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GREEN CENTRAL BANK MEASURES AND PUBLIC TRUST – EMPIRICAL EVIDENCE FROM SURVEY DATA

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The views expressed are those of the authors' and do not necessarily reflect the official view of the Central Bank of Hungary (Magyar Nemzeti Bank).
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Green Central Bank Measures and Public Trust – Empirical Evidence from Survey Data
(Zöld jegybanki intézkedések és lakossági bizalom – Empirikus eredmények kérdőíves adatok alapján)
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Abstract

Central banks can play a key role in the change in finance needed for the green transition, but green central bank measures may also have an impact on the general public's trust in the institution. Trust, in turn, is crucial for central banks to successfully conduct monetary policy. The objective of our study is to examine how this trust may change in response to green central bank measures in Hungary, using an independently conducted survey of 1,000 adults. Our results indicate that there is potential for some increase and a limited risk of a decrease in trust as a result of green measures. Although most respondents indicated that their trust in the central bank would not change if it took pro-environmental measures, over one third of respondents thought their trust would increase (37 per cent), while the share of those indicating a decline in trust was low (6 per cent). The majority supports the active involvement of the Central Bank of Hungary in the fight against climate change, but only as long as this does not pose risks to the inflation target and the stability of the banking system. We also find that Hungarians tend to worry about climate change and, accordingly, they consider the central bank's role in environmental sustainability important, but have little knowledge about the tasks of central banks.

Journal of Economic Literature (JEL) codes: E58, E61, Q54

Keywords: green transition, public confidence, central bank, monetary policy

Kivonat

A zöld átmenethez szükséges pénzügyi átalakulásban a jegybankok kulcsszerepet játszhatnak, a zöld jegybanki intézkedések pedig hatással lehetnek az intézménybe vetett társadalmi bizalomra is. A bizalom kulcsfontosságú tényező a központi bankok számára a monetáris politika sikeres megvalósításában. Tanulmányunk célja annak vizsgálata, hogy egy 1000 fő bevonásával készült, kérdőíves felmérés alapján hogyan változhat a jegybankba vetett bizalom a zöld intézkedések hatására. Eredményeink azt mutatják, hogy a zöld intézkedések növelhetik a jegybankba vetett bizalomat, míg a bizalom csökkenésének kockázata korlátozott. Bár a többség esetében a jegybankba vetett bizalom nem változna, ha az intézmény környezetbarát intézkedéseket tenne, a válaszadók több mint egyharmada gondolta úgy, hogy a bizalma emelkedne (37 százalék), míg azok aránya, akik bizalma csökkenne, alacsony volt (6 százalék). A többség támogatja a Magyar Nemzeti Bank aktív részvételét az éghajlatváltozás elleni küzdelemben, azonban csak addig, amíg az nem veszélyezteti az inflációs célt és a pénzügyi rendszer stabilitását. A felmérés eredményei továbbá arra is rávilágítanak, hogy a hazai társadalom aggódik a klímaváltozás jelensége miatt, a válaszadók a jegybank környezeti fenntarthatósággal kapcsolatos szerepét fontosnak gondolják, azonban nem rendelkeznek mély tudással a jegybank feladatait illetően.

Journal of Economic Literature (JEL) kódok: E58, E61, Q54

Kulcsszavak: zöld átmenet, lakossági bizalom, központi bank, monetáris politika

1 Introduction

The confidence of economic actors, businesses and households in the central bank is essential for the monetary authority to achieve its objectives through efficient implementation of monetary policy. In economic terms, this trust can be described in a principal-agent relationship, where the economic actors (citizens) as the principal, believe that the central bank, as an agent acting in their interest, will achieve its declared goal (Ehrmann et al., 2013).

Central banks' objectives are set out in central bank laws. Price stability and financial stability are typically areas within central banks' mandates, and these may be complemented by other objectives. In accordance with the principle of independence, within the limits set by their mandates, central banks have the autonomy to decide what measures they take to achieve their objectives and what specific operational targets they set. One particularly topical aspect of this issue is the various measures of central banks that aim to promote and incorporate environmental sustainability in policy actions.

There is no consensus on the desired level of green central banking activity, but there is growing evidence that a new consensus is forming (Kolozsi et al., 2022). According to the emerging new "norm", central banks cannot ignore climate change because of its direct impact on inflation and financial stability (Schnabel, 2021), furthermore as per Kyriakopoulou (2021) climate change is a "macro-critical" event and therefore central banks have a "duty" to actively support the green transition.

One of the key concerns for central banks' climate policy is how it affects trust in the central bank. If the credibility of the central bank, and thus the achievement of its primary objectives, is compromised by such policy actions, then taking such climate actions may prove troublesome from a legal perspective. The effect of green central bank activity on trust in the institution is not evident. On the one hand, an increase in the number of central bank goals may reduce trust, while on the other hand, attention to issues that are also relevant to central bank objectives, such as environmental sustainability and climate change, may improve trust (Kolozsi and Banai, 2023). In this paper, we present empirical research conducted by the Central Bank of Hungary (the Magyar Nemzeti Bank, hereinafter MNB), and the MNB Institute of John von Neumann University on the impact of the central bank's green monetary policy on the public's trust in the central bank. After reviewing and introducing the relevant literature, we present the results of a public opinion survey conducted at the request of the MNB. To the best of our knowledge, the survey which we present is the first that examines the public perception of green central bank activities in such detail. Our aim was to investigate the changes in public confidence in the broader context of the central bank's green measures and the public's attitudes towards climate change and thus to find out how these measures may affect public confidence in the institution. It goes beyond the scope of this paper to provide a comprehensive analysis of the overall level of trust in the central bank. We thus kept our focus on changes in trust instead of the level of trust. Furthermore, this paper does not intend to thoroughly address the question of what might explain the change in confidence or what other factors are associated with the impact of green measures on confidence, as it is the subject of separate research (see Baranyai et al., 2024).

The structure of our study is as follows. Section 2 reviews the relevant literature. Section 3 describes the survey methodology, followed by a presentation of the results in Section 4. Section 5 concludes.

¹ For example, the Federal Reserve, which acts as the central bank of the United States, has a dual mandate, aiming for full employment in addition to price stability. Globally, central banks may have additional objectives, such as supporting economic growth, governmental economic policies or ensuring the stability of the payments system. For more on the background of various central bank targeting regimes, see *Hoffmann and Kolozsi* (2017).

2 Literature review

A well-functioning financial system is built on trust, and trust in the institutions at the heart of the system is a key element.

