, it should be kept in mind that how appropriate the monetary stance is depends on the cyclical position of the economy and the prevailing inflation outlook. Negative real interest rates may be appropriate in some circumstances but not in others. It is noticeable in this context that the cyclical stance often varies across countries and regions in the euro area.

### **DIRECT AND INDIRECT EFFECTS**

The economies in the CEEA countries are affected by the eurozone monetary policy, but are too small to have any discernible influence on euro aggregates. This makes it reasonable to assume that economic developments in the CEEA countries will have a negligible impact on ECB policy rates. There are nevertheless several channels through which negative interest rates may affect developments in the CEEA economies. It is convenient to distinguish between direct and indirect effects.

The direct effect stems from the interest rates and other monetary policy measures of the ECB that apply to all the euro-area members. Negative interest rates affect the cost of funding directly and so affect the operations of the banks in the CEEA countries.

There are numerous indirect effects. Monetary policy is immediately transmitted to euro-area aggregates such as exchange rates and international capital flows. In the longer term there may also be other economic developments in the euro area, such as changes to inflation, foreign trade, and economic growth. The CEEA countries have close economic links to the rest of the euro area, so overall developments in the euro area will affect the CEEA countries. Developments in the euro area may also affect neighboring non-euro countries like Sweden, Denmark, and the UK – countries with which the Baltic states in particular have close economic ties (Kucharcukova 2016). It is likely that the complex web of indirect effects is as important as the direct effects for the CEEA economies.

It should also be kept in mind that negative interest rates or other expansionary monetary policy measures may be followed by policy reactions in the individual CEEA countries. The countries may for instance change their fiscal stance or adjust supervision and regulation of their financial sector, including how they set countercyclical capital buffers. However, it is difficult to ascertain which policy measures are reactions to negative interest rates, and which measures would have been implemented anyway.

The discussion above underscores the numerous problems in disentangling the effects that different monetary policy measures, including negative interest rates, have on financial and economic developments in the CEEA countries. Empirical studies have used VAR models, estimated or parametrized DSGE models, and difference-in-differences methods to address some of these knotty identification issues (Errit and Uusküla 2014; Stakenas and Stasiukynaite 2017; Damjanovic 2017).

This paper adopts a broad perspective and discusses key features of the CEEA economies in the aftermath of the global financial crisis and the introduction of negative interest rates in the euro area, along the lines followed by Dell'Ariccia et al. (2018). An important issue is whether domestic developments suggest that economic and financial stability may be jeopardized by negative interest rates and other expansionary monetary policy measures.

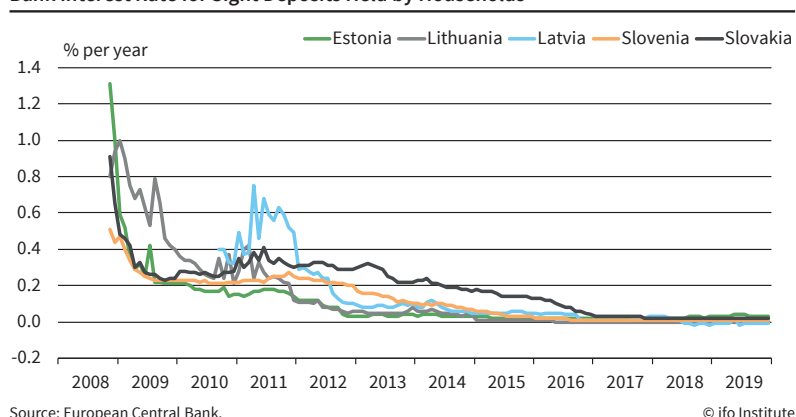
### **DEVELOPMENTS IN THE CEEA COUNTRIES**

