PUBLISHED BY
VOPROSY
EKONOMIKI
N. P.

Russian Journal of Economics 12 (2026) 358–389
DOI 10.32609/j.ruje.12.190983
Publication date: 8 October 2026

Russian
Journal of
Economics

www.rujec.org

Russia's crisis responses through the macroeconomic trilemma, 1998–2024: From financial shocks to constraint shocks

Ernst van Gassen [a,*], Busola Ijaware [b]

[a] *Arktos Applied Intelligence, Etten-Leur, The Netherlands*
[b] *Adekunle Ajasin University, Akungba-Akoko, Ondo State, Nigeria*

Abstract

Macroeconomic stabilization frameworks built on market-conforming instruments such as exchange rate flexibility and capital account openness presume the continued functioning of market mechanisms. This paper examines the conditions under which such frameworks cease to operate effectively. It introduces a distinction between financial shocks, which occur within functioning market structures, and constraint shocks, which impair the physical or institutional infrastructure of exchange and limit the ability of prices to coordinate adjustment. Using Russia's crisis responses from 1998 to 2024 as a comparative case study, the paper applies the macroeconomic policy trilemma to classify policy trade-offs across four crisis episodes. A central distinction concerns how the sacrificed trilemma corner is selected. In the earlier, financial crises Russia kept the capital account open and let the exchange rate absorb the shock, while monetary policy independence was secured only with the move to inflation targeting in 2014–2015; in 2022, by contrast, the loss of capital mobility was externally *imposed* by sanctions rather than chosen. Because closing the capital account relaxes the trilemma, the authorities were then able to preserve monetary autonomy and to stabilize the exchange rate administratively during the acute phase, before the rate increasingly moved with the trade balance under a closed capital account. This reconfiguration is reflected in the institutionalization of capital controls, a two-year suspension of the fiscal rule, and changes in the sequencing of policy instruments. Evidence is consistent with the interpretation that the observed policy reconfiguration reflects an adaptation to constraint shocks rather than a rejection of market-based principles. Because the 2022 episode remains ongoing, this interpretation is explicitly provisional: the paper specifies forward-looking falsification criteria against which the reconfiguration claim can be evaluated as further evidence accumulates through 2025–2027. The paper contributes to crisis-response theory by identifying the limits of market-conforming frameworks under conditions where markets cannot clear through price adjustment alone.

Keywords: macroeconomic policy, crisis management, policy trilemma, capital controls, constraint shocks, exchange rate regime, Russia.
JEL classification: E52, E58, F32, F41.

* Corresponding author, E-mail address: evg.gassen@gmail.com

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1. Introduction

This paper examines when market-based stabilization frameworks stop working. Modern macroeconomic frameworks rest on the assumption that, with credible institutions in place, markets can absorb large shocks through price adjustment. Exchange rate flexibility, inflation targeting, fiscal rules, reserve accumulation, and open capital accounts form a toolkit built around that premise. In Russia, this framework did not emerge at once. As Gurvich (2016) shows, the crises of 1998, 2008–2009, and 2014–2015 produced gradual institutional learning. By the mid-2010s, these experiences had consolidated into a rule-based configuration centered on exchange rate flexibility, monetary credibility, fiscal discipline, and external buffers, designed to manage financial and commodity price volatility under capital mobility.

The shock of 2022 differed in character. Earlier crises were triggered by capital outflows or oil price declines, and markets continued to function. In 2022, external restrictions targeted trade, payments, finance, and access to technology. As a result, certain cross-border transactions became difficult or impossible regardless of price movements. This paper describes such disturbances as constraint shocks, distinguishing them from financial shocks that strain liquidity and expectations while leaving market infrastructure intact. When transactions are legally restricted or payment channels are interrupted, price movements alone are insufficient to restore equilibrium.

This distinction informs the central research question: under what conditions does a market-conforming stabilization framework cease to operate as intended? Using Russia's 2022–2024 experience as a case study, the paper examines how crisis management evolves when policymakers face structural limits on market functioning rather than temporary financial instability.

The analytical framework for comparing crisis responses is the macroeconomic policy trilemma, also known as the impossible trinity, empirically documented by Obstfeld et al. (2005). The trilemma states that policymakers cannot simultaneously achieve three desirable objectives: free cross-border capital movement, a stable or fixed exchange rate, and independent monetary policy. At most two of these objectives can be maintained simultaneously; the third is relinquished. For Russia, the trilemma provides a useful lens for distinguishing policy regimes across crisis episodes and for understanding the logic of institutional change. A country that prioritizes capital account openness and monetary policy autonomy must accept exchange rate volatility as the price of adjustment. Conversely, a country that seeks to stabilize its exchange rate while retaining control over domestic monetary conditions must impose capital controls.

Russia's post-2014 framework occupies a clear position within the trilemma. The authorities opted to preserve monetary independence and an open capital account, accepting exchange rate flexibility as the primary shock absorber. The question, therefore, is whether the events of 2022 required a departure from this established equilibrium.

Section 2 presents the theoretical framework. Section 3 describes the data and the coding approach. Section 4 establishes the pre-2022 baseline and analyzes the 2022 crisis episode in comparable terms. Section 5 discusses implications and alternative interpretations. Section 6 concludes.

2. Theory

2.1. Financial shocks and constraint shocks

Standard macroeconomic crisis frameworks assume that markets continue to function during stress. Financial shocks such as capital flight, commodity price collapses, and sudden stops disrupt expectations and liquidity but leave the infrastructure of exchange intact (Calvo, 1998; Obstfeld and Taylor, 2004; IMF, 2009a). Prices adjust sharply, yet markets still clear. Russia's crises of 1998, 2008–2009, and 2014–2015 illustrate evolving stabilization mechanisms in which exchange rate adjustment, reserve use, and monetary recalibration played central roles, with the 2014–2015 episode marking the clearest shift toward a rule-based, market-oriented framework (Gurvich, 2016).

This paper introduces the concept of constraint shocks to describe a qualitatively different category. Constraint shocks arise when the infrastructure enabling market exchange is directly impaired. Legal prohibitions, exclusion from payment systems, trade embargoes, and restrictions on access to critical technologies limit the feasibility of the transactions themselves. Under such conditions markets may not clear at any price, because certain exchanges cannot legally or physically occur, and legal and institutional barriers become the primary determinants of adjustment.

The 2022 shock to the Russian economy had these characteristics: beyond capital outflows and asset volatility, external restrictions affected cross-border payments, trade logistics, financial intermediation, and access to technology. The distinction matters for policy choice. When markets function, price-based tools can coordinate adjustment; when the infrastructure of exchange is disrupted, administrative measures may become necessary complements.

Beyond impairing the operation of existing instruments, a constraint shock alters the menu of feasible policy regimes itself. Where a financial shock leaves policymakers free to choose which trilemma objective to relinquish, a constraint shock can remove an objective from the choice set altogether: once external restrictions sever cross-border financial intermediation, an open capital account ceases to be available regardless of domestic preferences. The relevant question is therefore not only which corner of the trilemma is sacrificed, but whether that sacrifice is chosen or imposed. This distinction — between a discretionary reordering of objectives and an externally enforced contraction of the feasible set — organizes the comparison developed below, and connects the constraint-shock concept to the wider debate on the limits of monetary autonomy under global financial integration, in which even open economies find the trilemma's promised independence sharply qualified (Rey, 2015; Klein and Shambaugh, 2015).

2.2. Defining policy reconfiguration: Criteria and standards of evidence

Distinguishing reconfiguration from temporary adjustment requires clear criteria. Drawing on the trilemma literature (Obstfeld and Taylor, 2004; Obstfeld et al., 2005), the IMF's Institutional View on capital flow management (IMF, 2012), and the de facto regime classification methodology developed by Levy-Yeyati and Sturzenegger (2005), this paper applies three operational criteria.

1. *Trilemma corner shift.* A change in which of the three policy objectives (capital mobility, exchange rate stability, or monetary independence) is persistently sacrificed. If the objective that is given up changes durably across crisis episodes, this indicates a reordering of macroeconomic priorities rather than a temporary tactical adjustment (Obstfeld and Taylor, 2004).

2. *Instrument hierarchy reversal.* A change in the sequencing and primacy of policy tools. In market-conforming frameworks, price-based instruments (interest rates, exchange rate flexibility) serve as first-line stabilizers, while administrative measures such as capital controls function as backstops or last-resort tools (IMF, 2012). If administrative controls are deployed at the outset of a crisis and maintained after acute pressures subside, this signals that policymakers judge standard transmission channels to be insufficient. This is a pattern the IMF's 2022 review of its Institutional View acknowledges, noting that capital flow management measures may be appropriate as part of a broader policy package when countries face crisis-level pressures that standard macroeconomic tools alone cannot address (IMF, 2022, paras. 4–6, 21–23). A growing theoretical and empirical literature similarly treats capital controls not as a deviation from sound policy but as a legitimate instrument under volatile capital flows and binding external constraints (Farhi and Werning, 2014; Korinek and Sandri, 2016; Erten et al., 2021).

3. *Stated objective reweighting.* A shift in the primary objective communicated by monetary and fiscal authorities. As Levy-Yeyati and Sturzenegger (2005) demonstrate, and as the behavioral classification of exchange-rate arrangements by Ilzetzki et al. (2019) confirms on a broader sample, de facto policy regimes frequently diverge from de jure announcements; the gap between stated and revealed objectives is itself diagnostic. If official communications shift from emphasizing inflation targeting and price stability toward financial system continuity, external transaction stability, or production maintenance, this indicates a reweighting of the policy mandate.

When all three criteria are met simultaneously — a different trilemma corner sacrificed, a persistent change in instrument hierarchy, and a documented shift in the primary objective — the case for policy reconfiguration is substantially stronger than it is for any single indicator alone. We test whether Russia's 2022 response meets these criteria in Section 4.

3. Materials and methods

3.1. Data sources and coverage

The empirical analysis draws on monthly macroeconomic data covering the period from 1992 to 2024 (start dates vary by series; see the figure captions), encompassing all four crisis episodes examined in the paper. The end date of December 2024 was chosen because, at the time of writing, not all data series had complete 2025 coverage: while exchange rate and policy rate data extend into 2025, labor market, fiscal, and capital flow series were available only through late 2024. Where more recent observations are available (for instance, international reserves composition through November 2025), these are noted as supplementary context but do not alter the formal analytical window. All figures end in December 2024; later observations cited in the text are not plotted. Data are obtained from

the Bank of Russia, the Federal State Statistics Service (Rosstat), and the Ministry of Finance of the Russian Federation, and are supplemented with World Bank commodity price data and IMF cross-validation where appropriate.

