

RETHINKING INFLATION MEASUREMENT: THE ROLE OF ALTERNATIVE INDICES IN MODERN ECONOMIES

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This study explores the theoretical value and practical applicability of alternative methods for measuring inflation, specifically examining the Charka-Shkvarka index in Belarus and the Sandwich index in Latvia. These indices address challenges such as limited access to official information, low trust in economic indicators, and the need for improved financial literacy among the population. The Charka-Shkvarka index, reflecting the cost of 100 g of vodka and 100 g of cracklings, offers a culturally relevant measure of purchasing power in Belarus, especially in times of socio-economic instability. Similarly, the Sandwich index in Latvia simplifies the understanding of inflation through the cost of a typical sandwich, making economic conditions more relatable. By providing accessible and culturally contextualized inflation measures, these indices enhance public comprehension and trust in economic data, ultimately supporting more effective macroeconomic policies. Despite limitations in scope and potential oversimplification, the study underscores the importance of alternative indices in capturing public perception and informing policy decisions during periods of inflationary shock, as witnessed in 2022-2023 across Europe.

Introduction

In the modern world, people are constantly faced with economic terms that a few decades ago were found only on the pages of specialized magazines. One of these concepts is inflation. For decades, the world economy, especially in developed countries, has struggled with the challenge of achieving and maintaining low levels of inflation through market mechanisms. As a result, society has become accustomed to a certain level of inflation, and sudden changes in price levels can have negative consequences not only for the purchasing power of the population, but also for attitudes towards official inflation data. Due to the fact that public perceptions during periods of sharp changes in inflation diverge from official data on price changes, many people may feel that inflation figures are unreliable. In order to bring perceived inflation closer to official data, a rich arsenal of alternative forms of measuring inflation is used.

The discrepancy between official inflation data and people's actual experiences is due to several factors. First, official inflation indices are often based on a narrowly defined basket of goods and services, which may not accurately reflect the consumption patterns of a heterogeneous population. Second, these indices may not fully capture the impact of changes in the quality or prices of goods and services that are not readily available for trading. In addition, the timing and frequency of release of official inflation data may not coincide with actual consumer experiences.

As a result of these restrictions, people may perceive inflation to be higher than official figures indicate. This difference in perception can have significant consequences. When consumers believe inflation is outpacing their wages, they may become more cautious in their

spending, which can slow economic growth. Perhaps worst of all, trust in official data may also be in question; it may undermine public trust in government institutions and their effectiveness.

In response to these challenges, economists and analysts have developed a number of alternative measures of inflation. These measures aim to provide a more comprehensive, widely understood and timely assessment of price changes that reflects the experiences of a broader segment of the population. These alternative measures, although not without their limitations, offer valuable information about inflation dynamics and can help close the gap between perceived and official inflation. By providing a more nuanced understanding of price changes, alternative measures can inform policymakers, businesses and consumers, allowing them to make more informed decisions in the face of inflation. Ultimately, the use of alternative indices will improve the financial literacy of people in order to make macroeconomic policy more understandable to the population and thereby more effective.

Inflation shock of 2022-2023 and request for alternative measures of price growth

In 2022, the level of inflation in many European countries reached unprecedented heights not seen in recent years. This surge compelled governments to reassess their economic policies and prompted the public to reconsider their understanding of what was once deemed normal price growth. The inflationary shock forced many people to pay closer attention to economic development indicators, and the issue of rising prices naturally became a central topic in the media as it captured the public's concern. According to Eurostat, the European Union's statistical office, the average inflation rate in the EU surged to 10% in 2022, with countries like Estonia and Lithuania experiencing inflation rates above 20%.

However, it was observed that personal expectations for many in society significantly diverged from official statistics, leading to a decline in trust towards politicians, institutions, and the media. This was further exacerbated by the fact that society was just recovering from the COVID-19 pandemic crisis, during which the assessment of pandemic countermeasures raised many questions. There were also concerns about the reliability of official health statistics during the pandemic. In many countries, such as Belarus, the conflicting data regarding the pandemic's impact led to a total collapse of trust in official statistics. Many experts accused the Belarusian authorities of data manipulation, claiming that the real number of COVID-19 cases and deaths was significantly underreported.

In 2022 and 2023, the rise in prices across many European countries prompted a reevaluation of how to communicate with the public about the consequences of price increases and changes in purchasing power. The goal was to provide society with accurate information without undermining the credibility of official statistics. Eurostat reported that in 2023, the inflation rate in the EU slightly decreased to 8.3%, but it remained a pressing issue, affecting various sectors differently. For instance, energy prices saw a dramatic increase of 25% in 2022, while food prices rose by 12%.

