What drives people's expectations of euro adoption? – Evidence from the OeNB Euro Survey on selected CESEE countries

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Recently, the monetary integration of some countries in Central, Eastern and Southeastern Europe (CESEE) has gained new momentum. Based on data from the OeNB Euro Survey from 2007 to 2019, we present evidence on individuals' expectations regarding accession to the euro area and examine how the framework that governs euro area accession, the different monetary policy regimes and de facto euroization affect expectations. We find that expectations have become less optimistic over time and that individuals' uncertainty in forming expectations has increased. Exposure to de facto euroization increases optimism in expectations regarding euro introduction and decreases uncertainty. Individuals who trust their national central bank and the EU expect accession to the euro area to take place sooner. Expectations of inflation or depreciation of the local currency are related to more pessimistic expectations regarding euro introduction. Monetary expectations (i.e. inflation and exchange rate expectations) play a stronger role for EU member states than for EU candidates and potential candidates; regarding trust in institutions the picture is reversed.

On July 10, 2020, Bulgaria and Croatia joined the exchange rate mechanism (ERM II) and thus took an important step in their endeavors to accede to the euro area over the medium term. After Slovenia, Slovakia and the Baltic states had joined the single currency area between 2007 and 2015, the recent ERM II entry by Bulgaria and Croatia suggests some renewed movement in the monetary integration of Central, Eastern and Southeastern Europe (CESEE), at least in some countries of the region, after largely stagnating for a few years. At the same time, policy positions about future euro accession continue to vary greatly among those CESEE countries that continue having their own national currencies.

Against this background, this paper focuses on two issues: What expectations do people in the CESEE region have regarding euro adoption? And what is driving these expectations? This is a highly relevant research topic given that euro adoption expectations do shape important economic and financial decisions among individuals, for example in the realm of saving and borrowing decisions when it comes to the choice of the currency in which assets and liabilities are denominated.

More specifically, we concentrate on exploring euro adoption expectations in ten CESEE countries that are not (yet) members of the single currency area, namely six EU members – Bulgaria, Croatia, the Czech Republic, Hungary, Poland and Romania – as well as four EU candidates and potential candidates (CPCs) from the Western Balkans – Albania, Bosnia and Herzegovina, North Macedonia and Serbia. Our analysis is based on data from the OeNB Euro Survey, which is, to our knowledge, the only dataset covering this issue for CESEE EU members and for

CPCs.[2] We cover developments from 2007 to 2019.[3] We first describe the distribution of expectations and how uncertain individuals are when forming expectations of euro adoption. We then focus on how (de facto) euroization as well as differences in monetary policy regimes and institutions affect expectations. Of course, there are many more aspects of how individuals form their expectations regarding euro adoptions that could be analyzed. However, we prioritize depth over breadth and have limited the scope of our analysis to those aspects that are related to institutional determinants. We do not address heterogeneities that are related to individuals' cognitive abilities, preferences or beliefs.

Gaining a better understanding about the determinants of euro adoption expectations is crucial from a policy perspective, given that these expectations impact on numerous economic and financial decisions people take. Moreover, implementing strategies for preparing euro adoption is certainly facilitated if expectations are well aligned with policy plans.

Our analysis is related to the growing effort by central banks around the world to gain a more precise understanding of how households form expectations and how these expectations affect their behavior.[4] This effort is reflected in the strong increase in research on households' expectations: Between 2000 and 2005, on average, 41 publications referenced on EconLit per year refer to "expectations" in the abstract and mention "households" in the main body of the paper. In the years from 2015 to 2020, this admittedly very rough indicator increases to 125 publications on average per year. And for the first half of 2020 alone, there are already 140 publications with these characteristics. We will not attempt to review or do justice to this mushrooming literature in this paper. We note, however, that we are not aware of any other analytical paper that has studied the determinants of euro adoption expectations in CESEE. Based on OeNB Euro Survey data, Scheiber (2019a and 2019b) addresses the question of whether euro adoption expectations have an impact on people's propensity to hold euro cash. He finds a positive and significant influence of expected euro adoption on the likelihood that individuals hold euro cash, however not on the amounts of euro cash held.

Our study is structured as follows: In section 1, we describe the data we used, and section 2 presents results on how households' expectations regarding euro introduction are distributed and how certain households are in forming expectations. Section 3 presents our empirical approach. In section 4, we discuss which factors determine euro introduction expectations, before summarizing our findings and concluding.

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[2] *For more details on the survey see: https://www.oenb.at/en/Monetary-Policy/Surveys/OeNB-Euro-Survey.html*

[3] *The European Commission regularly commissions a survey on the introduction of the euro in EU member states that have not yet adopted the common currency, which also covers Sweden but not the CPCs (European Commission, 2020).*

[4] *See, for example, the well-known survey of consumer expectations conducted by the Federal Reserve Bank New York at https://www.newyorkfed.org/microeconomics/sce, the newly established Bundesbank Online Pilot Survey on Consumer Expectations at https://www.bundesbank.de/en/bundesbank/research/pilot-survey-on-consumer-expectations/bundesbank-online-pilot-survey-on-consumer-expectations-794568 and the European Central Bank's newly established Consumer Expectations Survey (European Central Bank, 2020b) at https://www.ecb.europa.eu/stats/ecb_surveys/consumer_exp_survey/html/index.en.html.*

1 Data: the OeNB Euro Survey

The main source of data for our analysis is the OeNB Euro Survey – a repeated cross-sectional survey of individuals, aged 15 or older. The survey has been carried out by the Oesterreichische Nationalbank (OeNB) in ten Central, Eastern and Southeastern European countries (CESEE-10) since 2007, i.e. in the ten countries that we focus on in this study. In each country and in each survey wave, a sample (based on multistage random sampling procedures) of around 1,000 individuals is polled.

Each sample reflects a country's population characteristics in terms of age, gender, region and ethnicity. Weights are calibrated separately for each wave on census population statistics.

The survey questionnaire elicits a rich set of information on socioeconomic characteristics, indicators of wealth and finances, individual beliefs, expectations and trust. The questionnaire is composed of a core set of questions regarding the extent of euroization as well as varying questions that focus on a specific research question. One of the central aims of these specific research questions is to understand the determinants of euroization in the CESEE-10 countries. The volatility of inflation and the exchange rate and individuals' inflation and exchange rate expectations as well as expectations regarding accession to the euro area are important determinants of the different dimensions of euroization (e.g. Ize and Levy Yeyati, 2003; Jeanne, 2005; Stix, 2013; Fidrmuc et al., 2013; and Brown and Stix, 2015).

The central variable for our analysis, which measures expectations regarding accession to the euro area, is based on the following question:

> *When, in which year, do you think the euro will be introduced in your country?*
>   *Year: ####*
>   *Never*
>   *Don't know*
>   *No answer*
> *Interviewer instruction: Albania, Bosnia, North Macedonia and Serbia: We do not mean joining the European Union but introducing the euro.*
> *Bulgaria and Bosnia and Herzegovina: We mean when the national currency will be entirely replaced by the euro.*

This question was included in the survey waves of 2007, 2008, 2010, 2011, 2014, 2017, 2018 and 2019 with a total of around 92,000 observations.[5] Due to a different research focus, the question on euro introduction expectations was not asked in the survey waves of 2012, 2013, 2015 and 2016. As we believe recent developments are of more interest and want to avoid cluttering the descriptive analysis below, we pool the waves 2007−2008 and 2010−2011. Despite the fact that the time series of euro introduction expectations is not without interruption, the long time span covered by the survey is a unique asset for our analysis: The survey covers a time span of 13 years, albeit not at an annual frequency, with no changes to question wording or survey methodology, which is a rare asset.[6] Moreover, the OeNB Euro Survey has been conducted in a way that provides comparable data for

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[5] We do not use data for Bosnia and Herzegovina that was collected between 2007 and 2011 as the central question of interest is not comparable with that asked in the other countries.

[6] For example, the well-known Survey of Household Income and Wealth already included a measure of inflation expectations in 1989 but the survey question was changed between then and 2016, complicating analyses that pool several waves (Rondinelli and Zizza, 2020).

ten countries with diverse institutional and policy backgrounds. Finally, the questionnaire also includes questions on inflation and exchange rate expectations as well as on trust in institutions, which makes it possible to analyze how different expectations and trust relate to each other. Nevertheless, it is important to bear in mind the survey was not designed as an expectations survey, where it has become the established practice to ask questions about expectations in (1) qualitative form, i.e. asking about the direction of changes, (2) quantitative form, i.e. asking for a point estimate of expected changes in percent, and (3) probabilistic form, i.e. asking respondents to evaluate the likelihood of economic variables being within specific ranges (for example, Manski, 2004; Van der Klaauw et al., 2008; Deutsche Bundesbank, 2019; European Central Bank, 2020b).