Exchange rates (RUB/USD, RUB/EUR) are from the Bank of Russia statistics database (Bank of Russia, n.d.-b); monthly averages are constructed from daily observations to smooth high-frequency volatility while preserving underlying trends. The monetary policy stance is proxied by the Bank of Russia main policy rate. Before September 2013, the refinancing rate was used, reflecting its role as the primary policy instrument at the time; from September 2013 onward, the key policy rate is used, consistent with the formal adoption of inflation targeting. This institutional transition is marked in Fig. 3 (dashed vertical line, September 2013). Capital flow indicators are constructed from Bank of Russia balance of payments statistics, drawing on the financial account and its major components to capture net capital movements. Net capital outflow is calculated as the financial account balance minus changes in reserve assets, following standard balance-of-payments methodology. Labor market conditions are represented by the unemployment rate from Rosstat Labour Force Survey, compiled using ILO methodology. Real wage dynamics are measured by the year-on-year change in Rosstat real accrued wages, which provides a proxy for household income conditions during crisis periods.

The analysis also relies on two constructed policy indicators. The capital controls indicator is coded monthly by the classification in Table 1; the fiscal rule status indicator is coded monthly as 0 (rule active) or 1 (rule suspended), from official Ministry of Finance announcements, budget laws, and amendments to fiscal legislation.

Supplementary institutional information is drawn from the Bank of Russia annual reports, Ministry of Finance budget execution reports (Ministry of Finance, n.d.-a), and published government decrees. These sources provide qualitative context for interpreting quantitative patterns and for validating coding decisions.

Table 1
Capital controls coding scheme.

Code	Label	Criteria	Example
0	No controls	No administrative restrictions on cross-border capital movements; standard prudential requirements only	2015–2021: open capital account following 2014–2015 crisis normalization
1	Partial restrictions	Selected restrictions on specific transaction types, counterparties, or currencies; no mandatory surrender requirements	2014 Q4: informal guidance limiting FX forward positions; voluntary compliance measures
2	Extensive controls	Mandatory FX surrender requirements for exporters; broad restrictions on outflows to non-friendly jurisdictions; approval regimes for capital transfers	Feb. 2022 onward: 80% mandatory FX surrender (Presidential Decree No. 79, 28 Feb. 2022; reduced to 50% by Government Commission decision, June 2022; selectively maintained thereafter); prohibitions on transfers to non-resident accounts in sanctioning jurisdictions

Source: Authors' coding based on Bank of Russia communications, presidential decrees, and government resolutions. The full monthly coded series is available in the replication repository.

Table 2
Crisis episode windows.

Crisis	Window	Rationale
1998	Q3 1998 – Q2 1999	From the August 1998 default; one quarter later than Gurvich (2016) Q2 start, reflecting that macroeconomic disruption followed the default
2008–2009	Q3 2008 – Q2 2009	From the Lehman Brothers collapse; aligns with onset of financial stress rather than calendar year
2014–2015	Q4 2014 – Q4 2015	From the oil price collapse and emergency rate hike in Q4 2014; begins earlier than Gurvich (2016) calendar-year window, and later than the first financial restrictions of March 2014, which preceded macroeconomic stress by two quarters
2022–	Q1 2022 – end of sample	From the onset of comprehensive external restrictions; window remains open as the shock is ongoing

Source: Compiled by the authors, adapted from the crisis periods in Gurvich (2016, Tables 2–3).

3.2. Crisis episode windows

For analytical comparability, crisis episodes are defined using standardized windows that capture both the acute phase of each shock and the subsequent adjustment period. Gurvich (2016, Tables 2–3) compares key indicators across crisis periods defined as Q2 1998 – Q1 1999, calendar year 2009, and calendar year 2015, using rolling four-quarter periods corresponding to the largest year-on-year GDP decline. This study adopts the same crisis episodes but adjusts the window boundaries to align with the onset of observable macroeconomic stress and major policy interventions rather than with GDP trough dating (Table 2).

The Russian macroeconomic literature has no universal convention for defining crisis windows. Identifying August 1998 as the crisis onset is consistent with Russia's classification as a systemic banking crisis in Laeven and Valencia (2020) and as a sovereign default episode of 1998 in Reinhart and Rogoff (2009). Alternative window definitions would not alter the qualitative patterns documented below, since the core indicators (exchange rate, policy rate, capital flows) show clear crisis signatures within the chosen periods.

Gray shading marks these windows in all time-series charts, to facilitate cross-episode comparison.

3.3. Trilemma coding methodology

To operationalize the trilemma corner shift criterion defined in Section 2.2, this study introduces a binary coding scheme for three core policy dimensions at the crisis-episode level. This coding is the authors' own contribution; while the trilemma framework is established (Obstfeld et al., 2005), its application as a comparative coding device across Russian crisis episodes has not been undertaken in the existing literature. Each dimension is coded as 0 when the corresponding objective is preserved and as 1 when it is sacrificed:

- *Capital mobility:* coded as 0 when cross-border capital movements are largely free; coded as 1 when restricted through administrative or regulatory controls, including licensing requirements, transaction limits, or outright prohibitions.

- *Exchange rate stability:* coded as 0 when the exchange rate is held stable, whether fixed or subject to active administrative management aimed at stabilizing its level or path; coded as 1 when it floats and is primarily market-determined, so that the exchange rate absorbs the shock.
- *Monetary policy independence:* coded as 0 when policy is oriented toward an autonomous nominal objective such as inflation targeting; coded as 1 when subordinated to other objectives, including exchange rate defense, financial stability priorities, or fiscal financing needs.

By construction, the trilemma constraint implies that at least one dimension must be coded as 1 for each crisis episode. The resulting configuration characterizes the underlying policy regime concisely. For example, if capital mobility and monetary independence are both preserved (coded as 0), the exchange rate must be flexible (coded as 1). Conversely, if exchange rate stability and monetary independence are jointly pursued, capital mobility must be restricted (coded as 1). This approach allows crisis responses to be classified consistently without requiring subjective assessments of policy quality or normative desirability.

Coding assignments are based on observable policy actions and institutional arrangements during each crisis episode rather than on ex-post assessments of policy effectiveness. For capital mobility, mandatory surrender requirements, transaction limits, approval regimes, or restrictions on capital outflows trigger a code of 1. For the exchange rate regime, sustained intervention or administrative management that holds a specific level or path results in a code of 0 (stability preserved); market-determined adjustment results in a code of 1 (stability sacrificed). Where intervention slowed but did not prevent a large depreciation, as in 2008–2009, the dimension is coded 1, because the exchange rate still bore the adjustment. Monetary policy is coded as subordinated when official communications and policy statements show interest rate decisions to be driven primarily by non-inflation objectives.

Three coding decisions for the 2022–2024 episode warrant explicit justification, since they bear directly on the central claim. First, a binary scheme necessarily compresses intermediate regimes. The post-2022 exchange rate is best described not as a hard peg but as a managed float whose degree of administrative determination varied over time, and the trilemma literature has long recognized such corner-rounding and partial configurations (Aizenman et al., 2013; Klein and Shambaugh, 2015). The episode is therefore coded according to the acute crisis response — February to mid-2022 — when administrative measures rather than exchange-rate movement bore the adjustment burden; the partial normalization of 2023–2024 is examined separately in Section 4.2.2. Second, following the de facto classification tradition (Levy-Yeyati and Sturzenegger, 2005; Ilzetzki et al., 2019), the coding reflects the revealed locus of adjustment rather than the central bank's de jure regime label, which continued to describe the ruble as floating throughout. This choice is conservative with respect to the paper's thesis: it codes what absorbed the shock, not what the authorities called the regime. Third, monetary independence in the acute phase is coded 0 although the February 28, 2022 rate hike formed part of a stability-focused package (Section 4.4). The criterion is again the revealed locus of adjustment. In 2008–2009 the policy rate and liquidity provision were themselves deployed to defend the exchange-rate path and the banking system, so monetary policy carried the stability burden and is coded 1. In 2022 that burden was carried by capital controls and mandatory

conversion; the emergency hike was reversed in steps from April 2022 (Fig. 3), and subsequent rate decisions were framed in terms of the inflation target (Bank of Russia, 2024a). This is the most contestable cell in Table 3. Coding it 1 would place the acute phase inside the frontier as well, but would not alter the central claim, which rests on the capital-mobility row.

The binary scheme can be cross-checked against an external, continuous benchmark. Aizenman et al. construct quantitative "trilemma indexes" measuring the degree of monetary independence, exchange-rate stability, and financial openness (the Chinn–Ito KAOPEN index) for more than 170 countries (Chinn and Ito, 2006; Aizenman et al., 2013). For Russia, the published series corroborate the binary coding used here over the period they cover: the openness index records a substantially open capital account across the 2000s and 2010s, consistent with our coding of capital mobility as preserved (0) in 2008–2009 and 2014–2015, while the exchange-rate-stability index falls in the float-dominated crisis years, consistent with the exchange rate serving as the sacrificed margin in those episodes. The indexes are, however, currently published only through 2019–2020 and therefore do not yet cover the 2022 episode. This coverage gap is itself part of the motivation for an episode-level coding: the 2022–2024 reconfiguration lies beyond the reach of the standard cross-country measures, and a purpose-built classification is required to characterize it. Extending the continuous indexes through 2024 for a single country is left to future work, in part because the exchange-rate-stability component — being volatility-based — would mechanically register the closed-account environment as "stable" and would not, on its own, discriminate between administrative management and a low-volatility float (see Section 4.2.2).

3.4. Analytical approach

This paper documents what Russian policymakers did differently in 2022 compared with earlier crises, and whether those differences are persistent enough to constitute a reconfiguration. It does not estimate the causal effects of specific policies or model welfare outcomes. The evidence consists of time-series charts, policy chronologies, and the trilemma codings developed in Section 3.3, used to compare observable patterns across the four crisis episodes.

This approach fits the research question. Identifying a regime shift requires showing that institutional arrangements, instrument hierarchies, and stated priorities changed durably, not that any single policy caused a particular outcome. The trilemma framework provides the theoretical structure for comparison; the macroeconomic data and policy documentation provide the empirical content.

3.5. Use of artificial intelligence tools

In accordance with journal policy, the following AI-assisted tools and methods were employed in preparing this manuscript:

For research and comprehension: translating and interpreting Russian-language sources and economic concepts; clarifying technical terminology and theoretical frameworks; and summarizing supplementary literature to identify relevant findings.

For data processing and visualization: writing Python scripts for data ingestion from the Bank of Russia, Rosstat, and Ministry of Finance sources; processing

and cleaning raw data files (exchange rates, policy rates, capital flows, reserves, labor market indicators); and generating publication-ready figures with consistent formatting, crisis-window shading, and axis conventions.

For drafting and refinement: generating initial draft paragraphs for certain sections, which were then revised, restructured, and adapted to ensure consistency with the overall argument; refining academic language and improving clarity in complex passages; and checking citations and helping format references.