To address this issue, the press and analytical centers increasingly turned to alternative inflation indicators, such as the Big Mac Index, the Charka-Shkvarka Index (Belarus), the Olivier Salad Index (Russia), the Sandwich Index (Latvia), and the Kyufta Index (Armenia).

The author's study of the development and use of alternative measures to study and monitor inflation through official data and alternative forms of inflation measurement in Latvia, Armenia, and Belarus revealed specific nuances in the perception of these measures by the population. For example, the Charki-Shkvarka index in Belarus in 2022 and 2023 made it possible to calculate the size of the potential inflation overhang in the Belarusian economy after the introduction of strict state control over prices and, through this index, to clearly explain to the population the potential threats of the current situation in the economy.

The advantages of using alternative inflation indices are evident. They provide a simple and intuitive way to grasp complex economic phenomena, making them accessible to a broad audience. These indices also offer realistic approximations that traditional inflation indicators may overlook. For example, the Big Mac Index, developed by The Economist, compares the price of a McDonald's Big Mac burger in various countries to assess purchasing power parity (PPP). This index is widely recognized for its simplicity and global reach, making it a valuable tool for comparing economic conditions across different nations.

Similarly, the Charka-Shkvarka Index in Belarus, named after a traditional Belarusian meal of a shot of vodka (charka) and fried pork fat (shkvarka), reflects the affordability of basic foodstuffs and alcohol for the average citizen. This index highlights the real-world impact of inflation on everyday life, providing a relatable metric for the general public. The Olivier Salad Index in Russia uses the cost of ingredients for a traditional New Year's salad to measure inflation, offering a culturally relevant and tangible gauge of price changes.

In Latvia, the Sandwich Index tracks the cost of making a typical sandwich, while in Armenia, the Kyufta Index monitors the price of a traditional meat dish. These indices cater to local cultural contexts, making them particularly relevant for the populations they serve. By focusing on commonly consumed items, these alternative indices provide a more relatable and understandable measure of inflation.

Despite their benefits, alternative indices are not without limitations. They can overly simplify economic realities and may not account for the full range of goods and services in an economy. For instance, while the Big Mac Index provides a useful snapshot of price levels, it does not capture the broader spectrum of consumption patterns, such as healthcare, education, and housing costs. Similarly, indices based on specific food items may overlook variations in prices of non-food goods and services that significantly impact the cost of living.

Moreover, alternative indices can be influenced by cultural and regional preferences, making cross-country comparisons challenging. The choice of representative items, such as a Big Mac or a local dish, may not reflect the consumption habits of all demographic groups within a country. Additionally, these indices often rely on limited data points, which can lead to inaccuracies in capturing overall inflation trends.

Despite these limitations, alternative inflation indices play a crucial role in modern society. They contribute to a better understanding of economic trends by providing accessible and relatable measures of inflation. These indices help bridge the gap between official statistics and public perception, fostering greater transparency and trust in economic data.

Furthermore, alternative indices can influence policy decisions by highlighting areas where inflation is felt most acutely by the public. For example, a significant increase in the Charka-Shkvarka Index might prompt Belarusian policymakers to consider targeted measures to address rising food and alcohol prices. Similarly, a spike in the Sandwich Index in Latvia could lead to discussions on food security and cost-of-living adjustments. Policymakers can use these indices to identify which segments of the population are most affected by inflation and tailor their interventions accordingly.

The inflationary shock of 2022 and 2023 underscored the importance of effective communication between governments and the public regarding economic conditions. Alternative inflation indices, such as the Big Mac Index, the Charka-Shkvarka Index, and others, offer valuable tools for understanding and conveying the impact of inflation. While they have their limitations, these indices provide a complementary perspective to traditional measures, enhancing the public's grasp of economic realities and informing policy responses. As societies continue to navigate the challenges of inflation and economic uncertainty, the use of alternative indices will likely become increasingly relevant in fostering an informed and engaged citizenry. The growing reliance on these indices highlights the need for innovative approaches to economic communication and underscores the dynamic nature of public understanding in an ever-evolving economic landscape.