Moreover, expectations about euro introduction are likely influenced not only by policymakers and institutions but also by individuals' preferences and wishes. In the current analysis, we do not attempt to disentangle these two aspects – also due to a lack of additional data on individuals' wishes.[7]

2 Euro introduction expectations: past and present

How are individuals' expectations regarding euro introduction distributed? Did expectations change over time? How certain are individuals in their expectation formation?

When we look at the evidence to come up with answers to these questions, we must bear in mind that the CESEE-10 countries we analyze are very diverse with respect to their current monetary policy regimes and with respect to euro area accession policies. In the following, we will first give a quick overview of the framework that governs euro area accession, and then present results on how expectations are distributed across countries and over time. We will then focus on three aspects of this distribution: the role of monetary policy regimes for expectation formation, the role of the euro area accession framework and the role of uncertainty.

2.1 Distribution of euro introduction expectations from 2007 to 2019

What are the key features of the euro adoption framework? To start with, participation in the single currency area is only open to countries that are EU member states. Moreover, accession to the euro area is technically possible, at the earliest, in the third year after EU accession, given that it requires a smooth participation in ERM II for at least two years[8] and some lead time for the decision-making on euro area enlargement and for logistical preparations.[9] Based on this framework, one can determine the earliest possible year of euro area accession for each country and each survey wave that we include in this paper – and thus distinguish expectations

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[7] *In addition to the question on when individuals expect the euro to be introduced, the fall 2020 wave of the OeNB Euro Survey again includes a question on when they would like the euro to be introduced.*

[8] *Participation in ERM II is a necessary condition for joining the euro area from a legal as well as a practical point of view. Even EU member states with a pegged exchange rate regime or a currency board arrangement have to participate in ERM II for at least two years, observing normal fluctuation bands without devaluing against the euro (European Central Bank, 2003).*

[9] *In recent euro area enlargement rounds, this lead time amounted to about 6 to 7 months.*

that are in principle congruent with the framework from those that are not.[10] We dub those expectations that are not in line with the monetary integration framework as "overly optimistic" and suppose that they are to a considerable extent due to incomplete knowledge about the euro area accession process, but also – as we will explain in more detail below – an outcome of rounding behavior, which in turn appears to mainly reflect uncertainty.

Three issues need to be noted in this context: First, expectations that are in line with the technical rules may also turn out to be too bullish, given that euro area accession requires a high degree of sustainable convergence, which may not yet be fully in place at the earliest technically feasible point in time; and in fact, euro area accession in the minimum timeframe so far has been the exception rather than the rule. Second, joining the euro area in the third year after EU accession presupposes that a country is willing and sufficiently prepared to enter ERM II shortly after EU accession. Again, this may not necessarily be the case; in fact, in the past it was only the case for two out of the five CESEE euro area countries. Third, we take the OeNB Euro Survey question on euro introduction expectations to refer to euro area accession and not to a unilateral adoption of the euro. We think this is a reasonable specification given that no CESEE country has been considering a go-alone strategy toward adopting the euro during the sample period and that EU institutions have repeatedly stressed elementary objections against a potential unilateral euro adoption.

We now turn to the question of how expectations are distributed across countries and over time. Chart 1 shows the developments in EU member states from 2007 to 2019. Strikingly, expectations have become less optimistic[11] over time in the majority of countries, as expected euro adoption lead times have become longer with the passage of time. "Never" answers have also tended to rise over time – especially in the Czech Republic, Hungary and Poland. We see an exception in Croatia, where expectations oscillated quite a bit over time but were somewhat more optimistic in 2019 than they had been back in 2007.[12] In turn, the development of "don't know" shares has been diverse across countries. It is particularly interesting to note that it has substantially fallen in recent years in Croatia, while increasing to very high levels in Bulgaria and Poland. The recent decrease of "don't know" responses in Croatia is likely also related to the very active information campaign by the authorities, in particular the central bank.

A multitude of partly related factors come to mind as possible explanations for the lengthening of expected lead times. We can only sketch a number of them briefly, while emphasizing that their relevance differs from country to country.

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[10] By the latter, we mean expectations of euro adoption before such a step is actually technically feasible given the euro adoption rulebook, which is – for EU members – within less than two and a half years after the field phase of the survey, and – for non-EU members – less than two and a half years after the earliest feasible time of EU accession (with EU accession prospects being based on available information at the time of each survey wave, e.g. for the 2018 wave, we take 2025 as the earliest possible EU accession year for CPCs, based on the European Commission's Western Balkans strategy released in February 2018). Moreover, we assume that euro area accession only takes place at the beginning of a calendar year, as it has always done in the past.

[11] We define "optimistic" strictly in a temporal sense, i.e. expectations are more optimistic if from one survey year to the next, the expected euro introduction is shifted forward by less than one year. When using "optimistic" we therefore do not refer to any potential benefits or risks for the economy that euro introduction may entail.

[12] Note that expectations may have developed quite differently in those CESEE countries that have already joined the euro area.

Upon EU accession, euro adoption strategies of CESEE authorities were rather ambitious in most cases; only the Czech Republic (and to some extent Romania) took a more gradual approach.[13] In a number of countries, the ambitious plans proved unfeasible for a variety of reasons. As a consequence, timelines were lengthened, and later dropped in a number of cases. The sovereign debt crisis in several euro area countries certainly affected perceptions about cost-benefit balances of euro area membership. At the same time, inflation targeting and flexible exchange rates were seen to serve some countries well, while fixed and quasi-fixed pegs also proved durable. These factors certainly impacted on people's euro adoption expectations in the six CESEE EU member states covered here. Changes in expectations, in turn, equally surely fed back into policy positions regarding euro adoption.
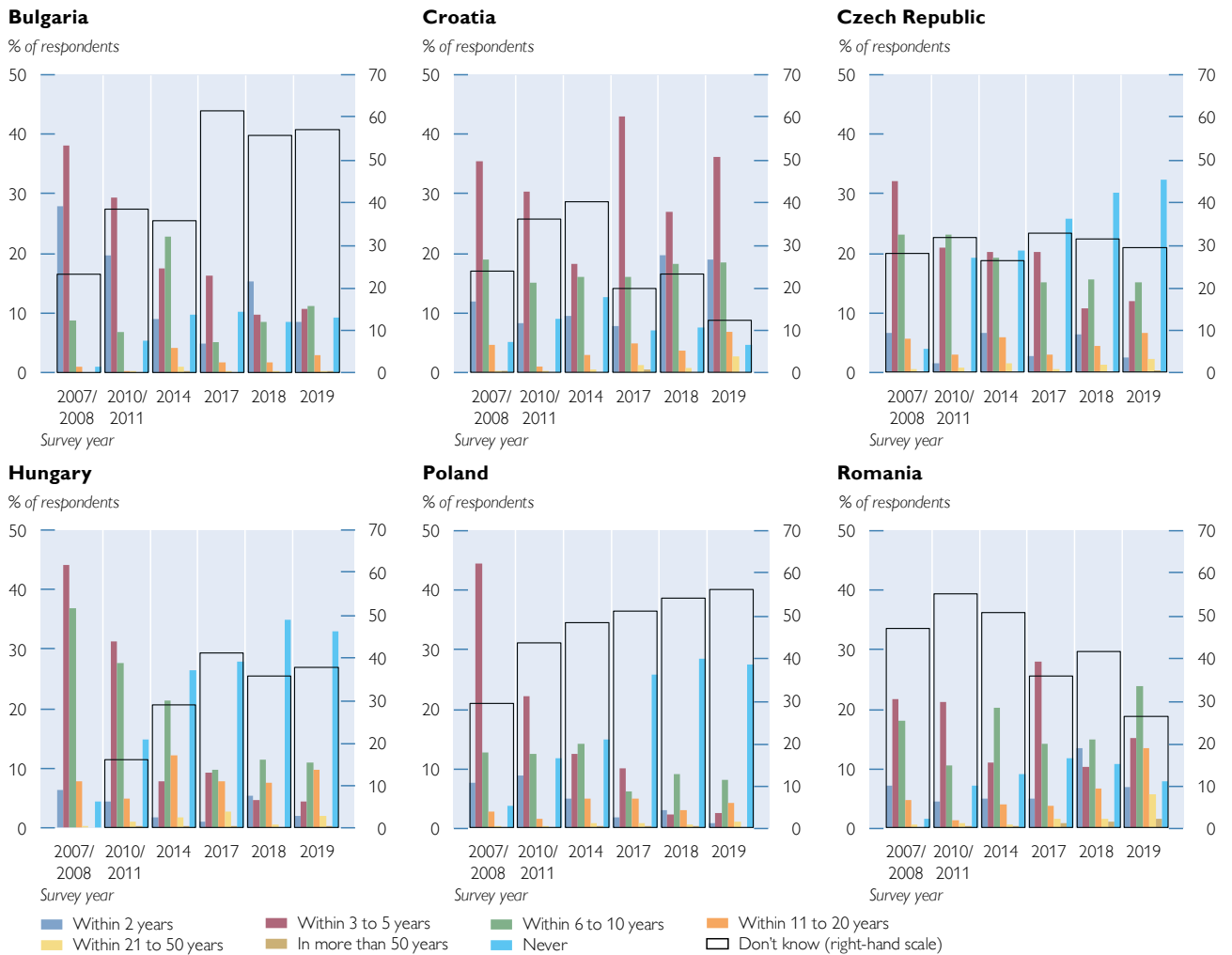
As Bulgaria and Croatia joined ERM II in July 2020, it is interesting to take a closer look at the development of euro adoption expectations in these two countries in the recent past.[14] To do so, we briefly recall at what stage the preparations for closer monetary integration were when the field phases of the last three OeNB Euro Survey waves took place (i.e. in the fall of 2017, 2018 and 2019). As of the fall 2017 wave, the Bulgarian authorities had indicated their intention to apply for ERM II entry (once ERM II stakeholders were ready to accept such an application). In Croatia, the central bank issued, in the fall of 2017, a strategy document on euro adoption which arrived at the conclusion that it would be favorable for the country to proceed toward joining the euro area (without indicating a timeline). In July 2018, ERM II stakeholders clarified, against the backdrop of EMU deepening (and, in particular, the creation of banking union), that countries willing to join ERM II also ought to enter into close cooperation with the ECB in the area of banking union. At the same time, Bulgaria expressed its firm intention to join ERM II within a year. In Croatia, the government adopted a euro introduction strategy in May 2018, based on an earlier central bank strategy document. Moreover, the central bank communicated the strategy very actively in numerous road shows across the country. As of fall 2019, preparations for ERM II entry and, alongside, for close cooperation with the ECB, were advancing for Bulgaria and Croatia, while it was not yet clear how much time they would take until being completed. How did expectations develop during this period? In Bulgaria, "don't know" dominated in recent waves, with a slight decline from 2017 to 2018, followed by almost no change in 2019 (57%). Notably, only about one-third of respondents had expectations of euro adoption that relate to a specific introduction year in 2018 and 2019 (slightly up from 28% back in 2017). Zooming in on the latter, we see a shift to more optimistic expectations from 2017 to 2018, which was partly reversed in 2019 (as overly optimistic expectations of a rapid euro adoption decreased). "Never" responses hover around 10%, with little change. In Croatia, we see that expectations have become more optimistic in recent waves (including also a rise in expectations of a very fast euro adoption), while the share of "never" responses decreased mildly from already low levels. At the same time, the share of respondents who answered that they "don't know" fell substantially from 2014 to 2017 and again from 2018 to 2019.

