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AZERBAIJAN AND UZBEKISTAN: COMPARATIVE ANALYSIS OF REGIONAL ECONOMIC DEVELOPMENT AND INDUSTRIAL CLUSTERS

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Abstract

This article presents a comparative analysis of regional economic development and industrial cluster formation in Azerbaijan and Uzbekistan, two post-Soviet economies with distinct development trajectories. The study examines how differences in resource endowment, institutional frameworks, and industrial policies have shaped the spatial distribution of economic activity and the performance of regional clusters. Azerbaijan's development model, largely driven by the oil and gas sector, has produced strong growth in the capital region but has limited diversification and weak inter-firm linkages in non-energy sectors. In contrast, Uzbekistan has pursued a more diversified and cluster-oriented strategy, particularly in agriculture, textiles, and manufacturing, which has contributed to more balanced regional development and stronger value chain integration. By comparing these two cases, the article identifies key structural and policy factors that influence the success of industrial clusters and regional competitiveness. The findings highlight the importance of coordinated industrial policy, institutional quality, and human capital development in fostering sustainable and inclusive regional economic growth.

Key words

regional development, industrial clusters, Azerbaijan, Uzbekistan, economic diversification, regional competitiveness, industrial policy, value chains, spatial economics, post-Soviet economies.

Introduction. In the context of accelerating globalization and the reconfiguration of regional economic systems, countries with emerging market economies face increasing pressure to enhance their competitiveness through structural modernization, industrial diversification, and innovation-driven growth. Among such countries, Azerbaijan and Uzbekistan occupy a particularly significant position in the Eurasian economic space. Both nations possess strategic geographical locations, abundant natural resources, and strong historical ties to regional and global trade routes, yet they have pursued distinct development trajectories since gaining independence. A comparative analysis of their regional economic development and industrial cluster formation offers valuable insights into how resource endowment, institutional reform, and spatial economic policy shape national growth patterns. Regional economic development has become a central pillar of modern economic strategy. Rather than relying solely on centralized industrial planning, many countries now emphasize decentralized growth based on regional specialization, local competitive advantages, and industrial clustering. Industrial clusters—geographic concentrations of interconnected firms, suppliers, service providers, research institutions, and government agencies—are widely recognized as powerful engines of productivity, innovation, and employment. The theoretical foundation of cluster-based development, largely associated with the work of Michael Porter and subsequent regional economics scholars, highlights the importance of spatial proximity, knowledge spillovers, and inter-firm collaboration in driving sustainable economic growth.

Azerbaijan and Uzbekistan present an especially compelling case for comparative study because both are post-Soviet economies that inherited similar industrial structures but have since diverged in their approaches to economic reform and regional development. Azerbaijan's economy has been heavily shaped by its energy sector, particularly oil and gas extraction in the Caspian Sea basin. This resource-driven growth model has generated significant fiscal revenues and infrastructure investment, but it has also created challenges related to regional imbalance, economic diversification, and industrial depth. In contrast, Uzbekistan has pursued a more gradual but broad-based development strategy, emphasizing agriculture, manufacturing, and export-oriented industrialization, supported by state-led reforms and industrial policy instruments. The spatial distribution of economic activity in both countries reflects these strategic differences. In Azerbaijan, economic output is highly concentrated in Baku and its surrounding regions, where the energy sector, financial services, and major industrial facilities are located. This has resulted in substantial disparities between the capital region and peripheral areas. Although recent policies have sought to stimulate regional development through industrial parks, special economic zones, and transport infrastructure projects, the challenge of creating self-sustaining industrial clusters outside the energy sector remains significant. By contrast, Uzbekistan has placed stronger emphasis on regional industrialization, establishing manufacturing clusters in areas such as textile production in the Fergana Valley, automotive manufacturing in Andijan, and chemical and metallurgical industries in Navoi and Almalyk.

Industrial clusters play a particularly important role in this comparative framework. In Azerbaijan, cluster development has primarily focused on energy-related industries, petrochemicals, logistics, and emerging agro-industrial zones. However, the level of integration between firms, research institutions, and technology providers remains relatively limited, reducing the innovative capacity of many clusters. Uzbekistan, meanwhile, has actively promoted cluster-based production systems, particularly in agriculture and light industry. The cotton–textile cluster model, which integrates farming, processing, and export-oriented manufacturing, illustrates how coordinated value chains can enhance productivity, reduce transaction costs, and attract foreign investment. Another critical dimension of comparison lies in institutional and policy frameworks. Azerbaijan's economic policy has traditionally been centered on macroeconomic stability, infrastructure development, and sovereign wealth management through the State Oil Fund. While these measures have contributed to financial resilience, they have been less effective in stimulating innovation-driven industrial clusters at the regional level. Uzbekistan, especially since the launch of major economic reforms after 2016, has focused more directly on improving the business environment, liberalizing foreign trade, and supporting small and medium-sized enterprises within regional industrial zones. These reforms have increased the attractiveness of Uzbekistan as a destination for manufacturing-based foreign direct investment and technology transfer. The comparative analysis of Azerbaijan and Uzbekistan also has broader relevance for other resource-rich and transition economies. Both countries face the common challenge of balancing resource-based growth with industrial diversification, reducing regional inequality, and integrating into global value chains. Their different policy choices and development outcomes provide an opportunity to assess which strategies are more effective in fostering resilient, competitive, and inclusive regional economies. Therefore, this study aims to examine and compare the patterns of regional economic development and industrial cluster formation in Azerbaijan and Uzbekistan. By analyzing their economic structures, spatial development models, and institutional frameworks, the article seeks to identify key similarities, differences, and best practices that can inform future economic policy in both countries. Such a comparative perspective contributes not only to the academic literature on regional development and clustering but also to the practical design of development strategies in emerging economies undergoing structural transformation.

