

ISSN 2789-3308

ECONOMIC REVIEW

National Bank Republic of Kazakhstan

No. 4, 2025



NATIONAL BANK OF KAZAKHSTAN

ECONOMIC REVIEW

National Bank of the Republic of Kazakhstan

Published by: National Bank of the Republic of Kazakhstan

Editorial Team of the Publication

Editor-in-Chief: Tutushkin V. A., Deputy Governor, NBK

Deputy Editor-in-Chief: Baimagambetov A. M., Deputy Governor, NBK

Agambayeva S.B., Department – Research and Analytics Center, NBK

Jussangaliyeva K. E., Department – Research and Analytics Center, NBK

Person Responsible for the Issue: Esaphieva A. V., Department – Research and Analytics Center, NBK

Editorial Board of the Publication

Akhanov S. A.

D.Sc.Economics, Professor, Turan University,
Advisor to the Chairperson, Financial Institutions' Association of Kazakhstan

Nurseyt N. A.

D.Sc.Economics, Kazakhstan-German University

Damitov K. K.

C.Sc.Economics, Adviser to the President, Almaty Management University

Syrlybayeva B.R.

C.Sc.Economics, Kazakh-British Technical University

Nurseitov A. A.

C.Sc.Economics, Institute of Economic Research

Popov S.V.

PhD in Economics, Cardiff University, UK

Shukayev M.

PhD in Economics, University of Alberta, Canada

Aldashev A.

PhD in Economics, Professor, Kazakh-British Technical University

Yergabulova A. A.

PhD in Economics, Nazarbayev University

Ybrayev Zh.Zh.

PhD in Economics, Department of Financial Stability and Research, NBK

When reviewing the papers in the issue, expert opinions were received from the following NBK staff: Oishynova G. A., Shaikh Sh.B., Salkhojayeva A. I.

The point of view and opinions of the authors do not reflect the official standpoint of the National Bank of Kazakhstan and may not coincide with it.

ISSN 2789-3308

ECONOMIC REVIEW
National Bank of the Republic of Kazakhstan

No. 4, 2025

CONTENTS

International Experience in Employing Non-Traditional Monetary Policy Measures <i>Almagambetov K. A., Tolegenova Zh.B., Jarjanov M. U.</i>	4
The Just Transition as Part of Decarbonization of the Economy and the Move to the ESG in Kazakhstan <i>Abdullayeva A. B., Abenova A. M.</i>	37
Using Grain Receipts as Collateral for Lending in Kazakhstan <i>Oishynova G. A., Nurkhanova O. V.</i>	56

International Experience in Employing Non-Traditional Monetary Policy Measures

Almagambetov K. A. – Chief Specialist-Analyst, Monetary Policy Division, Monetary Policy Department, National Bank of the Republic of Kazakhstan.

Tolegenova Zh.B. – Leading Specialist-Analyst, Monetary Analysis Division, Monetary Policy Department, National Bank of the Republic of Kazakhstan.

Jarjanov M. U. – Chief Specialist-Analyst, Monetary Policy Division, Monetary Policy Department, National Bank of the Republic of Kazakhstan.

This paper examines the theoretical background, instruments, and international practice of non-traditional monetary policy (NTMP) and assesses its relationship with inflation in developed and developing economies. The topic is relevant because, following the 2008 global financial crisis and especially during the COVID-19 pandemic, the NTMP has evolved from an exclusive anti-crisis tool into an important element of central bank practice, while its inflationary consequences and applicability remain a subject of debate.

The aim of this study is to systematize international NTMP experience and identify differences in its application and inflation implications across countries with varying levels of financial market and monetary institutional development. To achieve this goal, the paper addresses three objectives: clarifying the classification of NTMP instruments and their transmission channels; comparing the experiences of developed and developing countries; and conducting a cross-country empirical assessment of the impact of asset purchase programs and credit measures on inflation during the COVID-19 pandemic.

The paper's primary contribution is that it offers a unified comparative framework for analyzing monetary policy instruments, channels of action, and the central bank's balance sheet. Second, it combines the overview and empirical sections, complementing the analysis of international experience with a cross-country assessment using a sample of 41 countries. Third, the paper demonstrates that the inflationary effects of monetary policy vary significantly between developed and developing economies.

Empirical analysis using panel regressions and the difference-in-differences method shows that central bank balance sheet expansion is statistically associated with inflation, with this relationship being most pronounced in developing economies. For developed countries, panel estimates reveal no consistent relationship between the balance sheet expansion and inflation, while the DiD approach reveals a statistically significant but heterogeneous effect of monetary policy implementation. Across the entire sample of countries, the estimated effect is approximately 0.8–0.9 percentage points for the period following the introduction of monetary policy measures. The obtained results show that the applicability of monetary stimulus measures depends on the status of the interest rate channel, the anchoring of inflation expectations, the depth of financial markets and trust in the central bank.

Key Words: monetary policy, non-traditional monetary policy, central bank, inflation, COVID-19.

JEL-Classification: C23, E31, E44, E52, E58.

1. Preamble

Modern monetary policy underwent a significant transformation following the 2008 global financial crisis, when traditional instruments, primarily short-term interest rate adjustments, ceased to have sufficient impact on output, lending, and inflation in a number of countries. In response, central banks began employing non-traditional monetary policy measures, including asset purchase programs, earmarked credit instruments, forward guidance, negative rates, yield curve control, and foreign exchange interventions. A substantial body of research has accumulated in the international literature confirming that such measures can significantly impact yields, spreads,

asset prices, and financial conditions more generally. However, their impact on inflation and the limits of applicability in different institutional environments are less clearly assessed.

This issue has become particularly urgent during the COVID-19 pandemic, when monetary policy has been used on a significantly larger scale not only in developed but also in many developing economies. Research from the Bank for International Settlements (BIS) and the International Monetary Fund (IMF) shows that since 2020, central banks have actively used asset purchases, extended credit facilities, liquidity support operations, and other non-traditional measures, but the nature, scale, and impact of these actions have varied significantly across countries [4,44,49]. This is particularly important for developing economies, where limited financial market depth, high sensitivity to exchange rate and fiscal shocks, and less robust inflation expectations can amplify the side effects of stimulative policy.

Despite the large body of research, the literature on monetary policy remains fragmented, i.e., uneven in its coverage of topics and countries. First, a significant portion of the literature focuses either on individual NTMP instruments or on the experience of individual central banks, primarily in developed economies [5, 6, 11, 12, 20]. Second, many studies analyze the impact of NTMP through financial variables – yields, spreads, exchange rates, asset prices – while cross-country estimates of their relationship with inflation are presented less systematically [1, 7, 15, 27]. Third, there is still a lack of effort that simultaneously combines a typology of instruments, a comparative analysis of country cases, and a unified empirical test of the differences between developed and developing countries. Furthermore, alternative interpretations of NTMP effects coexist in the literature: some studies emphasize their role in easing financial conditions and preventing deflation, while others emphasize the risks of rising inflation, strengthening the fiscal-monetary relationship, and the accumulation of financial imbalances [3, 18, 19].

This paper aims to examine international experience with the NTMP, focusing on the differences between developed and developing economies and the inflationary implications of stimulus measures during the COVID-19 pandemic. The objective of the study is to systematize NTMP instruments and practices and assess how their use is associated with inflation in countries with different institutional and macrofinancial characteristics. To achieve this goal, the paper addresses the following objectives: first, it clarifies the classification of NTMP and the channels through which they are transmitted to the economy; second, it compares the experiences of individual central banks within a unified analytical framework; and third, it conducts a cross-country empirical assessment of the impact of central bank balance sheet expansion and the use of NTMP on inflation.

The paper's academic contribution consists of three main aspects. First, it proposes a unified comparative framework for the NTMP analysis, in which instruments are considered through a combination of their objectives, transmission channels, and changes in the central bank's balance sheet. Second, the study goes beyond the scope of predominantly descriptive reviews, complementing the analysis of international experience with its own cross-country empirical assessment using a sample of 41 countries. Third, the work demonstrates that inflationary effects of the monetary policy are fundamentally heterogeneous: panel estimates show a more robust relationship between the central bank's balance sheet expansion and inflation in developing countries, while for developed countries this relationship is weaker and more sensitive to the methodology and time horizon of the assessment.

This paper thus differs from existing approaches not only in its broad coverage of countries and instruments, but also in its attempt to combine three levels of analysis in a single study: a theoretical systematization of NTMP, a comparative analysis of country cases, and an empirical test of the hypothesis of heterogeneity in inflation effects. This approach allows answering two questions at a time: how exactly the NTMP works in theory and practice, and under what conditions is its application relatively safe or, conversely, associated with higher inflation risks.

The paper is structured according to this logic. The next section examines the theoretical background of quantitative easing, the prerequisites for its implementation, its classification, and its channels of influence. The third section analyzes the experience of individual central banks in developed and developing economies. The final section presents an empirical assessment of the

impact of quantitative easing programs and credit measures on inflation during the COVID-19 pandemic using panel regressions and the difference-in-differences method.

2. Non-Traditional Monetary Policy Measures: Theoretical Background and Classification

The history of non-traditional monetary policy measures reflects the evolution of central banks' responses to systemic shocks and the limitations of conventional interest rate policy. During the 2008–2009 global financial crisis, with interest rates reaching the zero lower bound (ZLB), and during the COVID-19 pandemic, central banks expanded their toolbox, including large-scale asset purchases, earmarked credit programs, foreign exchange market operations, and forward guidance (FG).

There is no generally accepted definition of NTMP in the academic literature. However, a strong consensus has emerged among researchers that NTMP is used to address disruptions in the monetary transmission mechanism or to stimulate the economy when traditional instruments prove ineffective [1].

Among the monetary policy measures, three main areas can be distinguished: balance sheet policy, FG, and negative interest rates. In practice, such measures can be used by central banks either in isolation (independently of each other and of traditional interest rate policy) or in various combinations, depending on the objective and the financial market situation [2].

For example, during the crisis management associated with the 2008 global financial crisis, central banks actively used balance sheet management policy to stabilize the financial system. These measures were used primarily in developed countries, where traditional monetary policy instruments were limited by the ZLB problem. Subsequently, as the emphasis shifted to more traditional macroeconomic goals, central banks began to rely more on FG [3]. During the COVID-19 pandemic, many central banks resumed the use of non-traditional measures, including large-scale asset purchases and earmarked credit programs. These measures were aimed at stabilizing financial markets and supporting the economy in an environment of close coordination of monetary and fiscal policies [4]. In general, the balance of monetary policy measures is determined individually by each central bank, basing on the specific structure of the financial system and the country's economy. The classification of monetary policy measures is presented in the table 1.

Table 1

Classification of Non-Traditional Monetary Policy Measures

	Transaction Type	Content	Impact Channel
Balance sheet policy	Lending Programs	Liquidity provision (long-term PEPIOs, LTROs) Earmarked credits/FFL-programs (FLS, TLTRO, FCIC, etc.)	Credit channel: reducing the marginal cost of funding, stimulating the origination of loans, reducing the spread between funding and lending rates
		Disclaimer: These are used in conditions of economic downturn, disrupted credit transmission, and banks' limited access to market funding. Their use is aimed at restoring the functioning of the credit channel.	
	Asset Purchases	Purchase of government bonds (QE, LSAP) Purchase of corporate bonds and commercial paper Purchase of other private assets: MBS, covered bonds, ETFs, REITs, etc. (credit easing)	Portfolio-balance channel: Reduction in the supply of long-term assets, lower yields, cheaper long-term financing, portfolio reallocation, and market stabilization. Signaling channel: confirmation of a longer period of low rates
		Disclaimer: They are used in conditions of deep recession, deflationary risks and persistently low inflation expectations, when traditional monetary policy instruments have been exhausted.	

	Transaction Type	Content	Impact Channel
	Management of bank reserves	Temporary reduction in the required reserve ratio Easing of liquidity requirements	Freeing up banks' resources, reducing their weighted average cost of funding, and strengthening the credit channel. Can be used as a supplement to FFL and QE.
Forward guidance (FG)	CB communication	Calendar FG Situational FG Delphic FG (clarification of the economic and policy outlook) Odyssean FG (preliminary commitment to hold the rate/balance sheet at a given level)	Expectation management instrument: the central bank communicates its future reaction to markets through statements, forecasts, dot plots, and the publication of the rate path. The main channel is the signaling channel: influencing the long-term interest rate component of expectations, reducing uncertainty and the risk premium, and enhancing the effect of zero or low rates
Negative interest rates (NIRP)	CB interest rate	Establishing a negative key rate/deposit rate for the Central Bank Transition to a "tiered" reserve remuneration system (some reserves are subject to a negative rate, some are not)	Extending the traditional interest rate channel beyond the zero bound: reducing market rates, making funding cheaper, stimulating lending, and redistributing portfolios into riskier assets
Other forms of NTMP	Yield curve control (YCC)	Achieving target levels of returns over different timeframes	Focused yield targeting of 10-year and other government bonds through unlimited purchases/sales: managing the shape of the curve, anchoring rate expectations, reducing the long-term term premium
	Foreign exchange market operations	Large-scale interventions to prevent excessive currency appreciation USD swap lines and other swap lines between central banks Currency swaps with commercial banks FX spot intervention, minimum exchange rate regimes	Maintaining the functioning of foreign exchange markets and/or managing the exchange rate. Weakening the national currency to counter deflation and support exports. The central bank's balance sheet is expanded through foreign assets (NFA). In some cases (SNB, ČNB), these are effectively an "external" form of quantitative easing

Source: compiled by the authors

2.1. Balance Sheet Policy

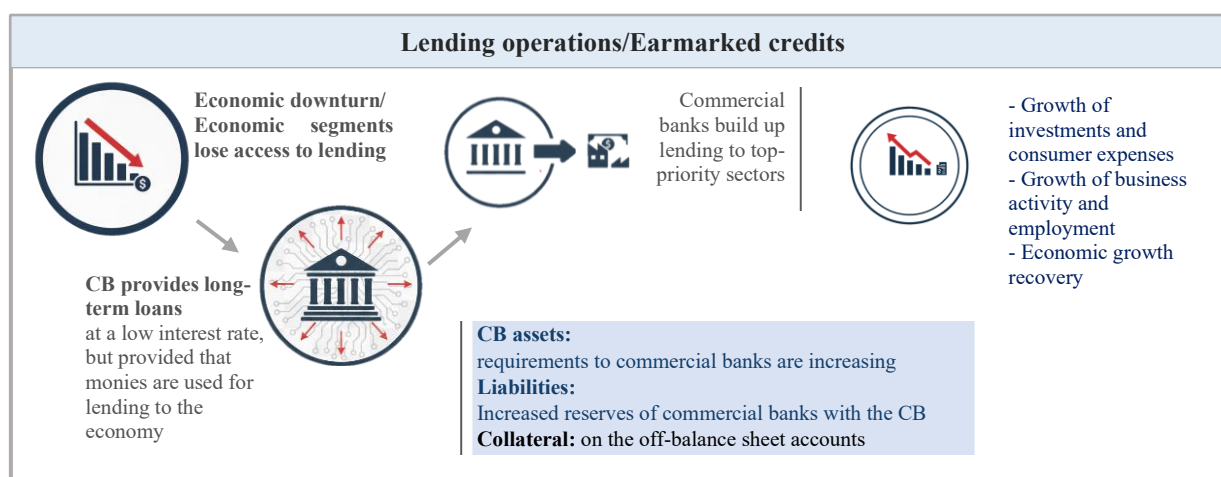
Balance sheet policy is an alternative approach to interest rate policy, which involves the central bank adjusting its balance sheet to influence financial conditions [3]. Unlike traditional liquidity management tools, it is characterized by large-scale and focused influence on the structure and size of the central bank's assets/liabilities. Balance sheet management policy includes large-scale asset purchases and exchange transactions (swap programs), the provision of central bank financing (liquidity) on non-standard terms (long terms, specific targets, etc.), and changes in the duration structure of assets.

The most common instruments in practice for this type of NTMP are funding for lending programs (FFLs) and large-scale asset purchases (LSAPs).

Both approaches are used by the central bank to stimulate economic activity. Through FFLs and LSAPs, the central bank increases the money supply, helping to reduce financing costs and expand lending, ultimately improving the transmission of monetary policy signals to the real economy [5]. However, the nature of the impact of these instruments differs: while LSAPs reduce overall financing costs by lowering long-term yields, FFLs directly stimulate bank lending and reduce the spread between market and bank borrowing rates. [6].

Figure 1

FFL Schemes



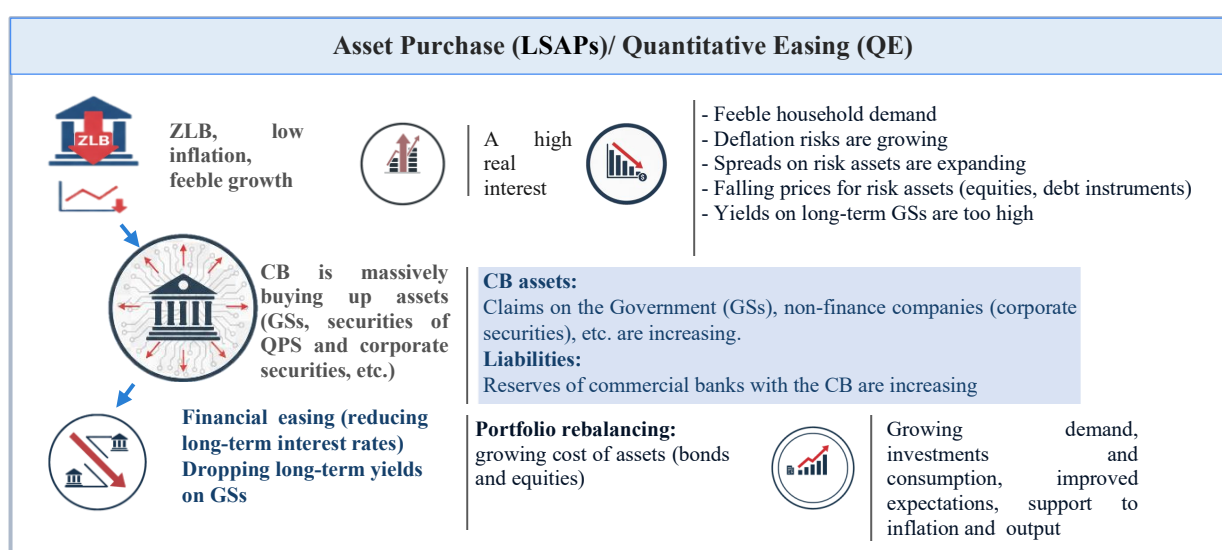
Source: compiled by the authors

Under FFLs, the central bank provides banks with access to affordable financing, typically on the condition of continuing to lend to specific segments of the economy. This instrument's impact on the cost of financing is both direct and indirect. On the one hand, FFLs directly increase the availability of bank loans by reducing the marginal cost of funding. On the other hand, FFLs have an indirect effect on the financial market: by reducing demand for alternative funding sources, they contribute to lower profitability and improve financing conditions for the system as a whole [7].

In public discussions, central bank asset purchase programs are collectively referred to as quantitative easing (QE). However, in academic literature and the professional community of central banks, QE is distinguished from a similar instrument – credit easing (CE). Unlike QE, which focuses primarily on balance sheet size, CE aims to manipulate both the size and composition of the central bank's assets [8].

Figure 2

LSAPs or QE Scheme

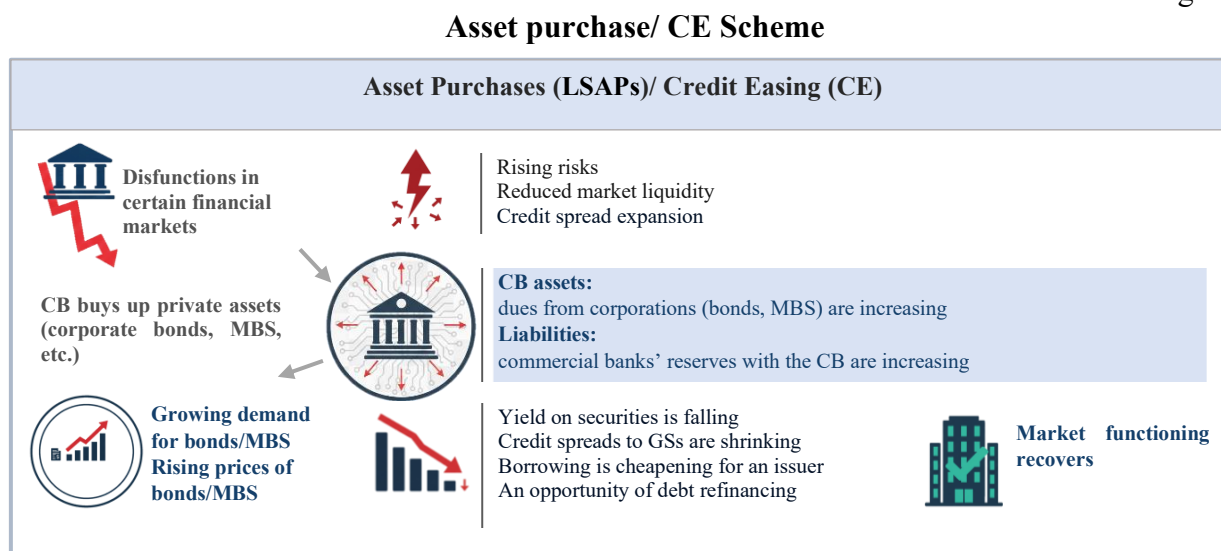


Source: compiled by the authors

Central banks may use different criteria to differentiate the two instruments. In particular, the Bank of Canada proposes the following definitions: QE is the direct purchase of government or private securities financed through reserve creation; CE is the acquisition of private assets in

certain segments of the credit market, which can be financed by increasing banks' reserves at the central bank, reducing their holdings of other assets, or increasing government deposit liabilities¹. However, the primary goal of QE is to stimulate aggregate demand, while CE is to improve the functioning of key markets that are important to the functioning of the financial system [9].

Figure 3



Source: Compiled by the authors

In implementing LSAPs, central banks may purchase a variety of financial assets depending on policy objectives, financial market structure, and the institutional characteristics of each country. The composition of the assets purchased ranges from government securities to private assets such as corporate debt, commercial paper, covered bonds, and even stocks and stakes in mutual funds [10]. Examples include the purchase of mortgage-backed securities and agency bonds by the US Federal Reserve, bank-backed bonds by the ECB, and commercial paper, shares in exchange-traded funds, and real estate investment trusts by the Bank of Japan (Figures 1, 2, 3).

Through asset-purchase programs, a central bank impacts the economy via two main channels – portfolio-balance channel and signaling channel.

The portfolio-balance channel suggests that the central bank can influence long-term returns by altering the relative supply (volume in circulation) of various financial assets. Through large-scale asset purchases, the central bank can influence their market supply and, consequently, returns. The presence of heterogeneous agents in the market with different risk and liquidity preferences allows the central bank to influence the allocation of funds, potentially influencing real activity and inflation [1].

The signaling channel implies that the central bank's purchases of financial assets provide information to markets about future monetary policy. Official announcements by the central bank can serve as a mechanism for confirming commitments or signaling the seriousness of its policy intentions [11]. Since long-term yields are shaped not only by the current level of short-term rates but also by expectations of their dynamics, the signaling channel can reduce yields over longer maturities by reducing the expectation component [12]. The effectiveness of this channel depends on the confidence of economic agents in the actions of the central bank and on the extent to which private expectations and confidence influence macroeconomic and financial conditions [1].

2.2. Forward Guidance

To enhance the signaling effect, central banks use another non-traditional monetary policy instrument – forward guidance (FG). This consists of statements by the central bank containing

¹ In the case of financing the CE by reducing the holdings of other assets or increasing deposit liabilities, the central bank can keep the reserve money unchanged if its impact on reserves is sterilized.

direct information about the likely development of the economy and the monetary policy stance in future. The key function of FG is to shape and manage market participants' expectations regarding the future path of interest rates. Through this instrument, the central bank can provide additional stimulus at the zero lower bound, signaling that interest rates will remain below the level implied in market quotes. In addition, FG can reduce the degree of uncertainty, thereby reducing interest rate volatility and, possibly, the risk premium [13].

FG can take various forms (e.g., setting targets, setting economic forecasts, announcing a plan) and be implemented in many venues (official speeches, news releases, and monetary policy reports) [10]. Depending on its parameters, FG can relate to a specific period of time (calendar-based) or depend on economic conditions (situational-based); contain specific numerical values (quantitative) or are expressed in vague terms (qualitative).

For example, a central bank may announce that it does not plan to cut the key rate in the foreseeable future (calendar and qualitative), or until inflation reaches the 2% target (contingency and quantitative), or within a year (calendar and quantitative), or until labor market conditions improve significantly (contingency and qualitative). Depending on complexity of the announcement, the central bank may use different combinations of parameters [3]. In general, the practice of central banks in developed countries demonstrates a consistent preference for the contingency and qualitative FG formats, as they allow market expectations to adjust in accordance with incoming information [13].

The practical usefulness of FG may depend on whether central bank announcements are viewed as a commitment, whether they are clearly stated, and whether they are interpreted correctly [14]. According to some economists, an effective FG includes a forward commitment from the central bank, i.e., when the public is confident that the central bank will fulfill its obligations, its statements can influence expectations regarding future interest rate dynamics [15]. This format of FG, which includes a promise or commitment from the central bank to conduct policy in a certain way, is called Odyssean. In contrast, Delphic FG is intended solely to inform and clarify the economic outlook and policy plans of the central bank [16].

Both the Delphic and Odyssean FG formats become particularly important when central bank interest rates reach near-zero levels. Delphic FG helps the public better understand the central bank's response, which may differ significantly from its actions under standard conditions. Odyssean FG helps convince market participants of the central bank's intention to keep interest rates low for an extended period, even if this implies a temporary overshoot of the inflation target [10]. Thus, FG can act as an effective mechanism for influencing the expectations of economic agents, increasing the effectiveness of policy.

2.3. Negative Interest Rate Policy

Negative interest rates, i.e. charging interest on banks' excess reserves, are a recent addition to the arsenal of non-traditional monetary policy measures [3]. This tool has been used at certain points by a number of central banks, including the ECB, the Danmarks Nationalbank, the Swiss National Bank, the Riksbank, and the Bank of Japan. These central banks introduced negative interest rate policies (NIRPs) to provide additional monetary policy flexibility within the constraints of rates reaching the zero lower bound. The motivations for this decision varied: some central banks sought to stabilize inflation expectations and support economic growth, while others focused on reducing pressures that contributed to currency appreciation [17].

While the underlying motivations for implementing NIRP may differ, the channels through which it influences economic activity and inflation are conceptually similar to those of traditional monetary policy. Negative interest rates affect the economy primarily through the interest rate, credit, portfolio, and exchange rate channels. Similar to the effects of positive interest rates, lowering rates below zero leads to lower borrowing costs and lower yields in financial markets. Lower rates increase banks' incentives to channel excess liquidity into lending, while investors' reorientation toward higher-yielding assets increases their market value and creates a wealth effect. Lowering domestic rates relative to foreign ones also leads to a weakening of the national currency

and supports exports. The combined effects of these transmission channels create the preconditions for expanding aggregate demand and accelerating economic activity [18].

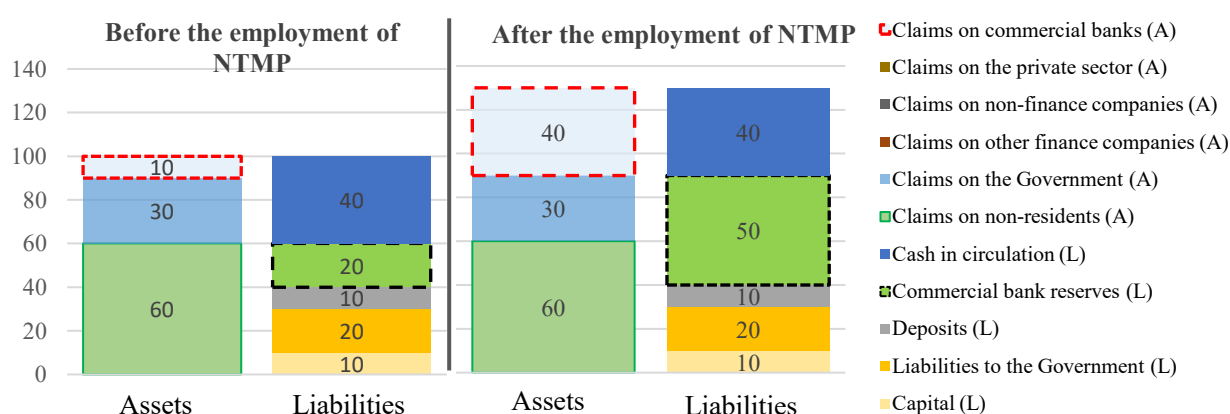
From a theoretical perspective, a negative interest rate policy appears justified; however, its practical implementation faces a number of limitations. Banks are often hesitant to fully pass on negative rates to deposits, fearing an outflow of funds into cash or alternative assets, which could reduce the effectiveness of the interest rate channel. Furthermore, pressure on financial sector profitability may limit the propensity to increase lending and weaken the effectiveness of the credit channel. As a result, the actual effect of negative rates may be less pronounced than theoretically assumed [19]. In addition to the instruments discussed (FFLs, QE, CE, FG, NIRP), central banks have also employed other forms of non-traditional monetary policy, such as large-scale foreign exchange interventions (the Swiss National Bank and the Czech Central Bank used this instrument to temporarily maintain a minimum exchange rate against the euro to prevent excessive strengthening of the franc/crown and its deflationary consequences), yield curve control (the Bank of Japan used market operations to control interest rates across different maturities to stimulate the economy), and others. As new challenges arise in the global economy, central banks are expanding and adapting their instruments, combining proven approaches with new practices.