[13] See Backé, Thimann et al. (2004).

[14] See European Central Bank (2020a) for the ERM II entries by Bulgaria and Croatia. See Backé and Dvorsky (2018) for a more general account of euro area enlargement toward CESEE and Backé et al. (2019) for a succinct update. More specifically on Croatia, see Allinger (2018).

Chart 1

Expectations in CESEE EU member states: Respondents think euro will be introduced...

Bulgaria

% of respondents

Survey year

Croatia

% of respondents

Survey year

Czech Republic

% of respondents

Survey year

Hungary

% of respondents

Survey year

Poland

% of respondents

Survey year

Romania

% of respondents

Survey year

Legend:
- Within 2 years
- Within 3 to 5 years
- Within 6 to 10 years
- Within 11 to 20 years
- Within 21 to 50 years
- In more than 50 years
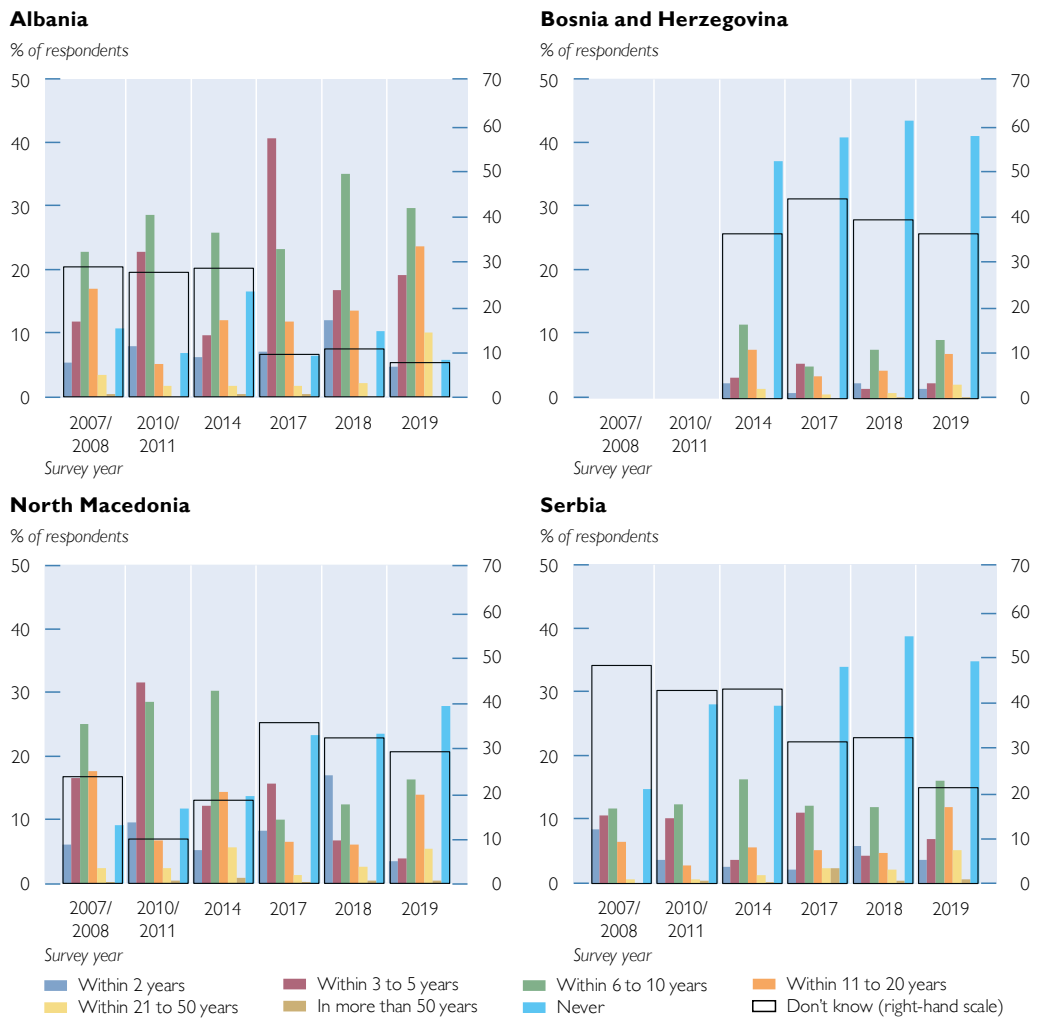- Never
- Don't know (right-hand scale)

Source: OeNB Euro Survey.

Chart 2 depicts how expectations of euro introduction have changed over time in the CPCs. For this country grouping, heterogeneities are particularly pronounced. Bosnia and Herzegovina is a rather extreme case, with very high shares of "don't know" answers. Among the remainder of respondents, "never" answers exceed the combined shares of those respondents that expect euro adoption at any future point in time. The share of the latter is also rather low in Serbia and roughly equals the "never" shares that have hovered around 30% during the past decade (in 2018 even getting close to 40%). In contrast, "don't know" shares have substantially fallen in Serbia in recent waves. A considerable and in fact rising "never" share is also characteristic for North Macedonia, while the opposite can be observed for Albania where this answer category was starkly lower than in the other three CPCs in the last three waves. Moreover, in recent years, Albania also boasts the by far smallest "don't know" shares among the four CPCs covered here. Comparing expectations in 2007 and in 2019, Albania stands out as the only CPC where expectations have become more optimistic. The opposite is true for Serbia and North Macedonia.

Chart 2

**Expectations in CESEE EU candidates and potential candidates:
Respondents think euro will be introduced...**

Albania

% of respondents

Bosnia and Herzegovina

% of respondents

North Macedonia

% of respondents

Serbia

% of respondents

Legend:
- Within 2 years
- Within 21 to 50 years
- Within 3 to 5 years
- In more than 50 years
- Within 6 to 10 years
- Never
- Within 11 to 20 years
- Don't know (right-hand scale)

Source: OeNB Euro Survey.

