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DEVELOPING A STRUCTURAL REFORM INDEX FOR ARMENIA: METHODOLOGY AND ECONOMIC IMPLICATIONS

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Abstract. *The purpose of this paper is to develop and analyze a structural reform index (SRI) for the Republic of Armenia, aimed at identifying the trends, sectoral patterns, and underlying dynamics of structural reforms. According to the results of this study, reform activity in Armenia has been episodic and strongly influenced by crisis events, political transitions, and the presence or absence of external policy anchors. Fiscal and financial reforms dominate in contribution, while social and monetary reforms remain underdeveloped. The findings suggest that the sustainability of structural reform efforts in Armenia is constrained by limited institutional capacity, weak implementation follow-through, and reform asymmetries across sectors. The proposed index provides an analytically grounded and replicable instrument for tracking reform momentum and informing public policy design.*

Keywords: *structural reform index, public policy, principal component analysis (PCA), sectoral reform, institutional change*

Raktiniai žodžiai: *struktūrinių reformų indeksas; viešoji politika; pagrindinių komponenčių analizė (PCA); sektorių reforma; instituciniai pokyčiai.*

Introduction

Understanding and measuring structural reforms is essential for tracking institutional transformation and long-term development in post-transition economies. These issues gain urgency in light of global uncertainty, technological change, and rising expectations on governance and fiscal institutions. Structural reforms aim to enhance economic efficiency and resilience by reforming the regulatory and institutional frameworks that govern public finance, labor markets, and financial systems (Duval 2008, 5; Roland 2000, 12).

Armenia's experience, shaped by the collapse of the Soviet Union, has been marked by deep political and economic transitions. Structural reforms have shaped state capacity and macroeconomic resilience (Aslund 2013, 34; Blanchard 1997, 22). However, reform implementation has often been inconsistent, with episodes of liberalization and donor-led restructuring not always followed by institutional consolidation. Reform progress has been shaped more by external conditions, crises, and political cycles than by a sustained, endogenous reform strategy (Campos et al. 2010, 95; Drazen and Grilli 1993, 600).

Many cross-country indexes (e.g., OECD PMR and Fraser's Economic Freedom Index) provide benchmarking tools but often overlook national specificities, timing, and sectoral depth (Conway et al. 2005, 9). As a result, these approaches may lack granularity for policy evaluation in small, transitional states such as Armenia.

This study addresses that gap by constructing a structural reform index (SRI) tailored to Armenia. Drawing on the IMF's Monitoring of Fund Arrangements (MONA) database, it applies a binary and weighted approach, aggregated through principal component analysis (PCA), to capture sectoral reform intensity over time. In doing so, it offers a replicable tool for tracking reform momentum and understanding how political, institutional, and crisis-related factors shape reform trajectories.

The index aims to provide empirical insights into Armenia's reform dynamics, identify sectoral asymmetries, and highlight the role of external actors and domestic political conditions. It also offers a framework for future policy evaluation and comparative analysis in other post-transition settings.

Literature Review

Structural reforms are widely recognized as a key component in promoting economic efficiency, institutional resilience, and good governance, particularly in post-socialist and developing economies (Duval 2008, 5; Roland 2000, 12). In transition contexts, reforms typically span public administration, financial regulation, labor markets, and social protection systems, all of which are essential for moving from centrally planned to market-based economies (Aslund 2013, 34; Blanchard 1997, 22).

However, the multidimensional and often qualitative nature of reform processes poses challenges for measurement. Initial evaluations relied on narrative assessments or expert-based indicators, such as the EBRD transition scores and the World Bank's governance metrics, which lacked sectoral specificity and temporal granularity (Tompson 2009, 15).

To address these limitations, scholars and institutions have developed standardized indices. Notable examples include the OECD's Product Market Regulation (PMR) index and the Fraser Institute's Economic Freedom Index (Conway et al. 2005, 9). While valuable for cross-country comparisons, these tools often miss country-specific reform timing and institutional context.