Studies examining trust in national institutions have discussed the trust-building process in detail (see overview in Mischler and Rose, 2001), presenting competing theories. Cultural theories emphasise the importance of social relations in early years: initially with close family members then gradually expanding to a wider circle. Interpersonal trust is thus key and spills over into trust in institutions. Institutional theories, in contrast, treat trust as endogenous, a rational response to the (perceived) performance of institutions. A further dimension is the distinction between micro and macro theories. The former emphasise that trust varies among individuals based on socio-economic background, personal characteristics, and experience, whereas macro theories highlight the collective similarities within a group.

Building on this theoretical basis, there is a large body of research studying the factors that can be associated with trust in a central bank (Wälti, 2012; Ehrmann et al., 2013; Bursian and Fürth, 2015; Horvath and Katuscakova, 2016; Hayo and Neuenkirch, 2014; Brouwer and de Haan, 2022). One important factor is knowledge about what central banks do (Mellina and Schmidt, 2018). Some studies differentiate between objective and subjective knowledge (what people know about the central bank versus how much they think they know) with the former appearing more important in the trust-building process (Hayo and Neuenkirch, 2014; Mellina and Schmidt, 2018). This body of research builds on Blinder and Krueger's (2004) seminal work on the general public's knowledge about economic issues in the USA.

There are a number of reasons why maintaining trust in central banks is crucial. A well-functioning monetary system requires trust that the central bank will maintain price stability and financial stability (Borio, 2019), which are thus the most important functions of central banks around the world. At the same time, the confidence of economic agents in the central bank also plays an important role in achieving price stability. The theoretical foundation for the key role of confidence in pursuing efficient monetary policy and achieving price stability was first presented by Barro and Gordon (1983), who argue that if the central bank's credibility, i.e. its commitment to its inflation target, is questioned, inflation expectations rise. And since inflation expectations can have a significant impact on actual inflation, the lack of credibility of the central bank inevitably makes it more difficult to achieve its main objective of price stability. Accordingly, as empirical evidence presented by Christelis et al. (2020) confirms, if the level of confidence in the central bank is higher, inflation expectations become lower, and this may contribute to achieving and maintaining price stability.

Confidence in the institution is essential not only for the fulfilment of the central bank's objectives, but also for preserving its independence. Fischer and Hahn (2008) argue that the erosion of public trust in the central bank first leads to limited functionality – difficulties in meeting objectives – that may lead to a loss of political support for the institution, ultimately jeopardising the independence of the central bank itself. In addition, a loss of trust in the central bank may make the institution weaker, and hence vulnerable to political pressure (Ehrmann and Fratzscher, 2011). Moreover, public trust in the broader sense also plays a role in the functioning of the central bank, given that not only the trust in the central bank itself is necessary for its institutional independence, but also a high level of general public trust. According to Berggren et al. (2014), it is this high level of public trust that creates the environment in which it is possible for the central bank to operate independently.

For the central bank, trust is not only directly important for the purpose of fulfilling its mandate. As a major public institution, the credibility of the central bank can also bring additional benefits if it serves as an example for other public institutions and market participants (Ehrmann et al., 2013). Consequently, the activities of the central bank that strengthen confidence are particularly important.

According to conventional economics, tackling climate change is primarily a fiscal policy issue, and is therefore the responsibility of elected governments. According to this view, which was relatively widely shared, the central bank focuses exclusively on price stability (Volz, 2017). Since the central bank is primarily responsible for smoothing economic cycles,

it must remain neutral with regard to the allocation mechanism between economic agents, and it is not responsible for restructuring the economy. As shown in Brunnermeier and Landau (2020), central banks can overstep their mandates by changing their instruments in an attempt to influence resource allocation or to channel loans in a particular direction. The Great Recession led to a change in the role of central banks worldwide, equipping them with an increasing range of responsibilities and set of instruments. Partly as a result of this increased engagement and wider set of instruments, the question of whether central banks should play a role in the fight against climate change has become a central issue in today's monetary policy. For example, Boneva et al. (2021) argue, that while stopping climate change is first and foremost the responsibility of governments and they have the most appropriate means at their disposal, central banks should also take action against climate change within the limits of their mandates. Annicchiarico et al. (2024) point out that, regardless of adopting targeted measures to support the green transition, central banks can contribute to fighting climate change by acting within the boundaries of their traditional mandates. By implementing successful stabilisation policies, central banks can reduce the uncertainty surrounding carbon pricing policies, ensuring better conditions for successful climate actions.

According to Volz (2017), there are three main arguments in favour of central bank involvement in the fight against climate change. First, central banks are the guardians of financial stability, and climate change leads to increasing risks to financial stability, given the significant weight of climate-exposed assets on financial institutions' balance sheets. Second, the market failure regarding the harmful side effects of economic activities on the environment – namely, that the failure of credit markets to price the externalities of carbon-intensive, polluting activities – makes credit allocation sub-optimal from a social perspective. Third, the fact that central banks, especially in developing and emerging countries, are often one of the most advanced and significant public institutions with the ability to effectively influence investment decisions, may also be an important point to consider. Central banks can also provide best practices to financial institutions, in part through their activities that serve as an example as mentioned above. However, Volz (2017) claims that central banks may face difficulties if they try to achieve too many objectives at once with relatively too few instruments.

Brunnermeier and Landau (2020) also point out that central banks may come under criticism for arbitrarily setting themselves secondary objectives. If, however, they look to elected bodies for guidance concerning their objectives, their independence may be called into question. According to Volz (2017), regarding adding too many institutional goals to central banks, it may be dangerous to give too much power to an unaccountable institution. On the other hand, Ferrari and Landi (2020) argue that central banks, as independent institutions, may be better placed to act against climate change than governments, which are more exposed to short-term political pressures. One approach to green central bank activity consistent with central bank mandates is for central banks to focus on achieving and maintaining price stability while continuously looking for opportunities to promote the green transition of the economy (Kolozsi et al., 2022). Thus, monetary policy can uphold its credibility by committing to the priority of the inflation target, but it can also support the fight against climate change.

Central banks opting to take action on climate change can also decide on the extent. Climate risk mitigation may focus on the central bank's own balance sheet or go beyond this, by supporting the transition to a carbon-neutral economy. Central banks can implement their green measures through a variety of instruments, such as credit operations, asset purchases or even changes to the collateral management system.² The majority of central banks' climate change mitigation measures can be effected by providing incentives to the financial system. The financial system, through the allocation of capital, can play an important role in the transition to a carbon-neutral economy (see Carney, 2021). The importance of the role of the financial system is underscored by a growing body of empirical evidence (De Haas, 2023), insofar as adequate access to capital through bank credit can support firms in investing in cleaner production technologies and reducing emissions.