2.4. The Scheme of Impact of Key NTMP Measures on a Central Bank Balance Sheet

This section presents a schematic diagram of the impact of key monetary policy operations on the central bank's balance sheet, demonstrating how various measures – LTRO/TLTRO, QE/YCC, and FX-swap lines – transform the asset-liability structure and enhance the overall monetary policy stimulus. Understanding the mechanics of these changes is an important starting point for the next section, which will examine the experience of using unconventional instruments in individual countries and demonstrate their actual impact on central bank balance sheets.

Figure 4

Impact of FFL Programs on a Central Bank Balance Sheet



Note: LTRO/TLTRO type operations increase claims on banks (CB assets) – in the example by 30 units – and concurrently increase commercial banks' reserves in liabilities by the same amount (correspondent accounts with the CB), providing banks with additional liquidity for lending.

Source: Compiled by the authors

Figure 5

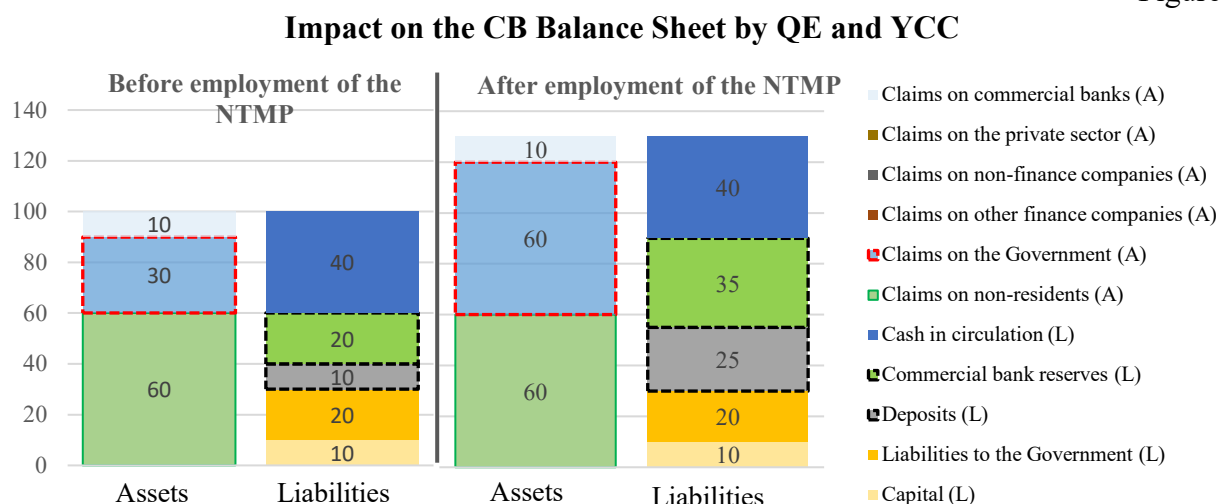
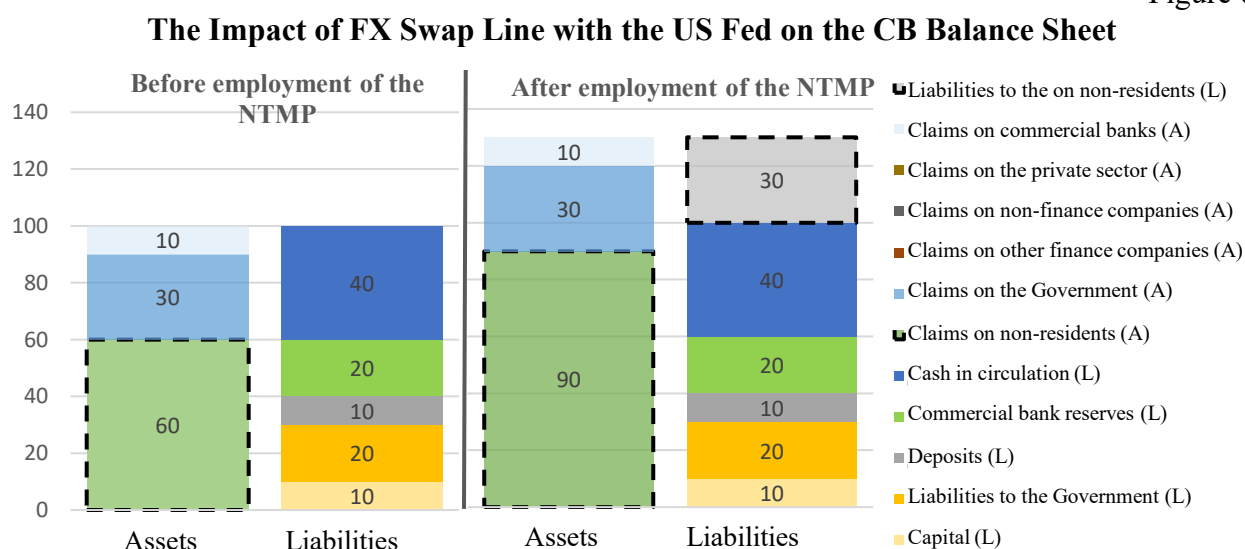


Figure 6



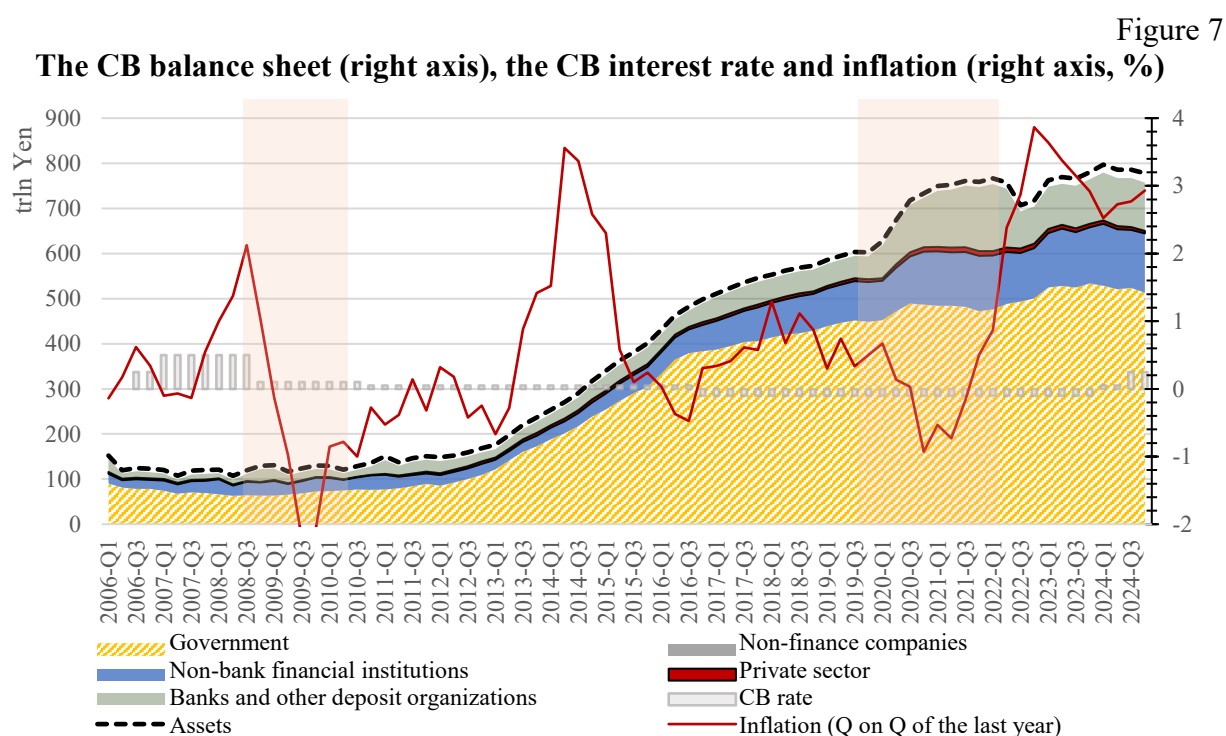
3. The Experience in Employing Non-Traditional Monetary Policy Measures by Central Banks

The Bank of Japan. Since the asset price collapse of the late 1980s, Japan has faced a prolonged period of weak growth and deflation. It was during this period that the first elements of unconventional monetary policy began to emerge.

In 1999, the Bank of Japan introduced a zero interest rate policy (ZIRP), marking one of the first instances of a central bank moving beyond traditional interest rate policy. An attempt at normalization in 2000 proved premature and was accompanied by a return of the rate to the zero bound.

In 2001, the Bank of Japan took the next step, launching the world's first QE program [20]. The central bank switched from targeting the overnight interest rate to a target reserve volume and significantly expanded operations with government bonds and certain private assets. These measures were aimed at stabilizing the financial system and preventing deepening of deflation. By 2006, after some stabilization of inflation, the QE program was concluded.

The 2008 global financial crisis was another deflationary shock for Japan, exacerbating structural problems in the economy². The contraction of global trade, strengthening of the yen, and the deterioration of corporate dynamics intensified deflationary pressures, with companies and households opting to cut spending and strengthen their balance sheets [21]. Initially, the Bank of Japan attempted to respond with a traditional set of instruments: a zero interest rate and an active FG. However, inflation remained negative, and the central bank's balance sheet expanded moderately (Figure 7). This reflected the weakness of traditional transmission channels.



In 2010, the Bank of Japan transitioned to the Comprehensive Monetary Easing (CME) program, which included a wide range of asset purchases, from government bonds to corporate securities. This phase marked the transition to a full-fledged balance sheet expansion policy, which was reflected in a gradual increase in assets.

The decisive turning point came in 2013 with the launch of quantitative and qualitative monetary easing (QQE), a key element of Abenomics.³ [22]. QQE involved large purchases of government securities and risky assets, as well as the formation of long-term inflation expectations. In 2013–2014, inflation temporarily accelerated, but falling energy prices and weak domestic demand soon led to a deceleration in inflation again, necessitating increased asset purchases [23].

In 2016, the Bank of Japan stepped up stimulus by introducing negative interest rates (NIRP) and yield curve control (YCC). In other words, to maintain yields within a given range, the Bank of Japan announced its willingness to buy or sell bonds in any volume, effectively fixing the price of long-term securities instead of a predetermined purchase quantity, as with traditional

² In the graph in Figure 7, this is reflected by a sharp decline in inflation and the key rate being kept at the zero lower bound.

³ In the graph in Figure 7, this is shown by a sharp acceleration in the growth of assets.

QE. The YCC regime allowed for the maintenance of accommodative financial conditions without exponential balance sheet growth. During this period, inflation gradually stabilized near 1%.

The COVID-19 pandemic once again increased the need for monetary support [20]. This was reflected in the Bank of Japan's balance sheet as an increase in assets, reflecting the launch of the Special Program to Support Financing, expanded purchases of corporate securities, and support for stock markets (Figure 7). At the same time, the Bank of Japan provided dollar liquidity through swap lines with the Federal Reserve. The key interest rate remained negative, and the YCC regime continued to play a stabilizing role.

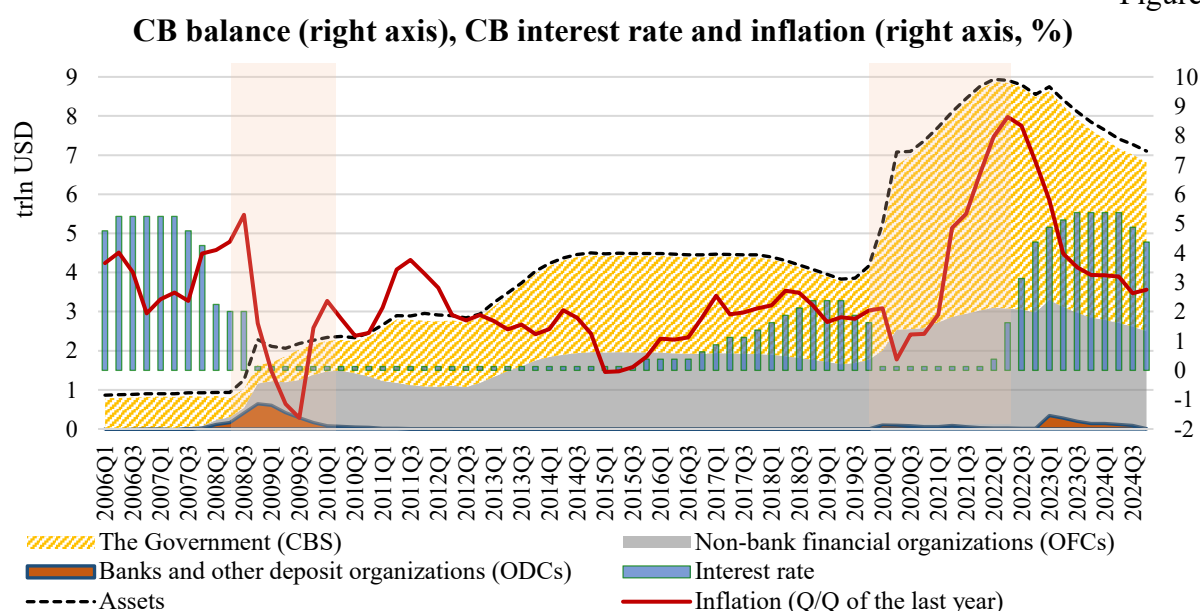
Since 2023, inflation has stabilized near the target level for the first time. The Bank of Japan has announced a gradual phase-out of non-traditional measures by 2026.

According to Bank of Japan researchers, the use of non-traditional monetary policy instruments since the introduction of QQE has increased the annual change in the CPI (excluding fresh food and energy) by 0.5-0.7 percentage points on average over the entire period through April-June 2023 [23]. These results confirm that the Bank of Japan's policy has played a key role in the economic recovery from chronic low inflation. At the same time, the persisting scale of the balance sheet and reliance on YCC and NIRP instruments indicate the structural unconventionality of the policy being pursued, reflecting the long-term impact of demographic factors and persistent inflation expectations, which continue to limit the potential for price growth.

US Federal Reserve System. The United States provides another illustrative example of a country with a developed financial market where the central bank was forced to go beyond traditional interest rate policy.

The 2007–2008 financial crisis led to a rapid easing of the US monetary policy. The Federal Reserve consistently lowered its target federal funds rate from 5.25% to a range of 0–0.25% by December 2008, exhausting the potential of the traditional instrument and finding itself at the zero lower bound. In response, the Fed turned to non-traditional measures, combining the FG with large-scale asset purchases (Figure 8) [24].

Figure 8



Source: compiled by the authors based on the data from <https://data.imf.org/>

The first round of QE was announced in November 2008 and included the purchase of \$500 billion in mortgage-backed securities (MBS) and \$100 billion in government agency bonds. The program was expanded in March 2009. At the same time, the Fed strengthened its FG by replacing the vague language about maintaining easy conditions with the statement “for an extended period,” thereby anchoring expectations of low rates.

The sluggish economic recovery forced the Fed to maintain an expanded balance sheet and launch a second round of QE (November 2010), which involved purchasing \$600 billion in Treasury bonds. In addition to direct asset purchases, the FOMC announced a new Maturity Extension Program (MEP) and a reinvestment policy. Another key innovation in the Fed policy was the use of the calendar and quantitative FG format – in a statement on August 9, 2011, the central bank announced its intention to keep rates low “at least until mid-2013”. The FG practice was further developed by the introduction of the well-known “dot plot” in January 2012, which reflects FOMC members’ assessments of the future rate path and enhances the influence of Fed communications on market expectations [25].

The slow labor market recovery led to the launch of QE3 in September 2012, which was the first to use a “conditional” format: the Fed announced its willingness to purchase MBS and Treasury securities worth \$40 billion per month until the labor market improved “substantially”. By the time the program ended in 2014, the Fed’s balance sheet had reached \$4.5 trillion. (Figure 8).

Following the end of quantitative easing in 2014, the Federal Reserve gradually reduced its asset position as part of its balance sheet normalization program until the coronavirus outbreak, when the regulator was forced to resort to stimulus measures again.

In response to the recession caused by the COVID-19 pandemic, the US monetary policy was aimed at containing the negative economic implications. As with the global financial crisis, the Fed first lowered the upper bound of the target federal funds rate from 1.75% to 0.25%. Furthermore, the central bank continued to use the FG, signaling its intention to keep rates low until inflation and unemployment in the US returned to target [26].

As part of its anti-crisis measures to support the economy, the Fed resumed its liquidity and lending support programs, which now offered emergency lending not only to financial institutions but also to large corporations and small and medium-sized businesses. In addition, the Fed provided liquidity to international markets by lowering rates on its own swap lines.

In March 2020, following severe dysfunction in financial markets, the FOMC announced the purchase of at least \$500 billion in US Treasury bonds and \$200 billion in MBS. The LSAP was subsequently expanded to a potentially unlimited scale with the announcement that the Fed intended to purchase assets “in amounts necessary to support market functioning”. In addition, new primary and secondary market corporate financing facilities (Primary Market Corporate Credit Facility and Secondary Market Corporate Credit Facility) were launched [27]. With the introduction of these facilities, the Fed gained the authority to purchase new bonds with favorable terms and existing corporate bonds, as well as investment-grade corporate bond ETFs. Ultimately, the Fed made a relatively small volume of bond and ETF purchases. However, according to most experts, it was not the portfolio rebalancing channel, but the signaling channel of asset purchases that contributed to stabilization of debt markets. By the end of 2020, the PMCCF and SMCCF were suspended, and all acquired corporate bonds and ETFs either expired or were sold by August 2021 [28].

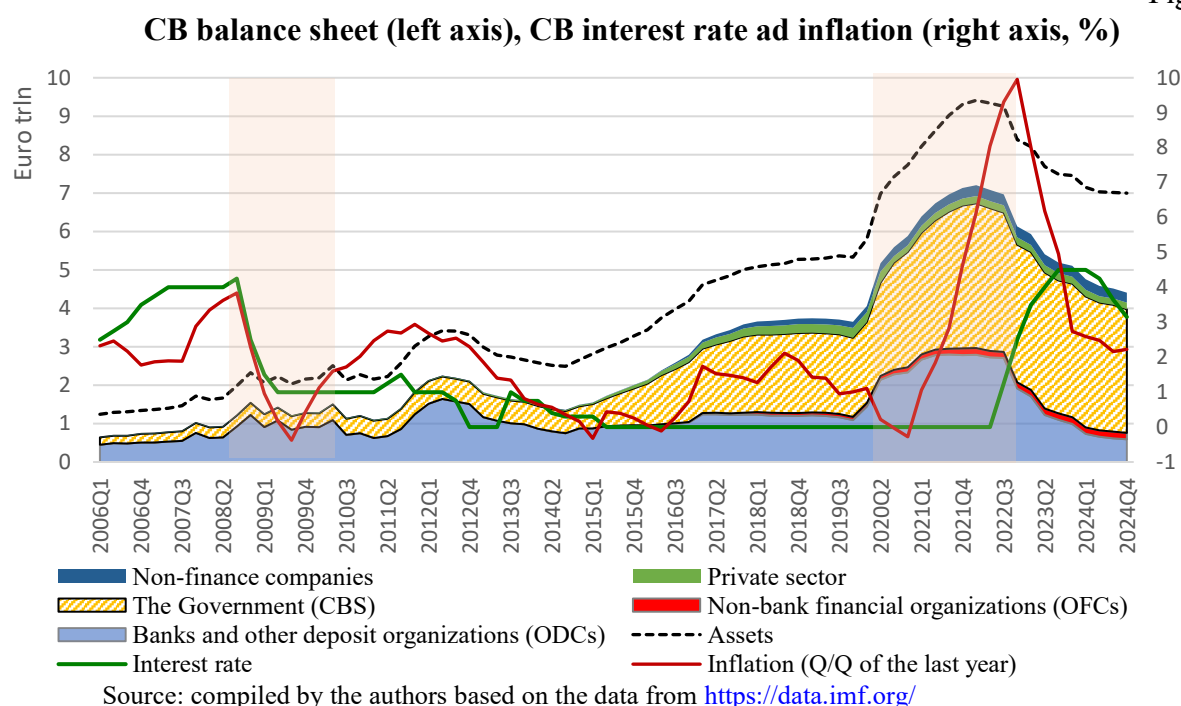
Overall, the LSAPs played a key role in the accelerated recovery of the US economy. However, in the second half of 2021, the Fed’s measures, combined with massive fiscal stimulus and disruptions in global supply chains, became a factor in the sharp rise in inflation, which reached its highest levels in four decades (Figure 8).

Until November 2021, the Fed continued to purchase \$120 billion in securities monthly, gradually reducing the volume of purchases each month. As a result of this gradual reduction in the volume of QE operations, QE was fully completed in March 2022, when net securities purchases reached zero [29]. By this point, the cumulative inflationary effect of non-traditional measures had fully manifested itself, forcing the Fed to tighten monetary policy.

European Central Bank. The ECB’s experience with monetary policy is an example of a diverse, systematic, and extensive policy aimed at maintaining financial market stability and stimulating the EU economy in the face of chronically low inflation and economic growth. It can be roughly divided into three overlapping phases: the initiation of liquidity programs after the 2008

crisis, the active period of large-scale asset purchases to stimulate the economy from 2015 onward, and measures following the onset of the COVID-19 crisis (Figure 9).

Figure 9



The 2008 global financial crisis marked a turning point in the development of the ECB's monetary policy instruments. When interest rate changes ceased to effectively influence lending activity, the ECB was forced to switch to NTMP measures, including quantitative easing, long-term refinancing operations, and negative interest rates.

From 2008 to 2011, the ECB focused on providing banks with liquidity through long-term refinancing operations (LTROs). The largest of these were conducted in December 2011 and February 2012 for a term of three years and a total volume of approximately €1 trillion [30]. These measures stabilized the banking system and reduced the risk of systemic defaults.

In 2012, at the height of the European debt crisis, the Outright Monetary Transactions (OMT) instrument was announced. This was essentially a program of potential unlimited purchases of government bonds from eurozone countries participating in macroeconomic stabilization programs. Although the ECB never used the OMT, the announcement of the program itself sharply reduced the yields of Italian and Spanish bonds [31]. Thus, it can be argued that the signaling effect of the policy was evident.

The deceleration in inflation to minimal levels also prompted the ECB to launch a comprehensive asset purchase program (APP) in early 2015 that comprised four subprograms. Net purchases amounted to €60 billion per month until March 2016, then increased to €80 billion. After 2017, volumes gradually declined, reaching €15 billion by the end of 2018. In January 2019, the ECB ceased net purchases, while maintaining the reinvestment of redeemable securities⁴. However, in November 2019, the program was resumed at €20 billion per month. By the time net purchases ended in July 2022, the total APP portfolio reached approximately €3.2 trillion [32].

In parallel with asset purchases, the ECB introduced a negative deposit rate of -0.10% for the first time in June 2014, and by 2019 it had been reduced to -0.50% [33]. In this way, the ECB attempted to encourage banks to channel excess liquidity into lending. This measure reinforced expectations of low rates and contributed to cheaper borrowing.

Targeted Longer-Term Refinancing Operations (TLTROs) were also launched in 2014 to support lending to businesses and households. Unlike LTROs, the interest rate under these lending

⁴ ecb.europa.eu/mopo/implement/app

operations decreased depending on how much more loans the bank provided to the real sector and households. For example, the third program, TLTRO III, launched in September 2019, allowed banks to obtain three-year loans at rates down to -1.0% subject to meeting lending conditions [34]. The total volume of loans provided at its peak reached approximately €2 trillion.

In March 2020, the ECB announced the launch of the Pandemic Emergency Purchase Programme (PEPP) with an initial volume of €750 billion [35]. The program was highly flexible: the ECB could make temporary purchases in countries with increased volatility.

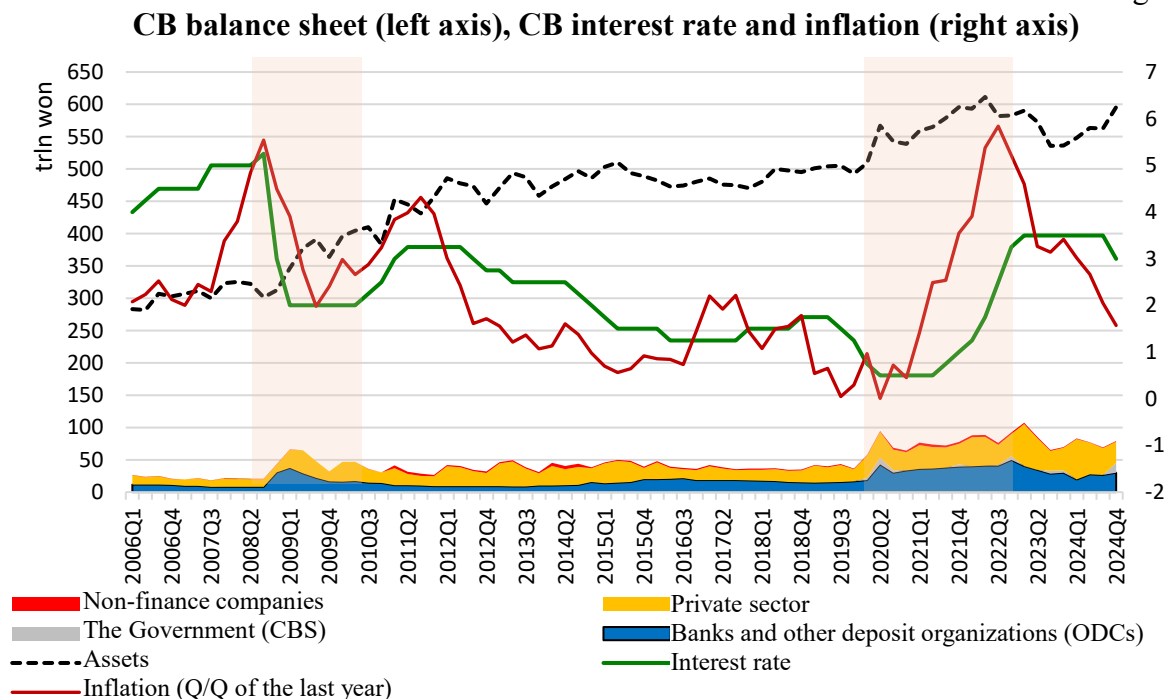
By the end of net purchases in March 2022, the cumulative volume of the PEPP had reached approximately €1.55 trillion [36]. The program helped stabilize financial markets during the pandemic and prevented the widening of yield spreads between eurozone countries.

Taken together, all these programs led to a sharp increase in the ECB's balance sheet (Figure 9), which amounted to approximately 65% of the eurozone's GDP [37]. By the end of 2024, the balance sheet had shrunk to €6.4 trillion, where assets acquired through monetary policy programs amounted to €4.3 trillion [38].

Overall, the ECB's extensive monetary policy measures helped avoid deflation, reduce borrowing costs, and support lending activity. However, the regulator was unable to avoid side effects: rising asset prices, pressure on bank profitability, and risks of financial market dependence on the central bank. A significant increase in inflation is also worth noting: annual inflation peaked at 10% by the end of 2022.

Bank of Korea. The Bank of Korea's experience with non-traditional monetary policy differs significantly from that of the United States, Japan, and the Eurozone, reflecting the structural characteristics of the Korean economy. For this country, the key channel of vulnerability is not domestic demand, but access to foreign exchange and the stability of external financing. This feature is clearly visible in the chart (Figure 10): despite fluctuations in rates and inflation, the Bank of Korea's asset structure remains stable, and the volume of claims on the government, banks, and non-banking organizations is minimal, reflecting the fact that the bulk of the balance sheet consists of international reserves, not domestic quantitative easing programs.

Figure 10



Source: compiled by the authors based on the data from <https://data.imf.org/>

During the global financial crisis of 2008–2009, the central channel of stress was a critical shortage of dollar liquidity [39]. In response, the Bank of Korea relied on international currency swap lines [40]. A line of up to \$30 billion with the Federal Reserve allowed for \$16 billion in

dollar funding auctions, reducing pressure on the financial sector and limiting fluctuations in the won exchange rate. Additionally, regional mechanisms were activated – a swap with the People's Bank of China for 180 billion yuan and an expansion of the line with the Bank of Japan from 3 to 20 billion dollars.

The COVID-19 pandemic has become an example of the most comprehensive use of non-traditional measures. The Bank of Korea reopened its swap line with the Federal Reserve, increasing its volume to \$60 billion, of which domestic banks received over \$19 billion through auctions. This period is reflected not in asset growth, but in a sharp rate cut and increased inflation volatility (Figure 10), highlighting that the primary policy channel was financial, not balance sheet. In parallel, the central bank launched Unlimited Repo Operations, which allowed for weekly fixed-rate repos to meet all demand. From March to December 2020, repo volume reached 23 trillion won, and direct government bond purchases amounted to approximately 11 trillion won – one of the few episodes that significantly impacted the dynamics of government claims. In addition to liquidity provision operations, earmarked credit market support mechanisms were expanded: the Corporate Bond-Backed Lending Facility program with a limit of 10 trillion won [41], an increase in the upper limit of the Bank-Intermediate Lending Support Facility from 25 to 43 trillion won [42], and funding for the operations of the National Wealth Fund by 2.5 trillion won. These measures softened yield volatility and stabilized inflation after the sharp decline in 2020 [43]. In the subsequent period, their impact on inflation dynamics remained moderate and was mainly indirect, since the scale and duration of the use of non-traditional instruments were relatively small.