Expectations in Bosnia and Herzegovina have barely altered. It needs to be noted that expected EU accession timelines for the CPCs have also slipped, as time went on, which in turn has also shifted expectations toward a later euro adoption.

How do the differences in monetary policy regimes across the CESEE-10 countries relate to euro adoption expectations? To address this question, we group countries based on their monetary policy regimes and compare euro adoption expectations across these groupings, i.e. we capture in how many years (mean and median) respondents expect the euro to be introduced in their respective home countries. Table 1 shows that there were surprisingly contained differences in expectations by different country groups in 2019. (Of course, these fairly moderate differences could either point to a limited impact of regimes on expectations or to other factors that dampen these differences.) An interesting distinction can be seen between EU member states and CPCs, as regards fixed versus floating regimes:

Table 1

Expectations across countries and monetary policy regimes

	Mean	Median
	Years until expected euro introduction	
EU member states	7.5	6
EU candidates and potential candidates	10.5	8
Fixed exchange rate (de jure or de facto): BG, HR; MK, BA	7.4	6
Float or managed float: CZ, HU, PL, RO; AL, RS	9.7	6
EU member states: fixed	5.4	4
EU member states: float	9.1	6
CPCs: fixed	10.9	10
CPCs: float	10.3	7
Inflation targeting	9.7	6
No inflation targeting	7.4	6

Source: OeNB Euro Survey (2019).

Note: The sample is reduced to respondents who name a year in which they expect the euro to be introduced, i.e. "don't know" and "never" responses are dropped.

While there is a clear difference between these two types of regimes in EU members in terms of expectations, this is not the case in CPCs. Moreover, we also examined correlations between exchange rate volatility and euro adoption expectations (mean, median and individual expected euro adoption). Here, we find that exchange rate volatility in the 12 months before a survey wave is mostly negatively correlated to the expected lead time until euro introduction.[15]

How is the framework for euro area accession reflected in expectations? We focus on the issue of overly optimistic expectations and display their development over time. Chart 3 shows the share of respondents with overly optimistic expectations, i.e. those who indicate a specific year in which they expect the euro to be adopted in their country that is not in line with the framework for euro introduction. Despite considerable variation over time, the share of overly optimistic expectations was lower, for most countries, at the end of the sample period than at the beginning. Among EU member states, overly optimistic expectations are clearly less widespread in countries in which authorities are reluctant or not eager at all to join the euro area in the foreseeable future, while the opposite is true for countries where authorities strive for progress toward euro adoption. The efforts of Croatia and Bulgaria (in the latter case, the renewed efforts) to advance on the road to the euro may have affected uncertainty but have not had any major effects on the share of overly optimistic expectations (some downward movement in Bulgaria, more mixed developments in Croatia). However, such policy efforts likely occasion a better understanding of the institutional framework in the general public and thus, if anything, moderate overly optimistic expectations. In CPCs, the share of overly optimistic expectations is higher than in CESEE EU member states. Presumably, this is mainly due to overly optimistic expectations about EU accession that add to other factors that can be considered to play a role for all ten countries under review here – in particular limitations in knowledge about euro area accession rules, but also uncertainty.

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[15] Detailed results available from the authors upon request.

Chart 3

Overly optimistic expectations: development over time

Share of respondents who expect euro introduction before technically possible, %
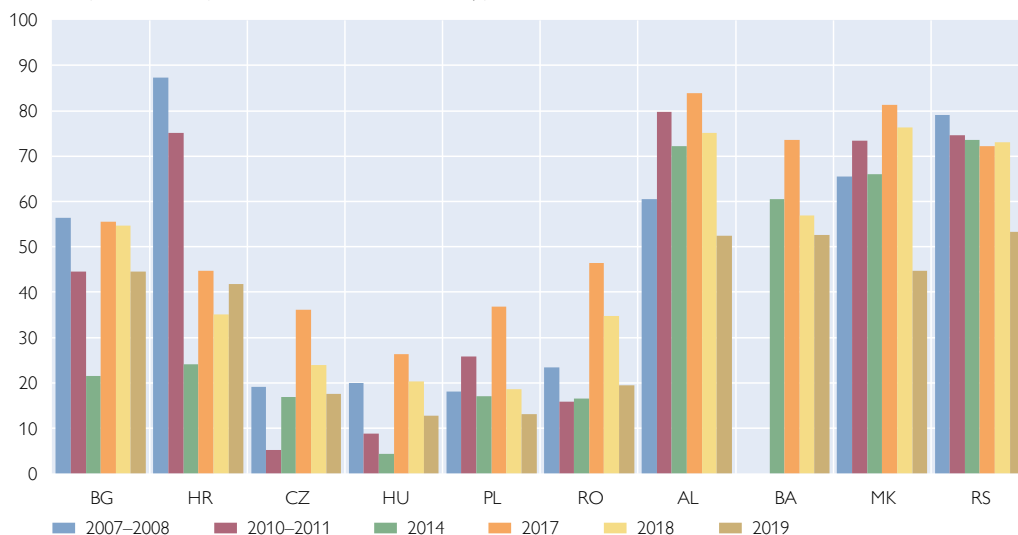
Source: OeNB Euro Survey.

Note: The sample is reduced to respondents who name a year in which they expect the euro to be introduced, i.e. "don't know" and "never" responses
       are dropped.

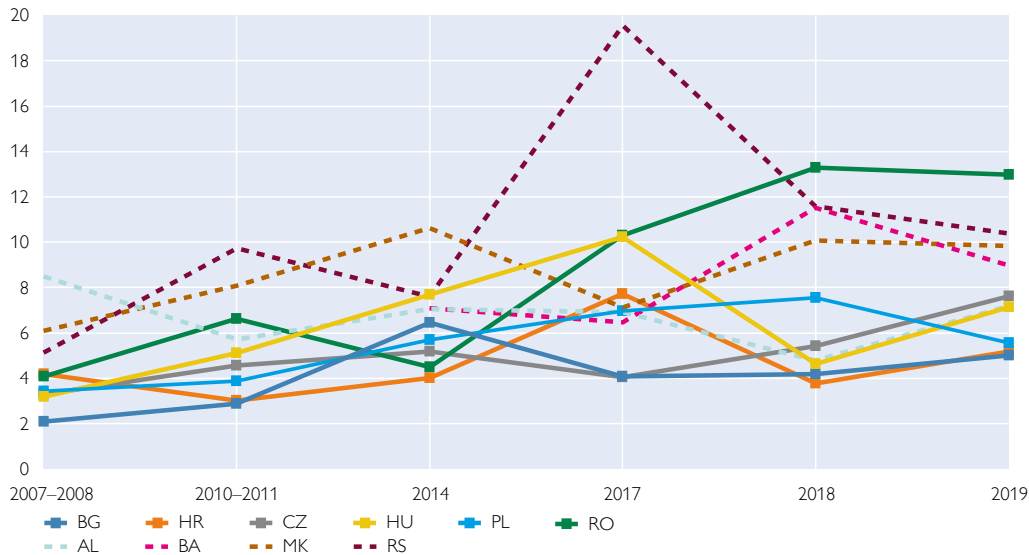## 2.2 Euro adoption expectations and uncertainty

To conclude the descriptive analysis, we zoom in on the issue of uncertainty. Given the multitude of political, economic and institutional factors that can affect euro accession prospects as well as the complex interaction between these factors, uncertainty very likely plays a role in the formation of expectations. As mentioned, for CPCs, uncertainty is aggravated by uncertain EU accession timelines.

Research on expectations, in particular inflation expectations, has recently focused on understanding the role of uncertainty. For example, Ben-David et al. (2018) show that households differ in how uncertain they are in their expectations regarding personal and macroeconomic outcomes, which in turn affects their economic decisions. From a survey perspective, there are different ways to measure uncertainty. Brown and Stix (2015) and Dovern (2020) ask respondents directly to assess their uncertainty in expressing their expectations. An alternative has been to employ probabilistic questions, where respondents are asked to assess the likelihood of inflation or other macroeconomic outcomes falling within specified intervals. These responses are then used to calculate the standard deviation of the expected mean outcome for each individual. The standard deviation is interpreted as a measure of uncertainty, an approach which has, however, also been criticized (see e.g. Krüger and Pavlova, 2020). Finally, some researchers have argued that rounding is an expression of uncertainty (see e.g. Binder, 2017, and Manski and Molinari, 2010): Respondents report one – rounded – value rather than reporting a range. Rounding is certainly also an issue in our context, given that the OeNB Euro Survey asks respondents to indicate specific years rather than intervals or timespans (e.g. "during the first half of the 2020s"), which would seem to correspond more closely to individual expectations in a setting that is characterized by uncertainty.