Analytical decisions made by the authors: all analytical decisions — coding the trilemma, interpreting data patterns, developing the constraint-shock versus financial-shock distinction, and applying the reconfiguration criteria; structural design — organizing the argument, determining which evidence supported which claims, and building the logical flow; chart analysis — interpreting what each figure showed and connecting those patterns to the trilemma framework; and analytical judgments — evaluating alternative interpretations, assessing persistence versus temporary measures, and determining whether the evidence met the reconfiguration threshold.

4. Results

4.1. The pre-2022 baseline: Crisis responses, 1998–2015

This section establishes the pre-2022 baseline of Russia's macroeconomic policy framework by examining the crisis responses of 1998, 2008–2009, and 2014–2015. Rather than recounting events in detail, the focus is on observable policy choices and their implications for the macroeconomic policy trilemma. Across these episodes a pattern of policy learning became visible: exchange rate rigidity gave way to greater flexibility, reserve accumulation assumed a central role in crisis management, inflation targeting was formalized, and fiscal rules became a more institutionalized component of macroeconomic governance (Kudrin and Gurvich, 2015). By 2014, these elements had largely coalesced into a market-oriented stabilization framework.

4.1.1. The 1998 crisis

The 1998 crisis exposed the fragility of Russia's early post-Soviet macroeconomic arrangements. Throughout the mid-1990s the authorities attempted to stabilize inflation and anchor expectations through a de facto fixed exchange rate regime supported by short-term domestic debt issuance. Weak fiscal institutions, low tax compliance, and rising rollover risk made this configuration fragile (Gurvich, 2016). When oil prices fell and external financing conditions tightened following the 1997–1998 Asian financial crisis, capital outflows accelerated and foreign exchange reserves were depleted. In August 1998 the government defaulted on domestic debt, devalued the ruble, and imposed a temporary payments moratorium (Chiodo and Owyang, 2002). The episode fits a broader pattern of currency-debt crises documented in cross-country studies (Reinhart and Rogoff, 2009; Laeven and Valencia, 2020).

Exchange rate defense proved unsustainable under capital mobility and fiscal weakness. As documented by Gurvich (2016), the crisis demonstrated the incompatibility of rigid exchange rate commitments with inadequate fiscal capacity and

shallow financial markets. In trilemma terms, the attempt to maintain both a fixed exchange rate and capital mobility while running unsustainable fiscal deficits violated the constraints identified by Obstfeld et al. (2005). The principal lesson was negative but durable: defending a fixed rate in the face of external pressure magnifies adjustment costs. Exchange rate flexibility, though initially forced, emerged as a necessary shock absorber.

4.1.2. The 2008–2009 crisis

The global financial crisis tested the lessons of 1998 under markedly different initial conditions. During the 2000–2008 commodity boom, sustained oil price increases (from approximately $10 per barrel in late 1998 to $147 per barrel by mid-2008; World Bank, n.d.) enabled Russia to accumulate foreign exchange reserves of approximately $600 billion by mid-2008 (compared with approximately $15 billion in August 1998; Bank of Russia, n.d.-a), to reduce general government debt from over 50% of GDP in 1998 to approximately 7% by 2008, and to pursue fiscal consolidation (Kudrin and Gurvich, 2015). When global credit markets froze and oil prices collapsed from $147 to $40 per barrel, Russian banks and corporations faced refinancing pressures while capital outflows intensified. The episode involved significant banking stress and currency pressure (IMF, 2009b), with net capital outflows (financial account excluding reserve assets) reaching $139.6 billion in 2008 (Bank of Russia balance of payments; World Bank, 2015).

Unlike in 1998, the authorities did not face immediate sovereign insolvency. The exchange rate regime operated as a managed float, with the Bank of Russia allowing gradual depreciation while intervening heavily to smooth volatility and limit balance sheet stress (IMF, 2009b; Gurvich, 2016). Fiscal policy turned expansionary, drawing on reserve funds to support banks, firms, and aggregate demand. As Gurvich (2016) observes, exchange rate policy in 2008–2009 was in practice similar to that pursued during the first crisis: the Bank of Russia again held the ruble back from falling, generating devaluation expectations and costly reserve losses. Reserves were used countercyclically and depreciation was permitted, but exchange rate management remained active and costly. Significant reserve losses of approximately $200 billion (Bank of Russia, n.d.-a) underscored the limits of defending specific exchange rate paths in the presence of capital mobility, a dynamic consistent with the trilemma constraints documented by Obstfeld et al. (2005).

4.1.3. The 2014–2015 crisis

The 2014–2015 crisis marked a shift toward a more rule-oriented macroeconomic regime. The shock combined a sharp decline in global oil prices with financial restrictions that limited access to international capital markets for major Russian banks and firms (Gurvich and Prilepskiy, 2015). Capital outflows intensified (net capital outflow of $131.0 billion in 2014), inflation accelerated, and the ruble depreciated from roughly 35 to 70 RUB/USD — a doubling of the RUB/USD rate, and a halving of the ruble's dollar value (IMF, 2015). Unlike in earlier episodes, the policy response prioritized rapid adjustment to new fundamentals and the consolidation of the inflation-targeting framework rather than the defense of a specific exchange rate level.

In November 2014 the Bank of Russia formally adopted a floating exchange rate regime and moved to inflation targeting as its primary monetary framework (Bank of Russia, 2014; Bozhechkova et al., 2015). Exchange rate intervention was reduced, and a sharp policy rate increase to 17% was implemented to stabilize inflation expectations. Rather than using reserves to defend a particular exchange rate level, depreciation was allowed to absorb the external shock. Fiscal policy kept expenditure restraint ahead of discretionary stimulus and financed the deficit from the Reserve Fund while the fiscal rule was suspended; a revised rule took effect in 2017. The sharp increase in exchange rate volatility and the reduction in systematic reserve intervention are consistent with a move toward a de facto floating regime in the sense of Levy-Yeyati and Sturzenegger's (2005) behavioral classification.

As documented by Gurvich (2016) and Kudrin and Gurvich (2015), this episode reflected the internalization of lessons from 1998 and 2008–2009. Exchange rate flexibility became the principal adjustment mechanism under capital mobility, while inflation targeting served as the nominal anchor. By the end of the crisis these market-conforming instruments increasingly functioned as structural components of the macroeconomic framework rather than as ad hoc crisis responses.

4.1.4. Consolidated learning by 2014

The preceding sub-sections documented how each crisis generated a specific institutional lesson: 1998 demonstrated the unsustainability of fixed exchange rates under fiscal weakness; 2008–2009 exposed the costs of defending managed depreciation paths through reserve depletion; and 2014–2015 validated the shift to inflation targeting and exchange rate flexibility. The post-2014 configuration is distinctive in that these individual lessons had by then been integrated into a mutually reinforcing institutional architecture rather than remaining isolated policy adjustments.

Gurvich and Prilepskiy (2013) identified external sustainability — the capacity to service external obligations and maintain balance-of-payments stability without recourse to disruptive adjustment — as a central policy objective, arguing that reserve accumulation and fiscal discipline were necessary conditions for achieving it. By 2014 this objective had been operationalized through the fiscal rule, which diverted oil revenues above a reference price into sovereign wealth funds rather than into current spending, and through the reserve buffer, which provided a cushion against commodity price volatility (Kudrin and Gurvich, 2015). Mau (2017) interprets this consolidation as reflecting lessons drawn from previous crises, emphasizing the strengthening of macroeconomic discipline and of institutional frameworks aimed at enhancing stability.

The entire architecture nevertheless rested on an implicit assumption: that markets would remain available as coordinating mechanisms. Exchange rate flexibility works as a shock absorber only when foreign exchange markets are liquid and accessible. Inflation targeting operates through expectations and interest rate transmission channels that presuppose functioning credit and capital markets. Fiscal rules discipline spending against commodity revenues that flow through open trade channels. As Mau (2017) notes, the framework was optimized for a specific class of shocks — those transmitted through prices and capital flows within an open economy. Whether this configuration could withstand shocks that disrupted the market infrastructure itself had not been tested. The 2022 episode provided that test.

4.2. The 2022 reconfiguration

4.2.1. Trilemma choices across crisis episodes

The macroeconomic policy trilemma provides a disciplined framework for comparing Russia's crisis responses across episodes by identifying which policy objective was relaxed to preserve the remaining two. Table 3 summarizes the trilemma coding for all four crisis episodes. Appendix Table A1 sets out the policy record behind each cell.

Across the crises of 1998, 2008–2009, and 2014–2015, a consistent pattern emerges. While institutional arrangements evolved, Russia repeatedly chose to preserve capital mobility; monetary policy independence was secured only in 2014–2015, after monetary policy had been subordinated to exchange rate and financial stability objectives in 1998 and 2008–2009. The burden of adjustment fell primarily on the exchange rate. In 1998, the exchange rate was defended through administrative and monetary subordination until the collapse made the regime unsustainable. In 2008–2009, the ruble was managed through gradual depreciation supported by reserve sales, allowing capital mobility to remain intact while monetary policy remained subordinated to financial stability. By 2014–2015, the adjustment mechanism had shifted fully to exchange rate flexibility, and the ruble was allowed to float, absorbing the shock from oil prices and external restrictions, while capital account openness and inflation targeting were preserved. The 2022 crisis marks a departure from this established configuration.

The 2022 departure differs from the earlier episodes in kind, not only in content. In 1998, 2008–2009, and 2014–2015 the authorities exercised discretion over which trilemma objective to relinquish, and repeatedly elected to let the exchange rate absorb the shock. In 2022 the binding constraint on capital mobility was

Table 3
Trilemma coding across crisis episodes.

Dimension	1998	2008–2009	2014–2015	2022–2024
Capital mobility sacrificed (=1)	0 (partial restrictions inherited)	0 (free)	0 (free)	1 (extensive controls)
Exchange rate stability sacrificed (=1)	1 (collapse/ forced float)	1 (managed depreciation)	1 (free float)	0 (acute phase: managed; de jure float)†
Monetary independence sacrificed (=1)	1 (subordinated)	1 (subordinated to stability)	0 (inflation targeting)	0 (controls, not the rate, bore the stability burden; see Section 3.3)
Corner sacrificed	Exchange rate + monetary autonomy	Exchange rate + monetary autonomy	Exchange rate	Capital mobility
Shock type	Financial	Financial	Financial	Constraint

Note: † The 2022–2024 exchange-rate coding reflects the acute crisis response (February–mid-2022), during which administrative measures rather than the exchange rate bore the adjustment burden. The Bank of Russia (2026) classified the ruble as floating throughout the period, and, as surrender requirements were relaxed from mid-2022, the rate moved more freely with the trade balance and depreciated through 2023–2024 (see Section 4.2.2). The cell thus codes the de facto locus of adjustment during the acute phase, not a stationary regime.
Source: Authors' coding based on Bank of Russia policy announcements, Ministry of Finance decrees, and crisis response documentation. The full coding methodology and source references are available in the replication repository (see Additional information).

externally imposed: sanctions severed much of Russia's cross-border financial intermediation — asset freezes, exclusion of major banks from messaging and settlement systems, and the immobilization of official reserves — before domestic controls were announced, so an open capital account was no longer an available option. The domestic controls that followed codified and administered a loss of capital mobility that the constraint shock had already produced. This is the defining signature of a constraint shock: the feasible set contracts exogenously, rather than the policymaker choosing a point within it. The coding in Table 3 records which corner was given up; the analysis that follows emphasizes that, for 2022, the more consequential fact is that the surrender was compelled rather than selected.