Theoretical measurement: the theory of inflation expectations, trust and alternative measures of inflation

Inflation expectations play a key role in alternative inflation measurement models. The theory of inflation expectations states that expectations of future inflation influence the current behavior of economic agents, which, in turn, can shape the real level of inflation. Expectations may be based on historical experience, current economic conditions and confidence in official information. In turn, alternative measures of price growth and inflation expectations are largely based on the concept of confidence in the economy. Trust in economic institutions and official statistics is an important factor influencing perceptions of inflation. A low level of trust may lead economic agents to seek alternative sources of information and methods for measuring inflation.

In the conditions of the modern economy, the final results of economic policy will depend on the degree of understanding of human decision-making mechanisms. Patterns of behavioral economics can greatly influence economic growth. The development of behavioral economics has given a significant impetus to the study of the impact of inflationary expectations on the effectiveness of macroeconomic policy.

The foundations of behavioral economics lie in the works of the classics (Adam Smith, John Keynes). The studies of the founders of modern behavioral economics (Daniel Kahneman, Herbert Simon, Richard Thaler) are based on this foundation. They showed that the Great Depression in the 1930s increased the concerns of politicians and scientists about the empirical relevance of the standard model of rational agent behavior in macroeconomics. So John Maynard Keynes formulated the law describing the dynamics of the dependence of income and

consumption, introduced the concepts of the crowd effect, waves of pessimism and optimism, the propensity to save, to consume. Later, the work of John Cohen led to a new paradigm of "homo psychologicus", where the idea was promoted that psychological factors have a significant influence on the decision of a person as an economic subject. A change in attitude towards a rational economic agent can be found in the works of Herbert Simon - "People are intentionally rational, but have this ability only to a limited extent ...". [1].

Another impetus to the study of the actions of economic agents, including in terms of their expectations, came with the growing interest of economists in studying financial crises in the 20th century. It is believed that the consumer has expectations. They can be based on both objective and non-objective factors, which is explained by the concept of bounded rationality, because the consumer is not always able to correctly assess the future situation on the market. At this stage, another psychological effect will be activated - the effect of the crowd. An individual, looking at the behavior of another individual, is very likely to do the same as the last one, and expectations, for example, inflationary ones, which are most aggravated during a crisis, acquire the format of an information cascade, which implies making a decision not only on the basis of one's own assessment, but and based on observing the behavior of other agents in the market [2].

Daniel Kahneman, who viewed behavioral economics as being studied in conjunction with the cognitive, emotional, and social factors that influence decision making. He emphasized that, under certain conditions, the choice could be influenced by the context and presentation of options, and not just by the main product. R. Tyler defines nudge as "any aspect of the decision-making process that encourages people to change their behavior in a certain way without introducing any restrictions on the possibility of choice.

In addition, loss aversion is considered to be one of several properties of the value function constructed within the framework of the "prospect theory" which is extremely important because of its applicability in practice[3]. The essence of loss aversion comes down to the tendency of people to prefer to avoid losses rather than acquire equivalent benefits. It has been proven that the pain of loss is psychologically about twice as strong as the pleasure of gain[4].

New approaches in the form of the development of the theory of behavioral economics put forward by D. Kahneman and A. Tversky, together with the discovery of R. Thaler, showed how expectations have a significant impact on aggregate demand, can, when taken into account, reduce government spending, which, in turn, can be invested in other sectors of the economy and the state as a whole. When approached correctly, behavioral economics provides the economic block of government with the key to understanding how to increase the credibility of macroeconomic policy and through this to achieve its high efficiency.

The study of confidence in the economy is also now associated with inflation expectations. The study of inflationary expectations of the population is a relatively new field, and there is no clear consensus on the earliest works in this area. However, there are a number of seminal papers that are often cited as important contributions to the study of inflation expectations:

- "Rational Expectations and the Theory of Price Movements" by John F. Muth (1961)[5].
- "Expectations and the Neutrality of Money" by Thomas J. Sargent and Neil Wallace (1975)[6].
- "Inflation Expectations and the Phillips Curve" by Edmund S. Phelps (1967)[7].

These three papers are widely considered to be important contributions to the study of inflation expectations and have had a significant influence on subsequent research in this area. Of the modern and important works in the field of studying the features of inflation expectations, the following works can be mentioned the issue of studying inflationary expectations of the population in the scientific literature in this area:

- "Inflation Expectations and the Transmission of Monetary Policy" by Olivier Coibion and Yuriy Gorodnichenko (2015)[8].
- "Measuring Consumer Inflation Expectations in India: A Preliminary Exploration" by Janak Raj, N. Pavan Kumar, and Sarat Dhal (2016)[9].
- "Comment on 'Adaptive Learning and Monetary Policy Design (2003)[10].
- "Inflation Expectations and Monetary Policy Design: Evidence from the Laboratory" by Stefano Eusepi, Richard Crump, and Emanuel Moench (2013)[11].
- "Inflation Expectations and Their Role in the Inflation Process" by Athanasios Orphanides and John C. Williams (2005)[12]