To the best of our knowledge, no survey has previously been published which examines the change in public trust in a central bank as a result of its green measures in such detail. However, several surveys have been carried out on trust in central banks, as well as knowledge about the institutions and attitudes towards green finance, which can be compared to the results of the present research. Using data from a Eurobarometer survey, Ehrmann et al. (2013) concluded that a higher degree of knowledge about the central bank (in their research, the ECB) is associated with more trust in the institution. 85 per cent of the respondents to the Eurobarometer survey claimed to have heard of the ECB. Adding to

² The potential instruments and practices of central banks to combat climate change are described in detail in a study by the Network for Greening the Financial System (2021).

this conclusion, the authors found that in times of crisis, knowledge of the central bank is an even stronger explanatory factor for the level of trust in it.

Based on the survey "Meinungs- und Imagestudie der Deutschen Bundesbank" conducted in 2016 and 2017, Mellina and Schmidt (2018) found that, although a majority of respondents consider their knowledge about the ECB and the Bundesbank to be "good" or "very good", only 20 per cent of the respondents mentioned price stability as an objective of the two institutions in response to an open-ended question. This highlights the difference between objective and subjective knowledge discussed above. Dräger and Nghiem (2023) used a randomised experimental method to investigate the impact of German households' understanding of inflation on inflation expectations and confidence in the ECB. According to their survey, only one third of respondents knew that the central bank's primary goal was price stability. The survey analysed by Mellina and Schmidt (2018) also showed that being familiar with the institutions (the Bundesbank and the ECB) correlated with the level of trust in them.

The results of Dräger and Nghiem (2023) show that provision of basic information on inflation increased confidence in the central bank, but this effect was only short-lived. Their experimental method yielded contradictory results as to how factoring climate change into central banking affects confidence. Their results suggest that explaining the ECB's commitment to consider the impact of climate change on financial stability – in addition to passing on basic information about inflation and the central bank – did not increase confidence in the institution in the survey conducted at the time but did so in the questionnaire repeated after three months.

Breitenfellner and Kariem (2023) analysed a demographically representative survey of 1,431 respondents on the Austrian National Bank (OeNB) with the aim to describe the attitudes of the Austrian population towards green finance. According to their survey, around one half of the Austrian population believe that they will be financially worse off in the coming years because of climate change. 66 per cent of the respondents felt that the financial system in particular had a responsibility in effecting the transition to a carbon-neutral economy.

The paper of Kolozsi and Banai (Kolozsi and Banai, 2023) can be considered the first, theoretical element in the work which this study continues. The authors start from the premise that the transition to an environmentally sustainable economy is not possible without the transformation of the financial system, and that central banks have a major role to play in managing the transition. However, it is not clear exactly what role central banks will play in the fight against climate change, and one key aspect in this regard could be the evolution of trust in central banks. Knowing what the public thinks about a central bank taking green steps is important because it enables a central bank to carefully manage its green direction without eroding trust, possibly even raising trust in the institution. One of the key questions for green central banking will be whether it succeeds in strengthening trust in the central bank, thus making central bank policy more effective. Accepting that, by their very nature, some green actions may enhance confidence while others may reduce it, central bank policymakers may have greater discretionary responsibility, as individual central banks must determine their green activity and take the optimal steps in the light of the impact on confidence.

The underlying survey data presented in this study is also used by Baranyai et al. (2024). The authors investigate how green measures affect trust in the MNB and the factors associated with this effect. The authors find that even in an environment of high inflation, there is potential for some increase in trust and a limited risk of decrease. They find that green variables are more important in explaining variance than those associated with the economy or institutions. A higher level of climate worry, seeing environmental protection as important, being a woman and being a student are associated with an expectation that trust will increase following the central bank's pro-environmental measures.

3 Methodology

We source public opinion data from a survey of 1,000 Hungarian residents 18 years and older, conducted in person between 16 March and 23 April 2023.³ The survey was conducted by IPSOS on behalf of the MNB. The survey uses a stratified random sampling method in which 21 strata were defined based on the 7 NUTS2⁴ regions in Hungary and the type of settlement (village, town, town with county rank, capital). Within each stratum a settlement was randomly chosen.⁵ As a next step, residents of the settlement were randomly chosen using data from the Interior Ministry's personal data and address register. The sample size in each stratum is proportional to the size of the stratum within the Hungarian population. There were 5 alternative addresses designated for each main address such that the age group and the gender of the potential respondent at the alternative addresses were identical to those of the potential respondent at the main address. This process is to ensure the representativeness of the sample when dealing with missing data (e.g., individual at main address does not participate).

The survey data from IPSOS we present incorporates weights for observations calibrated to ensure that the data are representative across variables of gender, age, type of settlement and highest level of education.⁶ At the time of the calibration the most recent census data were from 2011. Weights were gained through iterative proportional fitting using two-way cross-classifications for each pair of the four variables (6 pairs in total).

At the time of our data collection inflation peaked at 24–25 per cent. This context is important given the positive association seen in the literature between environmental concerns, on the one hand, and economic growth and employment, on the other (Franzen and Vogl, 2013; Gelissen, 2007).

Prior to the survey, three qualitative focus group surveys were carried out to ensure that the questions were understandable and that the questions were structured appropriately. Participants were split across the three focus groups based on their education level with eight participants in each. Participants in all three groups (unlike some respondents in the quantitative survey) had no background in economics or finance.

The quantitative survey contained a total of 46 questions, grouped into three main themes. In the first part, we explored general perceptions of climate change, such as the level of climate awareness and the perceived capacity of private and public institutions to act on it. In the second part, questions were posed to assess the level of economic knowledge and financial literacy, followed by questions about the understanding of the central bank's role and green finance in particular. In the last block, questions on the perception of green central bank measures were asked in the light of the above. The survey questions we present are closed-end and the list of possible answers are often based on a Likert scale. In this paper we examine only a selected part of the survey questions.

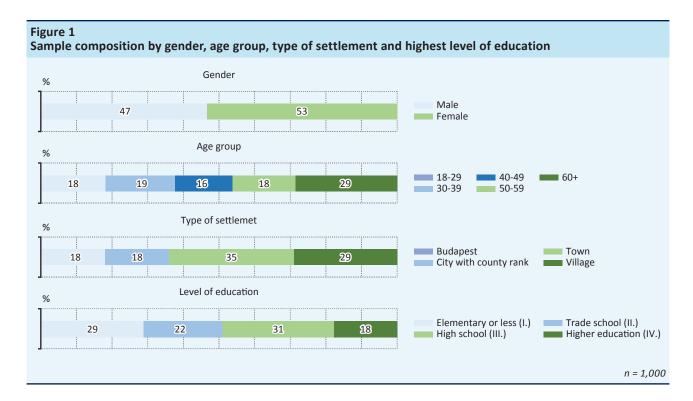
The main research question of this paper is the overall impact of green measures taken by the central bank on public confidence in the institution. We also looked at what characteristics might comove with attitudes towards green central bank measures, in other words, which groups appear more supportive of or opposed to the green direction in central banking. Our research questions were examined using questionnaire survey data.