This distinction can be stated geometrically. The trilemma's frontier — the edges of its triangle — represents configurations in which exactly two objectives are achieved and one is sacrificed, and it is where optimization within the constraint places a policymaker, since a second objective is never voluntarily surrendered while it remains attainable. Of the financial crises, only 2014–2015 sits on this frontier, with one corner given up and two retained. In 1998 and 2008–2009 the coding in Table 3 places the response inside the triangle: monetary policy was subordinated to defending an exchange-rate path that could not in the end be held, so both objectives were lost. Those interior points record a failed defense of the exchange rate under an open capital account, not an optimized choice. The 2022 episode starts on the frontier but does not stay there. Once sanctions had closed the capital account, the response moved across the year from the frontier into the interior, as Table 4 records.

In the acute phase the configuration matches the headline reading: capital mobility alone is sacrificed, administrative management holds the exchange rate, and monetary policy remains domestically set. As surrender requirements were relaxed, the exchange rate was allowed to float, and the economy moved into the interior of the triangle, where two of the three objectives go unmet. The constant across both sub-periods is the closed capital account; the exchange-rate entry is the only one that moves, and it moves toward a float. The route into the interior differs from that of 1998 and 2008–2009. There, the interior was reached by defending the exchange rate with monetary policy until the defense failed, while the capital account stayed open. In 2022 it was reached with monetary policy independent and the capital account closed from outside: the sacrificed corner was removed exogenously rather than relinquished by choice, which is the diagnostic of a constraint shock.

Table 4
Decomposition of the 2022–2024 episode.

Dimension	Acute phase (Feb – mid-2022)	Normalization (H2 2022–2024)
Capital mobility sacrificed (=1)	1 (imposed by sanctions and controls)	1 (controls retained; external access still restricted)
Exchange rate stability sacrificed (=1)	0 (held via mandatory conversion)	1 (floats with the trade balance; depreciates)
Monetary independence sacrificed (=1)	0 (controls, not the rate, bore the stability burden)	0 (inflation targeting reasserted)
Trilemma position	On the frontier (one corner: capital mobility)	Inside the frontier (two objectives unmet)

Source: Authors' coding. The acute phase runs from the February 2022 measures to the relaxation of mandatory surrender requirements from mid-2022; see Sections 4.2.2 and 5.4.

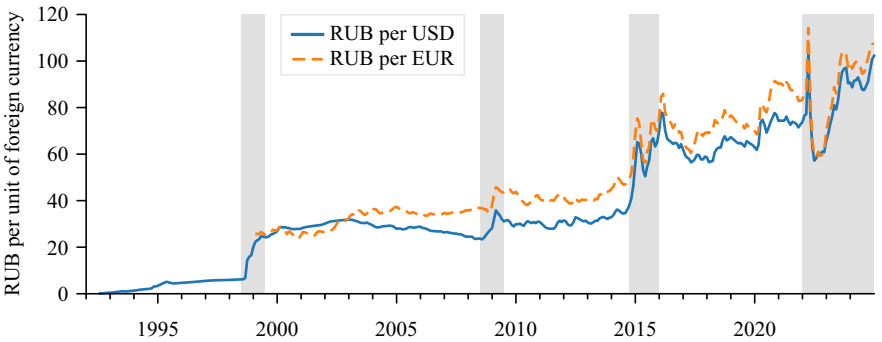

Fig. 1. RUB exchange rate against the US dollar and the euro (monthly averages), 1992–2024.

Note: Gray shading indicates crisis episodes (see Table 2).
Source: Bank of Russia official exchange rates.

4.2.2. Exchange rate dynamics

Fig. 1 presents exchange rate movements for the ruble against major currencies across all crisis episodes. Unlike in earlier crises, where depreciation was sustained throughout the adjustment period, the 2022 episode exhibited a distinctive pattern of sharp initial depreciation from approximately 75 to 120 RUB/USD (a 60% rise in the RUB/USD rate, equivalent to a 37.5% depreciation of the ruble) in March 2022, followed by rapid appreciation to below 55 RUB/USD by mid-year. This V-shaped pattern is inconsistent with market-driven adjustment under capital account openness. The sharp reversal reflected mandatory conversion requirements and capital controls, which compressed the demand for foreign currency, together with a collapse in imports that turned the trade balance strongly positive; once the financial account was closed, the exchange rate was driven primarily by these current-account flows rather than by the financial-account pressures that dominate under an open account (Itskhoki and Mukhin, 2022). This mechanism is consistent with the Bank of Russia's own characterization, under which a closed capital account leaves the rate to be determined chiefly by the balance of exporters' foreign-currency supply and importers' demand (Bank of Russia, 2026). In the acute phase, then, the exchange rate was held stable as a by-product of administrative measures rather than through price discovery in an open market. In the trilemma framework of Obstfeld and Taylor (2004), this represents a shift from sacrificing exchange rate stability (as in 1998, 2008–2009, and 2014–2015) to sacrificing capital mobility.

Fig. 2 displays the volatility of daily exchange rate changes using a 30-day rolling standard deviation. The 2022 crisis produced an initial volatility spike similar in size to that of 2014–2015, though well below the 1998 collapse. Volatility then declined rapidly, returning to its 2014–2015 average by the third quarter of 2022. This rapid suppression contrasts sharply with earlier episodes, where volatility remained elevated throughout the adjustment period. The pattern is consistent with exchange-rate stabilization through quantity restrictions on capital flows rather than through market adjustment alone. This evidence should, however, be read with care: closing the capital account mechanically removes the financial-account flows that are the principal source of high-frequency exchange-rate volatility, so suppressed volatility is expected under a closed account even absent active level targeting. The volatility data therefore corroborate, but do not by themselves

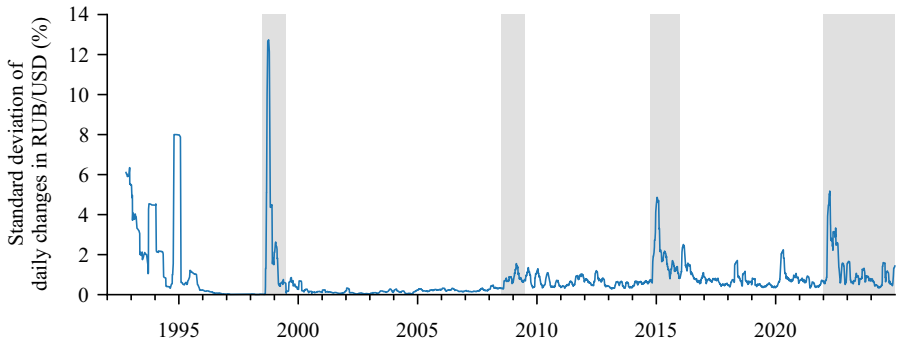

Fig. 2. RUB/USD exchange rate volatility
(30-day rolling standard deviation of daily percentage changes), 1992–2024.

Note: Gray shading indicates crisis episodes (see Table 2).
Source: Bank of Russia; authors' calculations.

identify, administrative stabilization; the identifying evidence is their conjunction with the documented surrender requirements (see Table 1) and the simultaneous collapse in import demand (Section 4.2.10; Itskhoki and Mukhin, 2022).

For the first time since the consolidation of the post-2014 framework, the primary adjustment burden did not fall on the exchange rate. Instead, with capital mobility curtailed—first by external restrictions and then by domestic controls—policymakers were able to preserve monetary policy autonomy while the exchange rate was held stable administratively during the acute phase. Beginning in late February 2022, comprehensive controls on cross-border capital movements were introduced, including mandatory conversion requirements for export revenues, restrictions on foreign currency transactions by residents, and limits on capital outflows to non-resident counterparts from sanctioning jurisdictions.

Two qualifications sharpen this interpretation. First, the Bank of Russia (2026) has consistently classified the ruble as a floating currency throughout 2022–2024. This de jure characterization is not in dispute; the claim advanced here concerns the de facto locus of adjustment during the acute phase, when mandatory conversion and capital controls—not exchange-rate movement—absorbed the shock. Second, the degree of administrative determination was not constant: the engineered appreciation of the first half of 2022 gave way, as surrender requirements were relaxed from mid-2022, to a more market-like regime in which the ruble drifted with the trade balance and depreciated substantially through 2023–2024. As Table 4 sets out, the 2022–2024 column of Table 3 codes the acute crisis response rather than a stationary regime, and the subsequent normalization is itself informative; Section 5.4 takes it up.

4.2.3. Monetary policy response

Fig. 3 traces Russia's policy interest rate from the late 1990s through 2024. The 1998 crisis is marked by exceptionally high and volatile rates, reflecting the breakdown of the fixed exchange rate regime and acute monetary instability. The 2008–2009 crisis shows a more measured increase (peak: 13%), followed by gradual easing. During the 2014–2015 episode, the policy rate rose sharply to 17% but was then reduced in a relatively orderly manner, consistent with the emerging inflation-targeting framework.

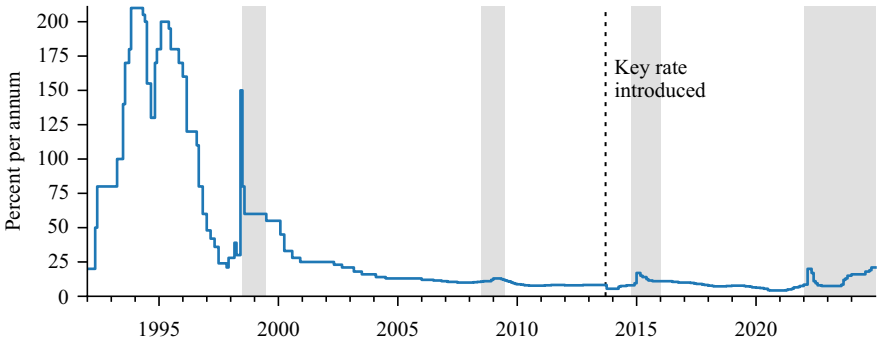

Fig. 3. Bank of Russia policy rate
(refinancing rate through August 2013; key rate from September 2013), 1992–2024.