These works are just a small selection of the extensive literature on the topic of studying inflationary expectations of the population. In addition, taking into account the consideration of Eastern European cases, it should also be noted that this topic was widely developed by the author of local economic schools. The issue of studying inflationary expectations of the population in Eastern Europe, including Russia, has been a topic of interest in the scientific literature:

- "Inflation Expectations In Ukraine: A Long Path To Anchoring? " by Yuriy Gorodnichenko and Coibion (2015)[13].
- " Political Shocks and Inflation Expectations: Evidence from the 2022 Russian Invasion of Ukraine " by Dräger (2022)[14]:.
- " The policy of the Bank of Russia for ensuring financial stability in an environment of economic recovery " by Ksenia Yudaeva, (2017)[15]
- " Inflation Targeting And Its Discontents: The Case Of Poland " by Rzońca (2014)[16]

These works are just a few examples of the research on studying inflationary expectations of the population in Eastern Europe and Russia. And finally, it is necessary to highlight a number of important works studying inflationary expectations of the population in Belarus:

- " Exploring SVAR-Based Empirical Measure of Inflation Expectations for Belarus " by D.Kruk (2020)[17].

- "SVAR Approach for Extracting Inflation Expectations Given Severe Monetary Shocks: Evidence from Belarus " D.Kruk (2020)[18].

Summarizing the review of the literature on the study of inflationary expectations of the population, it is important to highlight the following features. Firstly, this topic is widely represented in the scientific field and has many years of experience in studying within various economic schools. Secondly, the scientific literature discusses both practical and theoretical issues of studying inflationary expectations of the population, including the issues of the effectiveness of various models and approaches to studying inflationary expectations of the population in the context of the implementation of various macroeconomic policies and external conditions. Thirdly, regarding developing economies in general and Belarus in particular, from the point of view of theory and from the point of view of practice, this topic has been developed and described much less. On the one hand, this is due to the fact that the study of inflation expectations of the population is used by the regulatory authorities in Eastern Europe relatively recently and is not yet at work on a sufficient amount of initial data for analysis, on the other hand, often, and in the case of the Republic of Belarus, this is most important, the study of inflation expectations of the population hinders the closure of access to official analytical and statistical information.

It is important to note that the scientific literature pays little attention to the study of inflation expectations as a feedback channel between society and the state. This is due to the fact that the fulfillment of this function by inflationary expectations is more typical for authoritarian countries with developing markets, where the methods of interaction between society and the state, traditional for democratic regimes, such as the sphere of non-governmental organizations or sociological surveys of the population, are more developed, accessible and effective. In the case of Belarus, for example, the state does not have many mechanisms for obtaining feedback from the population regarding the effectiveness of a particular method of reform or impact on the economy or influence on it using available methods. In this case, such specific mechanisms as the demand for currency and inflationary expectations play such a role. But if the first, the demand for currency, reveals the attitude of the population to a particular macroeconomic policy after the fact, then the study of inflationary expectations has an important prognostic function.

Studying the fundamentals of the population's inflation expectations and their practical applicability for a particular country becomes the basis for constructing alternative assessment models. In this case, a new alternative measurement method will become understandable in a given environment, not only as a tool, but also culturally and socially. In addition, alternative measures based on inflation expectations can become an important channel for the exchange of information between policymakers and society.

The role of inflation expectations in building feedback between the state and society

Inflation expectations are an important economic indicator that reflect the public's expectations of future inflation rates. These expectations can serve as a way of feedback

between society and the state, as they inform policymakers about how their policies are perceived by the public and can shape public behavior in response to economic policies.

One way that inflation expectations can serve as feedback between society and the state is through the mechanism of the Phillips curve. The Phillips curve is an economic concept that describes the relationship between unemployment and inflation. According to the Phillips curve, when unemployment is low, inflation tends to be high, and vice versa. This relationship is based on the idea that when there is low unemployment, workers have more bargaining power and can demand higher wages, which leads to higher inflation.

Inflation expectations can affect the Phillips curve relationship by influencing how workers and firms negotiate wages. If workers expect high inflation in the future, they may demand higher wages to compensate for the expected increase in the cost of living. This can lead to higher inflation, even if there is no corresponding increase in economic activity. Conversely, if workers expect low inflation, they may be willing to accept lower wage increases, which can help to keep inflation low.