Overall, the Bank of Korea's experience demonstrates that non-traditional monetary policy measures primarily served a stabilization function and were aimed at preventing currency and financial imbalances [44]. The impact of non-traditional measures on the real sector remained limited, and economic recovery objectives were addressed in conjunction with active fiscal policy.

The Bank of Canada. The 2008 global financial crisis was one of the biggest tests of Canada's monetary policy, forcing the central bank to look beyond its traditional toolbox.

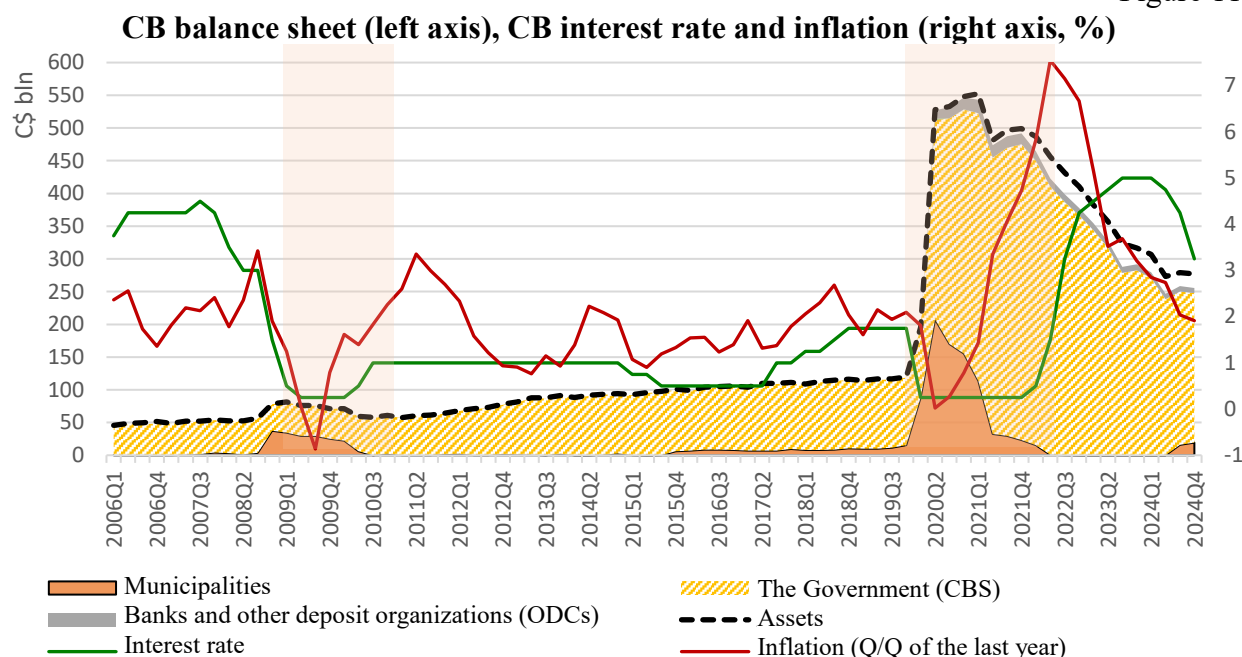
A consistent reduction in the overnight rate quickly led to the lower bound being reached at 0.25% in April 2009. In the absence of the ability to stimulate the economy through traditional means, the Bank of Canada emphasized the new conditional commitment instrument, a key example of Odyssean forward guidance. On June 22, 2009, the Bank of Canada announced its readiness to hold the rate at the minimum level until the end of the second quarter of 2010, provided the inflation outlook remained favorable. This helped reduce market uncertainty, lower long-term rates, and strengthen confidence in the predictability of monetary policy [45].

The Bank of Canada also implemented large-scale liquidity support programs. These programs provided second-tier banks with access to funding secured by a broader range of collateral (asset-backed commercial paper, U.S. Treasuries, non-mortgage loan portfolios, etc.). During the crisis, the total volume of liquidity provided reached over C\$100 billion, including joint initiatives with the U.S. Federal Reserve and the Canada Mortgage and Housing Corporation (CMHC). This measure helped prevent large-scale bank defaults and maintain the availability of credit for the economy.

A decade later, the COVID-19 pandemic once again forced Canada to use non-traditional monetary policy measures. In April 2020, the Bank of Canada launched its first quantitative easing program, the Government of Canada Bond Purchase Program (GBPP) [46]. Initially, under this program, the Bank of Canada conducted regular secondary purchases of government bonds in the amount of at least C\$5 billion per week; the parameters were later adjusted as the focus shifted from restoring financial market functioning to stimulating aggregate demand. Government bond purchases continued until October 2021, after which the Bank of Canada entered reinvestment mode (Figure 11).

In addition to the main GBPP program, targeted windows were in place to support the corporate sector, provincial debt markets, and bank liquidity [47]. As markets stabilized, the Bank of Canada terminated most of its asset purchase programs in the spring of 2021.

Figure 11

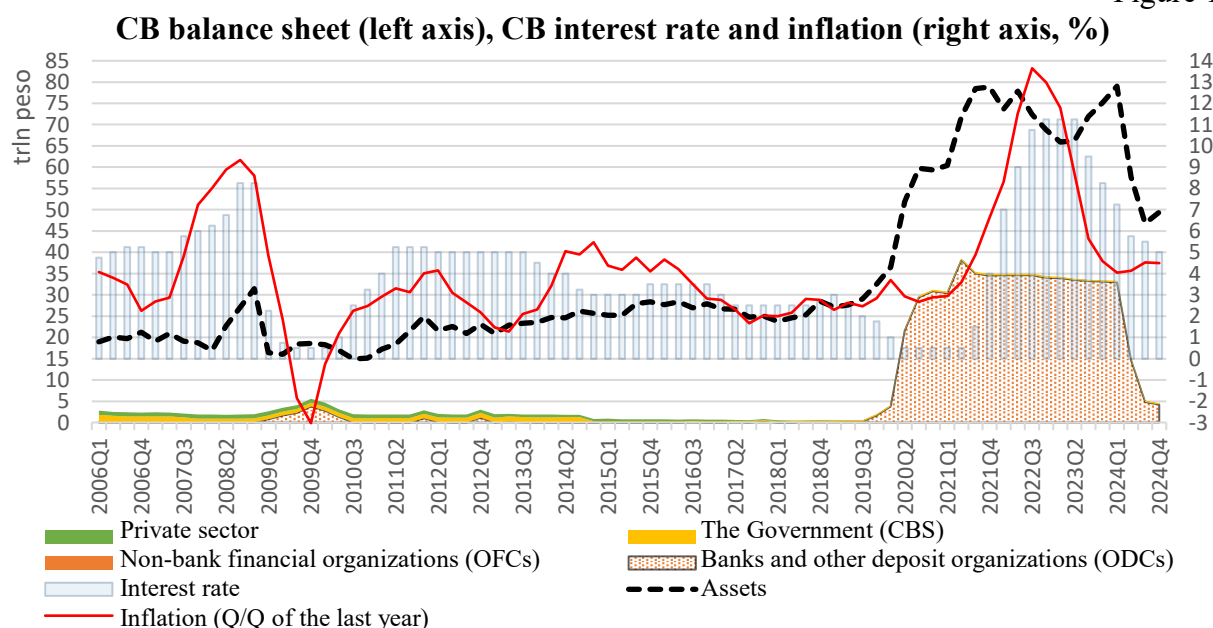


Concurrently with QE, the Bank of Canada continued to implement the FG, announcing on October 28, 2020, its intention to hold the interest rate at the effective lower bound until economic instability was eliminated to ensure sustainable achievement of the 2% inflation target. Such communication policy had a significant impact on the financial market, producing significant effect on the path of the expected short-term rate.

According to the Bank of Canada research estimates, the launch of the GBPP had a significant impact on financial markets and the macroeconomy: long-term bond yields fell by 20-80 basis points, which could lead to an acceleration in inflation of 0.6-1.8 percentage points year-on-year [60].

Central Bank of Chile. The Central Bank of Chile has employed non-traditional monetary policy measures primarily in response to major external shocks, when standard instruments proved insufficient to stabilize the economy. The chart (Figure 12) clearly highlights two key episodes of asset expansion.

Figure 12



The first episode occurred during the global financial crisis of 2008–2009. A sharp deterioration in external conditions, falling commodity prices, and rising risk premiums led to tensions in the external funding market, accompanied by significant inflation volatility and a rapid rate hike. In response, the Central Bank of Chile carried out large-scale foreign exchange interventions, announcing the sale of up to 8 billion dollars, and expanded its liquidity provision to the banking system through repo facilities [48]. These measures were accompanied by a short-term increase in assets (Figure 12). These were temporary stabilization measures aimed at supporting the functioning of the financial system; after the external environment normalized, the balance sheet quickly returned to its previous path, and the asset structure remained virtually unchanged.

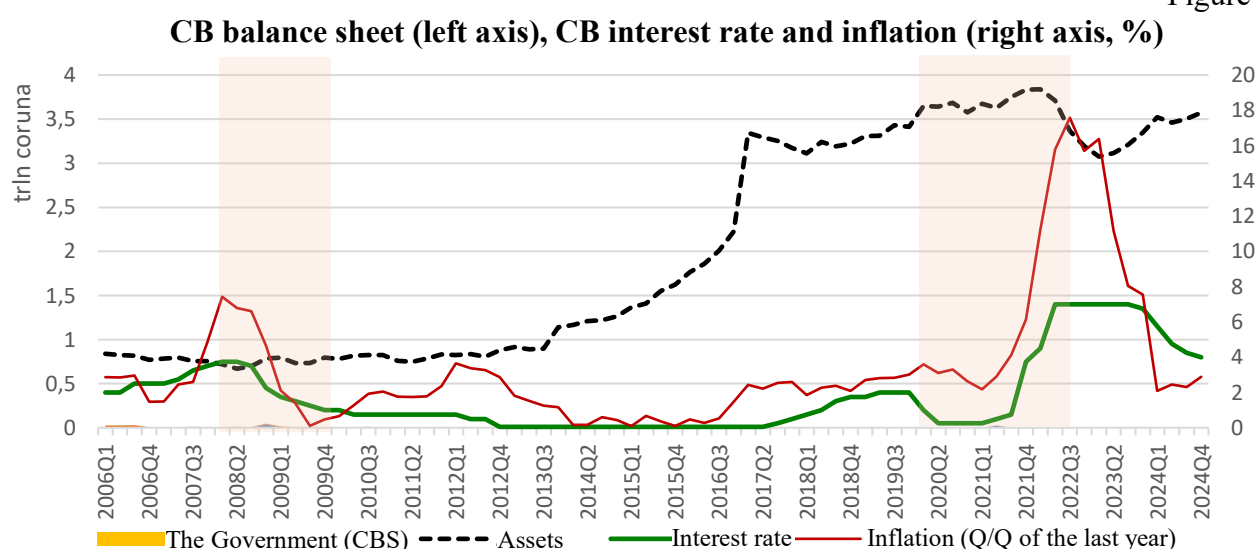
The second episode began in 2020 and reflects a qualitatively different scale and policy architecture. The consequences of the COVID-19 pandemic required a more comprehensive set of instruments. During this period, the FCIC (Facilidad de Crédito Condicional al Incremento de las Colocaciones) earmarked credit lines program was launched, providing banks with access to long-term funding on preferential terms with a commitment to expand lending to the private sector. According to the BIS, the FCIC has become a key example of the adaptation of the NTMP to the conditions of developing economies during the pandemic [49].

At the same time, the Central Bank of Chile purchased government and bank bonds. In addition, foreign exchange transactions were conducted and dollar liquidity was provided, although their role was auxiliary compared to significant domestic credit and balance-sheet expansion measures. According to the Central Bank of Chile itself, the combined measures of 2020–2022 led to a structural change in the central bank's balance sheet for the first time, making its dynamics comparable to QE [50].

Asset growth during this period was accompanied by a significant acceleration in inflation, peaking at around 13% in 2022. In response, the Central Bank of Chile undertook one of the most aggressive monetary policy tightenings in the region, raising the interest rate to over 11%, marking the end of the non-traditional stimulus phase. Unlike the events of 2008, the measures of 2020–2022 were systemic in nature, significantly changed the balance sheet structure, and represent a full-fledged example of non-traditional monetary policy in a developing economy.

The Czech National Bank. Unlike developed economies, which employed classic quantitative easing programs through the purchase of government bonds, the Czech National Bank (CNB) used the exchange rate as its primary non-traditional instrument, with balance sheet expansion occurring primarily through the growth of foreign reserves. The graph (Figure 13) of CNB asset dynamics demonstrates precisely this path: since 2013, the central bank assets have increased almost exclusively through foreign assets (NFAs), while claims on banks, the private sector, and the government have remained close to zero throughout the entire period.

Figure 13



Source: compiled by the authors based on the data from <https://data.imf.org/>

By the autumn of 2013, the Czech economy faced a combination of deflationary pressures, low economic growth, and the exhaustion of traditional interest rate policy: the policy interest rate was cut to virtually zero (0.05%), and inflation fell to zero. Since the CNB, unlike the Fed or the ECB, was legally restricted in its operations with government bonds, the center of gravity of non-traditional policy shifted to the foreign exchange channel. In November 2013, the CNB announced the introduction of a fixed exchange rate floor (FX floor) at 27 CZK/EUR, pledging to prevent the koruna from strengthening further than this level [51]. This decision was essentially the Czech equivalent of quantitative easing: to maintain the exchange rate, the CNB purchased foreign currency, creating new koruna, which led to a sharp increase in international reserves and a rise in bank reserves on liabilities. The National Bank's balance sheet changed asymmetrically after the introduction of the regime compared to classic QE. Domestic assets ("claims on the government", "claims on banks", "claims on the private sector") remained consistently small. However, foreign assets – primarily those denominated in euros – grew rapidly, leading to a nearly threefold increase in the balance sheet between 2013 and 2017. [52].

The FX floor regime operated through classic exchange rate transmission channels: the depreciation of the koruna stimulated exports and increased import prices, helping to break deflationary expectations. After a long period near zero, inflation returned to the 2% target range, coinciding with an acceleration in economic activity and a decline in unemployment. The exit from the regime in 2017 was implemented smoothly: the CNB ceased interventions, allowing the exchange rate to gradually strengthen. However, a significant amount of foreign reserves remained and has been still the dominant component of assets over the entire subsequent period [53].

The second significant policy episode is related to the COVID-19 pandemic. Here, another sharp increase in assets was observed after 2020; however, unlike in 2013–2017, this increase was not the result of active foreign exchange interventions. The increase in the balance sheet was primarily driven by the accumulation of international reserves and measures to support financial conditions under the pressure of an external shock, while the structure of domestic assets remained unchanged. The IMF notes that the Czech National Bank, unlike a number of neighboring countries, has made virtually no use of asset purchase programs, maintaining a focus on classical instruments and proactively raising the interest rate in response to growing inflation [54]. Thus, the response to accelerating inflation in 2021–2022 was tough and one of the most decisive among targeters countries: the rate was raised to levels of around 7%.

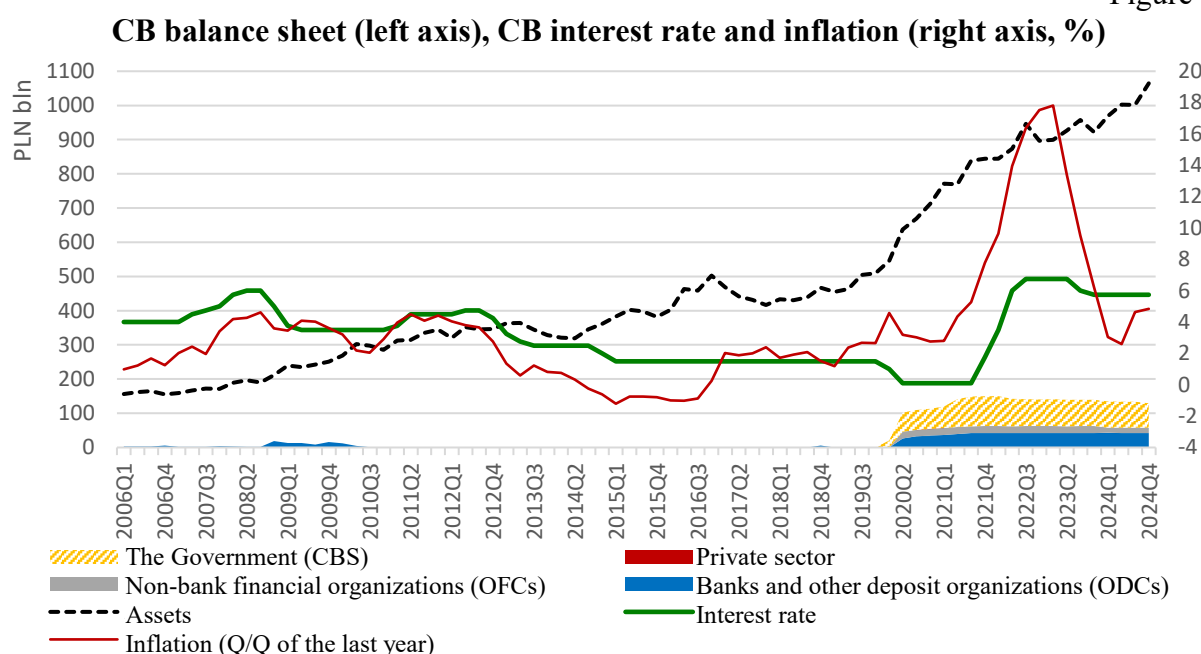
Overall, the Czech Republic's experience demonstrates a unique model of non-traditional policy, based not on the purchase of government securities or the expansion of credit programs, but on the use of the exchange rate as the main stimulus tool. This led to a structural change in the Czech National Bank's balance sheet, which now consists almost entirely of international reserves, with a minimal role for domestic assets. This approach allowed the Czech National Bank to escape the zero-rate trap, restore inflation, and support economic activity without violating legislative restrictions or resorting to direct government financing. The chart (Figure 13) clearly shows this specificity: assets grow intermittently and steadily, but their structure remains outward-oriented. This is the key distinguishing feature of the Czech Republic's monetary policy.

The National Bank of Poland. The National Bank of Poland (NBP) first employed large-scale, non-traditional instruments at the onset of the COVID-19 pandemic in March 2020, designated as structural open market operations (SOMOs). The purpose of these operations was to change the structure of long-term liquidity in the banking sector, provide liquidity for purchased securities in the secondary markets, and strengthen the monetary policy transmission mechanism. SOMOs were accompanied by other monetary easing measures adopted in response to the crisis (reductions in the NBP policy rate and minimum monthly wage standards, and the launch of a refinancing program for new loans).

Between March 2020 and December 2022, the NBP purchased securities worth about PLN 144 billion (Figure 14), which amounted to approximately 6% of 2019 GDP [49]. The largest portion of purchases was in 2020 [55], when market volatility was at its highest. These transactions sharply increased the NBP's balance sheet. Between February 2020 and January 2021, the NBP's asset volume increased from approximately PLN 530 billion to PLN 720 billion, which is

comparable to the scale of quantitative easing programs in advanced economies. At the beginning of 2021, the SOMO portfolio accounted for over 16% of the NBP's balance sheet and approximately 5% of GDP [30].

Figure 14



Source: compiled by the authors based on the data from <https://data.imf.org/>

According to the NBP's annual report, the nominal volume of bonds purchased under the SOMO amounted to PLN 136.2 billion at the end of 2022 and PLN 135.1 billion at the end of 2023 [56]. The portfolio reduced primarily due to redemptions. The NBP did not conduct active sales, reflecting a prudent approach to balance sheet normalization following the peak period of interventions.

The non-traditional measures had a significant impact on the market: government bond yields stabilized, the risk premium decreased, performance of the secondary market improved, and government borrowing in 2020–2021 had been on acceptable terms even with a significant widening of the fiscal deficit [49]. The programs also increased the liquidity of the banking system, helping to mitigate the impact of the crisis on the real sector lending.

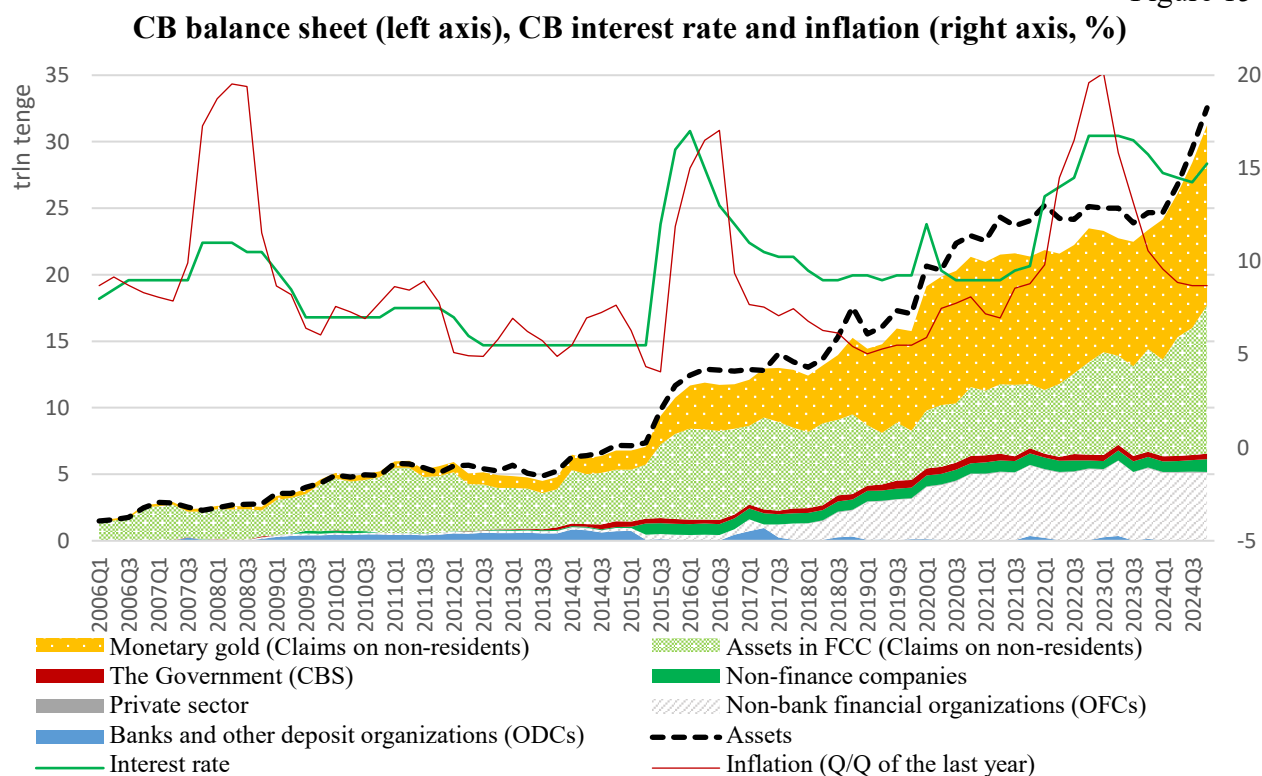
The positive effect of the NBP was primarily transmitted through two channels. First, easier access to finance leads to increased consumer demand and lowers the cost of capital, which in turn increases investment in the corporate sector and housing construction. Second, the impact of SOMO on the real economy is transmitted through trade channels. Due to the depreciation of the national currency, Polish exports became more competitive in foreign markets, leading to an improved trade balance and an increased contribution of net exports to economic growth [55].

However, the balance sheet expansion as a result of implementation of the MONSET also entailed costs. In the environment of rising interest rates and asset revaluations, the NBP recorded losses at the end of 2022. This reflects the central bank vulnerability, with its large bond portfolios, to policy tightening in response to rising inflation.

According to estimates by the NBP researchers, the effect of SOMO at the end of 2021 was comparable to a 140 bp cut in the CB rate. The net effect of the MONSET on annual inflation growth was 0.5 pp in 2021 [55]. It should be noted that this analysis was conducted in 2022 and covers only the first two years after the introduction of SOMO. Subsequently, the effect of the expanding SOMO on inflation likely increased significantly, as reflected in inflation dynamics, which peaked at 17.8% (in Q1 2023), while in the pre-COVID period it fluctuated between 2-3%. This resulted in the need to tighten the NBP policy (the base rate was raised to 6.75%).

National Bank of Kazakhstan. Although the National Bank of Kazakhstan (NBK) has not formally positioned its actions as non-traditional monetary policy, since 2018 it has implemented measures that, in their economic essence, are consistent with the NTMP toolkit, which has resulted in growth in the corresponding asset classes (Figure 15). This primarily concerns participation in government programs aimed at stimulating lending activity across various sectors of the economy.

Figure 15



Source: compiled by the authors based on the data from <https://data.imf.org/>

Thus, in mid-2018, the National Bank launched the “7-20-25” mortgage program and eliminated legislative gaps that hindered the development of the mortgage market. This led to a relaxation of mortgage lending terms, including down payment amounts, interest rates, and loan terms, which increased demand for mortgage lending [57]. Subsequently, the National Bank’s participation in various state lending programs expanded.

In 2020, with the onset of the COVID-19 crisis, as part of the implementation of anti-crisis initiatives to support the economic activity, the National Bank financed anti-crisis measures totaling 2.3 trillion tenge, which constituted more than 50% of the government’s total anti-crisis package (the program of concessional loans to business entities, the “Employment Roadmap”, “Economy of Simple Things”, and “Nurly Zher”).

Since 2018, the NBK has participated in seven economic lending programs. These programs were implemented at subsidized interest rates below the NBK’s base rate. This effectively constituted a form of earmarked lending, similar to the NTMP instruments used by central banks around the world during the crisis. It should be emphasized that in developed countries, such measures were typically implemented under the ZLB, when the effectiveness of the interest rate channel had been completely exhausted.

With the NBK’s base rate at a positive level (9-10%), large-scale lending programs reduced the effectiveness of the monetary policy transmission mechanism [58], as a significant portion of these programs were implemented outside of market pricing and with limited sensitivity to changes in the base rate.

In this regard, starting in 2021, the NBK began a gradual exit from its economic lending programs, emphasizing the need to reduce government participation in the economy as a whole, increase the share of market financing, and revise government frameworks for supporting the

economy. By the end of 2024, the NBK completed financing five of the seven programs, and by the end of 2025, it will continue to finance the “7-20-25” program only.

In accordance with the Monetary Policy Strategy until 2030, the NBK outlined areas for strengthening inflation targeting principles by eliminating barriers that reduce the effectiveness of interest rate policy. One important initiative was strengthening its communications policy, as part of which the NBK began implementing FG elements starting in 2022. Since 2024, the NBK started publishing the expected path of the base rate, enhancing the transparency and consistency of its policy.

Overall, the NBK’s experience has shown that, despite positive incentives for certain sectors of the economy, large-scale earmarked and subsidized lending programs were implemented with a positive and relatively high base rate, unanchored inflation expectations, and the economy’s persistent sensitivity to inflationary shocks. This objectively weakened the monetary policy transmission mechanism and increased inflation and foreign exchange risks. The NBK’s gradual withdrawal from lending programs and the concurrent strengthening of its communication policy indicate a transition to a “classical” inflation targeting model, where the interest rate channel and expectation management should play a key role.

4. Analysis of the Impact of the NTMP on Inflationary Processes during the COVID-19 Pandemic through the Construction of a Panel Regression

Despite the severe consequences of the pandemic, the time of COVID-19 has provided a unique opportunity to analyze the impact of non-traditional monetary policy on economic processes, particularly inflation. Many countries implemented large-scale support measures, such as quantitative easing, direct asset purchases, and extended credit facilities, almost at one time. This created rare conditions for cross-country analysis, enabling to see how similar monetary policy instruments impact inflation dynamics. This synchronized global experience allows to better understand whether the use of monetary policy can generally increase inflationary pressures. To test this hypothesis, the authors conducted a panel analysis covering a wide range of countries and a number of key macroeconomic indicators.

The sample includes 41 countries with varying levels of economic development (Figures 16 and 17). Approximately half of the sampled countries announced and implemented monetary policy measures. These countries have generally seen a significant increase in their central bank balance sheets since 2020 (often indicating active use of monetary policy). No similar dynamics were observed in the remaining countries. This made it possible to obtain a more accurate picture of the impact of large-scale monetary policy on inflation processes, taking into account other factors.

The analysis period covers 2013–2025, allowing for an adequate comparison of inflation dynamics before and after the COVID-19 pandemic. A significantly longer analysis period increases the likelihood that central banks in some countries conducted balance sheet-affecting operations outside the context of anti-crisis policy, such as liquidity management operations, replenishment of international reserves, bank recapitalizations, or foreign exchange interventions. To minimize the influence of such factors and focus on the most homogeneous time period, primarily related to the pre- and post-pandemic periods, the lower boundary of the sample is set at 2013 – the period when the effects of the global financial crisis had fully resolved and the European debt crisis had ended.