Chart 4

How uncertain are expectations?

Standard deviation of expected euro introduction in years

Source: OeNB Euro Survey.

Turning now to our dataset on euro adoption expectations, a first clear indication of uncertainty is the high share of "don't know" responses, as documented in charts 1 and 2.
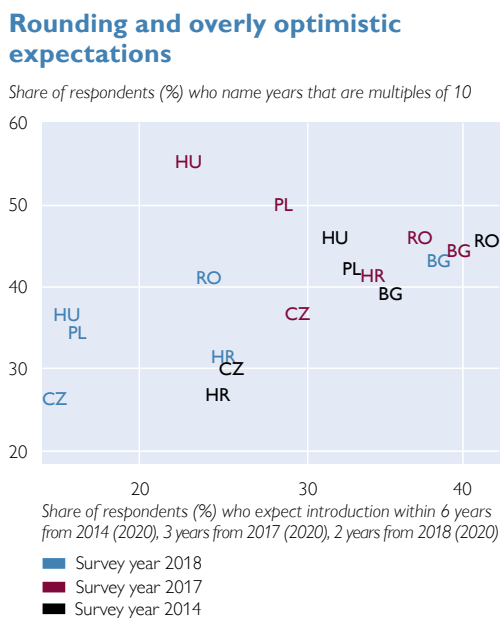
Chart 4 corroborates, based on the development of the standard deviation of the timespan until expected euro introduction, that uncertainty in euro introduction expectations has tended to increase over time.[16]

With regard to the issue of rounding, chart 5 confirms that our data contain substantial shares of answers that refer to years that are multiples of 10 in the six CESEE EU member states.[17] For the three survey waves shown in the chart (but also more generally), the share of answers that are multiples of 10 ranges from 27% to 55%, while if evenly distributed it would be 10%. In chart 5, we juxtapose this share with the share of expectations that the euro will be adopted in 2020 from the vantage point of three different survey waves. By doing so, we illustrate the connection between rounding (i.e. uncertainty) and overly optimistic expectations. This link can be seen neatly when looking at the 2017 survey wave. At the time of that wave, the technically earliest possible year for euro adoption was 2021. We suppose that rounding pushed expectations for 2020 upward (i.e. that some respondents named 2020 as a rounded figure, while they may have actually been thinking of a range extending into the first part of the 2020s). One year later, in the 2018 wave, a number of respondents still expect that the euro will be introduced in their country

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[16] The exceptionally high standard deviation for Serbia in 2017 appears to be due to some outlier answers, i.e. expectations of euro adoption in an extremely distant future. Moreover, after a successful macroeconomic stabilization in the preceding years, the denar started to appreciate nominally vis-à-vis the euro at the turn of 2016/17 and this appreciation process, though overall fairly moderate, continued throughout the year 2017. This constituted a clear break with previous exchange rate developments and could have contributed to the temporary widening of the dispersion of expectations regarding the date of euro adoption.

[17] The same is true (though not shown in detail) for the CPCs. In both country groupings, multiples of 5 are even substantially more frequent.

Chart 5

Rounding and overly optimistic expectations

Share of respondents (%) who name years that are multiples of 10

Share of respondents (%) who expect introduction within 6 years from 2014 (2020), 3 years from 2017 (2020), 2 years from 2018 (2020)

■ Survey year 2018
■ Survey year 2017
■ Survey year 2014

Source: OeNB Euro Survey.

in 2020, apparently thinking of the next year that represents a "round" figure, even though 2020 was already very near at the time of the 2018 wave. Rounding to multiples of 10 would also suggest that "underlying" expectations relate to fairly long intervals that are in themselves an additional indication for uncertainty.

3 Empirical framework and strategy

The purpose of our empirical analysis is to explore how monetary institutions and euroization affect individuals' expectations regarding euro introduction.

The large share of "don't know" answers to the central question of our analysis also poses a challenge for our empirical analysis. One option would be to follow the usual practice and set "don't know" responses to missing, thereby assuming these responses are in fact randomly distributed. However, considering the content of the question, this assumption would not be justified as it would ignore the extent of uncertainty surrounding euro introduction expectations. We therefore opt to include the responses in our analysis as a meaningful separate response option. In addition, the response behavior for the remaining responses shows that respondents tend to round their answers. Therefore, instead of following the prevalent practice of taking numerical responses at face value, we draw on Manski and Molinari (2010) and construct interval data from the survey responses. Based on both of these decisions combined, our dependent variable E for respondent i takes the values:

$$
E_i = \begin{cases}
0 & \text{expect euro introduction before technically possible} \\
1 & \text{expect euro introduction } \leq 10 \text{ years} \\
2 & \text{expect euro introduction } > 10 \text{ years } \leq 20 \text{ years} \\
3 & \text{expect euro introduction } > 20 \text{ years} \\
4 & \text{expect euro never to be introduced} \\
5 & \text{don't know when to expect euro introduction}
\end{cases}
$$

The outcomes are defined as mutually exclusive, i.e. a respondent cannot simultaneously be in categories 0 and 1. If the response of "within 10 years" is overly optimistic, the response will be coded as 0. The resulting dependent variable E_i is a variable where not all response categories can be ordered meaningfully, in particular outcomes 0, 4 and 5. Put differently, the distribution of the dependent variable is multinoulli. In our baseline specification, the probability of answering

0 to 5 is modeled as the multinomial logistic function G of respondents' characteristics, monetary institutions and euroization:

$$Pr(E_i \in \{0,1,2,3,4,5\}) = \mathbf{G}(\mathbf{S}_i\mathbf{M}_i\mathbf{X}_i)$$

where $\mathbf{S_i}$ is a vector of respondent-specific controls, in particular sociodemographic characteristics and $\mathbf{M_i}$ is a vector of respondents' economic expectations and trust in monetary institutions and $\mathbf{X_i}$ controls for respondents' exposure to euroization and euro usage. We define category 3 ("expect euro introduction >20 years") as the reference category, i.e. the probability of answering 0, 1, 2, 4 or 5 is compared to the probability of answering 3.

An alternative to estimating a multinomial logistic model would be to run separate regressions for the determinants (1) of "don't know" and "never" responses and (2) of responses in years regarding expectations. For the first case, we would run logistic regressions, however, imposing a Bernoulli distribution on the dependent variable. For the second case, we would analyze the subsample of respondents that name a year of expected introduction only, likely introducing selection bias into the analysis. Considering these disadvantages, the main results are based on multinomial logit models; in robustness checks we also run separate logit and ordered logit models.

The control variables $\mathbf{S_i}$ are informed by empirical results from the expectations literature and consist of gender, age, education and income (see e.g. Bryan and Ventaku, 2001a and 2001b; Easaw et al., 2013).[18] In analyzing the role of monetary institutions for expectations, we follow Mellina and Schmidt (2018) and Christelis et al. (2020) and control for trust in the central bank.[19] In addition, we control for trust in the stability of the local currency and in the stability of the euro. In an alternative specification, we analyze how expectations regarding inflation and the exchange rate are correlated with E_i.

A recent body of research argues that humans cannot absorb all information and choose which information to attend to. Usually, people devote more attention to issues with which they are confronted more directly or more frequently and, as a consequence, they form clearer – though not necessarily more realistic – expectations on related matters. Against this background, we also control for respondents' exposure to the euro. In particular, we include proxies for the extent of euroization in respondents' immediate environment. We also analyze whether expectations are correlated with respondents' financial choices, namely whether the respondent has a deposit or loan denominated in foreign currency. We further analyze whether respondents' exposure to the euro affects formation of expectations by analyzing the role of foreign currency income and remittances and controlling for proximity to the euro area.

As not all control variables are available in all waves, we reduce the sample to those waves where we have a consistent set of controls, namely: 2014, 2017, 2018 and 2019. All specifications include country and wave fixed effects. Standard errors are

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[18] *In contrast to the research on inflation expectations, we find that employment status, marital status and household composition do not affect euro introduction expectations. Therefore, our baseline specification does not control for these characteristics. Results are reported in table A2 in the annex.*

[19] *We acknowledge that in contrast to, e.g., inflation expectations, expectations regarding accession to the euro area are likely influenced by communication both of national central banks and national governments. We find that trust in the government does not have a significant effect on expectations regarding euro introduction.*

clustered at the country-wave level. We estimate multinomial logit models. To facilitate interpretation of our results, we calculate average marginal effects and analyze some of the effects in more detail by calculating marginal effects at representative values. The categories of the dependent variable are defined by economic rationale; we check this definition and whether dependent categories could be combined by conducting Wald tests for combining dependent categories.