³ The data used in the survey are also used by Baranyai et al. (2024).

⁴ Nomenclature of territorial units for statistics as defined by Eurostat.

⁵ In rare cases IPSOS needed to take into account if network of qualitative interviewers was not available in a settlement.

⁶ Categories are as follows. Gender: male and female. Age: 18-29;30-39;40-49;50-59; above 60. Type of settlement: village, town, city with county rank, capital (Budapest). Education: Elementary or less (I.), trade school (II.), high school (III.), higher education (IV.).



Some questions were asked depending on the responses given to some previous ones and accordingly the number of sample elements varies across questions. The lowest number of responses to a single question included in this paper was 738.⁷

In this study, we present the answers to three blocks of questions. The first set of questions includes four questions from the survey that concern general attitudes towards and knowledge about climate change and allow us to get an idea of the level of the climate awareness in the Hungarian population. The second block covers two questions which explore the Hungarian population's understanding of the MNB, and its tasks and responsibilities, and two brief questions which cover the personal interest in economic and financial matters, which are important starting points for reflecting on the question of trust in the central bank. The last part comprises five questions and can be considered as a subset of our main research question, as these questions are specifically concerned with the impact of green activity on confidence in the central bank.

The wording of our questions on belief in and worry about climate change closely follow the Yale questionnaire (Howe et al., 2015) (translated into Hungarian), thus permitting comparison with, *inter alia*, the international Meta survey, which is also based on the Yale questionnaire (Leiserowitz et al., 2022). To gauge objective knowledge about the central bank, we present the responses to a question in which we ask about the main objective of the central bank based on Van der Cruijsen et al. (2018). Each statement is separate in the sense that respondents needed to express an opinion on whether the statement about a particular objective being the main objective or being among the objectives is true or false. To formulate answer options, we also relied on our focus group interviews.

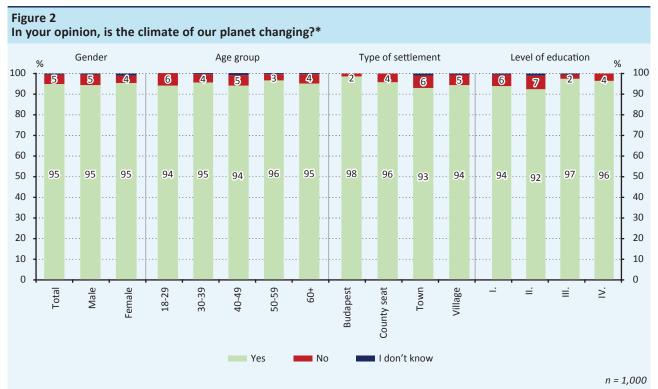
⁷ With a few exceptions, the option "I do not know/I do not wish to answer" was generally not listed as a possible answer.

4 Findings

In the following, we present the answers regarding to the general attitude towards climate change, followed by the general knowledge about the role of the central bank, and finally the answers to the questions regarding the relationship between green activities and trust in the central bank.

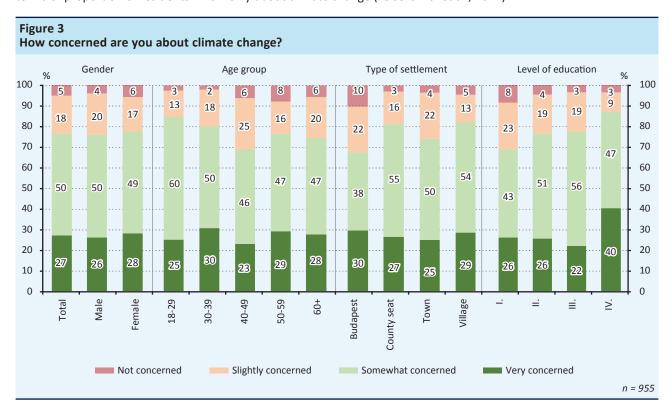
4.1 GENERAL ATTITUDE TOWARDS CLIMATE CHANGE

To better understand potential changes in public trust in central banks as a result of green measures, it is reasonable to first examine the Hungarian public's perception of and attitudes towards climate change. Investigating climate awareness is relevant to the approval of central bank's green measures, assuming that society will only support measures against climate change if it perceives climate change as a problem. Respondents were almost unanimous (95 per cent) in saying yes to the question of whether the planet's climate is changing, with 74 per cent of this group attributing this mainly to human activity. The survey results are in line with the Eurobarometer questionnaire conducted between May and June 2023, where 87 per cent of respondents in Hungary identified climate change as a very serious problem, 11 per cent as a fairly serious problem, and only 2 per cent said it was not a serious problem at all (European Commission, 2023). Those who believe climate change is a real phenomenon form a similar majority across all age groups, all types of settlement and all groups by education. In an international comparison, doubt about climate change in Hungary is very low. The Meta survey, in fact, puts Hungary at the top of the list in terms of proportion of residents who think climate change is happening (Leiserowitz et al., 2022).



*Additional explanation provided to the question: Climate change is defined as a persistent and significant shift in the climate including changes in rainfall, temperature and wind patterns over the past 150 years and in the future.

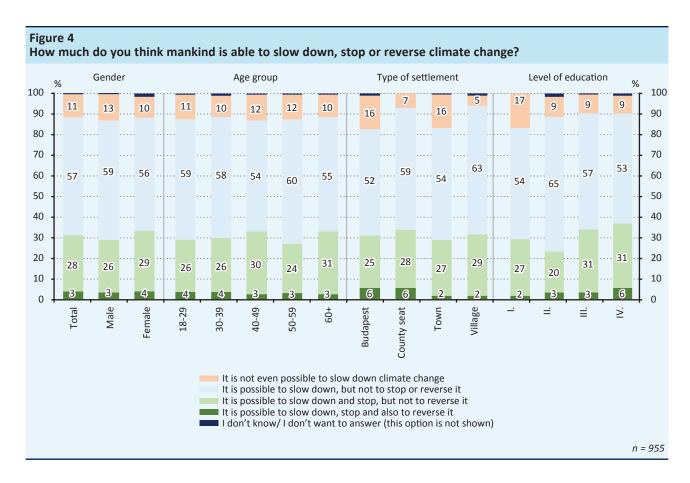
In addition to the extent to which Hungarians believe in climate change, it is also important to see the extent to which Hungarians are worried about climate change. Support for climate change policies and measures is likely to be higher, the greater the perceived threat. According to the survey responses, 77 per cent of those who believe in climate change are also worried to a lesser or greater degree (50 per cent and 27 per cent, respectively) about climate change (Figure 38). In terms of age, the youngest respondents, those in the age groups 18–29 and 30–39, have the most negative outlook, with 85 and 80 per cent being at least somewhat concerned, respectively. There is no clear trend in terms of settlement size, but a higher proportion of negative perceptions can be seen in the cities with county rank and villages. Significant differences can be observed by education, with 87 per cent of respondents with higher education being at least somewhat concerned about climate change, and the ratio of those who are very concerned is extremely high (40 per cent) compared to other education categories. In an international comparison, as per the Meta survey Hungary is in the top quartile in terms of proportion of residents who worry about climate change (Leiserowitz et al., 2022).