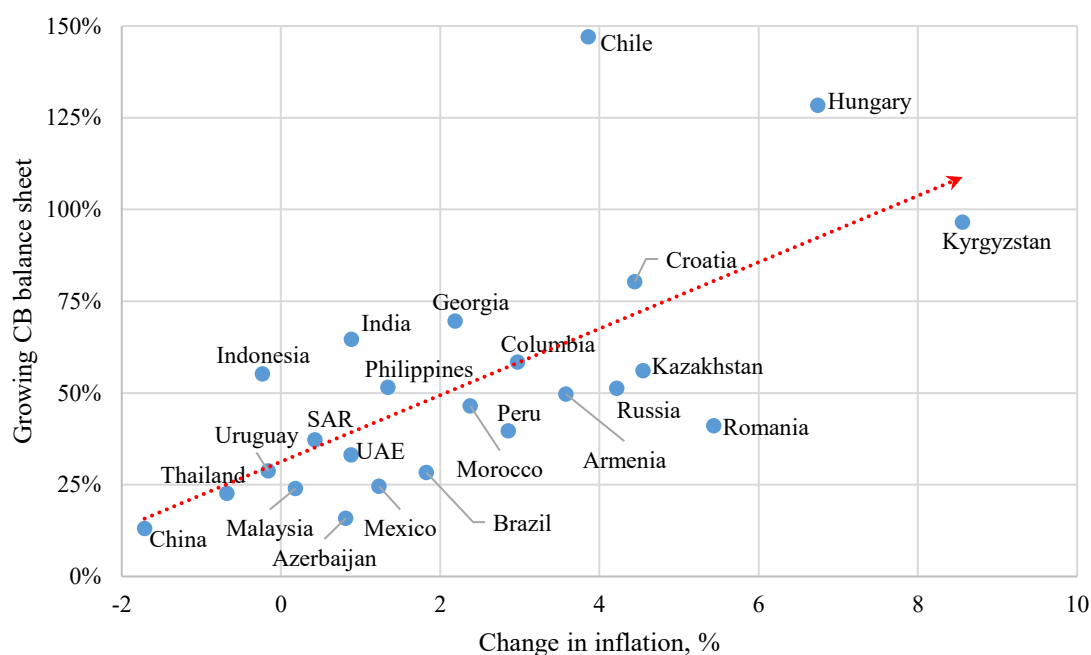
The panel regression analysis used the operating assumption that countries that experienced significant central bank balance sheet growth during the 2020–2022 period were considered to have implemented non-traditional monetary policy measures. This approach allows considering the actual expansion of central bank assets as an indicator of the use of large-scale asset purchases and credit programs, even in cases where central banks have not accompanied these actions with active communications. It should be noted that this assumption may be an approximation: the growth of a central bank balance sheet does not always fully reflect the specifics of instruments

used or policy objectives⁵. Nevertheless, given the limited availability of comparable data on the nature of monetary policy for all countries in the sample, this assumption appears justified and allows for identification of the overall response of monetary authorities to the pandemic shock.

Figures 16 and 17 show a visual relationship between the change in central bank balance sheets and the change in annual inflation in developing and developed countries, calculated as the difference in average values for the four years before the pandemic (2016–2019) and four years after it (2020–2024).).

Figure 16

The growing CB balance sheet and inflation pattern in a number of developing countries



Source: web sites of CBs and statistics committees of countries, the authors' computations

Figure 17

The growing CB balance sheet and inflation pattern in a number of developed countries



Source: web sites of CBs and statistics committees of countries, the authors' computations

⁵ Such examples will be analyzed in the next section.

In the case of developing countries, despite the scatter, a moderate positive correlation is observed. Countries where the central bank balance sheet expanded more significantly also tended to experience a more pronounced increase in inflation. This may indicate that the dynamics of the central bank balance sheet was one of the factors driving price increases in the post-COVID period. However, it is important to keep in mind that inflation dynamics are influenced not only by monetary stimulus measures, but also by factors such as exchange rate dynamics, external conditions, domestic demand, fiscal policy, and so on. Nevertheless, the visual correlation reflects the complex correlation between the policies of central banks in developing countries and macroeconomic conditions: expansion of the central bank balance sheet as a result of the monetary policy implementation in developing countries could increase inflationary pressure.

Developed countries present a different picture. The relationship between changes in central bank balance sheets and inflation dynamics is not clearly evident. While in some economies, the scale of monetary expansion following the pandemic was accompanied by a more than twofold expansion of the central bank balance sheet, inflation growth remained relatively moderate. This may mean that the high resilience of financial systems and trust in monetary institutions limit the direct impact of increased liquidity on prices.

For a more detailed search and analysis of the possible impact of monetary policy measures on inflation processes, panel regression models were used, allowing for time and cross-country differences. All variables are analyzed quarterly from the beginning of 2013 to the end of the first half of 2025⁶.

Two inflation indicators were used as dependent variables: annual inflation, which characterizes long-term price trends, and quarterly inflation, which reflects short-term reactions to the factors used.

Indicators characterizing monetary factors and external environment factors were used as explanatory variables:

- money supply (M3) as an indicator of an overall liquidity level in the economy;
- exchange rate (national currency against the US dollar) to control for the effect of the foreign exchange dynamics on the domestic prices;
- various indicators of the dynamics of the central bank balance sheet, which reflect the scale of the issuance;
- reserve money (M0) as an additional indicator of a scale of monetary expansion;
- a central bank interest rate as the main monetary policy instrument;
- a dummy variable for the COVID-19 that takes on the value of 1 during the pandemic (from 2020 through the 1st half of 2023⁷), thus enabling to separate the 2020 global shock from other inflation factors;
- the FAO index, which reflects the external inflation background as regards the food inflation.

Particular attention is paid to the variable characterizing the central bank balance sheet (the main factor analyzed). To more accurately capture the impact of monetary policy for each of the countries under consideration, a modified indicator – the central bank balance sheet gap – was constructed. This indicator is calculated as the percentage deviation of the current value from its 10-year trend (from 2010 to 2019)⁸. This approach presumably allows for better identification of periods of central bank asset expansion specifically during the COVID-19 crisis (2020–2024) and normalization of the scale of monetary expansion across countries, eliminating the size effect. However, a drawback of this indicator is the difficulty in accurately interpreting the results of the obtained estimates.

⁶ The number of observations for a single variable is 50, and the total number of data used, taking into account 41 countries, exceeds 2,000.

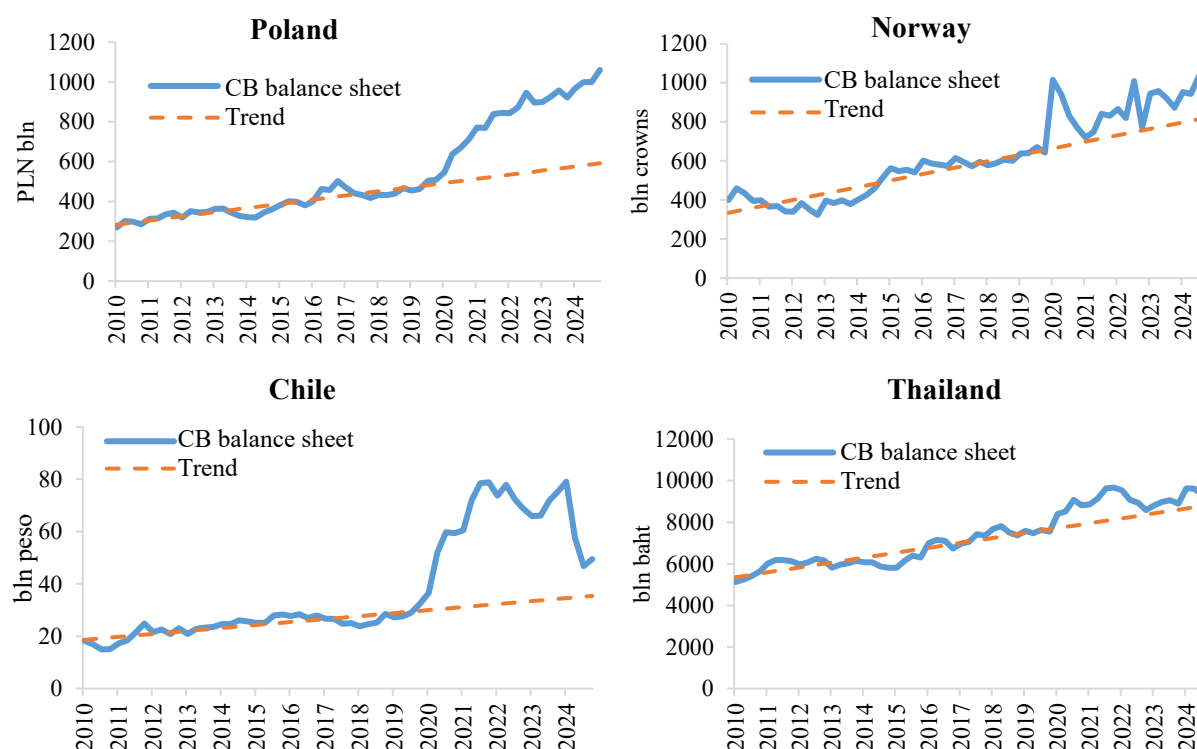
⁷ On May 5, 2023, the WHO declared that COVID-19 was no longer a global health contingency and its emergency phase had ended.

⁸ The trend was constructed based on quarterly data from the Central Bank's balance sheets from 2010 to 2019 using linear regressions for each country. The total number of observations for each country was 40.

The logic behind applying this indicator is clearly illustrated using four countries from the sample (Figure 18). In Poland and Chile, where large-scale monetary policy measures have been implemented since 2020, the central bank balance sheet deviates significantly from the trend, while in Norway and Thailand, this effect is practically not observed.

Figure 18

Dynamics of the CB balance sheet and its long-term trend



Source: CB web sites of the countries, IMF data, the authors computations

To obtain correct equations and results, the following transformations of variables and analysis of available data were carried out:

1. To achieve stationarity⁹ of time series and to bring them into a standardized (comparable) form, the variables were normalized.
2. Dependent variables in the equations are checked for multicollinearity¹⁰.
3. To determine the preferred panel data model type, a Hausman test was conducted. According to its results, the null hypothesis of the random-effects model specification is rejected at the 1% significance level. This means that individual country differences are correlated with the explanatory variables, and a fixed-effects model is preferred.
4. The lags of the variables were determined based on the increase in statistical significance and the correctness of interpretation of signs of the β coefficient.
5. The equations capture both the time and cross-sectional dynamics of the data used. It turned out that capturing the time dynamics allowed the model to capture common shocks from 2013 to 2025 that affected inflation dynamics in all countries (e.g., the COVID shock, falling commodity prices) much more effectively than introducing individual binary shocks¹¹ and the FAO Index.

⁹ The data was tested using the Pesaran – CIPS cross-sectional unit root test.

¹⁰ The M0 reserve money indicator was highly correlated with the dynamics of the central bank balance sheet (the correlation varied between 80% and 99% for individual countries), so it was decided to retain only the central bank balance sheet indicators as the primary factor. Furthermore, issuance under the NTMP almost always directly affects the central bank balance sheet.

¹¹ Separately including the COVID dummy variable and the global food price index required disabling the time-fixed effects option and worsened the model results (significantly reducing R^2). In fact, the model with time-fixed effects captures the impact of general shocks on inflation dynamics much better.

6. Due to the significant inertia of the annual inflation indicator, its change was used in the equation, which almost completely eliminated the autocorrelation of the variable¹². The quarterly inflation indicator, in turn, has been deseasonalized¹³.

Table 2

Assessment Results of Certain Inflation Factors

Change in the annual inflation	β coeff.	t-stat.	Quarterly inflation (seasonally adjusted)	β coeff.	t-stat.
Change in exchange rate	0.046	7.70	Change in exchange rate	0.028	6.22
Change in the CB balance sheet (-1)	0.014	3.99	Change in the CB balance sheet (-1)	0.011	3.91
Change in the CB interest rate (-4)	-0.33	-9.12			
C	-0.0004	-1.39	C	0.008	42.52
R²	32%		R²	44%	
Change in the annual inflation	β coeff.	t-stat.	Quarterly inflation (seasonally adjusted)	β coeff.	t-stat.
Change in exchange rate	0.046	7.34	Change in exchange rate	0.03	6.80
CB balance sheet gap (-1)	0.004	2.00	CB balance sheet gap (-1)	0.011	8.35
Change in the CB interest rate (-4)	-0.33	-9.24			
C	-0.0003	-2.03	C	0.008	36.84
R²	32%		R²	45%	

Source: the authors' computations

The final regression equations showed almost identical results when using the percentage change in the central bank balance sheet or the percentage gap in the central bank balance sheet¹⁴ (Table 2). The money supply factor appeared to be statistically insignificant in explaining the inflation pattern.

The results, as expected, show that annual inflation dynamics are linked to exchange rate changes and shifts in the central bank balance sheet. Both factors demonstrate a robust positive statistical correlation with price growth. A 10% increase in the central bank's balance sheet leads to an acceleration of inflation¹⁵. Changes in the key rate with a one-year lag lead to a decrease in inflation, reflecting the predictable response of annual price growth to monetary tightening. The model explains 32% of the variation in inflation, suggesting the presence of other factors not factored into in the equation.

The relationship between quarterly inflation and the exchange rate and the CB balance sheet also remains and appears stable in the data, which confirms the influence of these macro-indicators over shorter horizons¹⁶. Thus, a 10% increase in the CB balance sheet is accompanied by an increase in quarterly inflation by 0.11 percentage points. The equation for quarterly inflation explains a larger share of the variation ($R^2=44\%$) compared to the annual one, which indicates a more pronounced dependence of short-term price dynamics on the included variables and general temporal shocks.

For separate subgroups of countries (developed and developing), we were able to obtain final equations for annual inflation dynamics (Table 3). For quarterly inflation, all selected factors, with the exception of the exchange rate, were statistically insignificant. This is presumably due to the greater sensitivity of the indicator to price shocks in individual countries.

¹² The Durbin-Watson Test was 1.8, which is approximated to 2 (no autocorrelation whatsoever).

¹³ By using the Seasonal-Trend decomposition using Loess method.

¹⁴ Due to the easier interpretation of β coefficients, only the percentage change in the CB balance sheet will be used in the conclusions and further analysis at the level of country groups.

¹⁵ Since not the annual inflation itself but its change was taken as a dependent variable.

¹⁶ The variable for key rate changes with different lags showed a positive coefficient, likely reflecting a short-term coincidence in the direction of the rate and inflation movements due to the reactive nature of monetary policy. Since this sign prevents the rate effect from being interpreted as causal and contradicts long-term logic, the variable was excluded.

Table 3

Assessment Results of Certain Inflation Factors in Developed and Developing Countries

Change in the annual inflation (developed countries)	β coeff.	t-stat.	Change in the annual inflation (developing countries)	β coeff.	t-stat.
Change in exchange rate	0.027	2.87	Change in exchange rate	0.052	5.47
Change in the CB balance sheet (-1)	0.0001	0.037	Change in the CB balance sheet (-1)	0.034	3.46
Change in the CB interest rate (-5)	-0.22	-2.29	Change in the CB interest rate (-4)	-0.33	-7.94
C	0.0002	0.84	C	-0.001	-4.26
R²	48%		R²	31%	

Source: the authors' computations

The results of the panel regression for developed countries, as expected, were consistent with the visual picture (Figure 17): no impact of changes in the central bank balance sheet (or balance sheet gap) on inflation was detected, indicating the low effectiveness of this indicator as an inflation predictor in the subsample under consideration. At the same time, the relatively high value of the coefficient of determination ($R^2=48\%$) indicates that other factors (exchange rate, changes in the central bank interest rate) and time fixed effects (general price shocks) sufficiently explain inflation dynamics.

In a subsample of developing economies, changes in the central bank balance sheet have a positive and significant effect on inflation, suggesting that monetary financing by the central bank leads to increased price pressure. Exchange rate changes, as expected, have a strong positive and statistically significant effect on annual inflation. Changes in the central bank policy rate have a negative and highly significant effect on inflation with a one-year lag, demonstrating the effectiveness of monetary policy tightening in containing price growth¹⁷. Moreover, unlike the results for developed countries, the resulting equation explains about a third of the inflation variance, demonstrating the moderate predictive power of the included variables. This may be due to more frequent price shocks, less consistent monetary policy, and strong structural differences among the selected developing countries.

Overall, it can be noted that the transmission of external and monetary shocks to price growth varies across the selected groups of countries. Developing countries demonstrate a significantly higher effect of exchange rate changes on inflation and a strong sensitivity to central bank balance sheet expansion. This is consistent with the economic theory, which suggests that the insufficient depth of financial markets, often higher dollarization, and inflation expectations lead to a marked acceleration of inflation in response to emerging shocks. In practice, this means that measures to strengthen protection against exchange rate shocks and develop financial markets are more critical for developing countries. For developed countries, a timely response of the central bank interest rate remains key to price stabilization.

5. Analyzing the Impact by the NTMP on Inflation during the COVID-19 Pandemic by Using the Difference-in-Differences Method

The central bank balance sheet can serve as an indicator of the use of non-traditional monetary policy (NTMP), as quantitative easing programs and similar measures are typically accompanied by an expansion of assets on the regulator's balance sheet. However, using the balance sheet as a sole proxy indicator is incomplete: asset growth can occur for reasons unrelated to NTMP (foreign exchange interventions, changes in the reserve structure, etc.), and the scale and speed of changes vary significantly across countries.

¹⁷ According to the β coefficient (-0.33), the impact of the Central Bank rate on inflation turned out to be higher than in developed countries (the β coefficient is -0.22), which can be explained by the higher level and volatility of inflation in developing countries.

In this regard, the Difference-in-Differences (DiD) method was also applied in the study [59]. This method is often used in the fields of medicine, education, sociology, and economic policy and consists of comparing indicators in samples before and after an intervention (the effect of a medication, reform, policy, etc.).

In this study, countries that announced and implemented monetary policy (MP) programs were identified in the sample using the BIS study [4], official information from central bank websites, and data on asset purchase volumes and credit programs¹⁸ (Table 4) to specify the DiD method. The actual application and scope of measures were taken into account. This approach allows us to isolate the effect of announced and targeted NTMP measures, largely eliminating situations where the dynamics of the central bank balance sheet were not associated with monetary stimuli (reserve replenishment, asset revaluation, etc.) or where the central bank already had an “inflated” balance sheet before the pandemic without any pronounced growth dynamics after 2020 (for example, in the Bank of Japan).

Table 4

Countries that Implemented/not Implemented Large-Scale Asset Purchases and Credit Programs

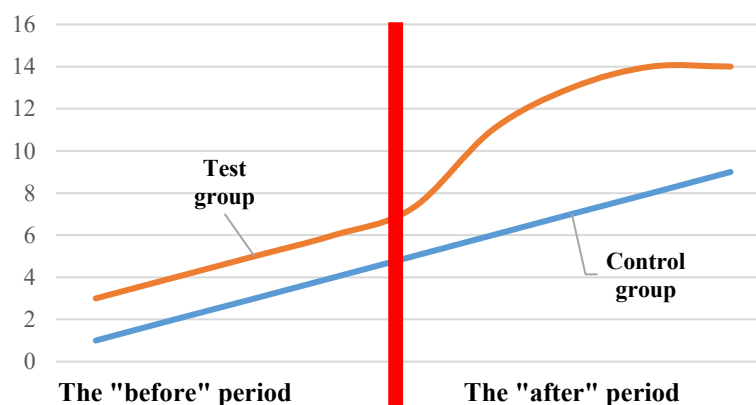
Countries whose central banks have not announced large-scale asset purchases and/or credit programs after 2020 (control group)	Countries whose central banks have announced large-scale asset purchases and/or credit programs after 2020 (test group)
Singapore, Czech Republic, Denmark, Norway, Iceland, Switzerland, Rep. of Korea ¹⁹ , Croatia, Brazil, Mexico, Russia, Colombia, Malaysia, South Africa, Thailand, Georgia, Uruguay, Kyrgyzstan, Azerbaijan, Peru, Armenia, Morocco, Romania, UAE, China	Poland, Australia, Israel, New Zealand, Canada, UK, Sweden, USA, EU, Philippines, Kazakhstan, Chile, Indonesia, India, Hungary, Japan

Source: Compiled by the authors

The key logic of the DiD approach is the assumption that, in the absence of NTMP measures, inflation trends in both groups of countries (test and control) would have remained parallel (Figure 19). This assumption allows regarding the deviation in inflation dynamics after the launch of NTMP measures as a result of the implemented policy, rather than a consequence of other external shocks.

Figure 19

The diagram of expected result from the DiD analysis



Source: Compiled by the authors

¹⁸ The data on most countries from the sample was derived from the IMF database.

¹⁹ The Bank of Korea implemented monetary policy measures in 2020, but the scale was small. The same is true for the central banks of Mexico, Colombia, and Thailand.

It is also important for the DiD analysis to ensure that the “before” (the adoption of measures) and “after” periods are comparable. For this purpose, equal time periods were used. For example, 5 years before the implementation of the NTMP and 5 years after.

To build the model, the following were identified: a test group – countries that have implemented asset purchase programs and credit programs since 2020²⁰, a control group – countries that have not announced large-scale use of NTMP instruments since 2020.

The overall analysis period covers quarterly data from 2015 to 2024. The cutoff point is Q2 2020, when most countries in the control group began large-scale implementation of NTMP measures. Thus, for a “pure” comparison, the pre-crisis period up to 2020 and the post-crisis period after 2020 were selected.

Inflation dynamics were used as the dependent variable. The key regressors were:

- a dummy variable *UMP*, that takes on the value of 1 for the countries, which implemented the quantitative easing programs (since 2020), and 0 in the opposite case;
- a dummy variable *Post*, equal to 1 for the period from the beginning and after the COVID-19 (2020–2024) and 0 for the period before the pandemic (2015–2019);
- a superfluous variable *UMP*Post*, a coefficient that reflects the “net effect” of the monetary policy on inflation.

All equations additionally included control variables: the dynamics of the central bank interest rate, exchange rate changes, and the annual inflation lag. The presence of these variables significantly reduces the risk of bias in estimates arising from the influence of other monetary policy factors.

The key parameter of interest is the coefficient for the *UMP*Post* interaction term. If it is positive and statistically significant, this means that inflation in countries that implemented quantitative easing increased more significantly in the post-crisis period compared to the dynamics in the control group, allowing this increase to be interpreted as the effect of quantitative easing programs. A negative, near-zero, or statistically insignificant coefficient indicates the absence of a clear relationship between the use of quantitative easing and inflation in the studied sample.

To improve the robustness of results and account for structural differences in economic development, a DiD analysis was conducted in two versions.:

- 1) a combined sample of all countries, including developed and developing economies. This allowed obtaining a general picture of the impact of monetary policy on inflation at the global level;
- 2) a split sample for developed and developing countries. This approach allows for identifying differences in the impact of NTMP, but suffers from a significant reduction in the number of observations.

Comparing the two analysis options provides a more complete understanding of the heterogeneity of the QE effect and avoids averaging the results, which could obscure important differences between country groups.

It should be noted that the DiD method, despite its popularity and intuitiveness, has several limitations. The main one is the assumption of parallel trends: if inflation dynamics in the test and control groups differed significantly before 2020, the interpretation of the results may be distorted. Furthermore, the QE effect may manifest itself with a time lag, which is not always reflected in standard DiD analysis. There is also the possibility of the influence of global factors (for example, oil price dynamics or US Federal Reserve decisions), which affect both groups of countries but are not always accurately accounted for.

In general, the equation for DiD analysis is as follows:

$$Y_{it} = \beta(UMP_i * Post_t) + \gamma_k X_{k,it} + \delta_i + \mu_t + \varepsilon_{it},$$

where:

²⁰ The test group consists of countries that have announced implementation of large-scale monetary policy measures. However, these are not necessarily the countries with the largest growth in their central bank balance sheets.

- Y_{it} – annual inflation in country i at the time t ;
- UMP_i – an indicator for the country where the NTMP was started to be implemented in 2020 (1 – for the group with the announced NTMP and 0 – for the control group);
- $Post_t$ – a post-effect indicator (1 – from the second half of 2020, 0 – before);
- $UMP_i * Post_t$ – interaction, where the β -coefficient is the very impact effect (DiD оценка);
- $X_{k,it}$ – a combination of additional covariates²¹;
- δ_i – cross-country fixed effects;
- μ_t – fixed time effects;
- ε_{it} – random error.

The results are presented in Table 5, where the comparison periods, β -coefficients and t-statistics are presented.

Table 5

The Results of the DiD Analysis across the Entire Country Sample

The “before” period	The “after” period	β coeff.	t-stat.
2015-2019	2020-2024	0.875	18.96
2016-2019	2020-2023	0.882	12.08
2017-2019	2020-2022	0.913	6.27
2018-2019	2020-2021	0.797	7.23

Source: the authors' computations

The β coefficients range from 0.8 to 0.9. This means that inflation in countries that implemented NTMP was, on average, by 0.8 to 0.9 percentage points higher than in the control group²². This is essentially the net effect of NTMP measures on inflation, including the inertia of annual price growth dynamics, the influence of monetary policy, the exchange rate, and external shocks.

In all cases, the β -coefficient of $UMP*Post$ turns out to be positive and highly significant: the t-statistics, despite the decrease due to the reduction in the number of observations, significantly exceeds the required threshold level.

The effect remains virtually unchanged in choosing the length of the post-COVID interval. This reflects the fact that the impact of the NTMP measures on inflation was uniform and long-lasting.

The analysis of the DiD results for inflation in subsamples of developing and developed countries shows a pronounced heterogeneity²³ of the effect (Tables 6, 7).

Table 6

The Results of the DiD Analysis of the Developing Country Sample

The “before” period	The “after” period	β coeff.	t-stat.
2015-2019	2020-2024	0.515	36.20
2016-2019	2020-2023	0.531	29.17
2017-2019	2020-2022	0.629	15.27
2018-2019	2020-2021	0.795	20.02

²¹ Including covariates reduces the variance of the estimate and eliminates additional variations in the dependent variable unrelated to the primary factor. However, unlike linear regression, it does not change the influence of the primary variable $UMP*Post$. In fact, DiD allows for better purging of individual cross-effects and focusing specifically on the factor of interest.

²² It should be emphasized that the control group includes countries that have not announced large-scale asset purchases or credit programs. However, the central bank balance sheet in these countries may also grow rapidly after 2020 for various reasons (for example, in Kyrgyzstan, due to the purchase of monetary gold).

²³ In other words, the impact of the NTMP on inflation in the DiD analysis was not the same for all countries, but depends on the type of economy, the chosen analysis period and the number of observations.

Table 7

The Results of the DiD Analysis of the Developed Country Sample

The “before” period	The “after” period	β coeff.	t-stat.
2015-2019	2020-2024	0.855	13.12
2016-2019	2020-2023	0.863	10.30
2017-2019	2020-2022	0.967	7.67
2018-2019	2020-2021	0.693	3.63

Source: the authors' computations

For developing countries, β coefficients range from 0.5 to 0.8 depending on the chosen “before” and “after” periods, while the t-statistics are quite high, and the effect is statistically significant. This suggests that the use of NTMP has a moderate but consistent impact on inflation in the subsample of developing economies. Moreover, the effect is stronger for shorter analysis periods (e.g., 2018–2019 versus 2020–2021).

For developed countries, the effect is somewhat larger: β ranges from 0.7 to 1.0. Possible reasons include larger-scale measures, the economy's resilience to external shocks²⁴ and lower inflation in the pre-COVID period²⁵, whereas in developing economies, the effect of NTMP could be partially offset by exchange rate volatility, limitations on the volume of stimulus, and the significance of external price shocks.

However, the calculation results for developed countries show a decline in the t-statistic for recent periods, which may indicate an increase in data dispersion or lower estimation precision due to a significant drop in the number of observations. In developed economies, the response of inflation to the NTMP is more pronounced, but is sensitive to the choice of the analysis period.

Overall, the results of the DiD analysis demonstrate that the impact of the binary metric of non-traditional monetary policy on inflation is statistically significant. In developing economies, the effect of the NTMP is moderate and stable, indicating a consistent response of inflation to policy easing measures. In developed countries, the effect is significantly larger, although accompanied by a decrease in the precision of the estimates in certain periods, reflecting the greater sensitivity of the data and the reduced number of observations.

6. Findings

The theoretical component of the study allowed systematizing and classifying the main forms of non-traditional monetary policy measures, identifying the key areas and mechanisms of their impact on the economy. A review of individual country experiences revealed that the use of NTMP varies significantly across countries in both scale and duration. In developing economies, such measures, with the exception of FG, are used primarily during periods of acute stress and serve to stabilize financial markets. In developed countries, NTMP has formed a longer-standing and more structured tradition, characterized by a diversity of instruments. This reflects regular episodes of declining interest rate effectiveness and the need to influence long-term rates and expectations through operations that go beyond the standard set of monetary policy tools.

A synthesis of theoretical and country analysis points to the balance sheet-centric nature of NTMP: virtually any significant central bank intervention – from foreign exchange interventions to asset purchases and targeted refinancing – is reflected in the structure of its assets and liabilities. This makes the central bank balance sheet an important indicator of the measures applied and allows for comparison of the impact of NTMP across countries.

The empirical analysis assessed the impact of monetary policy measures on inflation across a sample of 41 countries. The results of panel regressions showed that changes in the central bank

²⁴ Inflation likely remains significantly lower in developed countries that have not implemented NTMP than in those that have. In developing economies, external shocks lead to commensurate price increases, so the difference in inflation between the control and test groups may be lower.