4 Determinants of euro introduction expectations

In this section, we concentrate on presenting results regarding determinants of euro introduction expectations that relate to institutional aspects – in line with the focus of this paper. All estimations shown here also include key sociodemographic determinants (see table A2 in the annex for results).

How does exposure to aspects of euroization affect people's euro adoption expectations? That exposure indeed does have an impact is shown in table 2 (based on two alternative models[20]): Those who consider that holding euro cash is common and those that have foreign currency deposits are more likely to expect an early (overly optimistic) or relatively early (within a decade) euro introduction compared to those that do not. At the same time individuals displaying these euroization-related characteristics are less likely to give "don't know" answers (i.e. they are in a better position to form expectations). The latter is also true for individuals who receive remittances. Those who have a regular income in euro are also more likely to expect a relatively early euro adoption and less likely to answer "don't know" (the latter is only weakly statistically significant). The only euroization-related characteristic that reduces the likelihood of "never" answers is the perception that it is common to have foreign currency deposits. Of course, we do not interpret these results as causal effects as some of the control variables may well be endogenous, i.e. respondents may choose to hold foreign currency deposits or loans because they expect accession to the euro area in the near future.

The significance and direction of effects remains the same if we re-estimate table 2 using alternative reference categories. For all combinations of outcome categories, having a foreign currency loan has no statistically significant effect on expectations. Both model 1 and 2 also control for how far from the euro area the respondents live. We find that distance has an extremely heterogeneous effect across countries, very likely related to cross-border commuting in some countries and urbanicity in others.[21]

Looking at EU member states and CPCs separately yields further insights.[22] We do so by (1) including a dummy variable for CPCs in the model and (2) by splitting the sample into EU member states and CPCs. As regards significance, the main differences between the two country groupings relate to three respondent

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[20] We control for the determinants listed in model 1 and model 2 consecutively. Both models control for sociodemographic determinants and country and wave fixed effects.

[21] In the interest of brevity, and as this is a factor not affected by policy measures, we do not present detailed results by country.

[22] Results available upon request from the authors.

Table 2

How significant is exposure to euroization and the euro area for expectations?

	Respondents expect euro introduction…					
Dependent variable outcome category	Before theoretically possible	Within 10 years	Within 20 years	In more than 20 years	Never	Don't know
Model 1						
common to hold euro cash	0.022***	0.019***	−0.003	−0.006*	−0.005	−0.027***
	(0.008)	(0.007)	(0.005)	(0.003)	(0.008)	(0.008)
common to have foreign currency deposits	0.021**	0.001	0.008*	0.001	−0.035***	0.004
	(0.009)	(0.006)	(0.005)	(0.003)	(0.011)	(0.009)
has foreign currency deposits	0.036**	0.035***	0.012	0.000	−0.029**	−0.055***
	(0.018)	(0.007)	(0.014)	(0.006)	(0.014)	(0.012)
has local currency deposits	0.01	0.022***	0.017***	0.000	−0.026***	−0.024*
	(0.013)	(0.006)	(0.006)	(0.007)	(0.009)	(0.013)
has local currency loan	0.005	0.011*	−0.003	−0.001	−0.012	−0.001
	(0.008)	(0.007)	(0.005)	(0.003)	(0.009)	(0.009)
has foreign currency loan	−0.004	−0.009	0.011	0.007	0.009	−0.013
	(0.010)	(0.007)	(0.007)	(0.005)	(0.011)	(0.011)
N	32,575	32,575	32,575	32,575	32,575	32,575
Log-L	−45,810	−45,810	−45,810	−45,810	−45,810	−45,810
country and wave fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
further control variables	Yes	Yes	Yes	Yes	Yes	Yes
Model 2						
receives remittances	−0.003	0.011*	0.009*	0.008**	−0.002	−0.024**
	(0.013)	(0.006)	(0.005)	(0.004)	(0.014)	(0.010)
regular income in euro	0.016	0.022**	0.006	−0.005	−0.007	−0.032*
	(0.012)	(0.009)	(0.007)	(0.005)	(0.013)	(0.017)
N	39,880	39,880	39,880	39,880	39,880	39,880
Log-L	−54,862	−54,862	−54,862	−54,862	−54,862	−54,862
country and wave fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
further control variables	Yes	Yes	Yes	Yes	Yes	Yes
Model 3						
common to hold euro cash	0.022***	0.019***	−0.003	−0.006*	−0.005	−0.028***
	(0.008)	(0.007)	(0.005)	(0.003)	(0.008)	(0.008)
common to have foreign currency deposits	0.022**	0.001	0.008*	0.000	−0.035***	0.004
	(0.009)	(0.006)	(0.005)	(0.003)	(0.011)	(0.009)
has foreign currency deposits	0.038**	0.032***	0.011	0.000	−0.028*	−0.053***
	(0.018)	(0.007)	(0.014)	(0.005)	(0.014)	(0.012)
has local currency deposits	0.011	0.022***	0.016***	−0.001	−0.026***	−0.023*
	(0.013)	(0.006)	(0.006)	(0.006)	(0.009)	(0.013)
has local currency loan	0.005	0.011*	−0.003	−0.001	−0.012	−0.001
	(0.008)	(0.007)	(0.005)	(0.003)	(0.009)	(0.009)
has foreign currency loan	−0.004	−0.009	0.011	0.007	0.009	−0.013
	(0.010)	(0.007)	(0.007)	(0.005)	(0.011)	(0.011)
receives remittances	−0.01	0.009	0.007	0.009**	0.001	−0.016*
	(0.014)	(0.006)	(0.006)	(0.004)	(0.016)	(0.009)
regular income in euro	0.004	0.016	0.004	−0.005	−0.006	−0.013
	(0.014)	(0.011)	(0.008)	(0.006)	(0.014)	(0.020)
N	32,571	32,571	32,571	32,571	32,571	32,571
Log-L	−45,781	−45,781	−45,781	−45,781	−45,781	−45,781
country and wave fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
sociodemographic control variables	Yes	Yes	Yes	Yes	Yes	Yes

Source: OeNB Euro Survey (2014–2019). Authors' calculations.

Note: Multinomial logit results, average marginal effects reported. Further sociodemographic controls are included but not reported. Standard errors, in parentheses, are clustered at the country-wave level. The Wald test for combining dependent categories is significant for all outcomes of the dependent variable at the 1% level.

characteristics: (1) *perception that it is common to hold euro cash*: while individuals in CESEE EU member states who have this perception are more likely to expect relatively early euro adoption, this is not the case for people in CPCs; (2) those who state that they have *no deposits* are more likely to expect late euro adoption if they are CESEE EU citizens; this is not so for respondents in CPCs; and (3) *receives remittances*: individuals in CESEE EU member states to whom this characteristic applies are more likely to expect early or relatively early euro adoption; this is not the case for people in CPCs. Moreover, there are notable differences in the size of some significant effects. For example, having foreign currency deposits correlates with expectations much more strongly in CESEE EU member states than in CPCs.

Moving on to the second subset of determinants that we are interested in in this paper: Which role does trust in institutions and monetary expectations play in shaping euro adoption expectations? Our results are displayed in table 3, with model 1 focusing on trust and model 2 on monetary expectations.

Table 3 shows that those who trust in the euro, in the EU and in their national central bank are more likely to expect an early or relatively early euro adoption, while at the same time they are less likely to think that their country will never join the euro area. Trust in the local currency increases the likelihood of medium- to longer-term euro adoption expectations but has no impact on the likelihood of "never" answers. Those who expect inflation or depreciation of the local currency tend to be more likely to have somewhat more negative euro adoption expectations than those who do not.

Again, we look at the subsamples of CESEE EU members states and CPCs to examine possible heterogeneities among these two sets of economies.[23] Two main points stand out: Regarding the size of the effects, trust in institutions has a larger impact in CPCs than it has in CESEE EU member states. As for significance, depreciation expectations have somewhat varying effects in CESEE EU members states as compared to CPCs, while expectations of inflation imply a higher likelihood that respondents expect a later euro adoption in CPCs than this is the case in CESEE EU member states.

We conduct several robustness checks. First, we rerun regressions including all control variables in models 1 and 2 of tables 2 and 3 jointly to examine issues of multicollinearity among other issues. Results do not change significantly and are shown in the annex (tables A3 and A4). Second, taking into account that our sample includes a very diverse set of countries we rerun regressions dropping one country at a time to ensure results are not driven by a single country. We do not find evidence that this is the case. In further robustness analyses, following research by Malmendier and Nagel (2016), who show that experience of economic crises has long-lasting effects on expectations, and Goldfayn-Frank and Wohlfart (2020), who show that Germans who lived in the German Democratic Republic hold different inflation expectations than Germans who did not, we analyze whether experience of economic turbulence during transition affects expectations. We do not find that memories of hyperinflation or memories of banking crises have a significant effect on expectations of euro area accession.