Policymakers can use inflation expectations as feedback to adjust their policies to achieve their economic goals. For example, if the central bank wants to keep inflation low, it may need to communicate its inflation target to the public and work to anchor inflation expectations around that target. If the public expects low inflation, they will be less likely to demand higher wages, which can help to keep inflation under control.

Similarly, if policymakers want to stimulate economic growth, they may need to communicate their policy intentions to the public and work to boost inflation expectations. If the public expects higher inflation, they may be more willing to spend and invest, which can help to boost economic activity.

Inflation expectations can also serve as a way for the public to hold policymakers accountable. If policymakers are perceived as being responsible for high inflation, the public may demand changes in policy or even changes in leadership. Conversely, if policymakers are seen as successfully managing inflation, they may receive public support and be more likely to remain in power.

In this case, as the Belarusian experience shows, inflation expectations become an important marker for replacing official sociological research, the credibility of which may be low in such systems. In contrast to such studies, civil society uses alternative measures of inflation.

It is important to note that the challenges of studying inflation expectations in non-democratic countries are not limited to data availability and government interference. Other factors, such as cultural and language barriers, may also affect the accuracy and reliability of data on inflation expectations. For instance, in countries with low levels of financial literacy, individuals may not have a good understanding of inflation or may not be able to accurately predict future inflation rates.

Despite these problems, researchers have developed various methods for studying inflation expectations in non-democratic countries. Among other things, such methods rely on alternative measures of inflation. However, their use also has its limitations. Limited data

availability and government interference in information dissemination make it difficult to collect accurate and reliable data on inflation.

Belarus provides a good practical example of the challenges and importance of studying inflation expectations in non-democratic countries, and how NGOs are harnessing the power of alternative inflation measures in conditions of limited access to information and low confidence in official statistics. On the other hand, Lithuania, and the study of inflation expectations using alternative inflation measures allows us to overcome the misunderstanding of the differences between the official inflation rate and perceived inflation. Let us consider the problems of the Belarusian case in more detail.

Belarus is a country in Eastern Europe with a presidential system and limited democratic freedoms. Like many other non-democratic countries, Belarus faces challenges in collecting accurate and reliable data on inflation expectations due to government interference and limited data availability. For example, in 2020, the Belarusian government faced criticism for manipulating official statistics on inflation to downplay the severity of the economic situation. This made it difficult for analysts to accurately assess inflation expectations and led to increased uncertainty among the public and investors.

In this context, understanding inflation expectations is crucial for policymakers to make informed decisions and maintain public trust. In 2021, the Belarusian government implemented policies to curb inflation, including raising interest rates and tightening fiscal policy. However, without accurate and reliable data on inflation expectations, it is difficult to assess the effectiveness of these policies or identify potential risks to the economy.

To overcome these challenges, researchers have used a variety of methods to gather information on inflation expectations in Belarus. For example, in a recent study, researchers used a survey to gather information on household inflation expectations and found that they were higher than official inflation statistics. This information can help to inform policy decisions and improve the accuracy of economic forecasts. This information is based on alternative methods developed by NGOs for studying inflation from the remaining available data.

Practical measurement: prerequisites for developing an alternative inflation index in Belarus

Over the past 20 years, the Belarusian economy has faced different phases of inflation caused by internal and external factors. In the early 2000s, the country experienced high levels of inflation associated with the transition from a planned to a market economy, as well as various economic shocks (the rise in energy prices in 2008) and instability (external trade imbalances).

However, since the 2010s, inflation in Belarus has gradually decreased due to a number of measures taken by the National Bank of the Republic of Belarus (National Bank). These measures included:

- **Stabilization of monetary policy:** The National Bank moved to a stricter monetary policy, which helped reduce inflation expectations and stabilize the foreign exchange market.
- **Strengthening the national currency:** The introduction of a floating exchange rate and the accumulation of foreign exchange reserves helped strengthen the Belarusian ruble and reduce imported inflation.
- **Money supply controls:** Limiting money supply growth and credit controls also helped reduce inflationary pressures.

However, despite these measures, the country periodically experienced spikes in inflation associated with external economic factors, such as fluctuations in energy prices and trade wars. As a result, the population of Belarus had consistently high expectations regarding the current and future price levels, which made it difficult to implement effective economic policies aimed at stabilizing inflation and reducing it.