Event-based approaches using binary coding improved transparency and comparability. Alesina et al. (2005, 793) and Duval (2008, 5) introduced scoring methods that consider reform depth and ambition, particularly in labor and product markets. Complementary studies, such as Campos and Nugent (2012, 3), emphasized the distinction between reform passage and enforcement, while Anderson et al. (2017, 455) tracked legislative output to measure reform intensity.

To consolidate multiple reform dimensions, many studies have turned to PCA. This technique offers a data-driven way to derive composite indices by reducing dimensionality and generating objective weights (Ostry et al. 2009, 3; Hwang and Sunwoo 2018, 260). Bruno et al. (2018, 10) further applied PCA to assess institutional reform dynamics in post-transition states. Although PCA strengthens rigor, its effectiveness depends on the availability of standardized and well-classified data.

Beyond technical concerns, reform dynamics are shaped by political economy factors. Delayed reforms often stem from distributional conflicts and election-related political constraints (Alesina and Drazen 1991, 1171; Nordhaus 1975, 175; Rogoff 1990, 22). Crisis-driven reform theory adds that shocks can open policy windows for implementing otherwise unpopular reforms (Drazen and Grilli 1993, 600; Campos et al. 2010, 95).

External actors also influence reform direction and intensity. The IMF, World Bank, and EU use structural conditionalities to guide reforms in return for financial support. The MONA database tracks such benchmarks under IMF programs. Studies by Kentikelenis et al. (2016, 545) and Babb and Kentikelenis (2018, 18) analyze both the influence and limitations of such externally anchored reforms.

Despite global progress in reform measurement, there remains a lack of nationally tailored, sector-disaggregated, and time-consistent indices, especially for smaller transition economies such as Armenia. Existing reform assessments tend to be fragmented and narrative-based, limiting their suitability for longitudinal or empirical analysis.

This study fills that gap by constructing a structural reform index for Armenia using binary-coded, weighted MONA benchmarks and PCA. This approach aligns with international standards while providing sector-specific insights into reform scope and timing. It offers a replicable framework for policy evaluation and academic research in the post-transition context.

Research Methodology and Database

To construct the SRI for Armenia, we utilized the IMF's MONA database, which contains over 1,000 records of structural conditionalities under IMF-supported programs since 1995. While MONA does not comprehensively capture all reforms, it offers the most systematic dataset available for Armenia and serves as a strong empirical foundation for reform quantification.

Each reform entry was coded using a binary scale: 1 for full implementation, 0.5 for partial or delayed, and 0 for non-implementation, following established practices (Alesina et al. 2005; Duval 2008). To reflect their anticipated institutional impact, reforms were also weighted by their systemic importance: minor (0.25), moderate (0.5), or major (1.0).

We categorized reforms into five policy domains: fiscal, financial, social, monetary, and governance-related. For each sector, annual reform intensity was calculated by aggregating the weighted scores. These subindices were standardized using z-scores to ensure comparability across sectors, a crucial step for the PCA.

PCA was then applied to extract the first principal component (PC1), representing the composite SRI. The final index was normalized to a [0,1] scale using min-max normalization for interpretability. The SRI thus captures reform intensity trends over time and across sectors, offering a replicable framework for monitoring structural transformation.

Beyond descriptive value, the SRI can support empirical applications such as examining the relationship between reform intensity and macroeconomic variables (e.g., growth, investment, or institutional quality), and potentially inform policy design in similar transition contexts.

Analysis and Results

Since independence, Armenia's transition toward a market economy has been shaped by multiple waves of structural reform across fiscal, monetary, financial, social, and governance domains. Understanding the evolution of these reforms is crucial for designing more effective and targeted policy interventions.

Between 1995 and 2025, sector-specific reform trajectories displayed distinct patterns. Financial sector reforms experienced notable surges during 2001–2004, 2009, and 2018, primarily driven by efforts to modernize banking supervision, liberalize capital markets, and respond to post-crisis vulnerabilities. Fiscal reforms peaked between 2007 and 2011, a period marked by comprehensive public financial management upgrades and tax system restructuring.

Social sector reforms showed a gradual but consistent increase, particularly after 2004, with key measures targeting pension reform, healthcare systems, and social assistance mechanisms. Although less frequent, monetary reforms peaked in 2006–2007 and again in the early 2010s, aligning with shifts toward inflation targeting and enhanced central bank independence.