The extent to which the public believes in the success of climate change mitigation is also relevant for whether green measures are worth taking. Based on the survey responses (Figure 4⁹), a majority of respondents (57 per cent) believe that humanity can only slow down climate change, but can no longer stop or reverse it. However, only 11 per cent can be considered the most pessimistic (believing that even the slowdown of climate change is impossible), and 31 per cent believe that climate change may even be halted. Women appear to be more optimistic: 33 per cent believe climate change can be stopped, while 29 per cent of male respondents think the same. In terms of age groups, pessimism among 50–59 year olds is particularly pronounced, with only 27 per cent believing that climate change can be halted. Across settlement types the picture is mixed, especially with regards to the ratio of most pessimistic respondents. Among those living in the capital and in towns, 16 per cent in both categories believe that the process cannot even be slowed down, while in cities with county rank 34 per cent believe that climate change can be stopped. When it comes to education, those with elementary level attainment or less seem to be the most pessimistic, while those who completed high school or higher education, are the least pessimistic.

⁸ This question was only asked of respondents who had previously stated they believe in climate change or had answered "I don't know".

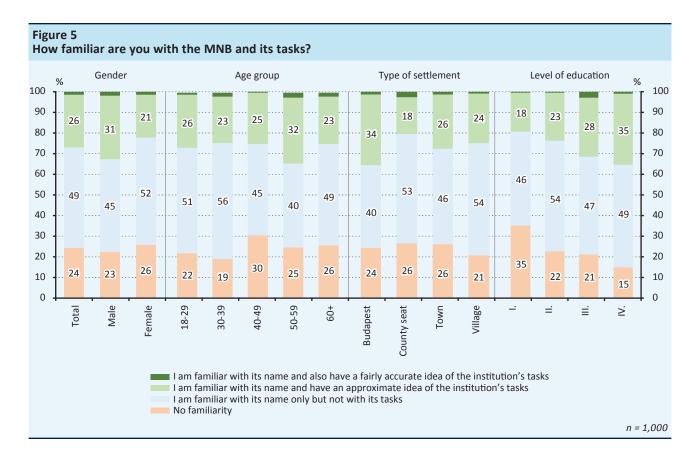
⁹ This question was only asked of respondents who had previously stated they believe in climate change or had answered "I don't know".



Overall, the Hungarian population can be considered aware of climate change, perceiving climate change as a real threat and fearing its adverse effects. The majority believes that it is possible to at least slow down the process, and therefore it is reasonable to assume that they believe that action against climate change makes sense.

4.2 GENERAL KNOWLEDGE ABOUT THE CENTRAL BANK

As regards the impact of green measures on confidence, an important aspect is the general awareness of the institution's tasks. According to the survey, on a self-reporting basis 73 per cent of the respondents either do not know the MNB and its tasks at all or only know the name of the institution (Figure 5). Men consider themselves to be more knowledgeable: one third of them believe they are roughly or exactly aware of the tasks of the central bank, as opposed to a mere 22 per cent of women. Based on high-level data, no clear connection with age group or settlement type can be established, but it can be noted that respondents aged 50–59 years and those living in the capital deem themselves to be the most informed. In these categories, around 35 per cent think that they have approximate or accurate knowledge. There is a clear link between educational background and self-reported level of knowledge. While only 19 per cent of those with elementary education or less claim to have accurate or approximate knowledge of the tasks of the central bank, this share increases to 36 per cent for those with higher education degree.



76 per cent of the respondents were familiar with the MNB's name, which is slightly less than the 85 per cent representing Europeans' awareness of the ECB as measured by Ehrmann et al. (2013) using Eurobarometer data. However, respondents to the present survey rated themselves much less knowledgeable than their German counterparts in the Bundesbank questionnaire by Mellina and Schmidt (2018), where only 20 per cent said they either did not know the Bundesbank or only knew its name. Note that Mellina and Schmidt (2018) found respondents' self-assessed knowledge to be exaggerated.

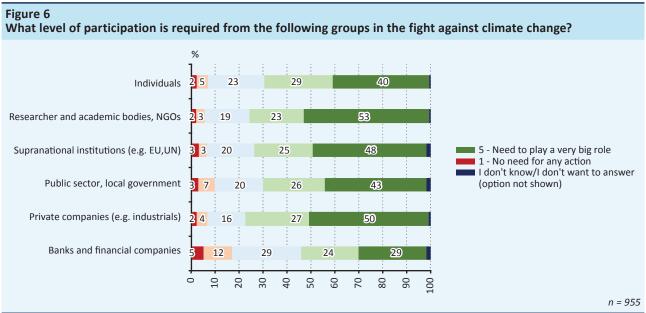
To assess factual knowledge about the MNB, a related question required respondents to select the main objective(s) of the central bank from among the given options. The option of inflation targeting was considered a primary objective by 62 per cent, while more respondents thought that managing the forint exchange rate (70 per cent) or generating financial profit (64 per cent) is among the primary objectives. Given that more than one option could be selected, respondents may have been inclined to think that the central bank has several main objectives – a similar finding was noted in Van der Cruijsen et al. (2018).

It should be noted that only 4 per cent of the sample deal with or have frequently dealt with economic and financial matters in their current or previous job, and 44 per cent are interested in economic matters to a lesser or greater extent.