In recent years, the National Bank has begun to actively monitor population inflation expectations. This step turned out to be important, since the expectations of the population can significantly influence real inflation processes. To do this, the National Bank conducts regular surveys and analyzes the expectations of households and enterprises regarding the future price level. These data help to better understand the dynamics of inflation processes and take corrective measures in a timely manner.

In parallel with this, Belarusian non-governmental organizations (NGOs) and think tanks began to actively use alternative inflation measures to more accurately convey to the population the features of inflation processes. Such meters allowed people to better understand how inflation affected their daily lives. There are several advantages to using alternative inflation measures:

The combined efforts of the National Bank to monitor inflation expectations and the use of alternative inflation indicators by NGOs contribute to more accurate and accessible information to the population about the state of the economy. This helped lower inflation expectations, increase confidence in official statistics and improve economic stability in the country. As a result, by 2020, the quality of government forecasting and planning in Belarus has increased significantly, including through improved communication between the state, NGOs and society. Such communication makes it possible to achieve increased financial literacy of the population and lower inflation expectations

In 2022, the National Bank of Belarus stopped publishing information on inflation expectations of the population based on a survey of 2,000 people. However, at the meeting of the board, some data were nevertheless announced. Such information leaks, willy-nilly, allowed NGOs to operate on them when constructing alternative inflation estimates.

The lack of open access to information about inflation expectations of the population does not mean that they have lost their relevance. On the contrary, the closing of the results of the polls of the National Bank was only one of the episodes of the decrease in public access to

official information in Belarus after 2020. Taking into account the fact that the adopted official methodology of surveys in Belarus of relative inflationary expectations is a rather narrow issue and not particularly costly in terms of conducting, non-governmental organizations have taken up the issues of inflationary expectations and assessment of current inflation among the population of Belarus.

Independent research centers can play a crucial role in providing insights into inflation expectations of the population, even in the absence of official data. Here are some ways they can contribute:

- **Conducting surveys:** Independent research centers can conduct their own surveys to measure inflation expectations among different segments of the population. This could involve asking questions about people's expectations for prices of goods and services in the future, and how they think these prices will affect their own financial situation.
- **Analyzing alternative data sources:** Independent research centers can analyze alternative data sources to infer inflation expectations. For example, they could analyze social media data or online search trends to understand how people are talking or searching about inflation-related topics.
- **Monitoring market indicators:** Independent research centers can monitor market indicators, such as bond yields or commodity prices, to gauge the market's expectations for inflation. These indicators can provide insights into how investors and traders are pricing in future inflation expectations.
- **Using macroeconomic models:** Independent research centers can use macroeconomic models to simulate different scenarios and estimate how changes in economic variables, such as interest rates or fiscal policy, would affect inflation expectations.
- **By providing independent analysis and insights into inflation expectations,** these research centers can help policymakers make informed decisions and develop appropriate policy responses to manage inflationary pressures.

In an authoritarian country, the role of independent research centers in providing insights into inflation expectations of the population may be restricted. The government may control the flow of information and limit the ability of independent organizations to conduct surveys, analyze data, or publish reports that contradict official government data or narratives.

However, independent research centers may still be able to play a role in providing insights into inflation expectations, even in an authoritarian country. Here are some possible ways:

- **Conducting anonymous surveys:** Independent research centers could conduct anonymous surveys of the population to measure inflation expectations. This could involve using encrypted online platforms or other methods to protect the identity of survey respondents.
- **Using alternative data sources:** Independent research centers could use alternative data sources, such as satellite imagery or unofficial trade data, to infer inflation expectations.

While these sources may not be as reliable as official data, they could still provide some insights into economic conditions and inflation expectations.

- Collaborating with international organizations: Independent research centers could collaborate with international organizations, such as the International Monetary Fund or the World Bank, to access data and resources that are not available within their own country. This could help them to conduct more robust analyses and provide more accurate insights into inflation expectations.

However, it is important to note that operating as an independent research center in an authoritarian country can be risky. These organizations may face harassment, censorship, or even imprisonment for speaking out against government policies or presenting data that contradicts official narratives. Therefore, they may need to operate covertly or rely on international support to ensure their safety and effectiveness.

The use of the methodology of the National Bank of the Republic of Belarus for the study of inflationary expectations of the population by non-governmental organizations of Belarus made it possible to match the available official data until 2022 and population surveys on this topic conducted by NGOs in 2023-2024. Nevertheless, the current methodology in Belarus requires significant adjustments, since it does not fully use the possibilities of studying inflationary expectations of the population, does not take into account the opinion of the expert community, and does not fully allow conveying information important to the population in terms of the interest of answers.