#### **Bank Interest Rates**

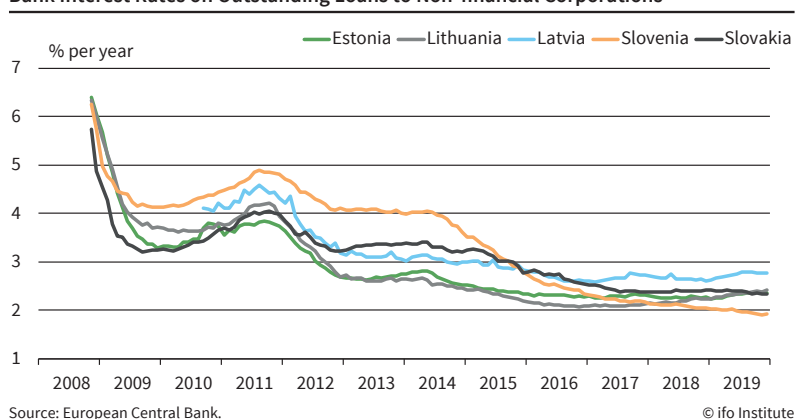
We start by looking at the average interest rates in the banking sectors in the CEEA countries. Figure 2 shows the deposit rates on sight deposits held by households. The interest rates have declined markedly since the onset of the global financial crisis, and this process continued after negative interest rates were introduced in June 2014. The reaction in Slovakia was somewhat slower, which may be due to lending in the country mainly being on fixed-rate terms, so that the Slovak banks were less exposed as interest rates declined after the global financial crisis (see below). It is noticeable that although the average deposit rates have been low and at or marginally above zero since June 2014, the rates for households have not fallen below zero.

The introduction of negative interest rates has arguably affected lending rates more than deposit rates. Figure 3 shows the average interest rate on outstanding loans to nonfinancial corporations from banks in the CEEA countries. Lending rates were relatively stable in 2013 and the first half of 2014 and then started to decline gradually. The pattern is particularly pronounced for Slovenia after the country

**Figure 2**  
**Bank Interest Rate for Sight Deposits Held by Households**



**Figure 3**  
**Bank Interest Rates on Outstanding Loans to Non-financial Corporations**



exited the economic crisis that hit it in 2011–2013. Precisely how the policy of negative interest rates affected lending rates is difficult to ascertain, but it is clear that the expansionary monetary policy lowered lending rates not only in the core euro area but also in the five CEEA countries.

Lending rates for various types of loans to households were also declining. Figure 4 shows the interest rate on outstanding housing loans, which are loans given to households to buy residential properties. Two features stand out. First, the interest rates in the Baltic states and Slovenia fell somewhat from mid-2014 to 2016, but have since remained broadly constant; the negative interest rates have had at most a modest impact on the interest rates for house purchases. Second, the interest rate on housing loans in Slovakia fell only gradually after the global financial crisis, in part because a large share of the outstanding loans were long-term loans with fixed interest

rates. Starting in 2018, the interest rate on outstanding housing loans was below 2.5 percent in all five CEEA countries.

### Financial Conditions

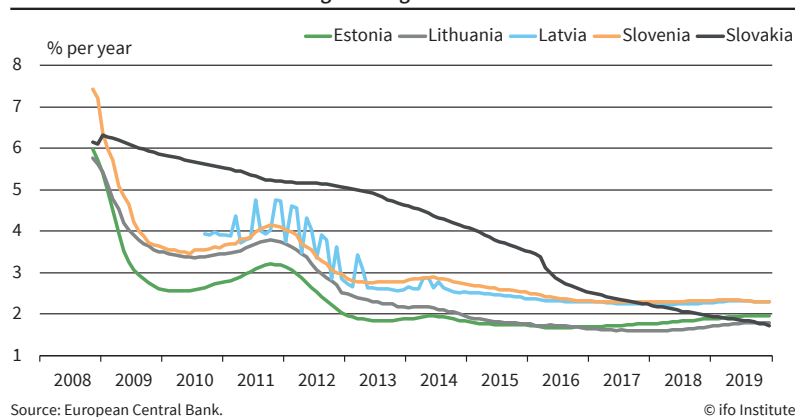
Bank interest rates have been low and relatively stable in the years since 2014, when negative interest rates were introduced in the euro area. The negative rates may however have had wider effects on financial conditions in the CEEA countries, and some of these could jeopardize financial stability.