²⁵ Growth from low inflation to moderate levels as a result of the application of the NTMP.

balance sheet (or the percentage gap in the balance sheet) have a robust positive relationship with inflation (both annual and quarterly). The impact of central bank balance sheet expansion on inflation is particularly pronounced in developing countries, where monetary financing exerts significant price pressure. At the same time, in developed countries, the impact of the central bank balance sheet on inflation dynamics was not detected. However, the results demonstrated the high effectiveness of other factors, such as changes in the exchange rate and key rate, in explaining inflation in both groups of countries.

The use of the difference-in-differences (DiD) method allowed supplementing the results of panel regressions, partially offsetting the shortcomings of the central bank balance sheet as an NTMP indicator. The results of this method showed that monetary policy measures had an impact on inflation in both developing and developed countries²⁶, despite significant heterogeneity. In developed countries, the NTMP impact was sensitive to the choice of the period of analysis, which is due to the smaller number of observations and the increase in data dispersion with narrower periods compared.

Based on the conducted research, it can be concluded that in developed economies, monetary policy stimulus measures (large-scale asset purchases and credit programs) were generally applied in conditions of persistently low inflation (below the CB target), stable inflation expectations, the actual exhaustion of the interest rate transmission channel (achievement of the ZLB), and high confidence in the regulator's prioritization of price stability. At the same time, the high price growth during the COVID-19 crisis demonstrated that even developed countries are not immune to the inflationary risks associated with excessively aggressive use of stimulus measures.

The use of such NTMP measures in developing countries is often unjustified and fraught with a number of risks. Given an unexhausted interest rate channel (the central bank rate is significantly higher than the ZLB) and unanchored inflation expectations, large-scale asset purchases and credit programs significantly reduce the transmission of the central bank rate, blur monetary policy signals, and actually increase inflationary pressures in the economy. Given weak institutional anchors²⁷ and high sensitivity to exchange rate and fiscal shocks, such measures may be perceived by the market as a rejection of the priority of price stability and a form of hidden fiscal dominance. As a result, NTMP does not offset the limitations of standard monetary policy, but rather exacerbates macroeconomic imbalances, increasing the volatility of inflation, interest rates, and the exchange rate, as well as increasing uncertainty regarding the regulator's response.

For this reason, it is important that NTMP measures be introduced only after the traditional interest rate policy mechanisms have been completely exhausted and are accompanied by increased confidence in the central bank, strengthening of financial stability, reduction of the economy's vulnerability to external shocks and consolidation of inflation expectations.

References

1. Cecioni M., Ferrero G., & Secchi A. (2011). Unconventional monetary policy in theory and in practice. Bank of Italy occasional paper, 102, 1-18.
2. Borio C (1997), "The implementation of monetary policy in industrial countries: a survey", BIS Economic Papers, no 47.
3. Borio C., Zabai A. Unconventional monetary policies: a re-appraisal //Research handbook on central banking. – Edward Elgar Publishing, 2018. – C. 398-444.
4. Cantú C, Cavallino P., De Fiore F.& Yetman J. A global database on central banks' monetary responses to Covid-19//BIS WP, no 934, 4-6
5. Churm, Rohan, Michael Joyce, George Kapetanios, and Konstantinos Theodoridis. 2018. "Unconventional Monetary Policies and the Macroeconomy: The Impact of the UK's QE2 and Funding for Lending Scheme." *The Quarterly Review of Economics and Finance*, October.

²⁶ As part of the country sample taken.

²⁷ Strong institutional anchors may include the independence of the central bank, historical predictability and transparency of the regulator's actions, a stable institutional environment in the financial market, etc.

6. Laine, O.M. and Nelimarkka, J., 2023. Targeted longer-term refinancing operations decreased overall credit costs and boosted economic growth.
7. Churm, R., Radia, A., Leake, J., Srinivasan, S. and Whisker, R., 2012. The funding for lending scheme.
8. Bernanke, Ben S. 2009. "The Crisis and the Policy Response." The Stamp Lecture, London School of Economics, January 13.
9. Bank of Canada, 2009, Monetary Policy Report, April 2009 (Ottawa).
10. Bernanke, B. S. (2020). The new tools of monetary policy. American Economic Association, Presidential Address, January 4.
11. Bauer, M. D., & Rudebusch, G. D. (2018). The signaling channel for Federal Reserve bond purchases. 36th issue (September 2014) of the International Journal of Central Banking.
12. Bhattarai, S., & Neely, C. (2016). A survey of the empirical literature on US unconventional monetary policy. Federal Reserve Bank of St. Louis, Research Division.
13. Feroli, Michael, David Greenlaw, Peter Hooper, Frederic S. Mishkin, and Amir Sufi. 2017. "Language After Liftoff: Fed Communication Away from the Zero Lower Bound." *Research in Economics*, Special issue on Macroeconomics, 71 (3): 452–90.
14. Filardo, A.J. and Hofmann, B., 2014. Forward guidance at the zero lower bound. BIS Quarterly Review March.
15. Woodford, M (2012): "Methods of policy accommodation at the interest-rate lower bound", *Proceedings – Economic Policy Symposium – Jackson Hole*, pp 185–288.
16. Campbell, Jeffrey R., Charles L. Evans, Jonas DM Fisher, and Alejandro Justiniano. 2012. "Macroeconomic effects of Federal Reserve forward guidance." *Brookings Papers on Economic Activity* 2012 (1): 1-80.
17. Bech, M. L., & Malkhozov, A. (2016). How have central banks implemented negative policy rates? BIS Quarterly Review March.
18. Arteta, C., Kose, M.A., Stocker, M. and Taskin, T., 2016. Negative interest rate policies: Sources and implications.
19. Heider, F., Saidi, F., & Schepens, G. (2021). Banks and negative interest rates. *Annual Review of Financial Economics*, 13(1), 201-218.
20. Kowalewski P., Shirai S. "History of Bank of Japan's more than two decades of unconventional monetary easing with special emphasis on the frameworks pursued in the last 10 years".
21. Aoki, K. and Ueda, K., 2025. Survey of the effects of unconventional monetary policy in Japan. *The Japanese Economic Review*, pp.1-33.
22. Westelius, N., 2020. Twenty years of unconventional monetary policies: lessons and way forward for the Bank of Japan.
23. Haba, S., Izawa, K., Kishaba, Y., Takahashi, Y. and Yoneyama, S., 2025. Measuring Policy Effects since the Introduction of Quantitative and Qualitative Monetary Easing (QQE): An Analysis Using the Macroeconomic Model Q-JEM (No. 25-E-2). Bank of Japan.
24. Yu E. "Did Quantitative Easing Work", Federal Reserve Bank of Philadelphia Research Department, 2016.
25. Dzyublyuk O. Unconventional Measures of Monetary Policy: Experience of the Federal Reserve System of the United States. – 2017.
26. Fischer, S., 2021. Comparing the Monetary Policy Responses of Major Central Banks to the Great Financial Crisis and the COVID-19 Pandemic (pp. 2022-01). Working Paper. MA, USA: MIT Management Sloan School, Cambridge.
27. Trifonova, S. and Kolev, S., 2021. Impact of The Fed's Unconventional Monetary Policy on The US Financial Market. *Eurasian Journal of Economics and Finance*, 9(3), pp.145-158.
28. Tenreyro, S. and Wazzi, M., 2025. Unconventional Policy Tools at the Fed: Lessons from Theory and Practice.

29. Haas, J., Neely, C.J. and Emmons, W.R., 2020. Responses of international central banks to the COVID-19 crisis. FRB of St. Louis Working Paper No. Forthcoming.
30. ECB, «Impact of the two three-year longer-term refinancing operations», Monthly Bulletin, March 2012.
31. ECB, Technical features of Outright Monetary Transactions, press release, 6 September 2012.
32. ECB, Consolidated financial statement of the Eurosystem as at 29 July 2022
33. ECB, Monetary policy decisions: June 2014, September 2019.
34. ECB, *TLTRO III and bank lending conditions*, *ECB Economic Bulletin*, Issue 6/2021.
35. ECB, *Pandemic Emergency Purchase Programme (PEPP) announcement*, March 2020.
36. ICMA, ECB PEPP and APP purchases bi-monthly data – November 2021.
37. CaixaBank Research, «Balance sheets: the not-so-visible normalisation of monetary policy», 2024.
38. ECB, Consolidated financial statement of the Eurosystem as at 27 December 2024
39. Chung, Hee Chun. The Bank of Korea's Policy Response to the Global Financial Crisis. BIS Papers No. 54, 2011.
40. Federal Reserve Board. Temporary U.S. dollar liquidity arrangements (swap lines). Press release, March 19, 2020.
41. Bank of Korea. BOK to Launch Corporate Bond-Backed Lending Facility. Press release, April 16, 2020.
42. Engbith, Lily S. South Korea: Corporate Liquidity Support Organization. *Journal of Financial Crises*, Vol. 4, 2022
43. Bank of Korea. Annual Report 2020 (Bank of Korea's Conduct of Its Business). BOK, 2021.
44. BIS. The Monetary-Fiscal Policy Nexus in the Wake of the Pandemic. BIS Papers No. 122, March 2022.
45. Carney M., Jenkins P., Duguay P., Longworth D., Murray J., Lane T, July 2009. Monetary Policy Report. Bank of Canada.
46. Fernandes, J. and Mueller, M., 2023. A review of the Bank of Canada's support of key financial markets during the COVID-19 crisis.
47. Bank of Canada, 2024. Review of the Bank of Canada's Exceptional Policy Actions During the Pandemic.
48. Banco Central de Chile, Financial Stability Report, November 2009.
49. BIS, Central bank asset purchases in response to the Covid-19 crisis, CGFS Papers No.68, 2021.
50. Banco Central de Chile, Monetary Policy Report, September 2021.
51. ČNB, The Czech National Bank's Exchange Rate Commitment, 2013.
52. BIS, Unconventional Monetary Policies in Emerging Europe, 2015.
53. ČNB, Exit from the Exchange Rate Commitment, 2017.
54. IMF, Czech Republic: Selected Issues 2022.
55. K. Hertel et al., «The impact on the Polish economy of the Structural Open Market Operations programme conducted by NBP», NBP Working Paper №343.
56. NBP, Annual Report 2023.
57. NBK, Annual Report 2018.
58. NBK, Monetary Policy Strategy Until 2030, 2021.
59. A. Baker, Difference-in-Differences Designs: A Practitioner's Guide, 2025
60. Azizova, C., Witmer, J. and Zhang, X., 2024. Assessing the Impact of the Bank of Canada's Government Bond Purchases (No. 2024-5). Bank of Canada.

The Just Transition as Part of Decarbonization of the Economy and the Move to the ESG in Kazakhstan

Abdullayeva A. B. – Chief Specialist-Dealer; Division of Dealing Operations with Pension Assets, Monetary Operations Department, National Bank of the Republic of Kazakhstan

Abenova A. M. – Leading Specialist-Dealer, Division of Dealing Operations with Pension Assets, Monetary Operations Department, National Bank of the Republic of Kazakhstan

This study analyzes the concept of a “just transition” in Kazakhstan, drawing on international experience and exploring its adaptability to national socioeconomic and institutional environment. Particular attention is paid to the role of the government and the corporate sector in the development and implementation of inclusive climate strategies based on ESG (Environmental, Social, and Governance) principles.

The paper examines successful international practices from countries such as Germany, Poland, Spain, Chile, China, and Belgium to determine their applicability to the Kazakh context. Furthermore, the study includes an analysis of the experiences of Central Asian countries, enabling a comparison of regional approaches and identification of common challenges and opportunities in the decarbonization process.

The study goes beyond theoretical analysis, proposing specific implementation mechanisms applicable to Kazakhstan’s national climate policy in the context of transition to low-carbon development.

Key Words: a just transition, ESG, decarbonization, sustainable development, energy justice, a low-carbon economy, renewable energy sources.

JEL-Classification: Q5, Q54, Q55, Q56.

1. Preamble

A Just Transition (JT) is a concept aimed at ensuring a transition to a sustainable economy that takes into account the interests of workers, local communities, and the environment. The core idea of Just Transition is the need for a balanced transition to a low-carbon development model, minimizing the social and economic impacts on populations and regions dependent on high-carbon industries.

The core idea of a “just transition” is to ensure inclusivity and equality in the transition to sustainable forms of production. This includes supporting workers and communities affected by economic changes, ensuring reskilling, and creating new employment opportunities in low-carbon sectors.

The concept of a “just transition” emerged in the 1970s and 1980s in the United States, where trade unions and activists advocated for a just transition, seeking worker protection, retraining, and social support while closing environmentally hazardous enterprises in the face of deindustrialization and the associated damage to health, the environment, and communities.

The JT reflects the need to comprehensively address the challenges of climate change, employment, and sustainable development. Its implementation directly aligns with the UN Sustainable Development Goals (SDGs), which serve as a universal framework for assessing progress. Thus, a just transition can be seen not only as a climate policy tool but also as a means to achieve a broader range of goals: climate action (SDG 13), affordable and clean energy (SDG 7), decent work and economic growth (SDG 8), and reduced inequality (SDG 10).

Moreover, JT allows for the simultaneous consideration of both the environmental and social dimensions of sustainable development. Its successful implementation allows for the concurrent achievement of reductions in greenhouse gas emission, creation of new green jobs, and protection of interests of the most vulnerable groups. This makes JT an important link between the global climate agenda and local socioeconomic priorities.

The importance of a just transition is particularly important for Kazakhstan and the countries of Central Asia, where the decarbonization process faces significant challenges. These include potential job losses in traditional industries, growing social inequality, and the need for a profound overhaul of the energy system.

With changing international reporting standards and investment criteria, the need for national energy transition models that can ensure the protection of vulnerable groups and long-term sustainability is growing. However, Kazakhstan currently lacks a comprehensive approach to the social component of the energy transformation, and existing initiatives do not fully utilize the potential for collaboration between the government, the corporate sector, and local communities. All of the above underscores the relevance of this study.

2. Literature Review

The concept of a just transition emerged in response to the need to combine environmental sustainability and social justice. The term originated with the activism of US trade unions in the 1980s, which demanded employment protections in the face of increasingly stringent environmental regulations. Over time, the idea expanded beyond labor relations and became central to international climate negotiations, including the Rio+20 conference (2012) and the Paris Agreement (2015). A report by the United Nations Development Programme (UNDP, 2020) emphasizes that a just transition must integrate climate action with social policies to minimize inequality and ensure protection of the most vulnerable segments of the population.

The conceptual framework for a just transition has been developed and institutionalized in the documents of leading international organizations. In particular, the International Labour Organization views a just transition as a key element in ensuring decent work in the context of climate change, emphasizing the need for social dialogue, active labor market policies, retraining programs, and targeted support for workers and regions affected by structural changes. The International Energy Agency, in its Net Zero Emissions scenarios, emphasizes the risks of asymmetric impacts of the energy transition on individual regions and social groups, as well as the importance of integrating social and regional aspects into national decarbonization strategies. (IEA, 2025).

Modern analytical approaches emphasize the need to measure and monitor JT. In 2023, the European Union introduced a methodology that assesses the transition using social, economic, and environmental indicators. Unlike more general conceptual frameworks, this tool is focused on practical implementation and allows for the adaptation of transition measures to the specifics of regions. The introduction of such monitoring systems is particularly important for resource-dependent economies, where social risks from job losses can undermine the sustainability of reforms.

The potential of financial institutions and innovation in this area is equally important. Just Transition Finance Lab emphasizes that the financial system can become a key mechanism for implementing a just transition if it considers not only environmental and climate goals but also social impacts (Just Transition Finance Lab, 2025). Their approach expands the concepts of green and sustainable finance by mandating the inclusion of social risks, opportunities, and public dialogue in investment decisions.

The research pays particular attention to countries whose economies rely on hydrocarbon exports. Hasan, Heffron, Mohtadi, and Urpelainen (2024) explore the prospects for JT in so-called “petrostates”. The authors note that the challenges in these economies differ from those in countries with diversified structures: critical factors include government budget dependence on oil and gas, institutional inertia, and household social vulnerability. Successful implementation of JT requires a combination of economic diversification, institutional reforms, and public engagement in decision-making processes.

Stockholm Environment Institute (2022) emphasizes that an energy transition based solely on technological innovation does not guarantee justice. Mechanisms for transparent benefit distribution, human rights protection, and programs to support alternative livelihoods for those who lose their jobs as a result of reforms are needed. This underscores the importance of

integrating principles of procedural, distributive, and restorative justice into energy transition projects.

Practical examples of JT implementation can be observed at the level of national partnerships. Vanheukelom (2023) analyzes the South African Just Energy Transition Partnership (JETP), launched with the support of international donors. In this case, energy transition financing was accompanied by social protection and retraining programs for coal industry workers. This integrated approach helped mitigate social risks and increase the credibility of reforms, demonstrating the importance of combining financial instruments and social measures.

Taken together, these approaches paint a picture of just transition as a complex transformation that requires not only climate action but also institutional reforms, monitoring systems, and active community participation, especially in resource-dependent economies such as Kazakhstan and the countries of Central Asia.

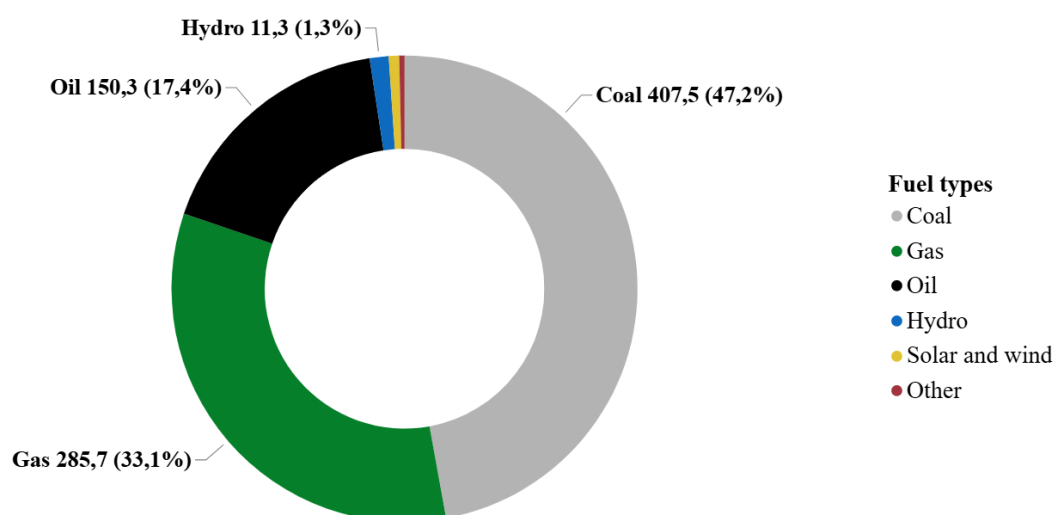
3.1. Kazakhstan: Energy Dependence and Challenges of Just Transition

A just energy transition is becoming increasingly important for Kazakhstan, both in light of global climate commitments and the need to minimize the socioeconomic impacts of fossil fuel transition. Despite the stated goal of achieving carbon neutrality by 2060 and the ongoing steps to modernize the energy sector, current efforts require further systemic development, as they are currently fragmented and only partially reflect the principles of social justice, inclusiveness, and sustainability.

The country's economy remains highly resource-dependent, posing particular challenges for implementing the JT. According to Kazakhstan's National Bureau of Statistics, coal-fired generation accounted for more than 47% of primary energy consumption in 2024 – 407.5 billion kWh (Figure 1), making coal the largest source of energy consumption in the country. The industry employs approximately 32,000 people, primarily in the single-industry regions of the Karaganda and Pavlodar oblasts. This concentration of employment increases the vulnerability of local economies: without accompanying support measures, a sharp reduction in coal generation could lead to increased unemployment and public unrest.

Figure 1

Primary Energy Consumption in Kazakhstan in 2024, bln KW per hour



Source: stat.gov.kz

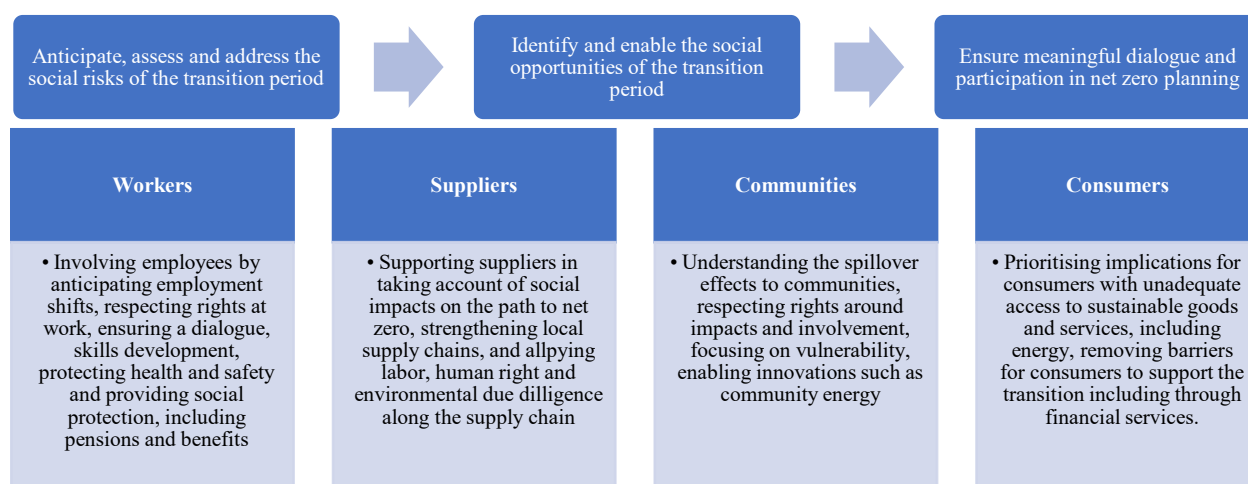
In this regard, a key element of the national JT strategy is the integration of environmental goals with social and economic measures aimed at protecting vulnerable groups. As the UNDP (2020) emphasizes, a just transition involves not only reducing the carbon footprint but also creating decent jobs, maintaining social guarantees, and supporting local economies. For

Kazakhstan, this requires a comprehensive strategy that combines government initiatives, corporate programs, and local community participation.

Institutional barriers remain a serious challenge. Hasan et al. (2024) note that in oil-dependent countries, the transition is complicated by centralized governance structures and weak regulatory frameworks, which reduce policy flexibility. SEI (2022) draws similar conclusions, emphasizing that without transparent benefit-sharing procedures, programs risk remaining formal. The European Union (2023) proposes systemic monitoring tools to overcome these limitations and improve coherence. For Kazakhstan, this could mean strengthening interagency coordination, creating regional support centers, and introducing transparent reporting mechanisms.

Figure 2

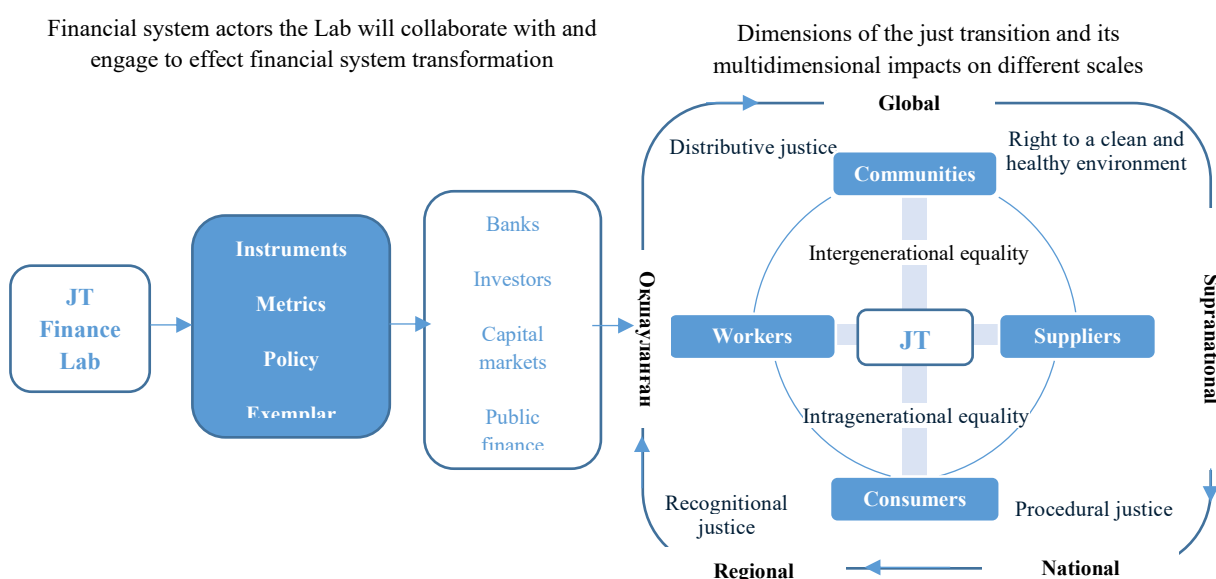
Priorities in JT Financing and their Use in Respect of Key Stakeholder Groups



Source: justtransitionfinance.org

Figure 3

The Finance Lab's approach to financial system transformation for the just transition



Source: justtransitionfinance.org

The financial component is also becoming increasingly important. Just Transition Finance Lab emphasizes the need to integrate social criteria into bank and investor decisions (Figures 2 and 3). In Kazakhstan, this approach could include financing the modernization of coal-fired power

plants with a gradual reduction in emissions, developing renewable energy sources (RES), and supporting services that create green jobs.

Monitoring and evaluating progress is another key element of JT. The European methodology (EU, 2023) identifies distributive, procedural, and restorative justice as indicators that allow for tracking progress and adjusting measures. In Kazakhstan, this could include tracking employment in coal regions, the number of reskilled workers, the level of community engagement, and the implementation of social guarantees.

At the same time, a national strategy must take into account cultural and institutional specifics. Jayasuriya (2024) emphasizes that top-down models rarely take local practices into account and reduce public trust. Stark (2023) adds that universal solutions are rarely effective without adaptation to the context. For Kazakhstan, this is especially important in coal-mining regions, where ignoring local realities could undermine the legitimacy of reforms.

A number of initiatives are already showing the first steps toward integrating JT. For example, a study by Agora Energiewende and Qazaq Green (2024) proposes a strategy for the gradual closure of coal-fired capacity while simultaneously developing renewable energy sources and modernizing grids. According to another study by Agora (2024), the share of wind and solar generation could reach 15-20% by 2030. In 2025, nine renewable energy facilities with a total installed capacity of approximately 503 MW were commissioned, including a 50 MW wind farm in the Karaganda region. These included five wind farms with a total capacity of 387 MW, three solar power plants with a combined capacity of 90 MW, and one hydroelectric power plant with a capacity of 26 MW. These projects spanned six regions of the country: Karaganda, Ulytau, Aktobe, Zhetisu, Kyzylorda, and Mangistau, contributing to an increase in the share of renewable energy in the energy balance and strengthening regional energy infrastructure (Astana Times, 2026).

Social justice should be a particular focus within the JT in Kazakhstan. As the UNDP (2020) emphasizes, the key is not only the creation of new jobs but also the protection of vulnerable groups – women, youth, and low-skilled workers. Transition programs should ensure equal access to training, social benefits, and decision-making processes. This builds trust in policies and reduces the risk of public unrest.

Below is a PESTLE analysis (Political, Economic, Social, Technological, Legal, and Environmental) of the current situation in Kazakhstan.

Table 1

PESTLE Analysis

Factor	Key Aspects
Political	• Strong centralized power: President K.-Zh. Tokayev publicly supports climate goals and the course towards carbon neutrality by 2060 • Coal-extracting regions (Karaganda, Pavlodar oblasts) are of strategic importance, which makes the transition politically sensitive • Possible resistance at the regional and local levels. Therefore, it is necessary to make an extensive awareness-raising effort in regions where the coal industry plays an important role in employment and income • Dependence on international support (EU, GIZ, UNDP) for policy development and technical assistance
Economic	• Significant dependence of the economy on fossil fuels: coal, oil and gas make up a significant share of GDP and exports • The coal and energy industries provide jobs in key regions, making diversification difficult • Limited budgetary capacity for large-scale programs for personnel retraining, investments in renewable energy sources and social guarantees

	• Potential to attract green investment, especially given the introduction of a carbon border tax in the EU from 2026 (CBAM, Carbon Border Adjustment Mechanism)
Social	• Risk of public concern in coal regions due to job losses, population displacement and local economic decline • The need for inclusive planning with the participation of stakeholders: trade unions, local authorities, young people and vulnerable groups • Gender inequality in the coal and energy industries may hinder the equitable distribution of new opportunities
Technological	• A low level of implementation of renewable energy sources (hydroelectric power plants and small renewable energy projects predominate), but growing interest in clean technologies • Aging coal-fired generation infrastructure requires modernization or repurposing • Insufficient development of digital infrastructure in rural and single-industry towns limits alternative economic prospects • Investments in research and innovation, development of green skills and technology transfer with the participation of international partners are needed
Legal	• The Environmental Code of the Republic of Kazakhstan contains provisions on “green” regulation, but does not include mandatory deadlines for phasing out coal • Energy legislation remains biased towards supporting fossil fuels; reforms of subsidies and tariff policies are needed • Given the weak regulatory framework and duplication of functions among government agencies, there is potential for further improvement of regulation and coordination • It is important to legislatively enshrine labor and social guarantees for workers during the transition period (retraining, compensation, etc.)
Environmental	• A high level of air pollution in coal regions; importance of addressing public health and environmental justice issues • Potential for significant reductions in greenhouse gas emissions through the gradual phase-out of coal and the development of renewable energy sources • Vulnerability to climate change (droughts, floods) increases the need to transition to a low-carbon economy

Source: the authors' own adaptation.