Theoretical value and practical applicability of alternative methods for studying inflation: analysis using the example of the Charka-shkvarka index in Belarus and the sandwich index in Latvia

Alternative methods of measuring inflation have significant theoretical and practical value, as can be demonstrated by the examples of the Charka-Shkvarka index for Belarus and the Sandwich index for Latvia.

Charka-shkvarka index in Belarus

The introduction of alternative methods for measuring inflation in Belarus allows us to solve important problems associated with limited access to official information, low levels of trust in economic indicators and strengthening trust in independent expert communities. These methods are particularly useful in conditions of socio-economic instability and decreased trust in official statistics.

The Charka-Shkvarka index was developed after the stabilization of the socio-economic situation in Belarus in 2015 and is aimed at increasing the financial literacy of the population. The index methodology is based on the price of 100 g of vodka and 100 g of crackling, which allows us to express the purchasing power of average wages in the country. The index uses a clear set of products with a local flavor, which contributes to its popularity and understanding among a wide audience.

Since its introduction in 2015, the index has become a familiar element of the financial press, but after the socio-political crisis of 2020, the activities of many Belarusian NGOs, including those that calculated the Charka-Shkvarka index, were suspended. Despite this, the index continues to be calculated by experts abroad, which indicates its demand.

Sandwich index in Latvia

In Latvia, alternative methods of measuring inflation, such as the sandwich index, make it possible to better communicate to the public the consequences of a sharp rise in inflation after a long period of decline. This index helps improve the financial literacy of the population by explaining discrepancies between official data and perceived inflation levels.

The Sandwich Index is based on simple methodology and easy-to-understand products, making it accessible to a wide audience. It demonstrates that despite lower wages in Latvia compared to other Baltic countries, the purchasing power of the population may be higher, which allows for a better assessment of the country's economic situation.

Thus, alternative methods of measuring inflation, such as the crackling and sandwich indices, play an important role in conditions of limited access to official information and declining confidence in official statistics. These indices make it possible to identify and calculate the amount of inflation overhang, and also help to increase the financial literacy of the population, which is an important aspect of socio-economic stability and confidence in economic indicators.

Conclusions

The study of alternative methods for measuring inflation, exemplified by the Charka-Shkvarka index in Belarus and the Sandwich index in Latvia, highlights the significant theoretical and practical value these methods offer in contexts of limited access to official data and low trust in government statistics. These indices provide an accessible and relatable measure of inflation that can increase financial literacy among the public and offer insights into the real purchasing power of wages.

In Belarus, the Charka-Shkvarka index, developed during a period of socio-economic stabilization, uses culturally relevant products to measure inflation, thereby increasing public engagement and understanding. Despite challenges such as the socio-political crisis of 2020, which disrupted the activities of many local NGOs, the continued calculation of the index by experts abroad demonstrates its enduring relevance and demand.

Similarly, in Latvia, the Sandwich index has proven effective in conveying the implications of inflation to the public, especially following periods of significant economic change. This index not only helps bridge the gap between official statistics and public perception but also underscores the potential for higher purchasing power despite lower average wages compared to neighboring countries.

Overall, these alternative inflation measures play a crucial role in enhancing economic stability and confidence in economic indicators, particularly in environments where traditional

measures may be distrusted or inaccessible. They serve as valuable tools for both policymakers and the public, promoting greater transparency and understanding of economic conditions.

List of references

[1] Vukolov D. "Behavioral macroeconomics: influence of psychological factors on economic growth". *Vestnik UGNTU. Science, education, economics. Series: Economics*, V. 3 (33), 2020, pp. 85-92.

[2] Coibion, Olivier, et al. "The Formation of Expectations, Inflation, and the Phillips Curve." *Journal of Economic Literature*, vol. 56, no. 4, 2018, pp. 1447–91. JSTOR, <https://www.jstor.org/stable/26570578>. Last accessed: 11/5/2023.

[3] Permitin, I. "Modern Stage of Development and Theoretical Achievements of Behavioral Economics" *Management of Economic Systems: Electronic Scientific Journal*, no. 9 (81), 2015, pp. 20.

[4] 11. Dimidenko, M. Medium-term forecasting model and macroeconomic policy design. *Bank Bulletin*. V 9 (498) 2008 r.41-48

[5] Muth, John F. "Rational Expectations and the Theory of Price Movements." *Econometrica*, vol. 29, no. 3, 1961, pp. 315–35. JSTOR, <https://doi.org/10.2307/1909635>. Last accessed: 11/5/2023.