Note: Gray shading indicates crisis episodes (see Table 2).
Source: Bank of Russia.

The 2022 episode differs in its timing and intensity. The policy rate was increased abruptly to 20% on 28 February 2022 and was then lowered within the same year (Bank of Russia, 2022). Compared with earlier crises, the adjustment appears more compressed and reactive. In 1998, rate increases reflected the collapse of the fixed exchange rate regime; in 2008–2009 and 2014–2015, they followed conventional tightening logic within an evolving monetary framework. The 2022 rate hike, by contrast, was implemented alongside and secondary to administrative capital controls, suggesting a response aimed at immediate stabilization under acute pressure rather than a conventional tightening cycle.

4.2.4. Reserve composition

Fig. 4 shifts attention from interest rate dynamics to the composition of Russia's international reserves, and specifically to the share held in gold. Through the 2008–2009 crisis, no sharp structural break was visible. Even after the 2014–2015 episode, the increase in gold holdings appeared gradual rather than abrupt.

A clearer upward trend emerges from the mid-2010s onward. The gold share increased from 8.9% in March 2014 to 22.9% by February 2022 and 32.1% by December 2024; outside the analytical window, it reached 42.3% by November

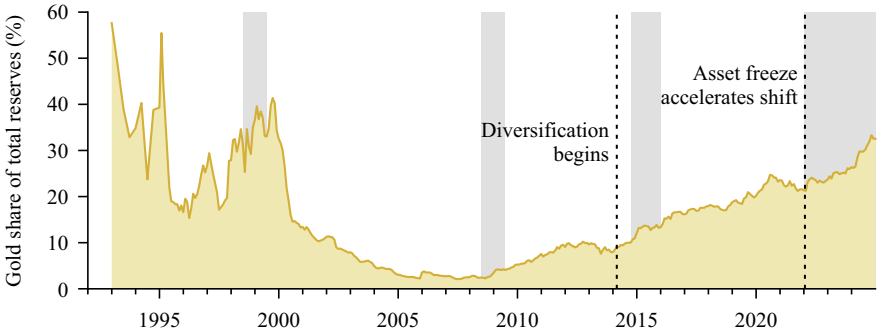

Fig. 4. Gold as a share of total international reserves (%), 1992–2024.

Note: Gray shading indicates crisis episodes (see Table 2).
Source: Bank of Russia; authors' calculations.

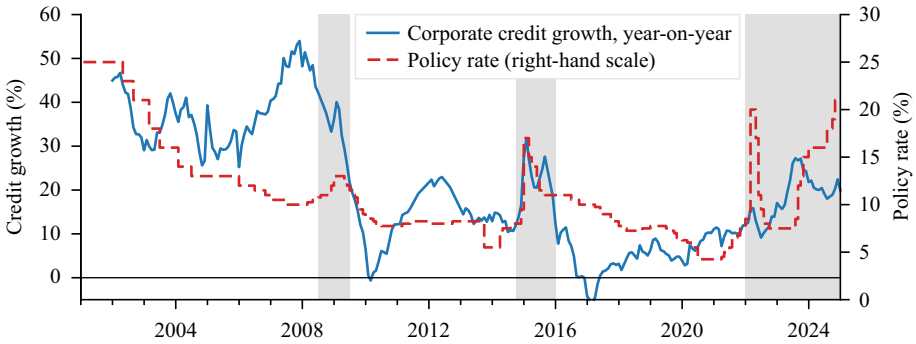

Fig. 5. Year-on-year corporate credit growth (%) and Bank of Russia policy rate (%), 2001–2024.

Note: Gray shading indicates crisis episodes (see Table 2).
Source: Bank of Russia.

2025. This points to deliberate reserve diversification rather than crisis-driven improvisation. The shift proved consequential: with an estimated $300 billion in Western-held reserves rendered inaccessible after February 2022 (European Parliament, 2025; Brookings Institution, 2025), gold holdings, physically stored in Russia, became the core of usable reserves. Total reserves remained nominally high, at $609.1 billion at the end of 2024 ($734.6 billion by November 2025) but their effective availability had changed fundamentally.

4.2.5. Monetary transmission

Fig. 5 compares policy rate movements with credit growth to assess whether monetary tightening transmitted into domestic financial conditions as expected. In earlier crises, particularly 2008–2009 and 2014–2015, tighter monetary conditions coincided with pronounced slowdowns in credit expansion. Credit growth collapsed alongside economic activity in 2008–2009 and stagnated during 2015–2016, with year-on-year growth falling to around zero and briefly below it (Bank of Russia, 2024a). This reflects relatively conventional crisis transmission dynamics.

The 2022 episode presents a markedly different pattern. After the policy rate increase to 20%, corporate credit growth accelerated, peaking at 27.3% year-on-year in July 2023. Average credit growth during 2022–2023 was 17.6%, compared with 5.6% during 2016–2021 (authors' calculations based on Bank of Russia banking sector statistics; see Bank of Russia, 2024a, for aggregate credit dynamics). The data suggest that domestic credit conditions were sustained despite acute external constraints, likely through subsidized lending channels and state-directed credit to strategic sectors. This historically anomalous pattern points to segmented monetary transmission, where the policy rate retained its signaling function for market-rate borrowers while parallel channels continued expanding.

4.2.6. Labor market dynamics

To assess whether monetary tightening transmitted into real economic contraction, Fig. 6 presents the unemployment rate across crisis episodes. Following the 1998 crisis, unemployment peaked at nearly 15% in 1999 as output contracted

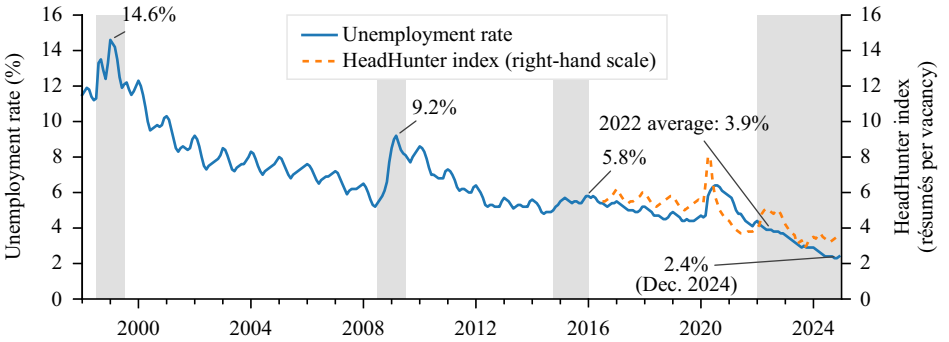

Fig. 6. Unemployment rate (ILO methodology) and HeadHunter index (résumés per vacancy), 1998–2024.

Note: Gray shading indicates crisis episodes (see Table 2). The HeadHunter index is available from July 2016.
Source: Rosstat Labour Force Survey; HeadHunter Russia (n.d.).

sharply (Gimpelson, 2019). In 2008–2009, unemployment rose from roughly 5% to around 9% at its peak, consistent with conventional transmission as tighter credit conditions and output contraction translated into labor market deterioration. The 2014–2015 episode, by contrast, exhibits a markedly muted response, with unemployment rising only modestly, to about 5.8%, consistent with Russia's shock-absorption mechanism, which works mainly through wage adjustment.

The 2022 episode differs substantially. Despite the abrupt spike in policy rates and acute external constraints, unemployment did not exhibit a comparable surge. Instead, the rate fell to 3.9% in 2022, which Kapeliushnikov (2023) identifies as an all-time historical low, and continued to decline thereafter, reaching a record low of 2.4% by late 2024 (Rosstat Labour Force Survey, ILO methodology). This is the most favorable labor market outcome of any Russian crisis episode. Kapeliushnikov (2023) links the pattern to a transition toward tight labor supply, record vacancy pressures, and a pronounced upward shift in the Beveridge curve. Complementing this account, RE:Russia (2024) emphasizes that labor shortages were amplified by rapid restructuring and by sectoral reallocation pressures that outpaced the available labor supply. The HeadHunter index of resumes per vacancy (Fig. 6; HeadHunter Russia, n.d.) points the same way: it averaged 5.5 in 2017–2019 and fell to 3.5 in 2024.

4.2.7. External price dynamics

Fig. 7 presents the evolution of the oil price wedge between Urals and Brent crude. Earlier episodes show temporary divergences, particularly during periods of financial stress, but these gaps tended to narrow as market conditions stabilized. In 1998 and 2008–2009, Russia's oil export pricing remained broadly aligned with global benchmarks. Even during the 2014–2015 episode, when financial restrictions affected access to capital markets (Gurvich and Prilepskiy, 2015), the Urals–Brent differential remained comparatively contained and eventually converged.

The 2022 period is markedly different. The Urals discount to Brent peaked at approximately $35 per barrel in April 2022, narrowing to approximately $10 per barrel by late 2024 but remaining structurally elevated. The persistence of a substantial oil price wedge represents forgone fiscal revenue and a structural deterioration in Russia's terms of trade. In conventional terms, such a deterioration would be expected

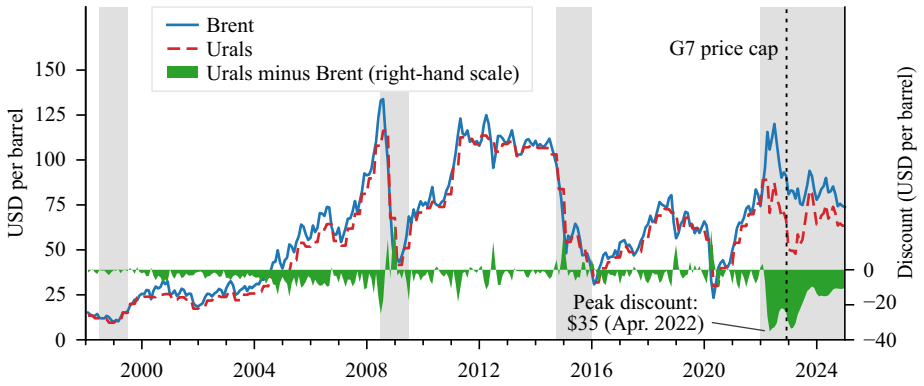

Fig. 7. Brent and Urals crude oil prices (USD per barrel) and the Urals discount, 1998–2024.

Note: Gray shading indicates crisis episodes (see Table 2). The dotted line marks the G7 price cap (December 2022).
Source: World Bank; Ministry of Finance of the Russian Federation.

to weaken fiscal revenues, compress output in energy-linked sectors, and transmit negatively into employment. When considered alongside the unemployment data presented above, however, the labor market response appears disproportionately muted. This divergence complicates expectations derived from earlier crises.