Figure 5 shows the annual growth in the nominal value of outstanding bank loans to households and nonfinancial corporations. The large variability of the data over time arises mainly because lending to nonfinancial corporations is very volatile throughout the period considered. A clear picture emerges even though the growth rates vary substantially across the countries. The growth rates of

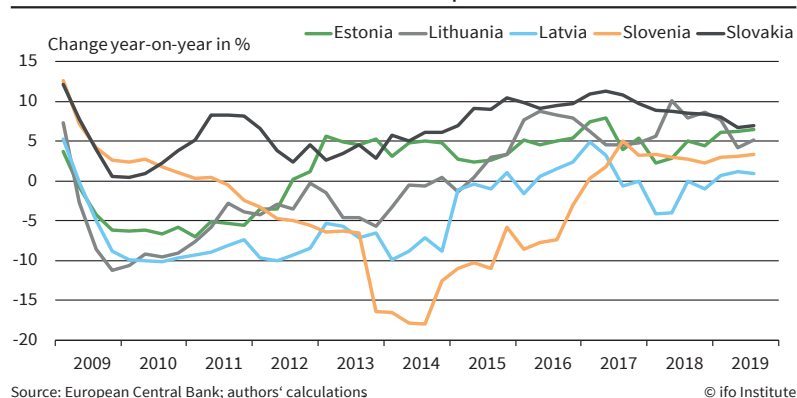
the stocks of loans to households and nonfinancial corporations have risen markedly since 2014 for all five CEEA countries. The change is particularly pronounced for Slovenia, which did not emerge from the recession until 2014. The dynamics for Slovenia stem from the corporate deleveraging that followed the recession in the early 2010s, and also from a switch from debt to equity financing.

The average growth rates for loans vary over the years 2017–2019 across the CEEA countries. The

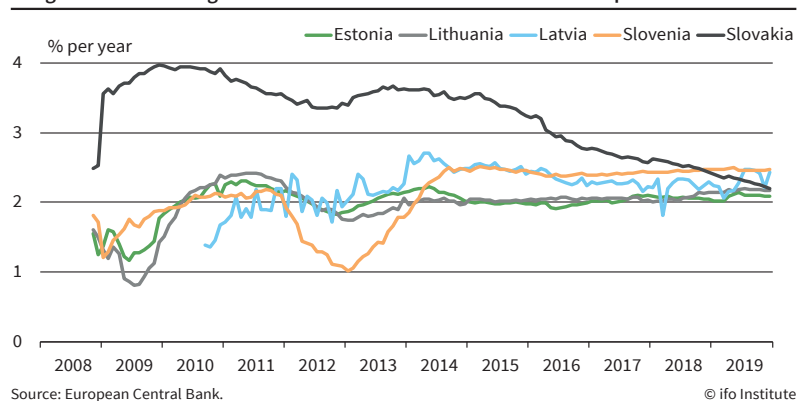
**Figure 4**  
**Bank Interest Rates on Outstanding Housing Loans**



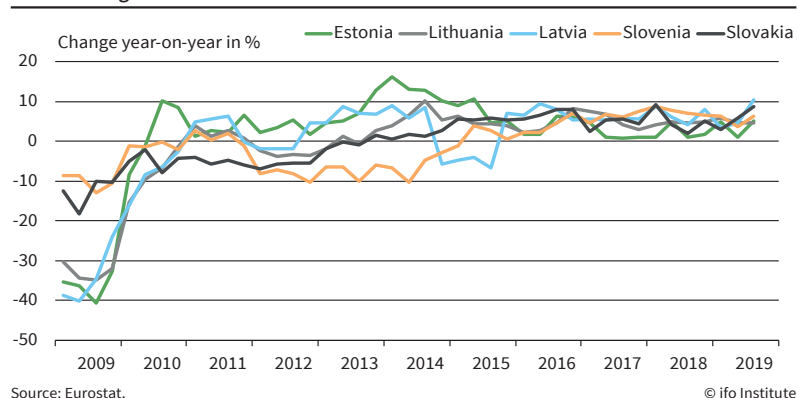
**Figure 5**  
**Bank Loans to Households and Non-financial Corporations**



