

# INNOVATION, CORRUPTION AND ECONOMIC GROWTH: AN INSTITUTIONAL APPROACH (EVIDENCE FROM UZBEKISTAN)

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## **Abstract.**

In this paper we examine the relationship between corruption, institutional quality, and innovation performance in Uzbekistan within a new institutional economics framework. Drawing on internationally recognized indicators including the Global Innovation Index, Worldwide Governance Indicators, and Transparency International's Corruption Perceptions Index the paper provides a qualitative and indicator-based analysis of institutional dynamics over the period 2012–2024. The findings suggest that corruption exerts a persistently negative influence on innovation by increasing uncertainty and discouraging long-term investment. Institutional quality, particularly government effectiveness and rule of law, plays a crucial role in fostering innovation and moderating the adverse effects of corruption. The study contributes to the literature by offering a country-specific perspective on the corruption–institutions–innovation nexus in a transition economy context and highlights the importance of sustained institutional reforms for innovation development in Uzbekistan.

**Keywords:** Corruption; Institutions; Innovation; Governance; Uzbekistan

## **1. Introduction**

In recent decades, innovation has been recognized as one of the key drivers of economic growth. At the same time, institutional challenges, particularly corruption, can undermine the effectiveness of innovation activities. In the case of Uzbekistan, the ongoing comprehensive economic and institutional reforms provide an important opportunity to empirically examine the interplay between these two factors.

The main objective of this study is to analyze the impact of innovation, corruption, and institutions on economic growth.

## **2. Literature Review**

### **2.1. Corruption and Innovation Nexus**

Existing literature widely acknowledges that corruption exerts a generally negative impact on innovation by increasing uncertainty, transaction costs, and misallocation of resources. According to North (1990), corruption distorts incentive structures, discouraging productive and innovative activities. Firms operating in highly corrupt environments often divert resources from research and development (R&D) toward rent-seeking behavior, informal payments, and regulatory evasion (Mauro, 1995; Méon & Sekkat, 2005).

Empirical studies confirm that corruption reduces firms' incentives to invest in innovation. Anokhin and Schulze (2009) show that corruption weakens

intellectual property rights protection, thereby lowering innovation output measured by patents. Similarly, Paunov (2016) finds that bribery negatively affects firms' innovation capacity in developing economies by crowding out productive investment.

However, some scholars argue for a "grease the wheels" hypothesis, suggesting that corruption may temporarily facilitate innovation in environments characterized by excessive bureaucracy and rigid regulations (Leff, 1964; Huntington, 1968). Nevertheless, more recent empirical evidence largely rejects this view, demonstrating that any short-term gains are outweighed by long-term institutional deterioration and innovation stagnation (Aghion et al., 2016).

Corruption distorts resource allocation and redirects entrepreneurial efforts from productive innovation toward rent-seeking activities. It increases the cost of doing business, reduces fair competition, and discourages high-productivity firms.

Consequently:

Innovation = f(- Corruption)

H1: Corruption negatively affects innovation.

## **2.2. Institutional Quality and Innovation Performance**

Institutions play a crucial role in shaping national innovation systems. Strong institutions defined by effective governance, rule of law, regulatory quality, and protection of property rights create a stable environment conducive to innovation (Acemoglu, Johnson, & Robinson, 2005). In contrast, weak institutions undermine trust, increase uncertainty, and discourage long-term innovative investments.

Studies consistently demonstrate a positive relationship between institutional quality and innovation outcomes. Rodrik, Subramanian, and Trebbi (2004) emphasize that institutional quality is a fundamental determinant of economic performance, including technological progress. Tebaldi and Elmslie (2013) find that countries with stronger institutions exhibit higher patent intensity and R&D expenditure.

At the firm level, institutions influence innovation by shaping access to finance, enforcement of contracts, and competitive pressures. Hall and Jones (1999) argue that institutional arrangements affect the social returns to innovation by determining how efficiently resources are allocated within the economy.

Institutions influence innovation by shaping incentives for risk-taking and long-term investment. Secure property rights, contract enforcement, and regulatory stability encourage firms to engage in R&D and innovative activities.

In institutional environments characterized by weak governance, uncertainty discourages innovation due to heightened risks of expropriation and opportunistic behavior.

Innovation = f(Institutional Quality)

Thus:

H2: Higher institutional quality positively affects innovation.

## **2.3. Institutions as a Moderating Channel between Corruption and Innovation**

Recent literature increasingly treats institutions as a mediating or moderating mechanism in the corruption–innovation relationship. Aghion et al. (2016) show that corruption is particularly harmful to innovation in countries with weak competition and poor institutional enforcement. In such contexts, corruption protects inefficient firms and discourages entry by innovative newcomers.