Governance-related (other) reforms—including judicial, regulatory, and anti-corruption initiatives—were characterized by volatility. Their most active phases occurred in the early 2000s and post-2018, corresponding to broader institutional modernization efforts (see Figure 1).

These differentiated sectoral trends underscore the importance of disaggregated analysis. They reflect how reform intensity has evolved not only in response to technical priorities but also amid political cycles and external pressures.

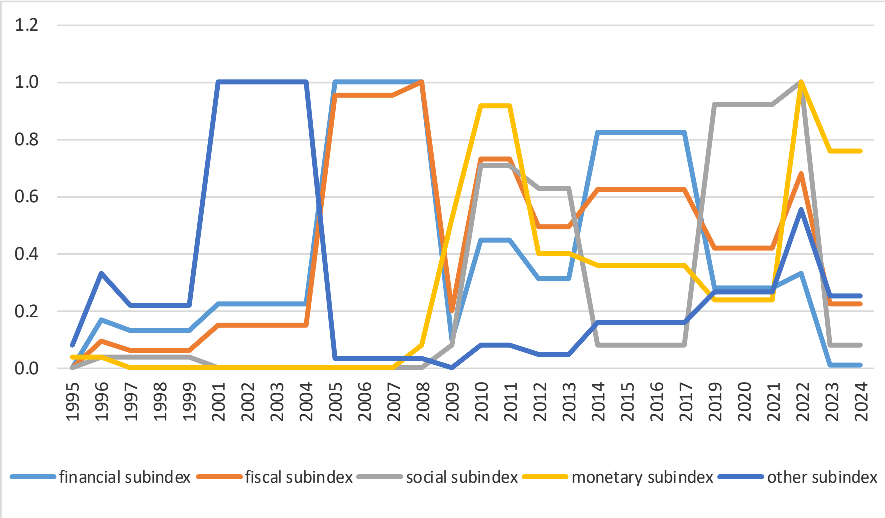

Figure 1. Trends in sectoral structural reform sub-indices in Armenia, 1995–2024

Source: Authors' calculations based on the IMF MONA database

Overall, Armenia's reform landscape has been uneven, with fiscal and financial sectors receiving sustained attention, while social, monetary, and governance reforms remain comparatively underdeveloped. This reflects both domestic policy preferences and external influences shaped by IMF-supported programs. The SRI captures these sectoral imbalances and temporal dynamics, serving as a diagnostic tool to evaluate reform momentum.

Beyond mapping trends, the SRI enables interpretation of reform patterns with broader institutional and political economy conditions. Periods of low or negative index values often coincide with electoral cycles or weakened administrative capacity. Notably, the index aligns with political business cycle theory (Nordhaus 1975; Rogoff 1990), which posits that reform activity tends to decelerate before elections due to short-term political incentives. Thus, the SRI also offers explanatory value by revealing how reforms respond to shifts in political and institutional context.

Figure 2. Dynamics of the structural reform index in Armenia, 1995–2024

Source: Authors' calculations based on the IMF MONA database

Analysis of the SRI reveals three major categories of factors influencing Armenia's reform patterns: political business cycles, crisis episodes, and post-revolutionary processes.

Periods of electoral transition—specifically 2007–2008 and 2022–2023—correspond to noticeable slowdowns or stagnation in reform activity. These declines align with the 2008 presidential and 2021 snap parliamentary elections, suggesting that governments tend to delay politically sensitive reforms ahead of elections. This supports the political business cycle theory (Nordhaus 1975; Rogoff 1990), where reform momentum weakens in pre-election periods due to risk aversion and short-term voter considerations.

In contrast, crises have served as key accelerators of reform. Notable post-crisis reform waves occurred in 2004–2007 and 2009–2011, following domestic stabilization and the global financial crisis, respectively. These periods saw increased engagement with the IMF and implementation of structural benchmarks in taxation, public expenditure, and banking regulation. Such episodes illustrate the "window of opportunity" hypothesis (Drazen and Grilli, 1993, 598–607), where crises reduce resistance to reform and realign political priorities.