Kazakhstan's ESG Initiatives in the Context of Just Transition. In Kazakhstan, an institutional and practical framework for promoting just transition principles through the ESG agenda is gradually being formed. These initiatives encompass gender equality, education and retraining, green finance, sustainable development strategy, and national and international commitments.

One of the priorities is gender integration. In 2023, the UNDP, together with Qazaq Green, initiated the creation of the Women for Just Transition network, aimed at increasing women's participation in renewable energy and decision-making processes (Astana Times, 2023). According to the UNDP research (2023), women occupy only 16% of managerial positions and 19% of technical positions in the energy sector. In the coal industry, their share is approximately 22%, in the oil and gas industry – 18%, and in the renewable energy sector – approximately 30%. More than half of women in the electricity sector (53%) are employed in unskilled positions. These data highlight the need for programmes aimed at enhancing gender equality and women's inclusion in just transition processes.

Significant attention is also being paid to green finance. In 2022, the National ESG Club was established, providing a platform for dialogue between businesses, government, and investors (Qazaq Green, 2022). In parallel, the AIFC Green Finance Centre promotes sustainable finance instruments, including green bonds, which attract investment in renewable energy and energy efficiency projects.

The financial sector is seeing increasing strategic integration of sustainability principles. The Development Bank of Kazakhstan received an ESG rating from Sustainable Fitch, reflecting improved reporting standards and a commitment to integrating sustainability principles into corporate governance practices (Sustainable Fitch, 2023).

Government strategies and international commitments remain equally important. Kazakhstan has approved a Strategy to Achieve Carbon Neutrality by 2060 and continues to reform its national Emissions Trading System (ETS), as evidenced by international reports (UNCTAD, 2022). At COP28, the country joined the Global Memorandum on Reducing Methane Emissions by 30% (Directorate-General for Energy, 2023). Also, at COP29, President Tokayev reiterated the need for predictable climate finance and access to advanced technologies as key conditions for achieving carbon neutrality (UNFCCC, 2023).

Thus, Kazakhstan's ESG initiatives demonstrate the gradual institutionalization of just transition principles. They combine a social dimension (gender integration), economic instruments (green finance and banking strategies), and long-term climate commitments within the national and international agenda.

Corporate and Quasi-Public Initiatives in Kazakhstan. A key feature of Kazakhstan's energy sector is the high concentration of quasi-state-owned companies, which, with significant financial and institutional resources, are capable of exerting a systemic influence on the just transition process. Their strategic investments and management decisions lay the foundations for integrating ESG approaches and reducing the economy's carbon footprint.

One of the most illustrative examples is the national oil and gas company KazMunayGas JSC (KMG). As part of its approved Low-Carbon Development 2022–2031 program, KMG has set a goal of reducing greenhouse gas emissions by 15% by 2031 and gradually moving toward carbon neutrality by 2060. The company has also joined the international Oil and Gas Methane Partnership (OGMP) 2.0 initiative, aimed at monitoring and reducing methane emissions, reflecting its commitment to following global best practices. Furthermore, KMG announced plans to implement renewable energy projects with a capacity of at least 300 MW, demonstrating its shift toward practical investments in green technologies (KazMunayGas, 2023).

Samruk-Energy JSC, Kazakhstan's largest electric power company, plays a significant role. Its sustainable development strategy encompasses both technological modernization and the social dimension of the energy transition. The company actively invests in community engagement programs, including the development of social infrastructure and support for regional initiatives. For example, in 2024, Samruk-Energy provided financial assistance to flood victims in the amount of approximately 800 million tenge and funded a charity marathon, demonstrating the importance of integrating social responsibility into corporate strategy (Samruk-Energy, 2024). These measures help strengthen trust between the company and the public.

Projects to modernize carbon-intensive energy infrastructure occupy a special place. In 2023, with the support of Samruk-Kazyna and the Asian Development Bank, a program to convert Almaty Thermal Power Plant-2 from coal to natural gas began. This step not only reduces emissions and improves air quality in the metropolis but also serves as an example of how public-private partnerships can implement large-scale just transition projects with significant social impact.

Also noteworthy is the work of KazTransOil JSC, the company responsible for oil transportation. Its practice focuses on mitigating local environmental risks: it is implementing projects to reclaim contaminated areas along pipelines and implementing technological measures to reduce evaporation (for example, installing pontoons on storage tanks, which reduce emissions by up to 80%). Thus, by the end of 2024, the total volume of pollutant emissions into the atmosphere was reduced by 6.9% compared to 2023 (by 38.75% since 2019) thanks to the

modernization of facilities and the introduction of energy-saving technologies (KazTransOil, 2025). In parallel, initiatives to educate employees and local communities about environmental issues are being implemented: holding campaigns, planting trees, and introducing separate waste collection (KazTransOil, 2025). The Mangystau Oil Pipeline Department reclaimed 1.4 hectares of historically contaminated land along the Uzen-Zhetybai-Aktau oil pipeline. These steps demonstrate that JT principles can be integrated not only into strategic decarbonization projects but also into the day-to-day operations of companies.

Thus, corporate and quasi-governmental initiatives in Kazakhstan demonstrate the gradual emergence of a systemic approach to a just transition. This is manifested in the combination of long-term decarbonization strategies, participation in international climate initiatives, modernization of energy infrastructure, and social support for communities, which together form the foundations of an inclusive and sustainable climate policy.

Implementation of the UN Sustainable Development Goals (SDGs) in Kazakhstan.

Kazakhstan is gradually integrating the UN Sustainable Development Goals into its national socioeconomic development strategy, linking them to the objectives of a just energy transition. Coordination in this area is ensured by the SDG Coordination Council and interagency working groups, reflecting the desire to adapt global goals to the national context (United Nations, 2022). Particular attention is paid to energy and climate aspects, which are directly linked to the JT concept. According to the UNDP (UNDP, 2023) and UNECE (UNECE & REN21, 2022), affordable and clean energy (SDG 7), climate action (SDG 13), and the preservation of terrestrial ecosystems (SDG 15) remain priority areas for Kazakhstan. These goals are consistent with the objectives of decarbonization and reducing dependence on fossil fuels, which form the core of a just transition.

Kazakhstan is also an initiator of regional mechanisms. At the suggestion of President Tokayev, the UN General Assembly in 2022 supported the establishment of a Regional SDG Center in Almaty, designed to coordinate cooperation in Central Asia and Afghanistan (Government of Kazakhstan, 2025). This step demonstrates Kazakhstan's ambition to serve as a regional hub for sustainable development, including JT.

Domestic issues of just transition are being promoted at platforms such as the ECOJER congresses, where prospects for low-carbon development, green finance, and labor market transformation are discussed (UNDP, 2024). Support for initiatives from international organizations, including UNDP through the PAGE program, Partnership for Action on Green Economy (PAGE, 2021), enables the integration of environmental and social dimensions in national climate policy.

Thus, Kazakhstan's experience demonstrates that achieving the SDGs serves not only as a global objective but also as a practical tool for institutionalizing JT at the national and regional levels.

3.2. Just Transition Initiatives in the Central Asian Countries (Kyrgyzstan, Uzbekistan, Tajikistan) and Azerbaijan

Kyrgyzstan. In Kyrgyzstan, a just energy transition received institutional support through the creation of the Green Energy Fund under the Cabinet of Ministers. This step consolidated the transition at the institutional level, providing a formal legal basis for financing renewable energy projects, implementing energy-saving technologies, and developing social infrastructure. A 2023 government decree allowed the government to systematize support for green initiatives and emphasize the involvement of vulnerable groups in the energy transformation (Green Energy Fund of the Kyrgyz Republic, 2023). Additionally, in 2025, a regulation on the guaranteed buyback of electricity generated from renewable sources was approved. This step is intended to increase the investment attractiveness of the sector and ensure predictability of income for investors. An important example was the agreement between the Green Energy Fund and Rosatom on the guaranteed buyback of energy from a future 100 MW wind farm, reflecting the growing role of international cooperation in implementing the principles of a just transition (Central Asia Climate Portal, 2025; AtomMedia, 2025).

International donors are paying attention to the gender dimension of a just transition. For example, the regional SECCA project conducted a national gender assessment, and the Kyrgyz Ministry of Energy established a Gender Committee to ensure consideration of women's rights, equal access to clean energy, and expanded employment opportunities in the energy sector (FSR, 2023). Furthermore, the OSCE and SolarSpar projects with the Bulan Institute train specialists, including women and youth, in the installation and maintenance of solar panels, thereby combining capacity building and social inclusion (Bulan Institute, 2023).

Particular attention is paid to supporting small and medium-sized enterprises (SMEs) as a key element of a just transition. USAID and the Asian Infrastructure Investment Bank (AIIB) programs aim to promote green technologies and improve women entrepreneurs' access to climate finance (AIIB, 2023; USAID, 2023). Furthermore, joint initiatives by the EBRD, government, and the National Institute for Strategic Studies have identified the need to increase business awareness of tax incentives and preferences in green technologies, emphasizing the importance of institutional support and dialogue with the business sector (Akchabar, 2023).

Thus, Kyrgyzstan's experience embeds elements of a just energy transition through the institutionalization of inclusive mechanisms, support for vulnerable groups, a focus on gender equality, and the integration of SMEs into low-carbon development. This allows Kyrgyzstan to be viewed as an example of a country where the social dimension of energy reforms is gradually being strengthened under the influence of international partners.

Uzbekistan. Uzbekistan is actively working on the development of the third version of Nationally Determined Contributions (NDC 3.0), which combines strengthening the climate goals adopted under the Paris Agreement with the integration of principles of social justice, gender equality, and environmental sustainability. The Supporting Uzbekistan in the Development of NDC 3.0 project, implemented with the support of the UNDP and the Ministry of Ecology, includes activities to enhance the capacity of government agencies, institutional interaction, and the inclusive participation of civil society organizations and vulnerable groups in the climate policy process (Daryo, 2024).

One of the key initiatives in this area is the Promoting Just Energy Transition in Uzbekistan program. It aims to strengthen the regulatory and institutional framework, remove barriers to energy production and consumption, and integrate JT principles into NDC 3.0. The program envisages the training and involvement of 60-70 technical specialists and approximately 30 managers, as well as public consultations with vulnerable groups (Joint SDG Fund, 2024a). The second key element is the Accelerating Decent Jobs and Social Protection for a Just Transition to Formality program. This initiative aims to reduce informal employment through the institutionalization of jobs and enterprises. At the same time, it aims to expand social protection mechanisms to previously excluded groups, with a particular emphasis on the inclusion of women, youth, and vulnerable groups. The program is designed to reach approximately 720,000 low-income individuals and create conditions for decent employment and social justice (Joint SDG Fund, 2024b).

Thus, the set of programs, along with the preparation of NDC 3.0, forms a holistic approach to a just transition in Uzbekistan, combining climate commitments with the objectives of social inclusion, labor protection, and sustainable economic development.

Tajikistan. Tajikistan, with its significant hydropower resources, relies primarily on hydroelectric power plants for its energy mix: approximately 90-93% of generation is provided by hydropower, according to reports from the Asian Development Bank (ADB, 2023). This structure reduces the carbon footprint of electricity production, but simultaneously makes the country vulnerable to fluctuations in water resources and climate change.

In June 2025, the Roadmap for Sustainable Development Goal 7, designed by the Ministry of Energy and UNESCAP, was launched in Dushanbe. It includes recommendations for improving energy efficiency, upgrading outdated heating and cooking systems, and diversifying energy sources with renewable energy sources.

Attention is also being paid to training young people and developing "green skills". For example, the Investing for the Future forum, organized by UNICEF and the World Bank,

emphasized the need for human capital development to support green jobs and the transition to a low-carbon economy (UNICEF, 2023).

Thus, Tajikistan is already taking the first concrete steps toward a just energy transition, manifested through initiatives and projects supported by international partners. SECCA and OSCE/CAREC events, the World Bank CCDR report, and UNICEF's efforts demonstrate the government's commitment to integrating sustainable development goals with the social dimension – engaging youth, women, and local communities, and mitigating climate and energy risks.

Azerbaijan. In recent years, Azerbaijan has accelerated the implementation of large-scale renewable energy projects, laying the foundation for a future energy transition. For example, at COP29, AIIB and Masdar signed a contract for the construction of two solar power plants – Banka Solar (315 MW) and Bilasuvar Solar (445 MW), making them among the largest private projects in the region (AIIB, 2024). Previously, similar initiatives included the launch of the 240 MW Khizi-Absheron wind farm with support from the OPEC Fund and the EBRD, as well as solar generation projects in the Eastern Zangezur region, where over 200 hectares of land have been allocated for renewable energy infrastructure (OPEC Fund, 2023; Caspian News, 2024).

However, despite the rapid development of green capacity and the creation of climate finance instruments, including plans to establish a national Green Fund, the institutional component of JT in Azerbaijan remains fragmented. In particular, there is a lack of comprehensive mechanisms for the social adaptation of workers employed in the traditional energy sector, as well as programs for retraining and engaging vulnerable groups. Initiatives such as the UNECE Energy Efficiency Cooperation and AccessBank's SME Financing Programs in Green Technologies create the preconditions for integrating social justice principles, but do not yet form a holistic model for a just transition (UNECE, 2024; AccessBank, 2024).

Thus, Azerbaijan is making progress in building renewable energy and climate finance capacity, but its approach to a just transition remains more focused on infrastructure and investment projects than on the social aspects of the transition.

3.3. Experience in Implementing Coal Phase-Out Policies: Examples of Success and Challenges

This section examines the practices of countries that have implemented coal phase-out policies, the approaches they used to achieve this, and the challenges they faced. The sample includes both developed and developing countries with varying shares of coal in electricity generation, ranging from high (Poland) to relatively low (Spain). All countries have either already announced deadlines for a complete coal phase-out (Germany, Poland, Chile) or are considering setting such deadlines (Spain).

Germany. Coal has long been a key energy source for Germany, fueling the country's industrial development since the late 19th century. The country possesses significant reserves of lignite and hard coal, but hard coal production began to decline in the 1960s due to geological difficulties and loss of competitiveness. In 1968, most West German mines were united into a consortium, Ruhrkohle AG (later RAG), with the state assuming the companies' debt obligations, allowing for centralized management of mine closures and support for laid-off workers. Social protection for workers was enshrined in law.

In 2007, the state governments of North Rhine-Westphalia and the Saarland, the IG BCE trade union, and RAG agreed to a complete cessation of hard coal mining by 2018, with provisions for worker retraining, funding for environmental and industrial safety measures, and support for education, science, and cultural initiatives in coal-producing regions. In 2018, an independent "Coal Commission" was established to develop a plan to phase out coal-fired generation and ensure a just transition for workers and regions, including retraining programs. The commission's recommendations called for the decommissioning of 44 GW of coal-fired capacity at an estimated cost of €69-93 billion.

In 2020, the Coal Phase-Out Act was passed, with a complete cessation of hard coal mining by 2038 (with a possible acceleration to 2030). The reduction in brown coal production is negotiated between operators and the government, and the decommissioning of hard coal plants is

carried out through compensation auctions. The Coal Regions Structural Development Act provides financial support for regions and socially vulnerable municipalities, as well as early retirement for workers.

The project is being implemented with major investments, including a Tesla plant in Brandenburg, a Rock Tech Lithium smelter in Guben, and a BASF battery materials production facility in Schwarzheide. The Ruhr region is experiencing an economic transformation from the coal industry to tourism, education, and green energy; the Königshovener Höhe wind farm is built on a reclaimed mine. Since 2018, coal mining has been completely stopped; it is imported from the USA, Australia, Colombia and South Africa, and the decommissioning of coal-fired power plants continues according to plan: 15 units with a total capacity of 4.4 GW will be decommissioned in the spring of 2024.

Despite the institutionally structured and socially oriented nature of the coal phase-out, the German experience reveals a number of persistent challenges to a just transition. A high cost of the transformation is still the key challenge: estimated costs of €69-93 billion create a long-term fiscal burden and intensify public debate about the distribution of costs between the federal budget, the states, and taxpayers. An additional problem is the uneven regional effects: economic diversification in the Ruhr region and Brandenburg is developing unevenly, and the creation of new jobs in “green” sectors does not always compensate for the loss of stable employment in the coal industry in terms of income and skills. Increased energy security risks after 2022, rising electricity prices, and the need to temporarily extend the operation of coal-fired power plants have also demonstrated the vulnerability of long-term coal phase-out plans to external shocks, complicating public perceptions of a just transition (WRI, 2021).

Spain. Spain implemented a comprehensive coal industry restructuring program, including the closure of unprofitable mines, support for workers, mine rehabilitation, development of new and existing operations, and infrastructure investment. In response to EU demands, a Coal Mine Closure Plan was approved by the end of 2018, leading to production reductions in Asturias, León, Palencia, and Teruel. In 2019, the Strategic Framework for Energy and Climate was adopted, including Law 7/2021 on Climate and Energy Transition, the National Integrated Energy and Climate Plan (PNIEC), and the Just Transition Strategy (ETJ).

In 2020, the Just Transition Institute was established within the Ministry of Ecological Transition, implementing an urgent plan for 2019–2027 for coal regions. The program includes compensation for laid-off workers, employment support, and the conclusion of just transition agreements with businesses and trade unions, including retraining, employment, and the implementation of new projects. The institute is creating databases of at-risk workers, providing personalized support, career guidance, and training in green professions, especially for women. Additionally, business support has been launched through grants: 279 projects received €39.8 million in subsidies, mobilizing €345 million in investments and creating over 1,200 jobs. Energy companies are also implementing their own strategies: EDP is creating green hydrogen production centers, and Iberdrola is opening a solar panel production facility in Asturias and building a 350 MW solar power plant in Velilla.

As a result, coal mining in Spain effectively ceased by 2018, and since 2019, a massive closure of thermal power plants has begun: most of the 10.6 GW of installed capacity has already been closed (EURACOAL, 2020).

Poland. Since the early 1990s, Poland’s coal industry has undergone profound transformation. From 1998 to 2002, the Miners’ Social Package (MSP) program was implemented, incentivizing voluntary quitting their jobs by workers through early retirement, severance pay, retraining, and social benefits. Participants included underground workers with at least five years of experience and some surface infrastructure employees. The program included miner’s leave with 75% of their salary paid, severance pay equal to 24 monthly salaries, employment benefits, and retraining courses. Total expenditures amounted to \$2.4 billion, financed by the government, the World Bank, and industry companies.

In 2000, the Mine Restructuring Company (SRK) was established to liquidate unprofitable mines, reclaim land, and provide social support to workers. Since 2010, the SRK has operated in

compliance with EU regulations and has received over \$2.8 billion in subsidies. From 2012 to 2018, former miners received free coal or its equivalent, and from 2017, a one-time compensation of \$3,000, costing the budget over \$700 million.

By 2023, the share of coal-fired generation had fallen to 61% due to households switching to gas and heat pumps. In 2020, the government signed a social agreement with trade unions to completely phase out coal mining by 2049, guaranteeing job security and social support, including miners' leave and severance pay. In 2021, the Social Plan for Industry Transformation was adopted, with measures to preserve jobs, provide early leave, payments of up to \$31,000, and retrain workers, as well as investments of over \$4.1 billion in coal-chemical technologies.

In 2022, an agreement on the transformation of the electricity and lignite industries was signed. This agreement provides for the creation of the National Agency for Energy Security (NABE), which will assume management of lignite and hard coal-fired thermal power plants (up to 55% of generation), as well as a statutory social guarantee package.

The results of the transformation include job cuts at unprofitable enterprises, the provision of benefits and social payments, and partnerships with trade unions. Problems remain, including poor retraining, low involvement of laid-off workers in new activities, and high budgetary costs. However, there are successful examples, such as the ZE PAK (Poland's largest energy company) program for career transition to the renewable energy sector through the RES Training Centre, where over 70 employees have received qualifications in solar panel installation.

Poland's experience with just transition is characterized by a combination of large-scale social measures and persistent structural problems. Despite significant spending on social packages, early retirement benefits, and compensation, the effectiveness of retraining remains limited, and a significant portion of displaced workers are not integrated into new economic sectors. Regions remain dependent on the coal industry, and the share of coal in the electricity sector remains one of the highest in the EU, reflecting the slow pace of structural diversification. The high budget burden also poses a significant challenge: total subsidies and compensation amount to billions dollars, while the extension of the coal phase-out deadline to 2049 reduces incentives for accelerated transformation. Further uncertainty is created by the institutional model with the creation of NABE, which, on the one hand, ensures a manageable transition, but on the other, preserves coal-fired generation and transfers financial and environmental risks to the government (OECD, 2025).

Chile. In January 2018, the Chilean Ministry of Energy signed a voluntary agreement with the major owners of coal-fired power plants – AES Gener, Colbún, Enel, and Engie – that secured a ban on the construction of new coal-fired plants and the phased decommissioning of existing capacity. A departmental working group was established to analyze the technical, environmental, social, and economic impacts of the phase-out. From June 2018 to January 2019, an energy decarbonization group assessed the impact of coal phase-out on the energy system and regions with the participation of non-governmental organizations, local communities, academic institutions, government agencies, and international organizations.

As a result, agreements were signed with the Ministry of Energy, stipulating a ban on the construction of new coal-fired plants without carbon capture systems, a complete phase-out of coal by 2040, the closure of eight units with a total capacity of 1 GW by 2024, and regular reviews of the plan every five years. Coal units will also be maintained as a strategic reserve for five years. In June 2019, the phased decommissioning of all 28 units was announced, as outlined in the 2020 decommissioning and repurposing plan.

In December 2021, Chile presented its Just Energy Transition Strategy, developed with the participation of trade unions, local communities, ministries, and international organizations. The strategy is based on four pillars: people, economic and environmental development, governance, and public participation, and includes eight initiatives and 32 measures. In 2022, it was expanded to the concept of a “just social and environmental transition”, with a focus on decent jobs and environmental justice.

According to the Framework Law on Climate Change, Chile commits to achieving carbon neutrality by 2050: sourcing 80% of its electricity from renewable energy sources by 2030, and

achieving 100% carbon-free generation by 2050. As of 2019, there were 28 units operating with a capacity of 5.5 GW, primarily owned by Enel, AES Andes, and Engie. Currently, 71% of the capacity has been shut down, leaving 20 units (4.1 GW) remaining, five of which are being repurposed. Coal production in the country ceased completely in 2020, and all coal consumed is imported (OECD, 2024).

Belgium. Belgium became one of the first countries in the European Union to completely phase out coal-fired power generation: its last coal-fired power plant was closed in 2016. By the time of its closure, coal's share in the country's energy mix was less than 5%, and the installed capacity of coal-fired power plants did not exceed 1 GW, significantly mitigating the socioeconomic impact of the transition. Unlike countries with high coal dependence, the phase-out of coal generation in Belgium was not accompanied by large-scale social disruptions, largely due to coal's limited role in the final stages of the transition, a well-developed social protection system, and the active role of the state in managing structural change.

Decarbonization policy was implemented within the framework of a broader climate and energy transition strategy, integrated with the socioeconomic agenda. Significant emphasis was placed on preventing social inequality, territorial disparities, and the risk of energy poverty, which, according to European institutions, affects approximately 10% of households in the country. In 2022–2023, Belgium institutionalized the concept of a just transition through the creation of the High Committee for a Just Transition, which brought together representatives of the scientific community, government authorities, trade unions, and civil society, and developed a package of principles and measures to achieve climate neutrality by 2050.

Within the framework of a just transition, key areas have been the integration of climate and social policies, stakeholder participation in decision-making, the protection of vulnerable groups and workers, and the development of multi-level governance mechanisms. Particular attention is paid to redistributing the costs of transition, mitigating the regressive effects of climate policy, and ensuring equitable access to the benefits of decarbonization. Additional financial support is provided by EU policy instruments; in particular, through cohesion policy and just transition mechanisms, Belgium allocated approximately €183 million for measures on social adaptation, skills development, and support for regions affected by structural changes in the energy and industrial sectors.

Despite the early and formally successful phase-out of coal-fired generation, the Belgian experience reveals a number of persistent problems. Strategic documents highlight the risk of regressive socioeconomic effects of climate policy, including rising energy prices and increased energy poverty among vulnerable groups. Even with a well-developed social protection system, integrating climate and social objectives requires ongoing adjustments to support measures and compensation mechanisms. The institutional fragmentation of governance associated with the distribution of powers between the federal and regional levels as well as the uncertainty about long-term effects in terms of the quality and sustainability of green jobs remain as additional challenge, which requires an active and coordinating role for the government (High Committee for a Just Transition, 2023).

China. China remains the world's largest producer and consumer of coal, accounting for over 50% of electricity generation and approximately 60% of the installed capacity of the power grid, reflecting the energy sector's deep structural dependence on this fuel. Despite the growth of renewable energy sources, China continues to actively exploit its coal infrastructure and plans to maintain significant coal production in the coming years, including through new and modernized capacity to ensure energy security and grid stability.

Since the early 2000s, Beijing has closed more than 10,000 small and obsolete coal mines, significantly increasing the concentration of production in large provinces (Shanxi, Inner Mongolia, Shaanxi, and Xinjiang). This has had socioeconomic consequences for cities and regions where the coal industry traditionally provided a significant share of GRP, tax revenues, and employment (for example, in Shanxi Province, up to 50% of industrial value added and approximately 900,000 jobs were related to coal). To mitigate the social impact of the coal sector's decline, the government and regional authorities are implementing retraining, workforce

redeployment, and employment promotion programs. According to the International Energy Agency, the Chinese government has allocated approximately €1.4 billion for worker training, while Shanxi Province has allocated approximately €0.3 billion to support retraining, early retirement, and job creation, which has enabled a significant portion of the laid-off workers to find employment in other sectors.

The Chinese experience highlights the complexity of a just transition in the context of energy dependence and a demographically large coal sector: while mine closures continue, energy security and coal-fueled economic development are maintained, creating a contradictory dynamic between decarbonization, social risks, and institutional priorities (IEA, 2023).

USA. The US case demonstrates the weakening of climate and environmental policies. In the United States, a specific coal phase-out policy was not centrally implemented at the federal level, similar to European countries with carbon schemes, but the country has become an important case study in the opposite direction – dismantling key climate measures and weakening regulations for the coal sector. As part of the fight against climate change, the Barack Obama administration in 2015–2016 initiated the so-called Clean Power Plan, aimed at reducing CO₂ emissions in the energy sector by 32% by 2030 relative to 2005 levels by closing coal-fired power plants and developing renewable energy. However, starting in 2017, and especially after Donald Trump's return to the White House in 2025, American climate policy has undergone significant changes, shifting its focus to deregulation and support for fossil fuels. In the first days, President Donald Trump signed an executive order withdrawing the United States from the Paris Climate Agreement and several international commitments, marking the second such withdrawal by the United States. Under Trump's leadership, the U.S. Environmental Protection Administration (EPA) initiated a rollback or repeal of key elements of the Clean Power Plan, which effectively removes federal limits on carbon dioxide emissions from power plants and relaxes toxic emissions controls. Executive orders were also signed granting regulatory exemptions to approximately 70 coal-fired power plants and other industrial facilities to comply with the less stringent standards in place before the new regulations were introduced (Harvard University Center for the Environment, 2017).

This reversal has been characterized as an attempt to restore and protect the coal industry and other carbon-intensive sectors, but it has also created regulatory instability and criticism from environmental groups, who point to the risks of increased emissions and worsening air quality. This case exemplifies the reversal of climate policy and shows that even large economies can face difficulties in reconciling long-term climate commitments with short-term political priorities (AP News, 2025).

3.4. Adaptation of International Practices for a Just Transition to Monotowns in Kazakhstan

In the context of a practical analysis of the development characteristics of Kazakhstan's monotowns, it is important to consider international experience in supporting areas with narrow economic specializations. Studying international initiatives allows identifying patterns and effective tools that can be adapted to local conditions and contribute to economic diversification, entrepreneurship development, and increased urban resilience. In particular, the following international programs and practices appear to be the most relevant:

1. Economic diversification and small and medium-sized business support programs. An example is the European Bank for Reconstruction and Development's program for the development of monotowns in Russia and Eastern Europe, which aims to stimulate entrepreneurship and create new jobs in the context of economic dependence on a single enterprise.

2. Integrating sustainable development and green transformation principles. International experience shows that the transition to more environmentally friendly technologies facilitates the modernization of urban economic bases. For example, the European Union's Just Transition Mechanism supports regions dependent on coal and other carbon-intensive industries in their transition to a sustainable economy.

3. Collaboration within international monotown networks. For example, the World Bank is implementing projects to exchange experience and consolidate knowledge between single-

industry towns in the CIS and Eastern Europe, enabling the adaptation of successful practices for local economic development.

4. Attracting investment and developing human capital through international grant programs. UNESCO and UN programs to support small towns and industrially dependent territories provide grants and training to improve the skills of local specialists, thereby reducing social and economic vulnerability.

4. Recommendations for a Just Energy Transition in Kazakhstan

Below are summarized and structured recommendations for ensuring a just energy transition in the context of Kazakhstan.