4.2.8. Fiscal dynamics

Fig. 8 turns to the fiscal dimension: liquid assets of the National Wealth Fund (NWF) and the Reserve Fund across crisis episodes. In 2009–2010, Reserve Fund assets declined sharply, reflecting countercyclical deployment during the global financial crisis: the fund fell from 4.1 trillion rubles in early 2009 to 0.8 trillion rubles by the end of 2010 (Ministry of Finance, n.d.-b). In the years that followed, assets recovered gradually, consistent with renewed fiscal consolidation and oil revenue accumulation. During the 2014–2015 episode the fiscal rule was also suspended, but the drawdown fell on the Reserve Fund, which was exhausted by 2017, the year a revised rule took effect.

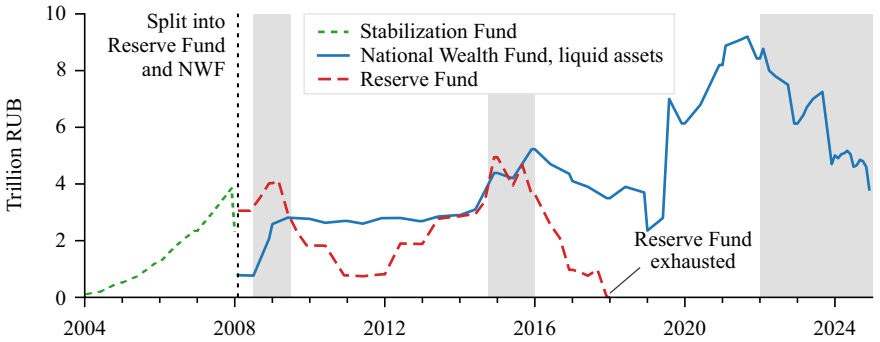

Fig. 8. Liquid assets of the Stabilization Fund (2004–2008), the Reserve Fund (2008–2017), and the National Wealth Fund (trillion RUB), 2004–2024.

Note: Gray shading indicates crisis episodes (see Table 2). The dotted line marks the split of the Stabilization Fund into the Reserve Fund and the NWF (February 2008).
Source: Ministry of Finance of the Russian Federation.

The 2022 episode exhibits a different configuration. NWF liquid assets declined by approximately 57% from pre-February 2022 levels, from roughly 8.8 to approximately 3.8 trillion rubles (Ministry of Finance, n.d.-b). The fiscal rule governing oil revenue allocation was suspended in early 2022 (Ministry of Finance, 2022), and fund resources were deployed more flexibly. As in 2014–2015, the rule was suspended and fund assets were drawn down. Unlike in 2014–2015, the drawdown coincided with extensive capital controls, and the rule returned in January 2024 only in modified form, with a $60 base oil price and a transitional structural deficit (Bank of Russia, 2024a, Box 5).

4.2.9. Capital flows

Fig. 9 presents quarterly net capital outflow, measured as the financial account balance excluding reserve assets, and its other-investment component for the private sector. The annual totals reported below are sums of the four quarterly observations. Summing the four quarterly observations shown in Fig. 9(a), net capital outflow totaled $139.6 billion in calendar year 2008 and $131.0 billion in calendar year 2014, respectively (Bank of Russia balance of payments; World Bank, 2015). These episodes were marked by pronounced but temporary spikes, followed by partial normalization as macroeconomic conditions stabilized. Cross-border financial movement continued within an open capital account framework.

The 2022 episode differs in both magnitude and structure. Net capital outflow (the financial account balance excluding reserve asset changes) in 2022 reached

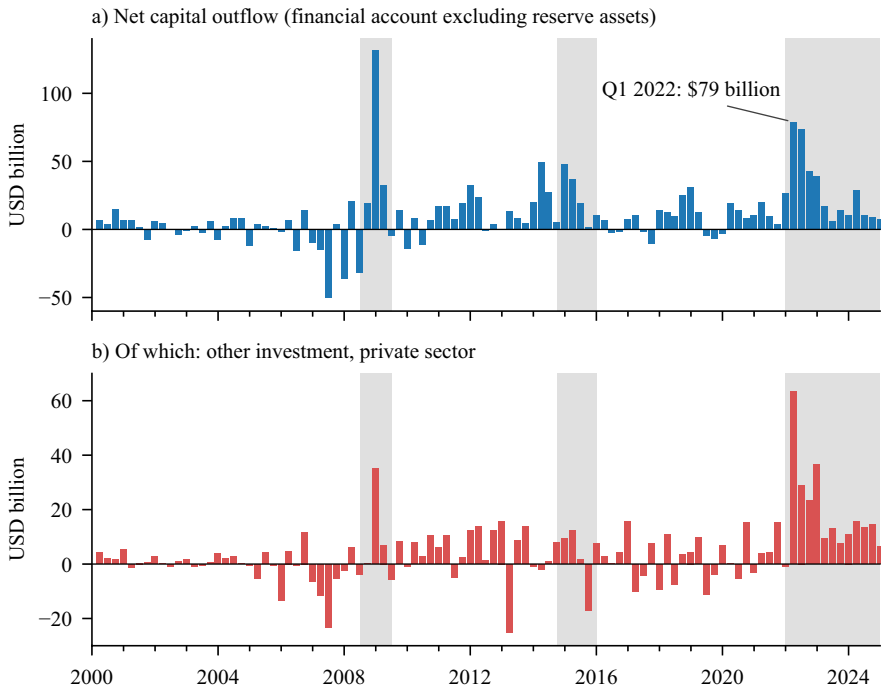

Fig. 9. Net capital outflow and its other-investment component (quarterly, USD billion), 2000–2024.

Note: Gray shading indicates crisis episodes (see Table 2).
Source: Bank of Russia balance of payments; authors' calculations.

$234.3 billion, with Q1 2022 alone accounting for $79.0 billion (Bank of Russia balance of payments, financial account). This substantially exceeds previous crisis episodes. The majority of 2022 outflows occurred via the "other investment" channel (bank deposits, loans, and trade credits). Rather than reflecting residents evading the newly imposed controls, the bulk of these outflows was driven by the external restrictions themselves. Russian banks and corporations, cut off from international funding, were compelled to repay external liabilities or were unable to roll them over, while exiting foreign investors and firms sold Russian assets and repatriated the proceeds. The 2022 surge was thus largely an externally compelled deleveraging and divestment rather than voluntary capital flight — itself a manifestation of the constraint shock rather than a failure of the controls — and net outflows fell sharply once these one-off adjustments were largely complete, to $48.7 billion in 2023, remaining at a comparable level of $56.6 billion in 2024 (Bank of Russia balance of payments, annual data). This pattern of acute, externally driven outflow followed by a much lower steady state is consistent with a durable reduction in de facto capital mobility, distinguishing the 2022 episode from earlier crises, where large but market-driven adjustments prevailed.

4.2.10. External trade dynamics

Fig. 10 presents the current account balance as a share of GDP alongside an import index. In earlier crisis episodes, current account movements were closely associated with import compression driven by domestic recession and exchange rate depreciation. In 1998, import volumes collapsed alongside output; in 2008–2009 and 2014–2015, import contraction followed standard cyclical patterns, as documented by Gurvich (2016). The 2022 episode displays a more pronounced divergence. The current account surplus rose to exceptionally high levels relative to GDP, while the import index fell sharply. Unlike in earlier episodes, where import contraction was primarily cyclical, the 2022 decline appears more abrupt and sustained, indicating that trade adjustment played a central role in external stabilization, with the external balance improving through constrained trade flows rather than through export expansion alone.

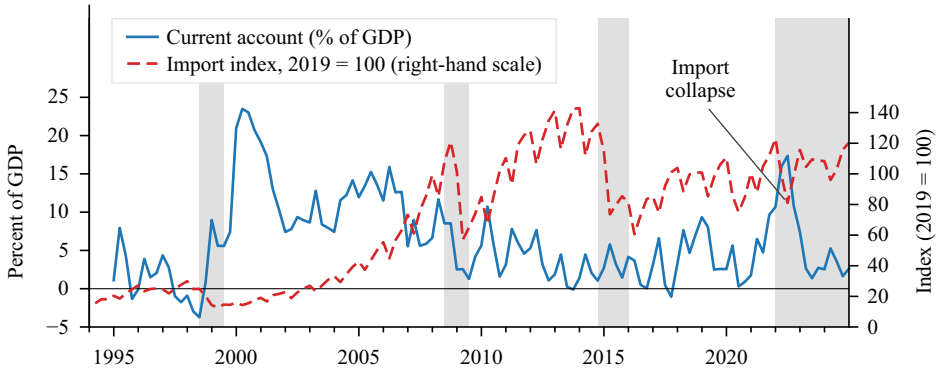

Fig. 10. Current account balance (% of GDP) and import index (2019 = 100), 1994–2024.

Note: Gray shading indicates crisis episodes (see Table 2).
Source: Bank of Russia balance of payments.

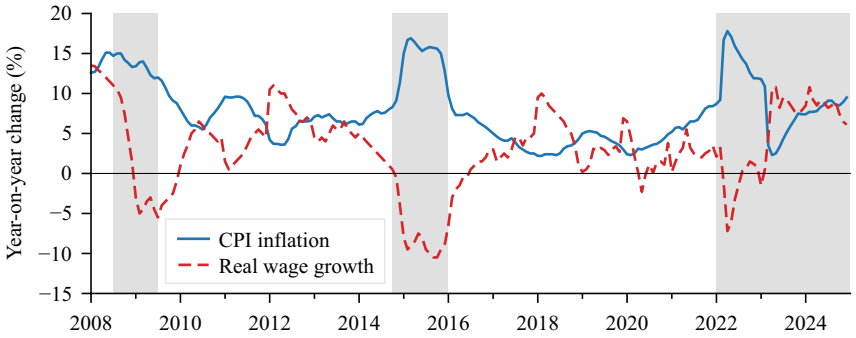

Fig. 11. CPI inflation and real wage growth (year-on-year, %), 2008–2024.

Note: Gray shading indicates crisis episodes (see Table 2).
Source: Rosstat; Bank of Russia.

4.2.11. Inflation and real wages

Fig. 11 presents CPI inflation alongside real wage growth. The 2022 episode is marked by a pronounced spike in inflation following exchange rate depreciation and supply disruptions. CPI inflation rose sharply in early 2022, fell back in 2023 and picked up again in 2024. The initial inflationary surge is comparable in magnitude to earlier stress episodes, particularly 2014–2015.

The behavior of real wages, however, differs from that in prior crises. In 2008–2009 and 2014–2015, inflation spikes were associated with sustained real wage compression, indicating adjustment through household income contraction. In 2022, real wages fell sharply during the acute phase of the shock (by 7.2% year-on-year in April) but recovered within the year and grew by 7–8% a year in 2023–2024, consistent with adjustment occurring under unusually tight labor market conditions rather than persistent slack (Kapeliushnikov, 2023). Taken together, the absence of unemployment deterioration and the subsequent wage dynamics suggest that the transmission of the 2022 inflation shock operated under labor market conditions structurally different from those of earlier crises (Kapeliushnikov, 2023; RE:Russia, 2024).