Méon and Weill (2010) demonstrate that corruption’s impact varies with institutional effectiveness: in countries with strong institutions, corruption is less prevalent and less damaging, whereas in weak institutional environments, it significantly hampers innovation and productivity. Similarly, Zhu and Zhang (2017) find that institutional reforms can mitigate the adverse effects of corruption on firm-level innovation.

This institutional perspective suggests that corruption should not be analyzed in isolation. Instead, its effect on innovation depends critically on institutional capacity, governance quality, and enforcement mechanisms. Consequently, strengthening institutions emerges as a key policy lever to foster innovation in corruption-prone economies.

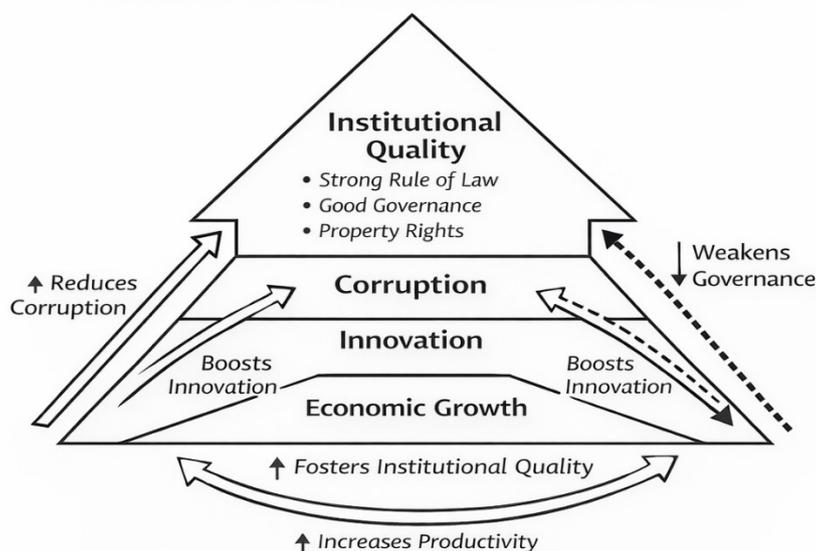
Within the endogenous growth framework, innovation enhances total factor productivity (TFP) and sustains long-run economic growth. Knowledge creation and technological progress improve production efficiency and competitiveness.

Formally:

$$\text{Economic Growth} = f(\text{Innovation})$$

H3: Innovation positively affects economic growth

Institutional quality may influence economic growth both directly and indirectly. Directly, through improved governance and reduced transaction costs; indirectly, through its impact on corruption and innovation.



**Figure-1. Institutional quality-corruption-innovation = economic growth model.**

The integrated structural relationship can be summarized as:

$$\text{Economic Growth} = \beta_1 \text{Innovation} + \beta_2 \text{Institutional Quality} - \beta_3 \text{Corruption} + \varepsilon$$

However, the deeper mechanism follows a mediated pathway:

Institutional Quality → Corruption → Innovation → Economic Growth

Therefore:

H4: Institutional quality affects economic growth indirectly through its impact on corruption and innovation.

#### **2.4. Evidence from Transition and Developing Economies**

Transition and developing economies provide a particularly relevant context for examining the corruption–institutions–innovation nexus. These countries often experience simultaneous institutional transformation and rising innovation ambitions. Estrin, Korosteleva, and Mickiewicz (2013) show that institutional voids and corruption jointly suppress innovative entrepreneurship in post-socialist economies.

In Central Asia and similar regions, weak governance structures and limited institutional capacity constrain innovation systems. While reforms aimed at improving transparency and regulatory quality have been introduced, their effectiveness remains uneven (World Bank, 2020). This suggests that institutional reforms must be sustained and credible to translate into meaningful innovation outcomes.

Despite a growing body of literature, several gaps remain. First, most empirical studies focus on cross-country samples, while country-specific institutional dynamics remain underexplored. Second, limited attention has been given to how institutional reforms over time alter the corruption–innovation relationship in developing and transition economies. Finally, Central Asian countries, including Uzbekistan, remain largely absent from mainstream empirical innovation studies.

This study contributes to the literature by providing a context-specific analysis of Uzbekistan, emphasizing the role of institutional quality in shaping the corruption–innovation nexus over time.