1. Developing a National Just Transition Strategy with a Focus on Social Justice. To ensure a sustainable and socially oriented energy transition, Kazakhstan needs a comprehensive national strategy that integrates climate and social objectives. Specific steps should include: developing and approving the “National Just Transition Strategy of the Republic of Kazakhstan” with clearly defined goals to reduce employment in carbon-intensive sectors and create at least 30,000 “green” jobs by 2030; establishing a National Just Transition Fund under the Ministry of National Economy aimed at financing retraining programs for workers in carbon-intensive sectors, subsidizing SMEs in renewable energy, and supporting social infrastructure in extractive regions. Earmarked grant programs for young people in regions dominated by the extractive industry should also be introduced to stimulate employment diversification and entrepreneurship development.

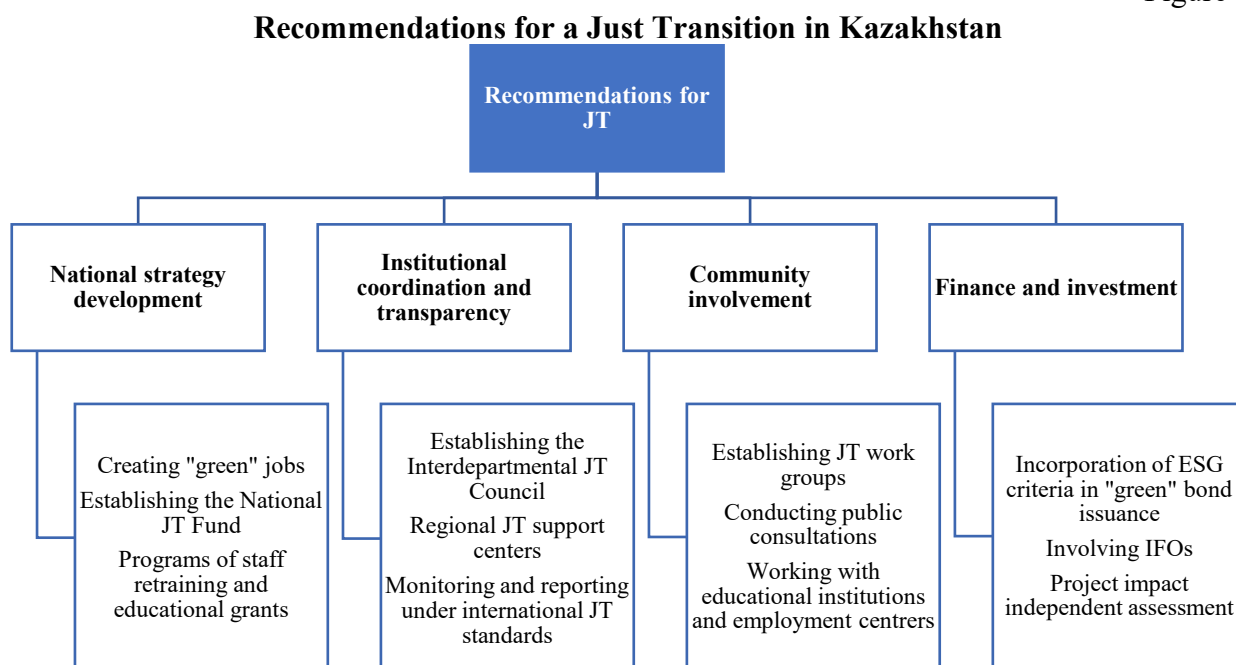
2. Strengthening institutional coordination and ensuring process transparency. Effective implementation of the strategy requires the creation of an institutional mechanism for transition management. To this end, it would be advisable to establish an Interdepartmental Council for a Just Transition under the Government of the Republic of Kazakhstan with the participation of the Ministry of Energy, the Ministry of Labor and Social Protection, the Ministry of Ecology and Natural Resources, the Ministry of National Economy, as well as representatives of akimats of extractive regions and trade unions. At the regional level, by 2027, Just Transition Centers should be opened (for example, in Karaganda, Pavlodar, and Ekibastuz) to implement retraining programs, monitor labor markets, and coordinate with educational institutions. A digital system for monitoring social and environmental indicators based on open data should be introduced, including indicators of distributional (household income, employment), procedural (the share of local community representatives in working groups, public online reports), and restorative justice (compensation and social support). The publication of annual Just Transition reports should be mandated by government decree.

3. Actively involving local communities in the decision-making processes. To enhance the legitimacy and effectiveness of reforms, it is necessary to ensure public participation at all stages of the transition. In each region affected by the decarbonization process, working groups on energy transition issues should be established under the akimats, including representatives of civil society, trade unions, and businesses. Regular public hearings and consultations should also be held, the results of which will be factored in when developing regional employment and social adaptation programs. Retraining programs should be developed in collaboration with local educational institutions and employment centers to ensure they meet labor market needs and the level of worker training.

4. Integrating social criteria into financial instruments and investment projects. To balance economic and social interests, public and private financial institutions should consider social aspects when evaluating investment projects. The Ministry of Finance should implement a methodology for incorporating ESG social criteria when issuing government green bonds and provide incentives for private investors implementing projects with proven social impact. International financial institutions (EBRD, World Bank, ADB) may be involved in financing infrastructure projects in industrial regions, provided that social standards are met. A system for independently assessing the impact of projects on employment and quality of life should be developed, and social reporting requirements should be included.

Thus, implementing a just energy transition policy in Kazakhstan requires a series of consistent steps – from adopting a national strategy and creating specialized institutions to introducing transparent financing mechanisms and active public participation (Figure 4). These measures will minimize the social risks associated with decarbonization and ensure sustainable regional development in the context of the global energy transition.

Figure 4



Source: the authors' own adaptation.

5. Conclusion

A just energy transition is a key tool for aligning climate goals with social and economic protections for vulnerable groups. International experience shows that successful implementation of a just energy transition requires a comprehensive approach, including institutional reforms, financial support, community engagement, and consideration of the cultural and social characteristics of the region.

In the context of Kazakhstan, the transition from coal energy to a low-carbon economy is accompanied by high social and economic vulnerabilities: the coal industry provides a significant portion of employment in single-industry regions, and a sharp reduction in production without support measures could lead to increased unemployment and public concern.

A phased phase-out of coal is impossible without the broad participation of all stakeholders directly affected by the process: government agencies, energy and coal mining companies, industry workers, local communities, and environmental organizations. International experience shows that the creation of independent commissions and specialized institutions increases trust and transparency in reforms (for example, the Coal Commission in Germany or the Just Transition Institute in Spain). Such approach for Kazakhstan could become a key tool for developing a balanced and equitable transition plan. JT strategy places special emphasis on the fate of workers in the coal industry. While declining coal production and power plant closures are leading to job losses, the renewable energy sector has the potential to create up to 15,000 new jobs, with wages higher than in traditional coal-fired generation. Additional opportunities exist in the production of renewable energy components, the development of electric transport, energy-efficient technologies, and, most promisingly, in the green hydrogen sector. Realizing these opportunities requires investment in education, retraining programs, social measures (such as early retirement), and close collaboration between government, business, and universities.

Diversifying the economies of coal-producing regions is no less critical. In addition to investing in renewable energy sources and modernizing power plants, remediation and restoration

of contaminated sites, waste recycling, tourism development, small and medium-sized businesses, construction, and digitalization are also important. Diversification efforts already underway in various regions of the country demonstrate the need to continue and expand these initiatives.

Financial and policy instruments play a key role in supporting the phase-out of coal. These include green bonds, the Emissions Trading System (ETS), the implementation of best available technologies, and participation in international initiatives such as the Accelerating Coal Transition program or the Asian Development Bank's Energy Transition Mechanism. These measures provide project financing, support worker retraining, and incentivize emission reductions.

However, despite the existence of numerous initiatives related to a just energy transition in Kazakhstan, current efforts require further systemic development, as they are currently fragmented. The lack of holistic coordination and a systems approach limits their effectiveness, and the scale of the measures being implemented is still too small to have a significant impact on the overall national low-carbon development path.

References

1. UNDP. (2020). Just transition report: Energy and social policies. New York: United Nations Development Programme. Retrieved from: <https://climatepromise.undp.org>
2. International Energy Agency (IEA). (2025). Ensuring a Strong Labour Dimension for Just and Inclusive Energy Transitions. Retrieved from: <https://iea.blob.core.windows.net>
3. European Union. (2023). Just transition measurement approaches. Brussels: European Commission. Retrieved from: <https://just-transition-experts.ec.europa.eu>
4. Just Transition Finance Lab. (no date). Just transition finance. London: Just Transition Finance Lab. Retrieved from: <https://justtransitionfinance.org>
5. Hasan, Q., Heffron, R.J., Mohtadi, S. and Urpelainen, J. (2024). 'Stepping into the just transition journey: The energy transition in petrostates'. *Energy Policy*, 172, 113279. Retrieved from: <https://www.researchgate.net>
6. Stockholm Environment Institute (SEI). (2022). Considerations for a just and equitable energy transition. Stockholm: Stockholm Environment Institute. Retrieved from: <https://www.sei.org>
7. Vanheukelom, J. (2023). Two years into South Africa's Just Energy Transition Partnership: How real is the deal? Maastricht: ECDPM. Retrieved from: <https://ecdpm.org>
8. Agora Energiewende & Qazaq Green. (2024). Enabling a just coal transition in Kazakhstan. Berlin: Agora Energiewende. Retrieved from: <https://www.agora-energiewende.org>
9. Agora Energiewende. (2024). Modernising Kazakhstan's coal-dependent power sector through renewables. Berlin: Agora Energiewende. Retrieved from: <https://www.agora-energiewende.org>
10. Jayasuriya, U. (2024). 'Just transitions as relationship-building'. *Environmental Politics*. Retrieved from: <https://www.tandfonline.com>
11. Samruk-Kazyna. (2024). Climate impact reduction initiatives. Nur-Sultan: Samruk-Kazyna. Retrieved from: <https://sk.kz>
12. Stark, A. (2023). 'Just transitions' meanings: A systematic review'. *Society & Natural Resources*, 36(9), pp. 1036-1055. Retrieved from: <https://www.tandfonline.com>
13. The Astana Times (2026). 'Kazakhstan Expands Renewable Energy Capacity as Clean Generation Reaches 7% in 2025'. *The Astana Times*, 8 January. Retrieved from: <https://astanatimes.com>
14. UNDP. (2024). Kazakhstan secures €6 million for grid efficiency modernization and energy loss reduction. United Nations Development Programme. Retrieved from: <https://www.undp.org>
15. Astana Times. (2023). 'Kazakhstan launches Women for Just Transition network to promote gender equality in energy'. *The Astana Times*. Retrieved from: <https://astanatimes.com>
16. UNDP. (2024). The path to equality: overcoming gender barriers in the energy sector of Kazakhstan. United Nations Development Programme. Retrieved from: <https://www.undp.org>

17. Sustainable Fitch. (2023). Development Bank of Kazakhstan assigned ESG rating. Sustainable Fitch. Retrieved from: <https://www.sustainablefitch.com>
18. Directorate-General for Energy. (2023). 2023 Global Methane Pledge Ministerial: decisive action to curb emissions. Retrieved from: <https://energy.ec.europa.eu>
19. UNFCCC. (2023). Statement by President of Kazakhstan Kassym-Jomart Tokayev at the World Leaders Climate Action Summit, COP29. United Nations Climate Change Conference (UNFCCC). Retrieved from: <https://unfccc.int>
20. UNDP. (2024). Just transition, green economy: IV ECOJER Congress presents solutions. Retrieved from: <https://www.undp.org>
21. KazMunayGas (2023) Low-Carbon Development Programme 2022-2031. Astana: KazMunayGas. Retrieved from: <https://www.kmg.kz>
22. Samruk-Energy (2024) Promotion of socio-economic development. Annual Report 2024. Nur-Sultan: Samruk-Energy. Retrieved from: <https://ar2024.samruk-energy.kz>
23. KazTransOil (2025) KzTransOil JSC reduced emissions of pollutants into the atmosphere by 6.9% in 2024. Retrieved from: <https://kaztransoil.kz>
24. KazTransOil (2023) KazTransOil JSC continues to prove its commitment to ESG principles. Nur-Sultan: KazTransOil. Retrieved from: <https://kaztransoil.kz>
25. United Nations. (2022). Coordination Mechanisms for Sustainable Development Goals in Kazakhstan. New York: United Nations. Retrieved from: <https://www.un.org>
26. UNDP. (2021). Programme for Action on Green Economy (PAGE) in Kazakhstan. Retrieved from: <https://www.un-page.org>
27. UNDP. (2023). UNDP report shows women's rising role in the Kazakhstan renewable energy sector. Retrieved from: <https://www.undp.org>
28. UNECE & REN21. (2022). Renewable energy status report. Retrieved from: <https://www.astrid-online.it>
29. Government of Kazakhstan. (2025). The Initiative of the President of Kazakhstan to Establish a UN Center in Almaty was Unanimously Supported by UN Member States. Retrieved from: <https://www.gov.kz>
30. Joint SDG Fund. (2024a). Promoting Just Energy Transition in Uzbekistan. Retrieved from: <https://www.jointsdgfund.org>
31. Joint SDG Fund. (2024b). Accelerating Decent Jobs and Social Protection for a Just Transition to Formality in Uzbekistan. Retrieved from: <https://www.jointsdgfund.org>
32. Daryo. (2024). UNDP partners with Uzbekistan on \$250,000 project to prepare NDC 3.0 for climate goals. United Nations Development Programme. Retrieved from: <https://daryo.uz>
33. UNDP. (2024). Uzbekistan strengthens climate commitment with second NDC 3.0 coordination workshop. United Nations Development Programme. Retrieved from: <https://www.undp.org>
34. Green Energy Fund of the Kyrgyz Republic. (2023). Green Energy Fund with the Cabinet of Ministers of the Kyrgyz Republic]. Retrieved from: <https://www.greenenergy.gov.kg>
35. Central Asia Climate Portal. (2025, February). The Kyrgyzstan's Cabinet of Ministers approved the regulation on the procedure for the guaranteed purchase of electricity generated by renewable energy facilities. Retrieved from: <https://centralasiaclimatportal.org>
36. AtomMedia. (2025). Rosatom and Green Energy Fund of the Kyrgyz Republic signed guaranteed power purchase agreement. Atom Media. Retrieved from: <https://atommedia.online>
37. Asian Development Bank. (2023). Tajikistan: 2024 Commitments (\$ million). Retrieved from: <https://www.adb.org>
38. United Nations Economic and Social Commission for Asia and the Pacific. (2025, June 24). Roadmap for Sustainable Development Goal 7 for Tajikistan officially launched in Dushanbe. Retrieved from: <https://en.avesta.tj>
39. United Nations Children's Fund. (2024, May 13). International Human Capital Forum Empowers Youth in Tajikistan towards Green Skills and Jobs. Retrieved from: <https://www.unicef.org>

40. Asian Infrastructure Investment Bank (AIIB). (2024). AIIB signs landmark private sector solar PV project in Azerbaijan at COP29 in Baku. Retrieved from: <https://www.aiib.org>
41. OPEC Fund for International Development. (2023). OPEC Fund supports clean energy development in Azerbaijan with US\$50 million loan to ACWA Power. Retrieved from: <https://opecfund.org>
42. Caspian News. (2024). ‘Azerbaijan Accelerates Renewable Energy Transition’. Caspian News, 5 November. Retrieved from: <https://caspiannews.com>
43. United Nations Economic Commission for Europe (UNECE). (2024). Renewable energy in Azerbaijan: current status and development priorities. Retrieved from: <https://unece.org>
44. AccessBank Azerbaijan. (2024). 2024 Annual Environmental & Social Performance and Client Protection Performance Reports Highlights. Retrieved from: <https://www.accessbank.az>
45. World Resources Institute. (2021). Germany’s “Coal Commission”: Guiding an Inclusive Coal Phase-Out. Retrieved from: <https://www.wri.org>
46. European Association for Coal and Lignite (EURACOAL) (2020) Coal industry across Europe (7th edition): Spain. Available at: <https://euracoal.eu>
47. OECD. (2025). OECD Economic Surveys: Poland 2025 – Managing the green transition. OECD Publishing, Paris. Retrieved from: <https://www.oecd.org>
48. OECD (2024) OECD Environmental Performance Reviews: Chile 2024. Retrieved from: <https://www.oecd.org>
49. High Committee for a Just Transition. (2023). Just Transition in Belgium: Concepts, Issues at Stake, and Policy Levers – Scientific Report. Brussels: High Committee for a Just Transition. Retrieved from: <https://www.justtransition.be>
50. International Energy Agency (IEA). (2023). China’s coal and steel capacity cuts and worker re-employment. Retrieved from: <https://www.iea.org/policies>
51. Harvard University Center for the Environment. (2017). Trump Signs Executive Order Unwinding Obama Climate Policies. Retrieved from: <https://www.environment.harvard.edu>
52. AP News. (2025). Trump eases regulations on coal, iron ore and chemicals. Retrieved from: <https://apnews.com>

Using Grain Receipts as Collateral for Lending in Kazakhstan

Oishynova G. A. – Chief Specialist-Analyst, Division of Financial Markets Research, Department-Research and Analytics Center, National Bank of the Republic of Kazakhstan

Nurkhanova O. V. – Head, Division of Financial Markets Research, Department-Research and Analytics Center, National Bank of the Republic of Kazakhstan

This paper examines the use of grain receipts as collateral in agricultural lending by second-tier banks. In recent years, the government has implemented a number of measures aimed at increasing the attractiveness of grain receipts for lending, both through financial market regulation and the grain receipt market as a whole. However, as a survey of operating second-tier banks conducted as part of this study showed, these measures have not had a significant impact on lending volumes. The paper presents the factors identified by banks as those hindering the origination of loans secured by grain receipts and examines industry-specific issues whose resolution will create conditions for transforming grain receipts into a fully-fledged collateral instrument for lending.

Key Words: grain receipts, agrifinance, hard collateral, pledge of grain receipts, second-tier banks, Qoldau digital platform.

JEL-Classification: Q14, G14, G18.

1. Preamble

Grain receipts are an agrifinance instrument that allows farmers and traders to access capital secured by agricultural produce. The successful functioning of this type of financing depends on many factors, including a carefully designed legislative environment, the development of clear mechanisms for communication between market participants, and the balancing of interests between borrowers and financial institutions.

In recent years, the government has taken a number of measures aimed at increasing the attractiveness of grain receipts for lending: a regulatory framework has been developed for recognizing grain receipts as a hard form of collateral, and work is underway to improve the digitalization of the grain receipt accounting system. This paper presents the results of an analysis of grain receipt-secured financing practices in Kazakhstan based on a survey of second-tier banks.

2. International Practice

A grain receipt is a security (a warehouse certificate or a receipt) proving ownership of grain stored at an elevator. Grain receipts can act as collateral for loans, depending on the terms, and can also be used as a settlement and trading instrument (purchase and sale). They can be used to transfer title to grain without physical delivery, thereby deferring sales and managing price risk. Furthermore, electronic receipts are used as an underlying asset for transactions with forwards and futures.

Several models of receipts exist internationally, differing in legal status, the mechanism for securing obligations, or the specifics of recognizing the current or future harvest. These differences reflect the specifics of the agricultural sector in each country, but the objectives of the instruments are the same: to ensure liquidity and reduce risks for market participants.

A broader category of receipts are agricultural receipts, covering all types of agricultural products. Such receipts are common in Latin American countries, particularly Brazil, one of the world's leading grain producers. The essence of agricultural receipts, and their difference from grain receipts, lies in the ability to borrow money using the future harvest as collateral. Moreover, the registration mechanisms and foreclosure system are extremely simple, making the instrument attractive to farmers. The Brazilian agricultural receipt market model is being studied and successfully adopted by several countries, including Ukraine and Serbia, whose experiences have also been described in the academic literature.

In the United States, where Warehouse Grain Receipts (WGRs) have the longest history of use, this financial instrument is successfully used thanks to high standards and licensing systems for elevators and standardization of grain quality according to federal regulations. A distinctive feature of the use of WGRs in Canada is the high legal force of the WGRs themselves, a full grain cycle tracking system, and the ability to obtain a loan within 24-48 hours of issuing the WGR.

In Russia, складские свидетельства или складские расписки на зерно warehouse certificates or warehouse grain receipts are used primarily by medium-sized and large agricultural holding companies. WGRs can be either double or simple. A double WGR consists of a commodity receipt (certifying ownership of the goods) and a collateral receipt (certifying the lien on the goods), which can be used separately. For example, a commodity receipt can be transferred to the buyer, while the collateral receipt is held as collateral by the bank. A simple WGR only certifies ownership of the stored goods.

Following ratification of the Agreement on the Rules for the Issuance, Circulation, and Redemption of Warehouse Receipts for Agricultural Products in the EAEU Countries, remote sales of products through the sale of warehouse receipts will be possible starting in 2026. The provisions of the Agreement call for access to information on existing warehouse infrastructure in the EAEU countries.

In countries with developed warehouse receipt financing, special authorities have been established whose functions include initiating and maintaining the entire financing cycle.

The Canadian Grain Commission (CGC), in addition to setting and maintaining Canadian grain quality standards and regulating grain handling in Canada, licenses grain elevators and is responsible for ensuring that elevators meet certain standards, including the issuance of grain warehouse receipts.

The USDA's Agricultural Marketing Service (AMS), in addition to developing, implementing, and managing national production, processing, and labeling standards for organic agricultural products, as well as inspecting handling operations, is responsible for ensuring warehouses' compliance with certain standards, including the issuance of warehouse grain receipts.

The Warehousing Development and Regulatory Authority of India regulates the process of providing and collecting collateral for goods in warehouse storage, establishes requirements (including accreditation) for warehouses and warehouse workers, audits warehouses, accreditation agencies, and other organizations related to warehousing, regulates and develops electronic warehousing systems, regulates rates and terms offered by warehouse workers in warehousing, and more.

The digitalization of processes related to the full grain cycle also contributes significantly to the successful operation of warehouse receipts. The US has implemented an electronic warehouse receipt (EWR) system, which eliminates the need for grain warehouses to store, archive, secure, and track used and unused warehouse receipts. This system also eliminates the need to maintain paper copies of grain receipts. The system stores warehouse activity history for at least six years. Companies with multiple warehouses can centralize warehouse receipt issuance, granting the right to issue/transfer warehouse receipts to specific employees with the appropriate access level. Management personnel can view and review every electronic warehouse receipt issued by the company. According to the US Department of Agriculture, there are four licensed EWR providers in the country. Their role is to provide electronic receipts to farmers storing their produce in warehouses. These four organizations are responsible for receiving goods, including labeling, weighing, placing into storage, assessing product quality, and issuing receipts. Farmers can use the received warehouse receipts for bank loans, with their goods stored in the warehouse being recognized as hard collateral. Warehouses can instantly view the history of each issued or held EWR for detailed auditing. Furthermore, the EWR system allows the state and federal regulatory agencies to electronically view receipt information, including product quality information, previously available only during on-site inspections, and enables the electronic transmission of receipt information, significantly reducing data entry time.

3. Literature Review

Overall, there is a limited amount of research and academic writing on the use of grain receipts as collateral for financing, owing to the fact that grain receipts are a practice-oriented financing instrument, studied primarily within applied case studies and institutional settings. However, experts from various countries also highlight the significant role and advantages of grain receipts as an additional source of financing for farmers, and also point to some similar problems in the functioning of this mechanism.

For example, Jonathan Coulter and G. Onumah (2002) note the importance of warehouse receipts in that they provide access to financing and can be used as collateral for short-term loans, allowing farmers to access credit soon after harvest without being forced to immediately sell their crops. At the same time, the study acknowledges problems, particularly those related to inconsistent and unsystematic government intervention in agricultural markets, which can suppress private sector participation. In the report “The Use of Warehouse Receipt Finance in Agriculture in Transition Countries” by the Investment Centre of the Food and Agriculture Organization (FAO), the authors identify warehouse receipts as a key advantage for banks in expanding their agricultural lending portfolio. They also note the importance of central banks treating warehouse receipt-backed loans as first-class collateral in a robust warehouse receipt system. Under such conditions, requirements to commercial banks related to loan loss provisioning should be adjusted.

The official platform of the World Bank Private Sector Development Blog also points to the advantages of warehouse receipt systems, such as stabilizing post-harvest prices, reducing losses due to inadequate storage facilities, and expanding funding sources. However, the challenges in implementing this form of financing include:

- lack of awareness among stakeholders (especially farmers);
- absence of appropriate legal and regulatory frameworks to protect lending;
- lack of knowledge among banks about warehouse receipt financing;
- absence of suitable warehouses and warehouse management services.

The Warehouse Receipt Financing Feasibility Study by the Financial Sector Strengthening Foundation (FSD Kenya, 2024)¹ identified the following as key determinants of effectiveness of the warehouse receipt system in the best global practices:

- wide distribution of warehouses for sorting and storing goods – the more warehouses, the lower the cost of monitoring the system;
- the presence of independent and professional warehouse operators who are disciplined and trustworthy among investors and financiers – this allows financiers to rely on warehouse receipts as collateral for a loan;
- appropriate pricing for the offered warehouse services – the fee for storage in the warehouse must be economically justified for the investor, taking into account the expected increase in the market price of the goods;
- the existence of a legal framework supporting the use of receipts as collateral – clarity in the process of creating, formalizing and providing a security interest in a warehouse receipt;
- an adequate monitoring and supervision system to ensure that warehouses operate in compliance with the law; an ineffective supervision system increases the costs of managing collateral.

In countries where the grain receipt financing market is more mature, some authors propose using modern technologies that create the preconditions for a systemic and more transparent solution to existing problems. Specifically, in the paper “Research on Warehouse Receipt Pledge Financing Using Blockchain Data Assets,” the authors draw attention to the blockchain technology. To create a warehouse receipt financing process based on blockchain technology, they

¹ FSD Kenya is an independent foundation, which aims to create a financial system that benefits a green and inclusive digital economy while improving the financial status and opportunities of women and micro and small enterprises.

utilize a distributed ledger, encryption technology, consensus mechanisms, and smart contracts, which helps solve the problems inherent in traditional grain receipt financing.

In S. M. Iskakov's work, "Legislative Regulation of the Grain Market in the Republic of Kazakhstan", the author concludes that to widely use grain receipts as collateral, it is necessary to increase the transparency of this market to attract even greater investment, as well as to ensure security by reducing the likelihood of fraud and crime in this sector, and to create a legal basis for the implementation of innovation approaches. This approach will enhance the investment attractiveness of the grain market not only for domestic but also for international financial institutions.

4. Grain Receipts in Kazakhstan

The concept of a grain receipt as a legal instrument appeared in Kazakhstan between 2001 and 2003, but their practical use as collateral began later. The Law of the Republic of Kazakhstan "On Grain" defines a grain receipt as a warehouse receipt in the form of a debt-based, book-entry, non-issuable security certifying the holder's right to receive grain from a grain receiving station in the quantity and quality specified upon its issuance. Receipts were first designated as collateral through amendments to this law in 2016.

The Ministry of Agriculture is the central executive authority responsible for coordinating and regulating the activities of grain market participants in Kazakhstan. Implementation of the government policy in the grain market falls within the purview of the local executive authority of the region, which also is in charge of licensing of warehouse services with the issuance of grain receipts. In 2018, the Qoldau digital platform was launched, which combines a variety of services for businesses and individuals, primarily for the digitalization of specific agricultural issues.

In 2023, the Decree of the President of the Republic of Kazakhstan dated March 10, 2023, No. 140 "On Measures to Expand Lending to the Real Sector of the Economy and Reduce Household Debt" outlined the need² to improve efficiency of the grain receipt market by introducing the possibility of using grain receipts as hard collateral subject to a guarantee from quasi-public sector entities. As a result, in 2023, grain receipts were legally recognized as a hard collateral by the Resolution of the Board of the Agency of the Republic of Kazakhstan for Regulation and Development of the Financial Market (hereinafter – Resolution No. 170)³.

According to the amendments, claims under grain receipts are excluded from non-hard forms of collateral if:

1) the grain receipts are guaranteed by a legal entity, where 100% of the voting shares (interests in the registered capital) are directly or indirectly owned by the government or a national management holding company, or

the property (grain) that is the collateral under the grain receipt is secured by an insurance contract containing clauses on the unconditional and irrevocable fulfillment of obligations, concluded with insurance organizations that have a rating of at least "B+" according to the Standard & Poor's rating agency or a rating of a similar level from one of the other rating agencies, or by an insurance contract, the terms of which are stipulated in paragraph 2-1 of the standards, while part of the liability of the insurance (reinsurance) organization under the insurance contract is transferred for reinsurance to a reinsurance organization that has a rating of at least "B+"

² Objectives: To take measures to improve the efficiency of electronic monitoring of grain receipts and ensure the safety of the volume and quality of grain in grain storage facilities (elevators and grain receiving points) by digitalizing the processes of obtaining reliable information on grain volumes and turnover; in conjunction with the Agency of the Republic of Kazakhstan for Regulation and Development of the Financial Market and the National Bank of the Republic of Kazakhstan, to ensure the inclusion of grain receipts guaranteed by quasi-public sector entities in the category of hard collateral.

³ The Resolution No. 100 of the Board of the Agency of the Republic of Kazakhstan for Regulation and Development of the Financial Market dated December 30, 2023, "On Amendments to Some Regulations of the Republic of Kazakhstan on the Regulation of Banking Activities", enacted amendments to the Resolution No. 170 of the Board of the National Bank of the Republic of Kazakhstan dated September 13, 2017, "On Establishing Regulatory Values and Methods for Calculating Prudential Ratios and Other Mandatory Norms and Limits, the Amount of Bank Capital, and the Rules for Calculating and Limiting Open Foreign Currency Positions".

according to the international scale of the Standard & Poor's rating agency or a rating of a similar level from one of the other rating agencies;

2) the term of the grain receipt does not exceed the maximum permissible storage period of grain belonging to the holder of the grain receipt, established by the Rules for the storage of grain, approved by the order of the Minister of Agriculture of the Republic of Kazakhstan dated June 26, 2015 No. 4-1/573;

3) the grain receiving station that issued the grain receipt complies with the Qualification Requirements for the provision of warehouse services with the issuance of grain receipts, and the list of documents confirming compliance with them, approved by the order of the Minister of Agriculture of the Republic of Kazakhstan dated April 16, 2015 No.4-1/339.