4.3. Persistence and institutionalization of administrative instruments

The capital controls introduced in 2022 persisted well beyond the immediate crisis phase. Although initially framed as emergency measures, restrictions on cross-border transfers, mandatory foreign currency conversion requirements for exporters, and limitations on outward capital transactions remained in place well after exchange rate volatility subsided. According to the Bank of Russia financial stability reviews (Bank of Russia, 2023, 2024b), capital flow management measures continued to be actively administered as part of the broader financial stability framework rather than being treated as short-term interventions.

Over time, administrative foreign exchange measures evolved from crisis tools into routine components of policy implementation. Surrender requirements and transaction approvals were recalibrated rather than eliminated, and supervisory oversight of cross-border operations became embedded in the regular reporting structure. Gaidar Institute monitoring reports document the sustained use of regu-

latory constraints on capital mobility and foreign exchange operations, indicating that these instruments became normal features of the operating environment of banks and corporations (Gaidar Institute for Economic Policy, 2023).

This trajectory contrasts with the 2014–2015 episode. Although foreign exchange interventions and temporary restrictions were introduced during that crisis, they were gradually relaxed as market conditions stabilized and the inflation-targeting framework consolidated. The emphasis returned to exchange rate flexibility and conventional monetary instruments, with administrative constraints treated as transitional rather than structural. The persistence of administrative measures after 2022 is more than an extended crisis response: their continued application, adaptation, and integration into routine supervisory practice indicate a shift in the hierarchy of instruments.

4.4. Reaction function evidence: From inflation-target dominance to stability and continuity

The sequencing of policy measures provides insight into the underlying reaction function in different crisis episodes. In 2014, the Bank of Russia responded to exchange rate pressure and rising inflation expectations primarily through monetary instruments. Following the intensification of external stress in late 2014, the Bank of Russia allowed the ruble to float in November and relied on substantial policy rate increases, culminating in the 16 December hike to 17%. The exchange rate was permitted to adjust as a shock absorber, while inflation targeting served as the guiding framework. Contemporary Bank of Russia communications emphasized price stability and the preservation of credibility as the central objective. As Bozhechkova et al. (2015) show, the policy rate functioned as the primary stabilization instrument, with liquidity management measures confined to temporary operational adjustments rather than generalized capital controls.

The 2022 episode displays a different sequence. On 28 February 2022, immediately following the imposition of extensive external restrictions, the authorities introduced sweeping capital controls, including restrictions on foreign currency transfers and mandatory conversion requirements for exporters. The policy rate increase to 20% was implemented the same day, as part of the same emergency package. However, the institutional framing differed from 2014: whereas the December 2014 rate hike was the centerpiece of the crisis response, the February 2022 rate hike was announced alongside, and in the instrument hierarchy subordinate to, sweeping administrative capital controls, which defined the character of the intervention.

Bank of Russia announcements on 28 February 2022 framed the measures explicitly in terms of financial stability and continuity of payments. As Yudaeva (2014) had emphasized, preserving the functioning of the financial system under external constraints was central to the Bank of Russia's institutional mandate, with inflation considerations addressed within that broader stability framework (Bank of Russia, 2022). The contrast with 2014 lies not in temporal sequencing but in the hierarchy of instruments. Whereas the 2014 response privileged exchange rate flexibility and inflation targeting, with the rate hike as the primary tool, the 2022 response placed systemic stability and capital containment at the forefront, with the rate hike in a supporting role within a broader package of administrative measures. That Russian macroeconomic institutions could execute this reconfiguration

under acute pressure reflects the institutional depth developed through earlier crisis episodes — a form of applied institutional learning — even where the instruments deployed departed from the earlier market-conforming consensus.

5. Discussion

5.1. Alternative interpretations

Section 4 documents a reconfiguration of Russia's crisis-response framework in 2022, but two alternative interpretations merit careful consideration.

The first is that the 2022 measures represent *temporary emergency responses rather than a structural trilemma reconfiguration*: capital controls, administrative foreign exchange measures, and fiscal rule suspension as exceptional tools to be withdrawn once external conditions normalize. This reading cannot be dismissed a priori, but the evidence weakens it. The measures have persisted well beyond the acute crisis phase and have been repeatedly renewed, adjusted, and embedded in regulatory practice. Official policy documents, including the Bank of Russia monetary policy guidelines for 2024–2026 (Bank of Russia, 2024a), acknowledge the continued role of capital flow management in ensuring stability, without specifying a timeline for full liberalization. The fiscal rule is the exception: it was reinstated in modified form from January 2024, with a $60 base oil price and a transitional structural deficit ahead of a planned return to rule-based expenditure in 2025–2026 (Bank of Russia, 2024a, Box 5). The duration and institutionalization of the capital-flow measures suggest a shift that extends beyond short-term crisis management.

The second is that 2022 was simply a larger shock, not different in kind, with the policy response reflecting the same logic applied more forcefully. While the severity of the 2022 shock is undisputed, this interpretation struggles to account for the observed change in instrument hierarchy. In earlier crises, including 2014–2015, exchange rate flexibility was the primary adjustment mechanism, with capital mobility preserved. In 2022, administrative controls on capital flows were introduced immediately and took precedence over exchange rate adjustment. The resulting outcomes — exchange rate stabilization and appreciation rather than depreciation, and declining unemployment rather than cyclical labor slack — deviate from the patterns observed in earlier financial crises. These differences suggest not merely greater intensity, but a qualitatively different response mechanism.

5.2. Comparative perspective: Other economies facing external restrictions

A comparative perspective helps situate Russia's 2022 experience. If the episode is a constraint shock, it is worth asking whether other economies facing similar restrictions adopted comparable policy configurations. The broader literature on sanctions effectiveness (Hufbauer et al., 2007) finds that comprehensive financial sanctions frequently induce durable institutional adaptation by the target rather than rapid policy reversal, a pattern the cases below illustrate.

Iran was disconnected from SWIFT in 2012 and again in 2018, alongside freezes of central bank assets. As an oil-dependent economy, Iran responded with tighter administrative exchange rate management and the introduction of capital controls; Farzanegan (2013) documents how financial sanctions transmitted through

the informal economy and foreign exchange markets, illustrating the mechanisms through which external restrictions reshape domestic financial arrangements. This policy configuration was sustained across successive phases of external restrictions and did not revert to the pre-2012 level of financial openness. Iran operates a dual exchange rate system and publishes less comprehensive macroeconomic data than Russia. Even so, the continued presence of administrative controls for more than a decade suggests that externally imposed constraints may lead to persistent institutional change rather than to temporary crisis management.

Venezuela provides a weaker comparator. Although United States restrictions intensified in 2017, the Venezuelan economy had already undergone severe contraction. Hyperinflation, institutional deterioration, and extensive capital controls predated the tightening of financial restrictions. Exchange controls were introduced in 2003, fourteen years before the expansion of external restrictions. This sequence makes it difficult to isolate the specific effects of external restrictions from pre-existing structural dysfunction. Venezuela's case nevertheless highlights a methodological distinction: constraint shocks should be analytically separated from broader policy failure or institutional collapse.

The comparison suggests that economies exposed to severe external financial restrictions often rely more heavily on managed exchange arrangements, capital flow restrictions, and reserve diversification. Russia's experience is analytically useful here because it previously managed financial shocks within a market-conforming framework, which sharpens the contrast with 2022. These observations are necessarily preliminary. A systematic comparative study of macroeconomic adjustment under externally imposed constraints, with dedicated attention to Iran's post-2012 experience and to smaller economies subject to trade and financial restrictions, would be needed to determine whether the patterns identified here generalize beyond the Russian case.

5.3. Implications for crisis-response theory

The trilemma reconfiguration documented here has implications beyond the Russian case. Most importantly, it underscores that market-conforming macroeconomic tools are effective only conditionally. The stabilization strategies developed between 1998 and 2014 — exchange rate flexibility, inflation targeting, fiscal rules, and reserve accumulation — worked because they operated within functioning markets. Prices could adjust, trade channels remained open, and financial intermediation continued to transmit policy signals.

The 2022 episode illustrates the limits of this framework under constraint shocks. When access to external finance is restricted, payment systems are disrupted, and key trade and technology channels are blocked, market prices alone cannot coordinate adjustment. Under such conditions, exchange rate depreciation, interest rate signaling, and rule-based fiscal restraint all lose much of their force.

The Russian response suggests that constraint shocks may require a different policy toolkit, one that relies more heavily on administrative coordination and direct intervention. Capital controls and managed exchange rates functioned as mechanisms to stabilize the macroeconomic environment when standard market channels were no longer sufficient, an application consistent with the view in the recent literature that such controls can serve as legitimate instruments under volatile

flows and binding external constraints rather than as departures from sound policy (Farhi and Werning, 2014; Korinek and Sandri, 2016; Erten et al., 2021). This does not imply that market mechanisms are irrelevant, but rather that they depend on an underlying infrastructure of exchange that external constraints can disrupt.

These findings have broader relevance for other economies facing severe external restrictions, whether financial restrictions or trade fragmentation. They suggest that crisis-response frameworks optimized for financial shocks may be ill-suited to environments characterized by physical and institutional constraints. The trilemma trade-offs confronted by Russia in 2022 may therefore become increasingly relevant in a more fragmented global economic system.

5.4. Why the exchange rate was not targeted, and the shock—shift distinction

If the loss of capital mobility relaxed the trilemma, an open question is why the authorities did not use their regained room for maneuver to target the exchange rate more actively, given that the real appreciation of 2022 was costly for exporters and for an oil-dependent budget. The interpretation advanced here is that, with the capital account closed, exchange-rate stability and monetary autonomy were no longer mutually exclusive, and the authorities chose to spend their freedom on the latter. Preserving the credibility of inflation targeting—accumulated since 2014—offered a durable nominal anchor at a moment of acute uncertainty, whereas committing the central bank to defend an exchange-rate level would have required deploying reserves that had just been shown to be seizable, and would have reintroduced the subordination of monetary policy that the post-2014 framework was designed to avoid. Allowing the rate to move with the trade balance, while damping volatility through surrender requirements, economized on scarce policy capacity. The cost of this choice was real: a strong ruble compressed export margins and budget revenues in 2022, and the subsequent depreciation imported inflation. The configuration is therefore best read not as a decision to stabilize the exchange rate as an end in itself, but as a decision to let a closed capital account—rather than the exchange rate or the policy rate—carry the burden of trilemma adjustment.