**Figure 6**  
**Margin on Outstanding Loans to Households and Non-financial Corporations**



**Figure 7**  
**Real Housing Price Index**



average annual growth rate hovered around zero for Latvia, but was 8–10 percent for Slovakia and Lithuania and around 5 percent for Estonia and Slovenia. The debt dynamics should be ascribed not only to the ECB's monetary policy, but also to national policy interventions (ESRB 2019). After a period of high rates of lending growth, Slovakia has taken measures since 2016 to address potential cyclical risks in the real estate sector, including tighter limits on housing loans. Slovenia tightened several macroprudential instruments

in 2018 while the Baltic states have taken only a few measures.<sup>9</sup>

Figure 6 shows an aggregate measure of the margin on the outstanding stock of loans to households and nonfinancial corporations. The dynamics for the Baltic states and for Slovenia are relatively similar. Margins were compressed in the aftermath of the global financial crisis, but they stabilized in 2015 and have since remained relatively constant. Slovakia is again an exception here because the share of fixed-rate loans was large, which meant that the average lending rates on outstanding loans declined only gradually. Overall, the fear of narrower bank lending margins does not appear to have materialized in the CEEA countries.

Movements of housing prices are often used to gauge challenges to financial stability. High or rapidly increasing housing prices may lead to imprudent borrowing by the household sector and leave the sector exposed to adverse economic or financial shocks. Figure 7 shows the dynamics of real housing prices in the five CEEA countries, and there is substantial variation across the countries. The Baltic states experienced very large declines in real prices during the global financial crisis, followed by a rebound starting around 2011. Slovakia saw a smaller decline during the crisis, but real price growth remained subdued until 2015. Finally, Slovenia also saw a

moderate decline in real housing prices during the global financial crisis, but then substantial declines in real prices during the subsequent downturn.

Since mid-2016, the rate of growth in real housing prices has been relatively similar, and on average

<sup>9</sup> Countercyclical capital buffers are part of the set of macroprudential instruments and require banks to set aside additional reserves when lending. They may thus help to dampen credit growth during an upswing in the financial cycle. Estonia, Latvia, and Slovenia have not applied countercyclical capital buffers after negative rates were introduced, whereas Lithuania has had a buffer of 1 percent since June 2019 and Slovakia is set to increase its buffer from 1.5 percent to 2 percent in August 2020.



quite high, in the five countries. Lower interest rates and easier credit conditions have favored housing markets in the CEEA countries and have been followed by an upward drift in real housing prices. As discussed above, several CEEA countries have taken measures to tighten credit conditions for housing loans, and these may have helped stabilize price developments. At the time of writing in February 2020, it is unclear whether these price rises may be excessive and may constitute a threat to financial and economic stability in the future.

### Macroeconomic Dynamics

The macroeconomic trends in the CEEA countries have been relatively benign over the 2014–2019 period. Figure 8 shows annual GDP growth for the five countries. The deep recessions in the wake of the global financial crisis affected the countries deeply, but GDP growth was positive in all five in the fourth quarter of 2011. Slovenia, however, slid into another recession shortly afterwards, and year-on-year growth did not turn positive in the country until the fourth quarter of 2013. Growth has been positive in all five countries since 2014, and year-on-year growth rates have at times hovered around 5 percent. Economic growth slipped, however, in several of the CEEA countries in 2019, reducing the risk of overheating.

Although rates of economic growth have been relatively high in the CEEA countries since negative interest rates were introduced, inflation has generally been contained. Figure 9 shows HICP core inflation, i.e., HICP inflation excluding energy, food, alcohol, and tobacco from the price index. Core inflation rose visibly in 2014–2019. Annual core in-

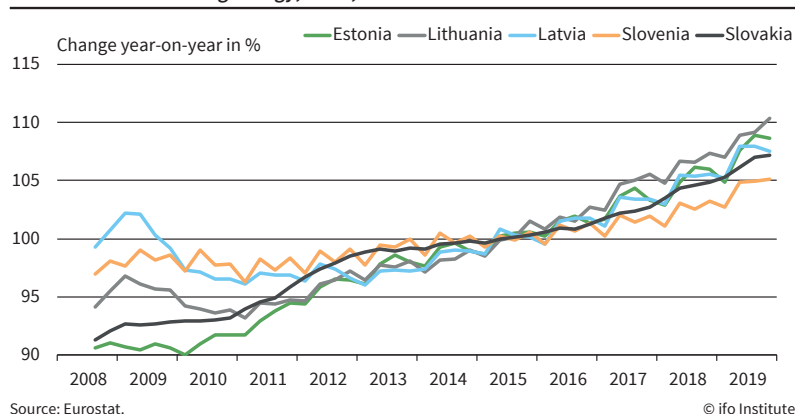
flation was 2.0–2.5 percent in all of the CEEA countries in 2019, and as such was clearly higher than in most of the euro-area countries in Western Europe. This might partly be ascribed to convergence effects, since trend growth in the CEEA countries is higher than that in Western Europe. It cannot be ruled out, however, that the upward inflationary pressure has arisen because of relatively high rates of economic growth and accommodating financial conditions in the five countries.