#### **3. Innovation and Anti-Corruption Reforms in Uzbekistan**

From 2017-year in Uzbekistan following changes have been recognized:

- Innovation development ministry has been established;
- IT Park and startup projects have been supported
- Digital government system recognized
- The anti-corruption agency was established in 2020 year
- A compliance control system is being introduced in public organizations
- Open Budget, e-procurement, e-auction

#### **4. Methodology and data.**

This paper period includes 2012–2024 years. Information has been taken from the following international organizations:

- World bank group
- Transparency International
- WIPO
- Statistic agency of the Republic of Uzbekistan

## 5. Results and Discussion.

The GII is an important benchmark used by policymakers, researchers, and investors to assess a country's innovation ecosystem, including education, research, technology production, and economic sophistication.

Uzbekistan's participation and progression in this index signal its growing efforts to build innovation capacity through reforms in education, research, and business environments. Uzbekistan's innovation score has been available from 2012–2024, showing moderate growth over time with variations year-to-year. The highest recorded score was in 2021 (27.4 points), and the lowest in 2012 (23.9 points). Although the 2024 score slightly decreased, Uzbekistan maintained a mid-range global rank (83rd).



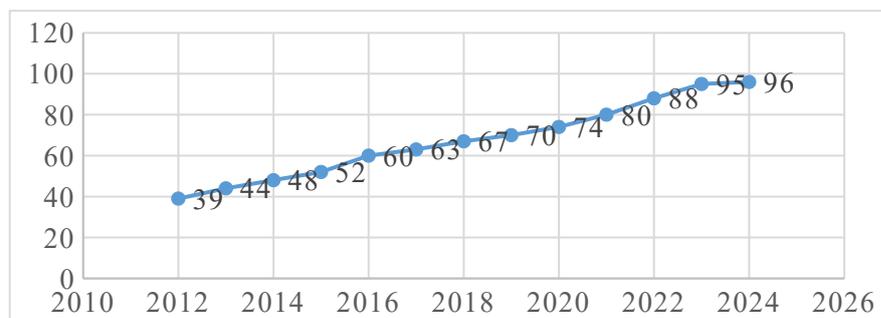
**1- Figure. Innovation and corruption ranking of Uzbekistan (2012-2024 years)**

The index reflects both investment in innovation and the outcomes produced, highlighting strengths and areas for future improvement.

The Corruption Perceptions Index (CPI) is a global measure published annually by Transparency International. It scores countries on a scale from 0 to 100. The CPI reflects experts' and business people's perceptions of public sector corruption, not direct measurement of corruption incidents.

Early years (2012–2017): Uzbekistan had very low CPI scores (around 17–22), indicating a high perception of public sector corruption. Gradual improvement (2018–2021): Steadily rising scores and better rankings suggest increasing transparency or reform efforts.

Strongest performance (2022–2023): CPI reaches its peak at 33 points, and the country climbs into the top two-thirds of countries globally. In 2024, the score dips slightly from 33 to 32 points, though the global rank remains similar (121st). Countries with similar scores include Kenya, Sri Lanka, Angola, and Togo.



**3-Figure. Fragile states ranking of Uzbekistan (2012-2024 years)**

The Fragile States Index (FSI) is published annually by the Fund for Peace. It assesses a country's vulnerability to political, social, economic, and security pressures that could push it toward instability or fragility. The score runs from 0 to 120. The index analyzes 12 political, economic, and social indicators such as security apparatus pressures, group grievance, human rights, and state legitimacy.

Between 2012 and 2024, Uzbekistan's FSI score has decreased significantly (from 87.5 to 64.8). A lower score means the country is considered less fragile and more stable relative to its past. This represents a strong long-term reduction in fragility — a trend seen clearly throughout the decade.

In 2012, Uzbekistan ranked among the more fragile countries globally (39th most fragile). By 2024, its position improved to a less fragile rank (96th), indicating that compared to other countries it has made progress toward greater stability.

Uzbekistan's Fragile States Index score dropped from 87.5 to 64.8 over 12 years, showing a clear improvement in state stability. Its global rank improved from 39th to 96th most fragile country, meaning it is less fragile relative to other countries today. This process reflects reforms and structural changes since 2016.

Anyhow, the ranking score of Uzbekistan in 2024 indicates moderate fragility remains.



**4-Figure. The growth of GDP of Uzbekistan for the period 2012-2024 years.**

From 2012 to 2024, Uzbekistan has experienced moderate and mostly positive economic growth, despite global shocks such as the COVID-19 pandemic.

Economic growth remained resilient, with a brief slowdown in 2020 due to the global pandemic and subsequent recovery in 2021–2024. (World Bank)

Periods of higher innovation scores generally align with stronger economic performance, reflecting the role of innovation as a driver of productivity and growth.