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[23] *Results available upon request from the authors.*

Table 3

How significant are monetary expectations and trust in institutions for expectations?

Dependent variable outcome category	Respondents expect euro introduction…					
	Before theoret-ically possible	Within 10 years	Within 20 years	In more than 20 years	Never	Don't know
Model 1						
LC future stable	−0.002	0.017**	0.012**	−0.002	−0.013	−0.011
	(0.008)	(0.007)	(0.005)	(0.003)	(0.011)	(0.007)
EUR future stable	0.025***	0.026***	−0.006	−0.003	−0.049***	0.007
	(0.009)	(0.007)	(0.005)	(0.004)	(0.010)	(0.009)
trust in central bank	0.033***	0.024***	−0.001	−0.010***	−0.039***	−0.007
	(0.010)	(0.008)	(0.006)	(0.003)	(0.009)	(0.010)
trust in EU	0.049***	0.027***	0.001	−0.004	−0.074***	0.000
	(0.010)	(0.006)	(0.005)	(0.004)	(0.008)	(0.008)
N	31,875	31,875	31,875	31,875	31,875	31,875
Log-L	−44,534	−44,534	−44,534	−44,534	−44,534	−44,534
country and wave fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
further control variables	Yes	Yes	Yes	Yes	Yes	Yes
Model 2						
expect depreciation	0.011	−0.017***	−0.009*	0.002	0.027***	−0.014*
	(0.009)	(0.006)	(0.005)	(0.002)	(0.009)	(0.008)
expect inflation	−0.023**	−0.009*	0.008	0.008***	0.020**	−0.003
	(0.011)	(0.005)	(0.005)	(0.003)	(0.009)	(0.008)
N	33,636	33,636	33,636	33,636	33,636	33,636
Log-L	−47,418	−47,418	−47,418	−47,418	−47,418	−47,418
country and wave fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
further control variables	Yes	Yes	Yes	Yes	Yes	Yes
Model 3						
LC future stable	0.001	0.018***	0.013**	−0.001	−0.01	−0.020***
	(0.008)	(0.007)	(0.005)	(0.003)	(0.010)	(0.007)
EUR future stable	0.029***	0.022***	−0.007	−0.004	−0.050***	0.01
	(0.009)	(0.007)	(0.005)	(0.004)	(0.010)	(0.009)
trust in central bank	0.037***	0.024***	−0.001	−0.010***	−0.040***	−0.01
	(0.010)	(0.008)	(0.006)	(0.003)	(0.009)	(0.010)
trust in EU	0.049***	0.028***	0.001	−0.004	−0.076***	0.001
	(0.010)	(0.006)	(0.005)	(0.004)	(0.009)	(0.008)
expect depreciation	0.022**	−0.005	−0.006	−0.001	0.009	−0.018**
	(0.008)	(0.006)	(0.005)	(0.003)	(0.009)	(0.009)
expect inflation	−0.022*	−0.006	0.009*	0.009***	0.018*	−0.006
	(0.013)	(0.005)	(0.005)	(0.003)	(0.010)	(0.008)
N	29,010	29,010	29,010	29,010	29,010	29,010
Log-L	−40,786	−40,786	−40,786	−40,786	−40,786	−40,786
country and wave fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
sociodemographic control variables	Yes	Yes	Yes	Yes	Yes	Yes

Source: OeNB Euro Survey (2014–2019). Authors' calculations.

Note: Multinomial logit results, average marginal effects reported. Further sociodemographic controls are included but not reported. Standard errors, in parentheses, are clustered at the country-wave level. The Wald test for combining dependent categories is significant for all outcomes of the dependent variable at the 1% level.

5 Conclusions

In this paper, we focus on euro adoption expectations expressed by individuals in ten CESEE countries that (still) have retained their national currencies, namely six EU member states – Bulgaria, Croatia, the Czech Republic, Hungary, Poland and Romania – as well as four EU candidates and potential candidates (CPCs) in the Western Balkans – Albania, Bosnia and Herzegovina, North Macedonia and Serbia. For our analysis, we use data from the OeNB Euro Survey ranging from 2007 to 2019.

We first describe the distribution of expectations and show how it has changed during the sample period. We find that, in general, the time horizons until expected euro adoption in the countries under review have tended to lengthen with the passage of time, and uncertainty appears to have played a substantial and, over time, increasing role in the formation of these expectations. More specifically, we also explore rounding behavior as an expression of uncertainty. Rounding behavior is of interest because, together with limitations of knowledge about euro area accession, it relates to the phenomenon of expectations that are not in line with the institutional framework that governs the adoption of the euro (i.e. expectations that the euro could be introduced before the earliest technically feasible point in time).

In the second part of the paper we focus on how (de facto) euroization as well as differences in monetary policy regimes and institutions affect expectations. Based on multinomial logit models, we substantiate that the exposure of individuals to features of de facto euroization has an impact on euro adoption expectations. Exposure to euroization tends to increase the likelihood of more optimistic euro adoption expectations and lowers the likelihood of "don't know" answers. In a similar vein, trust in institutions (national central bank, EU) and in the stability of currencies (euro, local currency) is associated with a higher likelihood of more optimistic euro introduction expectations. Both main results broadly hold – with some heterogeneity – for both CESEE EU member states and CPCs.

In policy terms, we would offer the following takeaways and implications: First, a successful promotion of the use of local currencies (de-euroization strategies, as applied e.g. in Serbia and Albania) could have some effect on euro adoption expectations going forward (e.g. dampen expectations of a swift euro introduction). Second, our results reinforce the notion that trust and stable monetary expectations are key for the formation of euro adoption expectations. Third, improving the knowledge about the framework of euro adoption might help reduce the share of overly optimistic expectations as regards euro adoption. In turn, this might help to improve the quality of financial decisions taken by individuals. Fourth, the same could hold true for policies that reduce uncertainty with respect to future euro adoption, including a clear and time-consistent communication on these issues, as witnessed in recent years in Croatia. At the same time, a note of caution needs to be added here: The large heterogeneity across countries which we document in this study needs to be considered when designing policies. What works in one country, may not necessarily work in another.

Our study has intentionally focused on a rather narrow research question but also points to several possible future avenues of research. Beyond distance to the euro area, are there regional heterogeneities such as local economic development that affect expectations of accession to the euro area? Inspired by research on inflation expectations (e.g. D'Acunto et al., 2019), interesting research questions for the future might also include: What is the role of cognitive abilities and financial literacy

for the formation of euro introduction expectations and how does literacy affect uncertainty? How do individual attitudes and beliefs, including political attitudes as well as personal preferences for introduction affect expectations? The fall 2020 wave of the OeNB Euro Survey will include survey questions designed to address some of these issues. In addition, future research may look at the relationship of changing expectations on households' investment and saving behavior in more detail.

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Annex

Variable definitions

Variable name	Definition
common to hold euro cash	Dummy variable based on the following question: "Please tell me whether you agree with the following statement on a scale from 1 (strongly agree) to 6 (strongly disagree): In [MY COUNTRY] it is very common to hold euro cash." Answers 1 to 3 are coded as 1, else as zero.
common to have foreign currency deposits	Dummy variable based on the following question: "Please tell me whether you agree with the following statement on a scale from 1 (strongly agree) to 6 (strongly disagree): In [MY COUNTRY] it is very common to hold foreign currency deposits." Answers 1 to 3 are coded as 1, else as zero.
has foreign / local currency / no deposits	Dummy variable that takes the value 1 if the respondent has deposits denominated in foreign / local currency or no deposits, else zero. Base category: Respondents who refuse to answer.
has foreign / local currency loan	Dummy variable that takes the value 1 if the respondent has a loan denominated in foreign / local currency, else zero. Base category: Respondents who do not have a loan.
receives remittances	Dummy variable that takes the value 1 if the respondent receives remittances from abroad, else zero.
regular income in euro	Dummy variable that takes the value 1 if the respondent receives regular income in euro, else zero.
LC future stable	Dummy variable based on the following question: "Please tell me whether you agree with the following statement on a scale from 1 (strongly agree) to 6 (strongly disagree): Over the next five years, the [LOCAL CURRENCY] will be very stable and trustworthy." Answers 1 to 3 are coded as 1, else as zero.
EUR future stable	Dummy variable based on the following question: "Please tell me whether you agree with the following statement on a scale from 1 (strongly agree) to 6 (strongly disagree): Over the next five years, the euro will be very stable and trustworthy." Answers 1 to 3 are coded as 1, else as zero.
trust in central bank, trust in EU	Dummy variable based on the following question: "Please tell me how much trust you have in the following institutions: (…) The European Union (…) the national central bank. For each of the institutions, please tell me if you tend to trust it or tend not to trust it. 1 means 'I trust completely,' 2 means 'I somewhat trust,' 3 means 'I neither trust nor distrust,' 4 means 'I somewhat distrust' and 5 means 'I do not trust at all.' " Answers 1 and 2 are coded as 1, else zero.
expect depreciation	Dummy variable based on the following question: "How do you think will the exchange rate of the [LOCAL CURRENCY] against the euro develop over the next five years?" The answer "The local curreny will lose value" is coded as 1, answers "The exchange rate will stay the same" and "The local currency will gain value" are coded as zero.
expect inflation	Dummy variable based on the following question: "Please tell me whether you agree with the following statement on a scale from 1 (strongly agree) to 6 (strongly disagree): Over the next year, prices will strongly increase in [MY COUNTRY]." Answers 1 to 3 are coded as 1, else as zero.