[6] Sargent, Thomas J., and Neil Wallace. "'Rational' Expectations, the Optimal Monetary Instrument, and the Optimal Money Supply Rule." *Journal of Political Economy*, vol. 83, no. 2, 1975, pp. 241–54. JSTOR, <http://www.jstor.org/stable/1830921>. Last accessed: 11/5/2023.

[7] Edmund S. Phelps. "Phillips Curves, Expectations of Inflation and Optimal Unemployment over Time." *Economica*, vol. 34, no. 135, 1967, pp. 254–81. JSTOR, <https://doi.org/10.2307/2552025>. Last accessed: 11/5/2024.

[8] Coibion, Olivier, et al. "The Formation of Expectations, Inflation, and the Phillips Curve." *Journal of Economic Literature*, vol. 56, no. 4, 2018, pp. 1447–91. JSTOR, <https://www.jstor.org/stable/26570578>. Accessed 11 May 2023.

[9] Chalwadi, Swapnil & Joshi, Preeti & Sharma, Nitin & Gite, Chaitanya & Salve, Sangita. (2023). Gender Differences in Inflation Expectations: Recent Evidence from India. *Administrative Sciences*. 13. 60.

[10] Duffy, John. "Comment on 'Adaptive Learning and Monetary Policy Design' by George W. Evans and Seppo Honkapohja." *Journal of Money, Credit and Banking*, vol. 35, no. 6, 2003, pp. 1073–79. JSTOR, <http://www.jstor.org/stable/3649874>. Last accessed: 11/5/2024.

[11] Pfajfar, Damjan & Žakelj, Blaž, 2018. "Inflation Expectations And Monetary Policy Design: Evidence From The Laboratory," *Macroeconomic Dynamics*, Cambridge University Press, vol. 22(4), pages 1035-1075, June.

[12] Athanasios Orphanides & John C. Williams, 2005. "Inflation scares and forecast-based monetary policy," *Review of Economic Dynamics*, Elsevier for the Society for Economic Dynamics, vol. 8(2), pages 498-527,

[13] Coibion O. Inflation Expectations In Ukraine: A Long Path To Anchoring? / O. Coibion, Y. Gorodnichenko // *Visnyk of the National Bank of Ukraine*. - 2015. - № 233. -p. 6-23.

[14] Dräger, Lena and Gründler, Klaus and Potrafke, Niklas, Political Shocks and Inflation Expectations: Evidence from the 2022 Russian Invasion of Ukraine (2022). CESifo Working Paper No. 9649, Available at SSRN: <https://ssrn.com/abstract=4070238> or <http://dx.doi.org/10.2139/ssrn.4070238> Last accessed: 5/5/2024

[15] Yudaeva, The policy of the Bank of Russia for ensuring financial stability in an environment of economic recovery // <https://www.bis.org/review/r170503h.htm>. Last accessed: 30/04/2023.

[16] Ciżkowicz, Piotr, And Andrzej Rzońca. "Inflation Targeting And Its Discontents: The Case Of Poland." *Acta Oeconomica*, vol. 65, 2015, pp. 107–22. JSTOR, <http://www.jstor.org/stable/24857785>. Last accessed: 30/04/2024

[17] Kruk, D. Exploring SVAR-Based Empirical Measure of Inflation Expectations for Belarus . BEROC. // https://beroc.org/en/publications/working_papers/exploring-svar-based-empirical-measure-of-inflation-expectations-for-belarus/. Last accessed: 30/01/2023

[18] Kruk, D. SVAR Approach for Extracting Inflation Expectations Given Severe Monetary Shocks: Evidence from Belarus. BEROC. // https://beroc.org/en/publications/working_papers/svar_approach_for_extracting_inflation_expectations_given_severe_monetary_shocks/ . Last accessed: 15/02/2023

[19] Mohammadi Khyareh, Mohsen. (2021). Exchange rate pass-through to price indices in Iran. *JANUS NET e-journal of International Relation*. // <https://repositorio.ual.pt/bitstream/11144/5034/5/0%20EN-vol12-n1-art08.pdf> Last accessed: 15/12/2022

[20] Lee, Aie-Rie, et al. "The Paradox of North Korea's Ideological Radicalism: Shaky Social Basis of Strengthening Ideological Campaigns." *North Korean Review*, vol. 5, no. 1, 2009, pp. 46–61. JSTOR, <http://www.jstor.org/stable/43910261>. Last accessed: 10/04/2024