The impression that macroeconomic conditions have been relatively stable during the years when interest rates have been negative is also confirmed by other indicators. The current account balance can be defined as saving minus investment in an economy. The current accounts in the CEEA countries have generally been in balance or slightly in surplus since the global financial crisis, although Slovakia has had moderate deficits since 2015 (Ameco 2020, code: *UBCABOP*). The financing costs of government debt have eased as yield curves have shifted downwards. This is arguably of less importance in the CEEA countries than it is in many Western European countries, since government debts are relatively low. It is noticeable, however, that the cyclically adjusted budget balances have been negative in all five CEEA countries for extended periods of time, suggesting that fiscal stances have been relatively expansionary (Ameco 2020, code: *UBLGAPS*).

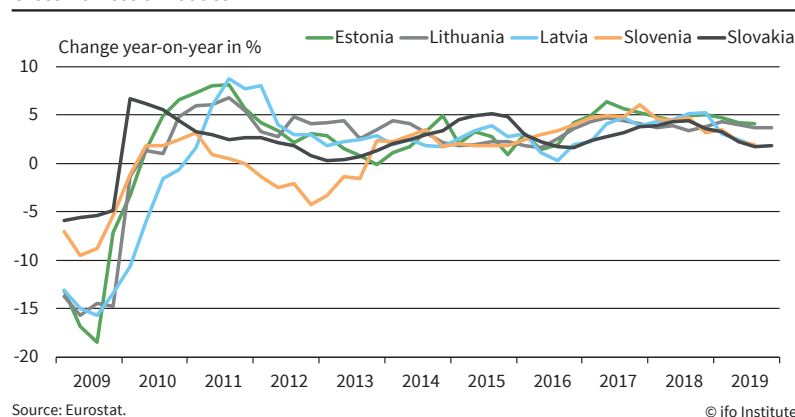
### FINAL COMMENTS

The monetary policy of the ECB focuses on the inflation rate and other aggregates for the entire euro area. The policy cannot take account of conditions in the individual countries, so developments in small economies will generally have a negligible impact

**Figure 9**  
HICP Inflation Excluding Energy, Food, Alcohol and Tobacco



**Figure 8**  
Gross Domestic Product



on the monetary policy decisions of the ECB. This makes it pertinent to consider how euro-area policies have affected financial and economic developments in individual euro-area countries.

The introduction of negative interest rates challenged long-held perceptions about the transmission and macroeconomic effects of monetary policy. The deposit interest rate of the ECB and the overnight interest rates in the euro area have been negative since June 2014. The negative interest rates may have affected the economies of the five CEEA countries directly, but may also have done so indirectly through developments in the euro area and countries outside the euro area.

At the time of writing in February 2020, the economic climate in the five CEEA countries is relatively benign and with few signs of financial instability or overheating. Interest rates on bank deposits in the CEEA countries have remained close to zero since 2014, but have not dipped below zero. Lending rates have not fallen substantially and the margins on outstanding loans have not been narrowed unduly since 2014. On the other hand, lending volumes have increased, real house prices have risen markedly, and core inflation is on an upward path, which are mild signs of imbalances gradually accumulating. The muted effects are on the whole consistent with the empirical literature discussed in the beginning of this paper. It is also of note that the ECB deposit interest rate has come down modestly and gradually.

The introduction of negative interest rates in the euro area as of June 2014 was not the result of developments in the five CEEA countries. The negative interest rates and other measures of monetary stimulus may, however, have helped the recovery in the euro area, and thus provided a backdrop against which financial markets and the real economy in the CEEA countries could stabilize. In this situation, the challenge for policymakers in the euro-area countries in Central and Eastern Europe is to ensure that the accommodating monetary policies do not lead to imbalances that jeopardize financial and economic stability in this part of the euro area.

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