For example, in 2021, when the GII peaked at 27.4, GDP growth recovered strongly to 8% after the COVID-19 dip. This pattern suggests that investments in research, technology, and innovative capacity contributed to post-crisis economic resilience.

A rising CPI score indicates improved perception of public sector integrity, which supports a better business environment and encourages innovation and investment. The period 2022–2024 shows that as corruption perception improved, economic growth remained stable at around 6%, and Uzbekistan maintained better global innovation rankings. This demonstrates that anti-corruption measures complement innovation policies, allowing economic growth to be more sustainable.

Over the period 2012–2024, Uzbekistan experienced moderate and largely positive economic growth, fluctuating between 5% and 8%, with a temporary slowdown to 1.6% in 2020 due to the COVID-19 pandemic, followed by a strong recovery.

**Table № 2**  
**Corruption, Institutions, and Innovation in Uzbekistan (2012–2024)**

	<b>Dimension</b>	<b>Indicator</b>	<b>Trend (2012–2024)</b>	<b>Interpretation</b>
1	Innovation	Global Innovation Index (World intellectual property organization)	Gradual improvement, but below global average	Innovation capacity growing, efficiency remains weak
2	Corruption	Corruption Perceptions Index (Transparency international - the global coalition against corruption)	Slight improvement	Perceived corruption still constrains innovation
3	Institutions	Government Effectiveness (World bank group)	Moderate improvement	Policy is improving faster than implementation
		Rule of Law (World justice project)	Slow progress	Weak enforcement limits innovation incentives
		Control of Corruption (World bank group)	Incremental gains	Institutional reforms not yet fully used
		Fragile States Index (The fund for peace)	Good progress (from alert group to sustainable group)	Institutional transformations should be further enhanced.

Innovation, measured by the Global Innovation Index (GII), showed gradual improvement from 23.9 in 2012 to a peak of 27.4 in 2021, reflecting growing capacities in research, technology, and creative outputs. These improvements contributed to enhanced economic resilience and productivity.

Institutional quality and anti-corruption progress, captured by the Corruption Perceptions Index (CPI), also improved significantly, rising from 17 in 2012 to 33 in 2023, slightly declining to 32 in 2024. Strengthened institutional frameworks and higher transparency created a more conducive environment for innovation and investment.

The combined trends demonstrate that innovation and institutional quality act synergistically as drivers of economic growth. Uzbekistan's reforms since 2016 have enhanced this relationship, showing that simultaneous improvements in innovation capacity and governance reduce fragility, mitigate corruption, and support sustainable economic development.

## **6. Recommendation.**

Several implications have emerged based on the findings:

1. **Strengthening institutional enforcement.** Anti-corruption policies should prioritize enforcement mechanisms rather than formal regulations alone. Effective rule of law is critical for protecting innovators and investors.
2. **Integrating innovation and governance reforms.** Innovation strategies should be explicitly linked to institutional reforms, particularly in public administration and regulatory frameworks.
3. **Improving transparency and accountability.** Expanding digital governance and open data initiatives can reduce discretionary power and lower corruption-related barriers to innovation.
4. **Supporting private-sector innovation.** Reducing bureaucratic blocks and informal costs for firms can redirect resources toward productive and innovative activities.

These measures can help create an institutional environment conducive to sustainable innovation-led growth.

## **7. Conclusion**

This study analyzed the interaction between corruption, institutional quality, and innovation in Uzbekistan from an institutional perspective. Consistent with existing literature, the findings indicate that corruption undermines innovation performance by weakening incentives for research and development, distorting resource allocation, and reducing trust in formal institutions. Innovation outcomes remain constrained not by a lack of policy ambition, but by institutional inefficiencies and governance challenges.

The analysis further demonstrates that improvements in institutional quality particularly in government effectiveness, regulatory quality, and rule of law are essential for enhancing innovation capacity. Institutional reforms implemented in recent years have contributed to gradual improvements; however, their impact on innovation remains limited due to uneven enforcement and implementation gaps.

Overall, the study confirms that innovation-driven growth in Uzbekistan cannot be achieved solely through technological or industrial policies. Instead, it requires a complementary strategy focused on strengthening institutions, improving transparency, and ensuring accountability.

The empirical evidence from Uzbekistan (2012–2024) suggests that innovation has become an increasingly important driver of economic growth. However, the growth-enhancing effect of innovation remains conditional on institutional quality. High levels of corruption and institutional fragility have historically constrained the innovation–growth connection. Recent institutional reforms have partially mitigated these constraints, allowing innovation to contribute more effectively to economic performance.

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