Source: OeNB Euro Survey.

How do sociodemgraphic heterogeneities affect expectations of euro introduction?

Dependent variable outcome category	Respondents expect euro introduction…					
	Before theoretically possible	Within 10 years	Within 20 years	In more than 20 years	Never	Don't know
female	−0.001	−0.015***	−0.017***	−0.004***	−0.017***	0.054***
	(0.004)	(0.004)	(0.003)	(0.002)	(0.004)	(0.006)
age	−0.001***	0.000	0.000	−0.000***	0.001**	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
married	0.014**	−0.004	−0.001	−0.003	−0.014**	0.008
	(0.006)	(0.005)	(0.004)	(0.002)	(0.007)	(0.008)
1 person household	0.011	−0.011*	−0.01	−0.003	−0.015**	0.028***
	(0.009)	(0.007)	(0.007)	(0.004)	(0.007)	(0.010)
3+ person household	0.016***	0.001	−0.002	−0.004	−0.023***	0.011
	(0.006)	(0.003)	(0.004)	(0.003)	(0.006)	(0.007)
education: secondary	0.038**	0.027***	0.006	0.005	−0.007	−0.070***
	(0.015)	(0.007)	(0.006)	(0.004)	(0.008)	(0.012)
education: tertiary	0.060***	0.053***	0.007	0.007	−0.027**	−0.100***
	(0.016)	(0.008)	(0.007)	(0.006)	(0.011)	(0.017)
income: refused answer	−0.053***	−0.026***	−0.023***	−0.009***	0.009	0.102***
	(0.010)	(0.007)	(0.005)	(0.002)	(0.009)	(0.011)
income: medium	0.008	0.020***	0.008*	0.000	−0.011*	−0.025***
	(0.007)	(0.007)	(0.004)	(0.003)	(0.007)	(0.008)
income: high	0.015	0.039***	0.005	0.001	−0.022***	−0.039***
	(0.009)	(0.007)	(0.006)	(0.003)	(0.007)	(0.009)
retired	−0.006	−0.004	−0.004	−0.001	−0.015*	0.030***
	(0.008)	(0.008)	(0.007)	(0.004)	(0.008)	(0.010)
unemployed	0.007	−0.013*	−0.012**	0.001	0.006	0.011
	(0.007)	(0.007)	(0.004)	(0.002)	(0.010)	(0.010)
student	0.023**	0.005	0.009	0.003	−0.043***	0.002
	(0.011)	(0.012)	(0.009)	(0.004)	(0.014)	(0.013)
self-employed	0.004	0.015***	−0.006	0.003	−0.004	−0.012
	(0.013)	(0.005)	(0.007)	(0.003)	(0.009)	(0.013)
N	39,536	39,536	39,536	39,536	39,536	39,536
Log-L	−54,431	−54,431	−54,431	−54,431	−54,431	−54,431
country and wave fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Source: OeNB Euro Survey (2014–2019). Authors' calculations.

Note: Multinomial logit results, average marginal effects reported. Standard errors, in parentheses, are clustered at the country-wave level. The Wald test for combining dependent categories is significant for all outcomes of the dependent variable at the 1% level.

Table A3

Robustness analysis: How significant is exposure to euroization and the euro area for expectations?

	Respondents expect euro introduction...					
Dependent variable outcome category	Before theoret-ically possible	Within 10 years	Within 20 years	In more than 20 years	Never	Don't know
common to hold euro cash	0.022***	0.019***	−0.003	−0.006*	−0.005	−0.028***
	(0.008)	(0.007)	(0.005)	(0.003)	(0.008)	(0.008)
common to have foreign currency deposits	0.022**	0.001	0.008*	0.000	−0.035***	0.004
	(0.009)	(0.006)	(0.005)	(0.003)	(0.011)	(0.009)
has foreign currency deposits	0.038**	0.032***	0.011	0.000	−0.028*	−0.053***
	(0.018)	(0.007)	(0.014)	(0.005)	(0.014)	(0.012)
has local currency deposits	0.011	0.022***	0.016***	−0.001	−0.026***	−0.023*
	(0.013)	(0.006)	(0.006)	(0.006)	(0.009)	(0.013)
has local currency loan	0.005	0.011*	−0.003	−0.001	−0.012	−0.001
	(0.008)	(0.007)	(0.005)	(0.003)	(0.009)	(0.009)
has foreign currency loan	−0.004	−0.009	0.011	0.007	0.009	−0.013
	(0.010)	(0.007)	(0.007)	(0.005)	(0.011)	(0.011)
receives remittances	−0.01	0.009	0.007	0.009**	0.001	−0.016*
	(0.014)	(0.006)	(0.006)	(0.004)	(0.016)	(0.009)
regular income in euro	0.004	0.016	0.004	−0.005	−0.006	−0.013
	(0.014)	(0.011)	(0.008)	(0.006)	(0.014)	(0.020)
EU member state (0/1)	−0.044	0.316***	−0.079***	−0.044***	−0.241***	0.092*
	(0.029)	(0.070)	(0.011)	(0.016)	(0.029)	(0.055)
N	32,571	32,571	32,571	32,571	32,571	32,571
Log-L	−45,781	−45,781	−45,781	−45,781	−45,781	−45,781
country and wave fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
sociodemographic control variables	Yes	Yes	Yes	Yes	Yes	Yes

Source: OeNB Euro Survey (2014–2019). Authors' calculations.

Note: Multinomial logit results, average marginal effects reported. Further sociodemographic controls are included but not reported. Standard errors, in parentheses, are clustered at the country-wave level. The Wald test for combining dependent categories is significant for all outcomes of the dependent variable at the 1% level.

Table A4

Robustness analysis: How significant are monetary expectations and trust in institutions for expectations?

	Respondents expect euro introduction…					
Dependent variable outcome category	Before theoret-ically possible	Within 10 years	Within 20 years	In more than 20 years	Never	Don't know
LC future stable	0.001	0.018***	0.013**	−0.001	−0.01	−0.020***
	(0.008)	(0.007)	(0.005)	(0.003)	(0.010)	(0.007)
EUR future stable	0.029***	0.022***	−0.007	−0.004	−0.050***	0.01
	(0.009)	(0.007)	(0.005)	(0.004)	(0.010)	(0.009)
trust in central bank	0.037***	0.024***	−0.001	−0.010***	−0.040***	−0.01
	(0.010)	(0.008)	(0.006)	(0.003)	(0.009)	(0.010)
trust in EU	0.049***	0.028***	0.001	−0.004	−0.076***	0.001
	(0.010)	(0.006)	(0.005)	(0.004)	(0.009)	(0.008)
expect depreciation	0.022**	−0.005	−0.006	−0.001	0.009	−0.018**
	(0.008)	(0.006)	(0.005)	(0.003)	(0.009)	(0.009)
expect inflation	−0.022*	−0.006	0.009*	0.009***	0.018*	−0.006
	(0.013)	(0.005)	(0.005)	(0.003)	(0.010)	(0.008)
EU member state (0/1)	−0.070**	0.331***	−0.072***	−0.045***	−0.238***	0.095
	(0.029)	(0.069)	(0.012)	(0.015)	(0.028)	(0.058)
N	29,010	29,010	29,010	29,010	29,010	29,010
Log-L	−40,786	−40,786	−40,786	−40,786	−40,786	−40,786
country and wave fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
sociodemographic control variables	Yes	Yes	Yes	Yes	Yes	Yes

Source: OeNB Euro Survey (2014–2019). Authors' calculation.

Note: Multinomial logit results, average marginal effects reported. Further sociodemographic controls are included but not reported. Standard errors, in parentheses, are clustered at the country-wave level. The Wald test for combining dependent categories is significant for all outcomes of the dependent variable at the 1% level.