4.3 GREEN ACTIVITY AND CONFIDENCE IN THE CENTRAL BANK

The financial system may play an important role in combating climate change through capital allocation, but this might seem distant to the public and less understandable compared to the role of actors who make more direct and understandable decisions. To better see which members of our economy and society are expected to take action, respondents were asked to rate the level of engagement they would like to see from each actor on a 5-point scale (Figure 6). Only 29 per cent of the respondents believe that the financial system had a very big role to play, whereas 53 per cent and 50 per cent held this opinion about research organisations and business entities, respectively. A general observation was that respondents tended to expect more from institutions than individuals, but even individuals were deemed to have greater responsibility

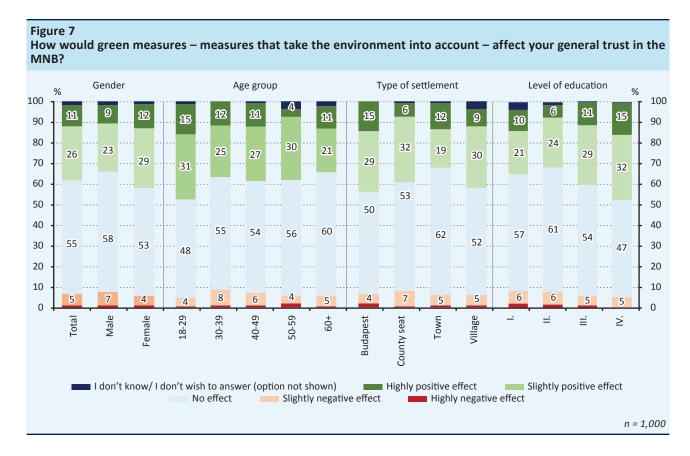
than the financial system. Overall, 53 per cent gave a score of four or five with regard to the responsibility of the financial system, which is below the 66 per cent measured for the Austrian population by Breitenfellner and Kariem (2023). 10



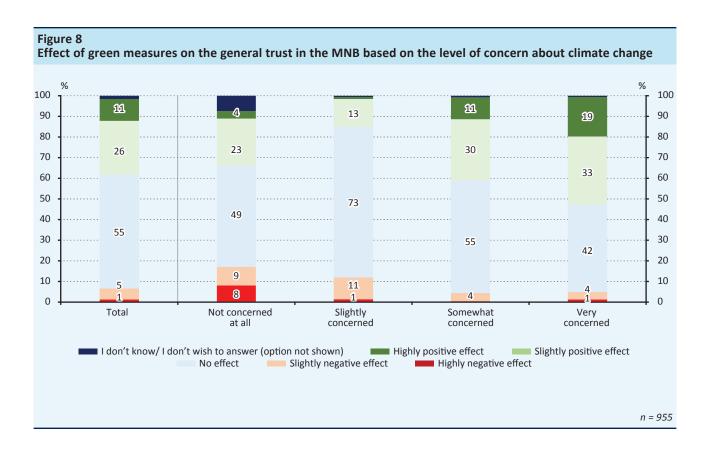
The main motivation of the survey is to understand how trust in the central bank could change if the institution takes measures with a focus on environmental sustainability (Figure 7). Overall, the responses suggest that green measures would tend to increase public confidence in the central bank. The most common attitude is neutral: 55 per cent of the respondents claimed that such steps would neither improve nor worsen the existing level of trust. Only 6 per cent would see a negative shift, but 37 per cent would expect a boost in confidence.

Broken down by gender, women are more likely to see a positive shift, with 41 per cent expecting a moderate or considerable improvement in confidence, compared to 32 per cent of men. Looking at demographics, it can be seen that the youngest age group of 18-29 year olds had the highest share of respondents anticipating a positive change, but the available confidence gains do not decrease significantly with age, as considerably more respondents in all age groups have a positive attitude towards green measures than a negative one. It should be pointed out that, apart from the youngest age group of 18-29 year olds, more than half of the respondents have a neutral attitude in each age category. By type of settlement, 44 per cent of those living in Budapest expect an improvement in confidence, with somewhat fewer positive responses in the other types of settlement. It is noteworthy that among the settlement types other than Budapest villages had the highest proportion of respondents whose confidence would change in a positive direction. Budapest clearly has the lowest proportion of neutral respondents, while respondents residing in other settlement types are less likely to have either a positive or a negative attitude. By education categories, those with higher education are most likely to see an increase in trust as a result of green measures, as 47 per cent in this category said that such measures would increase confidence in the central bank. All this suggests that, even though green action would not change the confidence of most respondents in the MNB, there is room for the institution to improve trust in a broad range of the population.

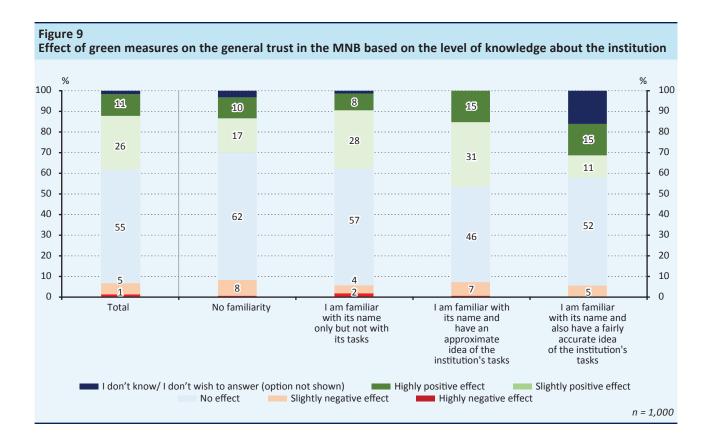
¹⁰ 66 per cent of the survey respondents strongly agreed or agreed that the financial system had specific responsibility in the transition to a climate-neutral economy.



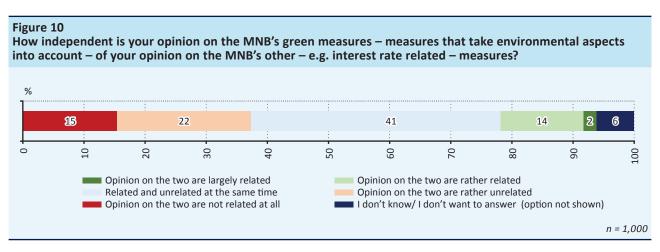
As discussed above, the level of concern about climate change can be an important driver for the support of green measures. To illustrate the link, we present how respondents assessed the change in their general trust in the MNB if it took green measures, based on their level of concern about climate change (Figure 8). The data confirm the level of worry as an important factor: the share of respondents whose trust would increase is the highest (52 per cent) among those who are very concerned about climate change, and it is also high (40 per cent) among those who are somewhat worried. Very few among those who are very or somewhat worried indicated a decrease in trust. The share of respondents whose trust would be negatively affected is the highest (17 per cent) among those who are not concerned at all about climate change. However, in the case of those who are not concerned at all about climate change, the sample size is rather small, as only 5 per cent chose this option (this question was only asked from respondents who believe in climate change).