This reading also clarifies a distinction that the binary coding cannot capture: between one-off *shocks* and durable *shifts*. The 2022 episode bundled both. The immobilization of roughly half of Russia's official reserves and the initial spike in capital outflows were one-off shocks; the persistent loss of access to Western financial infrastructure, the structural narrowing of the investable asset universe, and the diminished capacity to insure against future external volatility are durable shifts in the operating environment. Even were Russia to remove every domestic control, the capital account could not return to its pre-2022 openness while external restrictions remain, and the usable reserve buffer available to absorb the next shock is permanently smaller. The trilemma corner that was sacrificed is, in this sense, only partly a policy variable: a component of the sacrifice is now a standing feature of the environment rather than a reversible choice. Whether the acute adjustment was substantially complete by 2024—so that only the durable shifts remain—is itself one of the questions the falsification criteria in Section 5.6 are designed to adjudicate.

For Russian policymakers, the episode carries provisional lessons. It suggests that, under constraint shocks, the value of buffers depends on their seizability, favoring

reserves held in non-sanctionable form — a logic consistent with the documented shift toward gold (Section 4.2.4) — and that the feasibility of a market-conforming regime is contingent on continued geopolitical access rather than being a purely domestic choice. Whether a partial return to capital-account openness becomes feasible and desirable once the acute phase passes is a live question; the analysis here implies that any such decision would turn less on domestic preferences than on the external constraints that define the available menu. These lessons are tentative, and are offered as hypotheses for debate rather than as settled conclusions.

5.5. Limitations and future research

Two limitations constrain the conclusions. First, the analysis is descriptive rather than causal: it documents policy choices, sequencing, and outcomes without estimating causal effects or welfare implications. Second, the post-2022 observation window remains short; persistence through 2024 is documented, but whether the configuration endures over a longer horizon cannot yet be determined.

Future research could extend this analysis in several directions. Firm- and sector-level data could clarify how administrative mechanisms operated within the real economy. Comparative analysis with other externally constrained economies, particularly Iran, whose experience shares structural parallels, could help distinguish Russia-specific factors from more general patterns. Finally, continued monitoring of policy rollback, or of the lack of it, through 2025–2027 will be essential for assessing whether the 2022 episode represents a permanent policy reconfiguration or a prolonged but ultimately temporary deviation.

5.6. Forward-looking falsification criteria

The interpretation advanced in this paper is that Russia's 2022 crisis response constituted a policy reconfiguration rather than a temporary deviation. This claim has observable implications that can be evaluated against future evidence, particularly developments between 2025 and 2027.

Evidence inconsistent with the reconfiguration interpretation would include a systematic rollback of administrative measures introduced in 2022; a restoration of the pre-2022 instrument hierarchy (freely floating exchange rate, inflation targeting as the dominant nominal anchor, policy rate adjustments regaining primacy over administrative tools); and reinstatement of the fiscal rule in its pre-2022 form, alongside official communications reverting to the language of price stability and market-based adjustment.

Evidence consistent with the reconfiguration interpretation would include the persistence of capital controls through 2027, even after immediate financial pressures have subsided; continued reliance on administrative foreign exchange management, including surrender requirements or transaction restrictions; and formal changes to institutional mandates or legal frameworks that codify capital flow management or redefine the hierarchy of objectives.

Intermediate outcomes are also possible: partial rollback of some controls combined with the retention of others would generate mixed signals. Interpretation would then depend on which elements persist and how they are framed, and would turn on sequencing, legal codification, and stated objectives. The reinstatement of

a modified fiscal rule in January 2024, while capital controls remain in place, is an early signal of this mixed kind.

These criteria make the argument testable rather than purely descriptive: monitoring institutional persistence, instrument hierarchy, and policy discourse through 2027 will show whether 2022 marked a temporary emergency response or a durable reconfiguration of Russia's macroeconomic policy framework.

6. Conclusion

This paper addresses when market-based policy frameworks stop working. Rather than asking whether Russia's 2022 response represented continuity or rupture in isolation, the analysis examined the conditions under which market-based policy instruments cease to function as effective stabilization tools. Building on Gurvich's (2016) comparative analysis of Russia's earlier crises, the paper extended the framework to include the 2022–2024 episode using the macroeconomic policy trilemma as a unifying analytical device.

The core theoretical contribution is the distinction between financial shocks and constraint shocks. Financial shocks operate within functioning market structures and disrupt mainly confidence, liquidity, and capital flows, leaving price mechanisms intact as coordinating devices. Constraint shocks arise when physical or legal barriers obstruct the infrastructure of exchange itself — trade channels, payment systems, and access to financial networks. Under such conditions markets cannot clear at any price, and price-based instruments such as exchange rate adjustment or interest rate policy lose their coordinating capacity. This distinction clarifies why market-conforming frameworks that perform well under financial stress may fail to stabilize economies facing binding external constraints.

Applying this framework to Russia's crisis history reveals a consistent pattern. The crises of 1998, 2008–2009, and 2014–2015 were primarily financial in nature, despite differences in scale and institutional preparedness. Policy learning moved toward greater reliance on market-conforming tools, culminating by 2014 in a framework characterized by exchange rate flexibility, inflation targeting, fiscal rules, reserve accumulation, and an open capital account. These instruments proved effective precisely because markets, though stressed, remained operational. As documented in Section 4.1, the entire framework rested on an implicit assumption — that market infrastructure would continue to function — which had not been tested under conditions where exchange itself was constrained.

The 2022 shock differs qualitatively. The introduction of wide-ranging external restrictions, payment system exclusions, and trade barriers impaired the infrastructure on which markets operate, transforming the policy environment from one of financial stress to one of constrained connectivity. Russia's response, characterized by early capital controls, acute-phase exchange rate stabilization, and administrative interventions, reflects a different trilemma trade-off rather than a rejection of prior technocratic learning. The externally imposed loss of capital mobility, and the authorities' decision to preserve domestic policy autonomy rather than to defend a particular exchange rate level, is consistent with the logic of constraint shocks, under which the feasible set contracts exogenously and price-based adjustment alone cannot restore equilibrium. Observed outcomes, including exchange rate appreciation, a decline in unemployment to a record

low of 2.4%, and corporate credit growth peaking at 27.3% in mid-2023, further distinguish this episode from earlier financial crises.

The broader implication is that the effectiveness of market-conforming macroeconomic frameworks is conditional rather than universal. Such frameworks rely on the continued functioning of markets and the legal and institutional channels that enable exchange. When these conditions are violated, administrative measures may become rational complements rather than departures from sound economic management. This insight is relevant beyond the Russian case, particularly for economies exposed to external restrictions, geopolitical fragmentation, or disruptions to global financial and trade networks.

The interpretation advanced here remains provisional and explicitly falsifiable. If capital controls are dismantled, the fiscal rule fully restored, and policy returns to the pre-2022 trilemma configuration as external constraints ease, the episode would be better understood as a prolonged but temporary deviation within an otherwise stable regime. If administrative controls persist or deepen, the evidence supports a durable reconfiguration of macroeconomic governance. In this sense, and subject to the falsification criteria outlined in Section 5.6, Russia's 2022 response may be understood not as the abandonment of market-conforming policy frameworks but as their adaptation to an environment in which markets themselves were no longer fully available. Whether this adaptation proves temporary or durable remains an empirical question that can be answered only by observing what happens after external constraints ease.

Acknowledgments

The authors gratefully acknowledge helpful comments from colleagues during the preparation of this manuscript.

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Additional information

Artificial Intelligence (AI) use

Parts of the data analysis, figure generation, and manuscript drafting were conducted with the assistance of Claude (Anthropic), a large language model. The authors take full responsibility for the content, analysis, and conclusions presented. All remaining errors are the authors' own.

Data availability

All data used here are publicly available. Sources, by series:

- Exchange rates, policy rate, international reserves, balance of payments, corporate credit: Bank of Russia official statistics database (https://cbr.ru/statistics/).
- National Wealth Fund assets, fiscal rule status, Urals oil prices: Ministry of Finance of the Russian Federation (https://minfin.gov.ru/).
- Unemployment rate, real wage growth, CPI inflation: Federal State Statistics Service (Rosstat), ILO methodology (https://eng.rosstat.gov.ru/).
- Brent crude oil prices: World Bank Commodity Markets Pink Sheet.
- HeadHunter Index (labor market tightness): HeadHunter Russia (https://stats.hh.ru/), available from mid-2016.

Replication materials, including the processed datasets and the figure generation code, are available at https://github.com/arktos-ai-lab/RuJE-Russia-Crisis-Responses-through-the-Macroeconomic-Trilemma

Appendix

Table A1
Crisis policy comparison matrix, 1998–2024.

Policy dimension	1998	2008–2009	2014–2015	2022: acute phase (H1)	2022–2024: normalization (H2)
Exchange rate regime	Fixed rate defense until August 1998 devaluation; forced to float	Managed float with extensive intervention to limit volatility	Floating; minimal intervention (November 2014 transition)	De jure float, but held stable administratively via mandatory FX surrender and capital controls	Float in practice; ruble drifts with the trade balance and depreciates as surrender rules relax
Capital account regime	Partial restrictions inherited from the transition period	Largely free; no major administrative controls	Largely free; informal guidance to state exporters, Dec. 2014 to Mar. 2015 (cf. Table 1)	Extensive controls imposed: mandatory FX surrender; outflow restrictions to non-friendly jurisdictions	Controls eased at the margin but retained; external access still restricted by sanctions
Monetary policy stance	Subordinated to exchange rate defense and crisis management	Subordinated to financial stability and liquidity provision	Independent inflation targeting (formal adoption November 2014)	Emergency tightening (key rate to 20%) within a stability-focused package; hike reversed from April 2022 as controls bore the stability burden	Inflation targeting reasserted; rate set domestically with the capital account closed
Fiscal stance	Forced austerity following default; disorderly adjustment	Expansionary; deployment of Reserve Fund and NWF to support banks and demand	Restrained spending; fiscal rule suspended, deficit financed from the Reserve Fund; revised rule from 2017	Expansionary; fiscal rule suspended (early 2022); emergency budget support	Remains expansionary; modified fiscal rule from January 2024 ($60 base oil price) with a transitional structural deficit
Trilemma configuration	Exchange rate stability attempted but unsustainable; capital partially restricted; monetary policy subordinated	Exchange rate managed; capital free; monetary policy subordinated to stability	Exchange rate flexible (sacrificed); capital free; monetary policy independent	On the frontier: capital mobility sacrificed (imposed); exchange rate held; monetary policy independent	Inside the frontier: capital mobility and exchange-rate stability both unmet; monetary independence retained

Source: Authors' coding based on Bank of Russia policy announcements, Ministry of Finance decrees, and crisis response documentation. The 2022–2024 episode is decomposed into an acute phase (February–mid-2022) and a normalization phase (H2 2022–2024), consistent with Table 4. The full coding methodology and source references are available in the replication repository (see Additional information).