For Kazakhstani farmers, the ability to use grain receipts as hard collateral could help solve one of the problems that agricultural producers encounter: a lack of liquid collateral for obtaining financing. According to the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, as of December 1, 2025, there were 22.1 million tons of grain (including rice) and pulses available. At the same time, according to the grain receipts information service Qoldau.kz, as of December 1, 2025, the number of active grain receipts was 24,822 with a recorded physical weight of 5.8 million tons, and the current utilisation rate of grain storage facilities is 48.1% (Figures 1, 2). Of this, 1.27 million tons are held as collateral.

Figure 1

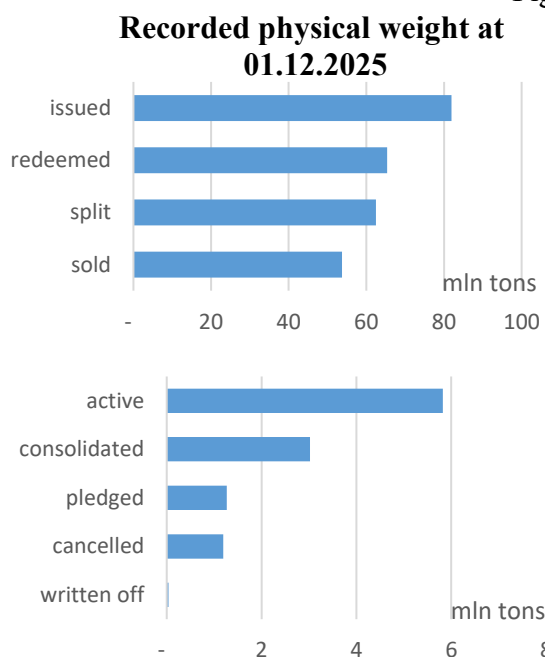
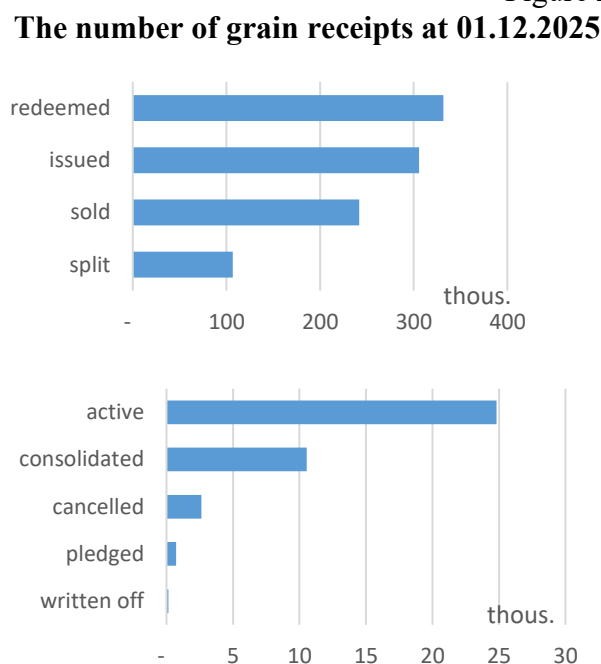


Figure 2



Source: Qoldau

Due to the limitations of the Qoldau website regarding the data on grain receipts dynamics, participant structure (producers/traders), collateral status, receipt value, grain quality, and other detailed data, it is difficult to draw conclusions about the development or stagnation of this market. However, the overall potential for lending secured by grain receipts can be identified.

5. Survey Results

To determine the current situation in grain receipt-secured lending and to gain an understanding of the prospects for this sector, a survey of second-tier banks was conducted as of July 1, 2025. The questionnaire consisted of seven questions and was sent to all operating second-tier banks providing business lending (19 banks). Information was collected through an official request, accompanied by a questionnaire and a table for completing information on loans secured by grain receipts. Participation in the survey was voluntary. Responses were provided by all 19 banks (a 100% response rate). However, some banks (9 out of 19) provided responses without

disclosing their positions due to a lack of lending experience or a lack of plans to lend against this type of collateral, which may point to limited disclosure on certain issues.

The questionnaire contained standardized questions that were not open-ended, ensuring comparability between respondents. Verification of the information provided was carried out, in part, using data from external sources.

Despite the full coverage of respondents, the survey results should be interpreted with a number of limitations in mind. In particular, the voluntary nature of participation may impact the completeness and detail of the responses. However, the results obtained reflect the consolidated position of the banking sector on the issues under consideration and can be used to form a general understanding of current practice. However, they do not preclude the need for additional analysis on specific aspects.

Question No. 1. Does/has the financial institution provided loans secured by grain receipts? Question No. 2. What are the financial institution's future plans regarding loans secured by grain receipts? Twelve of the surveyed banks have not previously financed or currently provide loans secured by grain receipts. One of these banks mentioned moderate risk appetite in the agricultural sector as the reason. Of the remaining seven banks, only four have outstanding loans secured by grain receipts in their loan portfolios. Three banks had experience with lending, but only before 2017.

Among the banks participating in the survey, only six intend to provide finance using grain receipts as collateral. Two of these banks indicated that they plan to finance on general terms; ten banks preferred not to answer. Four banks stated a categorical “no”, one of which cited a negative experience due to a criminal case related to the forgery of grain receipts as the reason for not planning to provide loans. Since only operating banks participated in the survey, the estimates of lending volumes secured by grain receipts presented below may not fully reflect historical trends. According to the data provided in the survey, as of July 1, 2025, the outstanding principal debt on loans secured by grain receipts amounted to 55.3 billion tenge, 65% of which were 90+ days past due (Table 1). However, there are no loans in the banks' portfolios for which grain receipts are recognized as hard collateral in accordance with the Resolution No. 170.

Table 1

Balances of loans provided against the grain receipts, at 01.07.2025

Item	The number of loans	Outstanding principal, mln tenge
Loans where grain receipts are used as collateral	99	55 303
incl.those that are 90+ days past due	19	36 144

Source: second-tier banks participating in the survey

An increase in the volume of loans provided by operating banks and secured by grain receipts was observed in 2012, 2016, and 2020–2023 (Figure 3). The greater activity in 2012 and 2016 could be related to changes in the legislative environment aimed at improving the instrument and increasing trust in grain receipts. In 2012, regulations for the use of the electronic grain receipt system were approved⁴, defining the procedure for creating and redeeming grain receipts, as well as requirements for grain receiving stations. In 2016, amendments were adopted whereunder grain receipts moved from a paper to electronic format, as well as to an automated grain accounting at elevators⁵. However, due to the lack of information on banks that are currently inactive, the pattern of the portfolio secured by grain receipts probably does not fully reflect the entire dynamics.

⁴ Governmental Decree of the Republic of Kazakhstan dated February 1, 2012 No. 185 “On Approval of the Rules for the Use of the Electronic Grain Receipt System”.

⁵ Law of the Republic of Kazakhstan dated April 9, 2016 No. 502-V “On Amendments to Some Legislative Acts of the Republic of Kazakhstan on the Grain Market Regulation”.

Figure 3
Issuance of grain receipts as collateral by operating banks

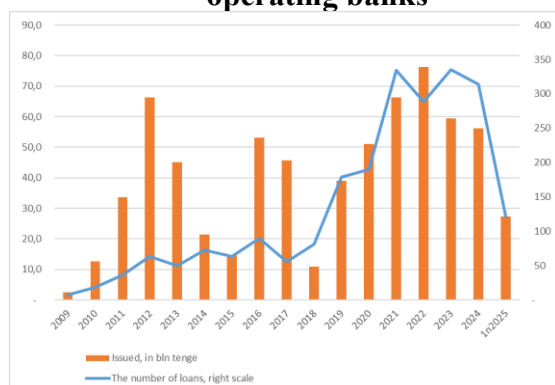
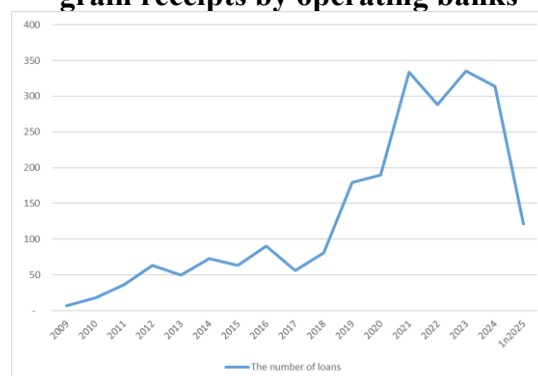


Figure 4
The number of loans provided against grain receipts by operating banks



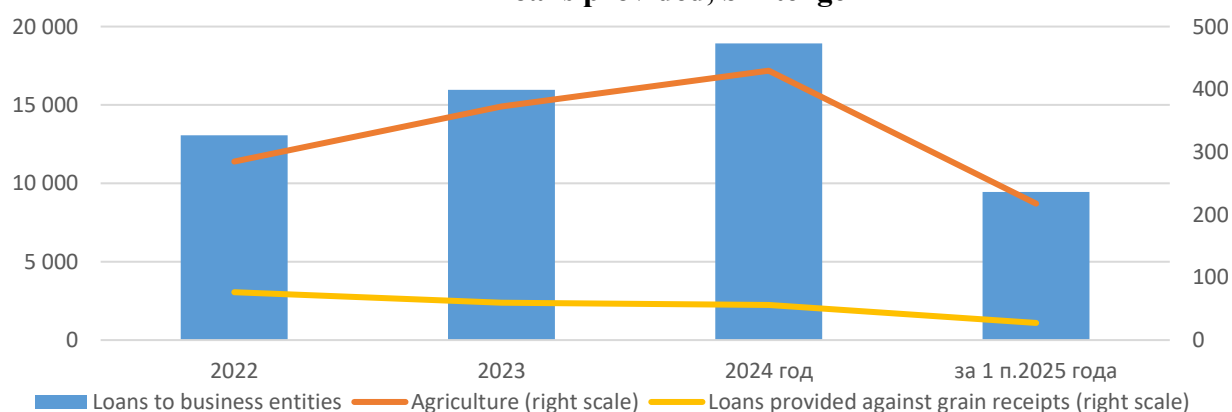
Source: second-tier banks participating in the survey

The dynamics of loan origination secured by grain receipts before 2018 was determined primarily by an increase in the average size of a small number of loans, reflecting a focus on larger transactions. After 2018, the situation changed, and the growth in total loan volumes was driven primarily by an increase in the number of loans, rather than their size (Figure 4).

The average size of grain receipt-secured loans has remained consistently low since 2018, possibly indicating a continued conservative approach by lenders and low interest in this type of lending.

Overall, the loan portfolio issued by second-tier banks to agricultural businesses accounts for a relatively small share of the loan portfolio and has no significant impact on either the total loan portfolio or the structure of agricultural loans. This share remains insignificant throughout the period under review, indicating the weak integration of this instrument into the banking financing system of the agricultural sector. This situation is understandable, since there is an alternative financing channel in the market, operated by the quasi-public sector. (Figure 5).

Figure 5
Loans provided, bln tenge



Source: NBK, bank survey

Question No. 3. Financial products using grain receipts as collateral. Six banks mentioned that they do not have any special financial products for this type of collateral, and financing was/is provided under general terms. The remaining 13 banks did not provide information due to the absence of loans secured by grain receipts in their loan portfolios.

Question No. 4. Requirements to grain receipts. Banks pointed to the requirements for both the receipt itself and the grain receiving station that are consistent with legal requirements. In general, banks note that grain receipts are accepted as low-liquidity collateral or additional collateral.

Requirements to a grain receiving station:

- a grain receiving station (GRS) that has issued a grain receipt must be a participant in the system of guaranteeing obligations under grain receipts or insure civil liability to holders of receipts;
- a GRS must have a sufficient bank trust rating for grain storage facilities, published on the web portal of the grain receipt information system;
- registration of the bank's right of pledge in the State Electronic Register of Grain Receipt Holders of the Ministry of Agriculture of the Republic of Kazakhstan⁶.

Requirements to availability of documents:

- a document from a GRS certifying the fact of grain storage;
- quality passport/certificate of conformity for grain;
- contract for storage and compulsory insurance of plant products.

One bank mentions the monitoring of grain receipts on a monthly basis without conducting a physical inspection of the collateral property, by obtaining an opinion on the value of grain receipts based on price bulletins.

Question No. 5. Main sources of funding for these types of loans. According to banks' responses, funding sources can include both internal and external funds, including those from government business support programs.

Question No. 6. Factors hindering the origination of loans secured by grain receipts, and proposals for developing financing. Banks identified the following factors hindering the origination of loans secured by grain receipts:

- industry-specific: weak domestic grain market, limited exports and logistical problems, grain price volatility, lack of confidence in the quality of grain storage and accounting, especially in private GRS;
- legal: insufficient legal protection for creditors in the event of a borrower's default (there are no clear mechanisms for foreclosure on grain under a receipt), unregulated electronic receipts and their legal recognition in the courts;
- technical: problems with registration of grain receipts on the Qoldau website, lack of digitalization in the agricultural sector.

One of the banks surveyed mentioned the lack of applications for financing secured by grain receipts as a limiting factor. In addition to supply-side factors for loans secured by grain receipts, there are also constraints on the demand side, that is, from entrepreneurs themselves, which also requires study.

Proposals regarding the development of financing presented by one bank:

- 1) regulatory environment: improvement of legislation, including clearer rules for handling grain receipts and the procedure for collecting collateral, the introduction of a mechanism to protect creditor rights;
- 2) tax legislation: creation of tax breaks or incentives for banks working with this instrument;
- 3) financial incentives: designing government support programs, including subsidizing interest rates on loans secured by grain receipts;
- 4) technical improvements: implementation of a single digital platform for all participants (elevators, banks, farmers) with online accounting of receipts.

Question No. 7. Has the situation in lending changed since the regulatory environment changed, which defined the status of grain receipts as hard collateral? No changes in the volumes and terms of bank lending have been identified.

6. Challenges

Despite significant regulatory initiatives, market analysis and bank responses suggest a lack of interest in financing secured by grain receipts, both from the banking sector and potential

⁶ www.qoldau.kz

borrowers. This is likely due to the existence of problematic issues limiting the potential use of this type of collateral, which have not been addressed or fully resolved by the changes implemented in the grain receipt market. To monitor effectiveness of the measures taken and formulate a further development strategy for the industry, it seems advisable to conduct regular analysis and publish the results publicly.

In addition to the problematic issues in the agro-industrial complex referred to by banks, the following challenges can be identified.

Experience in recent years with the use of grain receipts, including information from one bank's response, has revealed the lack of transparency in the instrument's operating mechanisms. Specifically, grain receipts have been issued that were not actually backed by grain, and the tonnage and quality of grain accepted at grain receiving stations have been overstated. Open sources note that in 2017 alone, grain shortages of approximately 7 million tons were detected at elevators in several regions of Kazakhstan.

Numerous cases of fictitious grain receipts being used as collateral, as well as transactions involving grain receipts not backed by grain, have been identified. These latter cases occurred after legislative amendments and the introduction of electronic grain receipts, which were intended to prevent fraud. This situation is caused, among other things, by insufficient internal/external audits of elevator and GRS operations, as well as the absence of developed verification mechanisms.

The imperfections of the electronic grain receipt system, created in part to address the aforementioned problem, are another barrier to their full implementation and dissemination. In mid-2016, legislation⁷ established the issuance and circulation of electronic grain receipts to reduce farmers' production costs, ensure market transparency, and eliminate violations previously identified by regulatory authorities in this area. To this end, the Qoldau.kz platform was constructed and launched. It serves as a single access point for information and interactive services within the registrar information system. The platform is designed to provide users with information about electronic grain receipts and grain storage facilities. Furthermore, the platform is intended to enable local government officials, as entities exercising control functions in the area of grain market regulation, to monitor the quantity and quality of actual grain in warehouses in real time. Given the identified discrepancies in published data, there are questions regarding the extent to which this platform currently covers these functions and provides a complete picture of grain storage facilities.

Lack of information or incomplete/inaccurate information could potentially facilitate the spread of fraudulent schemes and a loss of trust in the electronic grain receipt system overall.

The Agency for the Protection and Development of Competition of the Republic of Kazakhstan also highlighted the problem of insufficient transparency and efficiency in the provision of GRS services due to the lack of digital accounting and management tools in its opinion based on the analysis of the state of competition in the grain storage services market for grain receiving stations for 2024⁸. The government agency recommended implementing a digital grain registration system (GRS) for accounting of grain crops and monitoring of grain volumes and quality, as well as automating the application process for services provided, ensuring equal access (a queue system). Furthermore, the report identified the lack of GRS licensing, discriminatory tariffs and limited access to GRS services, the high cost of Qoldau portal services, and limited GRS access to subsidies for GRSs with increased capacity as key barriers to GRS operations.

An analysis of grain storage facility data revealed that of the 190 active grain receiving stations, only 42 are licensed to provide warehousing services with the issuance of grain receipts (Appendix 1). Furthermore, some grain receiving stations still have grain receipts in a paper form, although the purpose of introducing electronic receipts was to establish an effective system for

⁷ Law of the Republic of Kazakhstan "On Amendments and Additions to Certain Legislative Acts of the Republic of Kazakhstan on the Grain Market Regulation".

⁸ Opinion based on the results of the analysis of the state of competition in the market for grain storage services of grain receiving stations (reception, weighing, drying, cleaning, storage and shipment of grain) within the geographical boundaries of cities and regions (districts) of the Republic of Kazakhstan for 2022–2023 and 9 months of 2024.

monitoring grain movement at the grain receiving station and eliminate the possibility of counterfeiting.

The introduction of a grain receiving facility rating system, categorized as reliable/acceptable/unreliable, was proposed as one of the methods for increasing industry transparency, standardizing services, and improving the quality of stored grain. According to Qoldau, the GRS rating system should be based on the indicators in Table 2.

Table 2

Indicators used in evaluating GRS

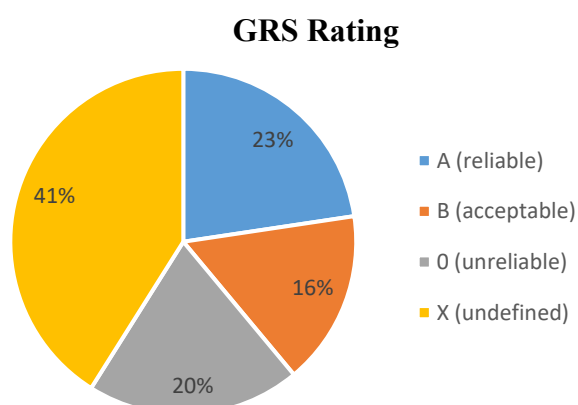
Group name	Sub-group name	Items
Quality of GRS services	Responsibility	Insurance coverage Arrest on the GRS property Participation in judicial proceedings as a defendant
	Consumer satisfaction	The share of cancelled orders Survey of users
	Grain turnover	Grain turnovers The share of two-year old grain and the GRS capacity
Institutional development of GRS	Transparency of operations	Audit results Services beyond the pricelist Integration of IC with the grain receipt information system
	Technical equipment	Railways Electronic weights Grain drier Access to the Internet, including for users via wi-fi

The worst GRS rating is assigned should at least one of the factors below be present:

- 1) the existence of outstanding paper grain receipts issued by this GRS;
- 2) the absence of the fact of publication of the audited annual financial statements of GRS on the Internet resource of the financial statements' depository;
- 3) the absence of the fact of publication of electronic GRS reporting on the Portal;
- 4) the absence of the fact of publication of the GRS price list on the Portal;
- 5) the fact of introducing the procedure for temporary management of GRS.

According to the portal, as of December 1, 2025, of the 190 operating grain storage stations, 78 (41%) had an undefined trust rating, 43 (23%) GRS had an A (reliable) rating, 31 (16%) had a B (acceptable) rating, and 38 GRS, or 20%, were considered unreliable (Figure 7). The presence of a large number of GRS with an undefined rating may complicate the assessment of risks inherent in grain receipts issued against grain stored in such GRS.

Graph 7



Source: Qoldau

Deficiencies in the regulatory framework were identified, including a lack of clear requirements for participants in the process and the inability to mitigate risks associated with grain receipts.

Protecting the interests of grain receipt holders from the failure of grain receiving stations to fulfill their obligations under the grain receipts they issued is the responsibility of grain receipt fulfillment guarantee funds in accordance with the provisions of the Law “On Grain”. This function was performed by the Grain Receipt Fulfillment Guarantee Fund, established in 2003 and later renamed KazAgroGarant JSC. In 2020, with the wording “due to the current lack of demand for services to guarantee the fulfillment of obligations under grain and cotton receipts”⁹, KazAgroGarant JSC withdrew from the system of guaranteeing the fulfillment of obligations, and was later reorganized.

Thus, no one currently performs the functions of guaranteeing the fulfillment of obligations under grain receipts, despite the existence of a legal requirement. In fact, such funds serve as a compensatory buffer, protecting note holders and increasing the confidence of banks and investors. A 2009 FAO Investment Centre document¹⁰ gave high ratings to countries, in part due to the existence of such funds. At that time, Kazakhstan was also classified as a country with a developed warehouse receipt system.

Under the laws¹¹, “GRSs that do not participate in the grain receipt fulfillment system insure their civil liability to grain receipt holders”. Furthermore, according to the Resolution No. 170, for grain receipts to be recognized as a hard collateral, the property (grain) serving as collateral for the grain receipt must be secured by an insurance contract. Part of the insurance company’s liability under the insurance contract must be reinsured with reinsurance companies rated at least “B+”¹². However, according to the data from Qoldau¹³, of the 190 grain storage stations currently in operation, only 5 have entered into GRS civil liability insurance contracts.

Thus, the lack of interest among market participants in insuring risks associated with grain receipts reduces the attractiveness of grain receipts and limits their adoption. Overall, a comprehensive review of insurance issues is needed to develop an approach that takes into account the interests of all participants.

The previously mentioned report by the Agency for the Protection and Development of Competition of the Republic of Kazakhstan points to the lack of advanced equipment and technological processes for storing, drying, cleaning, processing, and shipping grain, as well as the high deterioration of grain storage facilities commissioned during Soviet times. The condition of most grain storage facilities requires major repairs. According to the Agency’s estimates, in the medium term (up to 2030), major repairs will be required for almost all grain storage facilities with concrete silos, which account for at least 50% of elevator capacity.

There are also questions regarding the GRS regulatory processes at the local level. Previously, oversight functions for grain market regulation were assigned to the Ministry of

⁹ Resolution of the Government of the Republic of Kazakhstan dated January 5, 2020 No. 1 “On Amendments to the Governmental Decree of the Republic of Kazakhstan dated July 12, 2018 No. 423 “On Approval of the Government Program for the Development of the Agro-Industrial Complex of the Republic of Kazakhstan for 2017–2021”.

¹⁰ FAO Investment Centre Technical Reference Paper, Warehouse Receipt Financing for Agriculture in Transition Economies, 2009.

¹¹ Clause 1 of Article 16 of the Law of the Republic of Kazakhstan “On Grain”: “Grain-receiving stations that do not participate in the system of guaranteeing the fulfillment of obligations under grain receipts shall insure their civil liability to holders of grain receipts and its parts, ensuring, in the event of loss or deterioration in the quality of grain accepted for storage, an insurance payment to each holder of a grain receipt in the amount of no less than eighty percent of the market value of the lost or deteriorated grain, which existed at the time of compensation, without the application of franchise conditions”.

¹² According to the international scale of the rating agency Standard & Poor’s or a rating of a similar level from one of the other rating agencies.

¹³ <https://p-grain-receipt.qoldau.kz/ru/gr-info/granaries> (an inquiry as of 01.12.2025).

Agriculture of the Republic of Kazakhstan. However, as part of ongoing decentralization efforts¹⁴, oversight functions for grain market regulation have been transferred to local executive authorities. This may create a conflict of interest, as akimats, as executive bodies, should not combine oversight functions with those for industry development.

7. Findings

Government measures aimed at developing lending secured by grain receipts are keeping pace with changing market trends. A sufficient legislative framework has been established, including regulatory changes allowing grain receipts to be regarded as hard collateral. Work is underway to digitalize grain receipts, and measures are being taken to improve efficiency and reduce abuses in the use of grain receipts.

However, as a survey of existing second-tier banks showed, the regulatory amendments have not had a significant impact on lending volumes. Most existing banks have not previously financed and are not currently lending against grain receipts. Several other banks have balances of problem loans in their portfolios that were originated before the amendments defining grain receipts as hard collateral came into effect.

Statistics for this lending segment reflect the existence of unresolved economic issues, and the creation of the ability to use grain receipts as hard collateral is only part of the agricultural sector lending mechanism. Transforming the grain receipt into a fully-fledged instrument and recognizing it as truly liquid and hard collateral requires further improvement of existing market mechanisms and the resolution of a number of problems, in particular:

1. Addressing the sector's structural issues. The effective functioning of the financial instrument directly depends on the state of the infrastructure and market regulation mechanisms. To ensure greater transparency in grain receipt insurance, it is possible to consider GRS inspections to ensure compliance with the rules for maintaining quantitative and qualitative records and storing grain, and the creation and maintenance of a state electronic register of grain receipt holders, not only by the Ministry of Agriculture of the Republic of Kazakhstan and local executive authorities, but also with the involvement of representatives of the insurance and banking markets.

2. Strengthening protection for grain receipt holders. Further development of insurance and guarantees for the fulfillment of obligations under grain receipts is required, ensuring that the interests of all participants are covered and regulatory inconsistencies are eliminated.

3. Improving the electronic system. The Qoldau.kz web portal requires a further upgrade, transforming it into an electronic system with a full cycle of tracking grain and related transactions. Furthermore, the current functionality needs to be improved, data access and analysis features added, and its reliability enhanced.

4. Developing a culture and building dialogue with market participants. High-quality dialogue among all market participants can contribute to the effectiveness of measures taken to expand lending to the real sector of the economy. It is difficult to expect sustainable and systemic results when the measures implemented do not fully take into account the interests and capabilities of all market participants. The absence of loans in bank portfolios that use grain receipts as hard collateral highlights, among other things, fragmented communication between the parties.

References

1. Jonathan Coulter & G. Onumah (2002). The role of warehouse receipt systems in enhanced commodity marketing and rural livelihoods in Africa». Rural Finance & Investment Learning Centre. <https://www.rfilc.org/wp-content/uploads/2020/08/role-of-whr-in-africa.pdf>
2. Investment Centre Division (2009). The use of warehouse receipt finance in agriculture in transition countries. <https://openknowledge.fao.org/handle/20.500.14283/al181e>

¹⁴ In accordance with the Law of the Republic of Kazakhstan dated September 29, 2014 No. 239-V "On Amendments to Some Legislative Acts of the Republic of Kazakhstan Regarding Delimitation of Powers between Levels of Government".

3. World Bank Blogs. Can warehouse receipts unlock farmer finance?(2025) <https://blogs.worldbank.org/en/psd/can-warehouse-receipts-unlock-farmer-finance->
4. Financial Sector Deepening Kenya. Warehouse receipt financing feasibility study (2024). <https://www.fsdkenya.org/wp-content/uploads/2024/09/Warehouse-receipt-financing-feasibility-study.pdf>
5. Kun Ma, Yu Ping Zhou (2024). Research on warehouse receipt pledge financing based on blockchain technology. <https://dl.acm.org/doi/fullHtml/10.1145/3655497.3655517>
6. Iskakov S.M. (2013). "Legislative regulation of the grain market in the Republic of Kazakhstan", Russian Journal of Agricultural and Socio-Economic Sciences, CyberLeninka; Editorial Board of the journal Russian Journal of Agricultural and Socio-Economic Sciences, v. 22(10). https://rjoas.com/issue-2013-10/article_03.pdf

Information About Granaries by Regions, as of 01.12.2025

#	Regions	The number of GRS	There are paper GRs	GRS is insured	GRS confidence score				Has a warehouse license to grant/issue grain receipts
					A (reliable)	B (acceptable)	0 (unreliable)	X (undefined)	
1	Abai	3	1	-			1	2	1
2	Akmola	68	5	3	24	11	5	28	6
3	Aktobe	7	-	-	3	1	1	2	6
4	Almaty	2	1	-			1	1	1
5	Atyrau	-							0
6	West Kazakhstan	9	1	1	2	2	3	2	2
7	Zhambyl								0
8	Zhetisu	1	-	-		1			0
9	Karaganda	4	-	-	2	1		1	1
10	Kostanai	35	13	0	4	5	9	17	9
11	Kyzylorda								0
12	Mangistau	1	-	-				1	1
13	Pavlodar	6	-	-	1	4		1	0
14	North Kazakhstan	44	12	1	6	3	17	18	13
15	Turkestan	1	-	-				1	1
16	Ulytau								0
17	East Kazakhstan	6	3	-	1	2	1	2	1
18	city of Astana	3	1	-		1		2	0
19	city of Almaty								0
20	city of Shymkent								0
	Total	190	37	5	43	31	38	78	42

Source: Qoldau