In determining the change in trust, the general awareness of the institution's tasks may be another important aspect (Figure 5). The direction of the effect of knowledge about the institution on the endorsement of green measures is not evident, since most of the criticisms of green monetary policy discussed in the literature review section are based on a certain level of understanding of central banks. This would suggest that among those who claim to have a higher level of familiarity with the institution, the increase in trust as a result of green measures would be lower. However, we find that the share of those whose trust would be positively affected by green measures is the highest (47 per cent) in the group who are familiar with the institution's name and have an approximate idea of its tasks (Figure 9). Accordingly, the proportion of those whose trust would be negatively affected is highest (8 per cent) among those who are not familiar with the institution (do not even recognise its name). The results are somewhat mixed in the group who claim to have a fairly accurate idea of the institutions tasks, but the sample size of this group is extremely small, at less than 2 per cent of the respondents.

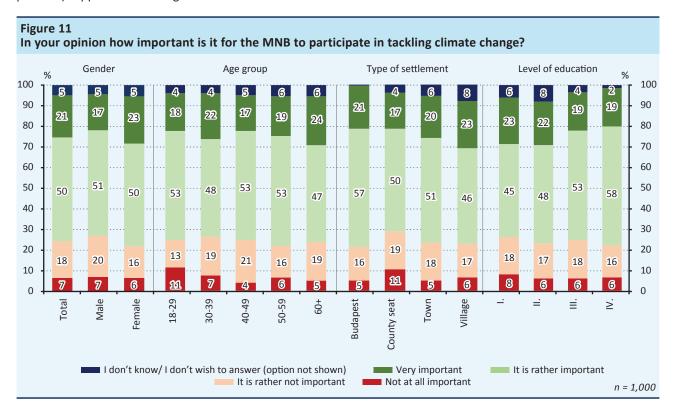


The survey asked the respondents how independent the perception of green measures is from other measures of the MNB (Figure 10). The responses show that the perception of green measures does not depend much on the perception of the central bank's other measures. 37 per cent of the respondents said that the two were rather not related or not related at all, and 41 per cent believe that is no strong connection (related and not related at the same time). Only 16 per cent established a stronger link, which means only a minority of the population can be assumed to be influenced by traditional central bank activities in their perception of the central bank's green measures. This suggests that the incorporation of environmental sustainability into policy actions might have a value-added effect by itself, unrelated to the assessment of other measures.



To better understand the potential changes in confidence, one can examine the level of demand for green central bank measures and its limits. The survey included a question on the importance of the MNB's involvement in the fight against climate change (Figure 11). 50 per cent of the respondents think it is rather important and 21 per cent think it is very important, meaning that the vast majority see green actions as being justified. Only 18 per cent think it is not very important and 7 per cent believe it is not important at all. In terms of gender and age category, women and the age group

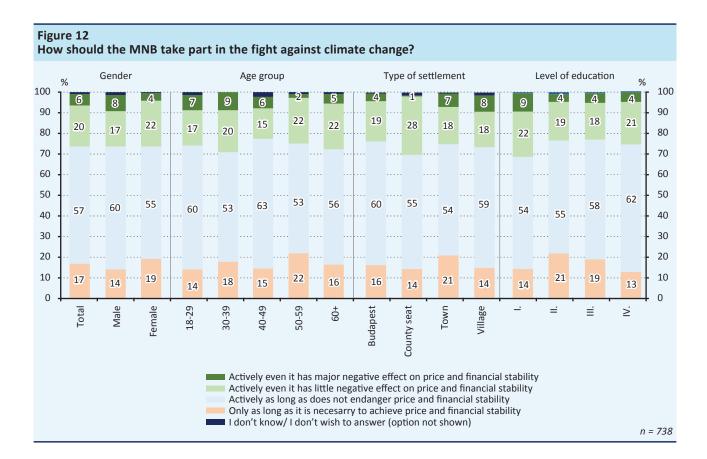
of 50–59 year olds were most supportive, with 73 per cent wanting the central bank to get involved. In other demographic groups, an even higher proportion (78 per cent) of those living in Budapest and those with a higher education degree (76 per cent) support the MNB's green direction.¹¹



We asked respondents about the extent to which the central bank should participate in the fight against climate change (Figure 12). 12 This question sought to introduce trade-offs with traditional central bank mandates, namely price stability and financial stability. The majority, 57 per cent, support the active involvement of the MNB in the fight against climate change, but only as long as this does not pose a risk to inflation and the stability of the banking system, while 17 per cent think it is justified only as long as it is necessary to ensure the fulfilment of the central bank's mandates. 20 per cent believe that green policies should be pursued, even when there is a small negative impact on price stability and the stability of the banking system, while only 6 per cent think that the MNB should pursue green activities even if it has substantial negative effects on these mandates. The sum of these two latter groups can be considered as the share of those who would be willing to make sacrifices in terms of the traditional central bank mandates to actively pursue green policy. In terms of this share, there seems to be no large difference by gender, while as far as age groups are concerned, it is mainly younger respondents, especially those aged 30-39 years, who appear to be willing to make sacrifices to protect the climate. In terms of education level: respondents in the lowest (I) and highest (IV) categories are the most inclined to accept small or large negative impacts on traditional mandates, at 31 and 25 per cent, respectively. Overall, the majority is only supportive of green actions as long they are consistent with the central bank's mandates (on price stability and financial stability) suggesting no widespread public desire to take green measures at the expense of inflation targeting or financial stability.

¹¹ It should be borne in mind that based on the survey, the Hungarian population has very little knowledge of recent green measures. One question surveyed whether they had heard of the previous green programmes listed, or if they associated these with the central bank, the Hungarian government or any commercial bank. The vast majority of respondents had not heard of them, and only a small percentage of those who had could match each programme to the right institution. For example, 28 per cent of the 1,000 people surveyed had heard of the Green Home Programme under the Funding for Growth Scheme, and 27 per cent of them, or 78 respondents in total, considered it to be a programme of the MNB.

¹² This question was only included for those who responded to a previous question, that the MNB should consider climate change when carrying out its duties.



5 Conclusion

The green transition requires a changing approach in finance, in which central banks can play a key role. Climate policies may be included into several central bank functions, while in the case of monetary policy the extent of inclusion largely depends on the impact on trust in the institution. The survey presented in this paper was designed to supply empirical data to this topic, which has both academic and professional relevance internationally. Our research reflects the situation in Hungary, but with appropriate limitations, the findings may also be useful for other countries. The results show that the Hungarian population can be considered climate-conscious, with a large majority of people across all age groups, settlement types and levels of educational attainment believing in climate change, and those who do are also typically worried about the process. The majority believe that climate change can only be slowed down, but cannot be stopped or reversed, while only 11 per cent believe that it is impossible to even slow down climate change. Regarding our research question, it may warrant caution that, according to our survey, most of the Hungarian population does not understand exactly what the MNB does – as both the self-reporting study and the survey questions about the institution's tasks point to this conclusion. Even so, the Hungarian data do not deviate from the international pattern, and the related international research paints a similar picture in respect of the European Central Bank.