The post-2018 phase also saw renewed reform efforts, particularly in governance. Driven by political change, reforms targeted public procurement, legal transparency, digital administration, and civil service modernization. However, this momentum was partially reversed after 2021 due to implementation gaps, lack of reform sequencing, and external shocks—including the COVID-19 pandemic and the 2020 Artsakh war—which diverted policy attention toward crisis management.

Persistent underperformance in the social and monetary reform subindices suggests limited state capacity or political will to undertake redistributive and institutional reforms. This reflects a broader trend identified in the structural reform literature: that socially sensitive reforms face greater resistance due to their political cost.

The SRI thus not only reflects Armenia's reform history but also captures the interaction between reform intensity and underlying political, institutional, and crisis-related dynamics.

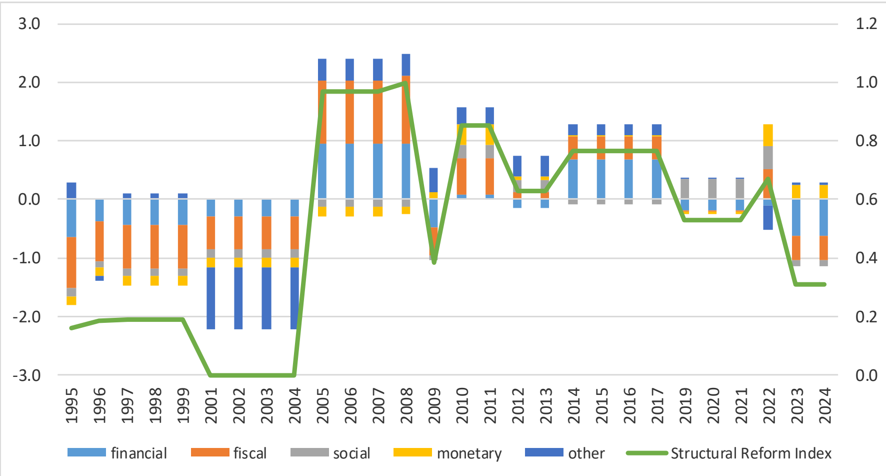

Figure 3. Dynamics of the structural reform index in Armenia and sectoral contributions, 1995–2024

Source: Authors' calculations based on the IMF MONA database

Note: Normalized SRI scaled to [0,1] is not directly decomposable

Examining sectoral contributions to the structural reform index reveals clear asymmetries. Financial and fiscal reforms have been the primary drivers of overall reform momentum throughout the review period, while social and monetary reforms played a more limited role. Governance-related reforms—categorized as "other"—show episodic influence, particularly during institutional reform phases in the early 2000s and post-2018.

These trends underscore the unequal prioritization of reform domains in Armenia, shaped by both domestic policy preferences and international engagement, particularly through IMF programs. Reform waves often coincide with major political transitions or economic shocks, highlighting the combined role of internal and external stimuli in shaping reform intensity.

The SRI thus functions as more than a historical index; it serves as an analytical framework for interpreting reform surges, gaps, and their underlying policy drivers. By tracing sectoral weight and reform timing, the index offers a structured view of Armenia's evolving reform landscape.

Conclusions

1. Armenia's structural reform trajectory has been marked by sectoral imbalances, episodic momentum, and institutional constraints. The structural reform index developed in this study reveals how reform dynamics have evolved over time, with fiscal and financial reforms taking precedence. Social and monetary reforms remain underdeveloped, raising concerns about inclusiveness and long-term resilience.
2. Reform intensity in Armenia reflects both internal and external drivers. Fiscal and financial reforms benefited from international program alignment and feasibility, while social and monetary domains faced political and institutional barriers. The SRI effectively captures the role of political business cycles, crisis windows, and post-revolutionary opportunities in shaping reform waves.
3. The methodological framework applied—combining binary coding, weighted significance, and PCA aggregation—provides a transparent, replicable model for tracking reforms. Beyond descriptive insights, the SRI offers practical value for cross-country comparison, reform diagnostics, and evidence-based policymaking. It emphasizes the need for sustained, balanced reform strategies to ensure economic sustainability and institutional strengthening in Armenia and similar transition contexts.

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