Nearly one third of the respondents believe that the financial system has a very big role to play in the fight against climate change, which is a low ratio considering that 53 per cent and 50 per cent held this opinion about research organisations and business entities, respectively. Moreover, even individuals' responsibility was deemed to be greater than the role of the financial system. Our main research question was about how green activity affected trust in the central bank. The survey reveals that the most typical attitude is neutral, but 37 per cent would presume a boost in confidence while only 6 per cent would expect a negative shift. By demographic categories, women, respondents in the age group of 18-29 year olds, those living in the capital and respondents with higher education are most likely to see a positive shift. The level of concern about climate change also appears to be an important driver in the level of support for green measures, as the share of those whose trust would increase in response to green measures is the highest, 52 per cent among those who are very concerned about climate change. Based on knowledge about the institution, the share of respondents who would see a positive shift in their level of trust as a result of green measures is highest in the group who are familiar with the institution's name and have an approximate idea of its tasks, which can be considered above average knowledge. The responses suggest that the perception of green activity depends little on the perception of other actions of the central bank. The majority support the active involvement of the MNB in the fight against climate change, but only as long as this does not pose a threat to price stability and financial stability. Overall, the impact of green actions on trust is neutral for the majority of respondents, but green activity that does not endanger the central bank's main objectives has the potential to increase public trust in the institution.

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Appendix

List of survey questions presented in this paper: 13

- 1. In your opinion, is the climate of our planet changing?*
- *Additional explanation provided to the question: Climate change is defined as a persistent and significant shift in the climate including changes in rainfall, temperature and wind patterns over the past 150 years and in the future.
 - a. Yes
 - b. No
 - c. I don't know
- 2. Which of the following statements do you most agree with?¹⁴
 - a. Climate change is mostly caused by human activity
 - b. Climate change is mostly caused by natural (not man-made) processes in the environment
 - c. There are other reasons behind climate change
 - d. I don't know
- 3. How concerned are you about climate change?¹⁵
 - a. Not concerned at all
 - b. Slightly concerned
 - c. Somewhat concerned
 - d. Very concerned
- 4. How much do you think mankind is able to slow down, stop or reverse climate change?¹⁶
 - a. It is not even possible to slow down climate change
 - b. It is possible to slow down, but not to stop or reverse it
 - c. It is possible to slow down and stop, but not to reverse it
 - d. It is possible to slow down, stop and also to reverse it
 - e. I don't know/ I don't want to answer (this option was not presented)
- 5. How familiar are you with the MNB and its tasks?
 - a. No familiarity
 - b. I am familiar with its name only but not with its tasks
 - c. I am familiar with its name and have an approximate idea of the institution's tasks
 - d. I am familiar with its name and also have a fairly accurate idea of the institution's tasks

¹³ In this paper, we only present a selected subset of the survey questions. The survey was originally conducted in Hungarian; here we present the English translation of the questions. We listed all of the questions which were presented in detail, but also the ones where only high-level data was discussed.

¹⁴ We only asked this question of those who responded to Question 1. with "Yes" or "I don't know".

 $^{^{15}}$ We only asked this question of those who responded to Question 1. with "Yes" or "I don't know".

¹⁶ We only asked this question of those who responded to Question 1. with "Yes" or "I don't know".

6. In the following question, we would like to assess your knowledge of the main objectives of the MNB. You're not supposed to be looking for the right answer, so please don't worry if you might have given the wrong answer. Do you think the following statements are true or false?

Columns:

- a. Yes
- b. No
- c. I don't know/I don't wish to answer

Rows, randomised:

The main objective of the MNB is...

- i) ... persistently low inflation
- ii) ... low unemployment
- iii) ... high economic growth
- iv) ... stable interest rates
- v) ... stability of the HUF exchange rate
- vi) ... financial profit
- vii) ... developing the government's financial policy
- 7. Was/is your current or previous work related to any economic or financial topic?
 - a. Not at all / Never
 - b. Barely
 - c. Occasionally
 - d. Often, but not daily
 - e. Yes, almost every day
- 8. How interested are you in economic topics?
 - a. They don't interest me at all
 - b. Rather not interested
 - c. Rather interested
 - d. Very interested
 - e. I don't know/I don't wish to answer
- 9. In your opinion, which of the following groups should play a role in the response to climate change? Please answer on a 5-point scale, where 1 means it should have no role at all and 5 means it should play a very big role. You can refine your opinion with the intermediate values!¹⁷

Columns:

- a. 1 It doesn't have to have any role
- b. 2
- c. 3
- d. 4
- e. 5 It must play a very big role

Rows, randomised:

- i) ... Individuals
- ii) ... Researcher and academic bodies, NGOs
- iii) ... Supranational institutions (e.g. EU, UN)
- iv) ... Public sector, local government
- v) ... Private companies (e.g. industrials)
- vi) ... Banks and financial companies

¹⁷ We only asked this question of those who responded to Question 1. with "Yes" or "I don't know".

- 10. How would green measures measures that take the environment into account affect your general trust in the MNB?
 - a. Highly negative effect
 - b. Slightly negative effect
 - c. No effect
 - d. Slightly positive effect
 - e. Highly positive effect
 - f. I don't know/ I don't want to answer (this option was not presented)
- 11. How independent is your opinion on the green measures measures that take environmental aspects into account of the MNB of your opinion on other measures of MNB (e.g. interest rate related measures)?
 - a. Opinion on the two are not related at all
 - b. Opinion on the two are rather unrelated
 - c. Related and unrelated at the same time
 - d. Opinion on the two are rather related
 - e. Opinion on the two are largely related
 - f. I don't know/I don't want to answer (this option was not presented)
- 12. In your opinion how important is it for the MNB to participate in tackling climate change?
 - a. Not at all important
 - b. It is rather not important
 - c. It is rather important
 - d. Very important
 - e. I don't know/ I don't wish to answer (this option was not presented)
- 13. How should the MNB take part in the fight against climate change?¹⁸
 - a. Only as long as it is necessary to achieve price and financial stability
 - b. Actively as long as does not endanger price and financial stability
 - c. Actively even it has little negative effect on price and financial stability
 - d. Actively even it has major negative effect on price and financial stability
 - e. I don't know/ I don't wish to answer (this option was not presented)

¹⁸ We only asked this question of those who responded to a previous question that the MNB should consider climate change when carrying out its duties.

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