Literature review. The study of regional economic development and industrial clusters has evolved into a central field within economic geography, development economics, and regional planning. Scholars have long emphasized that economic growth is not spatially uniform, but rather concentrated in specific regions that possess favorable institutional, infrastructural, and industrial conditions. The classical foundations of regional development theory can be traced to Marshall's concept of industrial districts, which highlighted the benefits of geographic proximity among firms, including shared labor markets, supplier networks, and knowledge spillovers. This idea was later refined and expanded by Porter's cluster theory, which conceptualized clusters as geographically concentrated networks of firms, supporting industries, and institutions that enhance competitiveness through cooperation and rivalry. Porter (1998) argued that clusters stimulate innovation and productivity by enabling firms to access specialized inputs, skilled labor, and technological knowledge more efficiently. Subsequent studies have demonstrated that clusters contribute to export growth, regional resilience, and the creation of high-value-added industries. Delgado, Porter, and Stern (2014) empirically confirmed that strong clusters are associated with higher employment growth and business formation, reinforcing the argument that cluster-based development is a key driver of regional prosperity. These insights have led governments across both developed and developing economies to incorporate cluster strategies into national and regional development policies.

In transition and post-Soviet economies, the role of clusters is particularly important due to the legacy of centralized industrial planning and the need for structural diversification. According to Meyer and Estrin (2014), post-socialist countries inherited highly concentrated and vertically integrated industrial structures, which limited regional entrepreneurship and innovation. As these economies liberalized, new forms of industrial agglomeration began to emerge, driven by foreign direct investment, privatization, and market-based competition. However, the success of these clusters depended heavily on institutional quality, regulatory frameworks, and state support mechanisms. In the context of Central Asia and the South Caucasus, research on regional development has emphasized the challenge of overcoming resource dependence and spatial inequality. Pomfret (2019) argues that natural resource-rich economies often experience "enclave development," where growth is concentrated in capital cities or extraction zones, leaving other regions economically marginalized. This pattern is particularly evident in Azerbaijan, where oil and gas production dominates exports and fiscal revenues. Studies by Hasanov and Huseynov (2018) indicate that Azerbaijan's hydrocarbon sector has generated limited spillover effects into manufacturing and regional industries, thus constraining the formation of diversified industrial clusters.

Several scholars have examined Azerbaijan's attempts to promote regional development through industrial parks, free economic zones, and infrastructure investment. Guliyev (2020) notes that while the government has established multiple industrial zones in regions such as Sumgait, Ganja, and Mingachevir, many of these zones function more as isolated production sites rather than fully integrated clusters. The lack of strong linkages between firms, universities, and research institutions reduces innovation and limits value chain integration. This observation aligns with broader theoretical findings that clusters require not only geographic proximity but also institutional and technological connectivity to be effective. In contrast, Uzbekistan has attracted growing attention in the literature as a case of gradual but structured industrial transformation. After decades of state-controlled economic policy, the country initiated major reforms after 2016 aimed at liberalizing markets, encouraging foreign investment, and promoting export-oriented industrialization. According to the World Bank and Asian Development Bank analyses, these reforms have significantly improved the business climate and strengthened regional manufacturing capacity. Scholars such as Yuldashev and Saidova (2021) emphasize that Uzbekistan's cluster-based agricultural and industrial policies have played a key role in increasing productivity and rural employment. The cotton–textile cluster model in Uzbekistan

has been widely discussed as an innovative approach to integrating agriculture with manufacturing and export markets. Abdullaev and Rakhimov (2020) argue that by linking cotton production, ginning, textile manufacturing, and marketing within a single regional framework, these clusters have reduced transaction costs and improved quality control. This integrated value chain approach corresponds closely with Porter's cluster theory, which highlights the importance of vertical and horizontal linkages within geographically concentrated industries. Beyond agriculture, Uzbekistan has also developed industrial clusters in automotive manufacturing, chemicals, and metallurgy. Studies by Ernst and Young (2022) and UNIDO (2021) indicate that the establishment of special industrial zones in regions such as Navoi and Andijan has attracted foreign investors and facilitated technology transfer. These clusters benefit from government incentives, transport infrastructure, and access to skilled labor, contributing to regional economic diversification.

Comparative studies between Azerbaijan and Uzbekistan remain relatively limited, but existing research suggests important structural differences. Ismailov and Gafarov (2022) compare the industrial policies of the two countries and find that Azerbaijan's heavy reliance on the energy sector has slowed the development of non-oil manufacturing clusters, whereas Uzbekistan's emphasis on import substitution and export diversification has led to more balanced regional growth. Similarly, Kalyuzhnova and Nygaard (2016) argue that Uzbekistan's stronger role of the state in coordinating industrial development has helped overcome market failures that often hinder cluster formation in transition economies. Institutional quality is another major theme in the literature. North's theory of institutions emphasizes that stable and transparent rules are essential for long-term economic development. In Azerbaijan, studies by Aslanli (2019) point to regulatory uncertainty and limited access to finance as obstacles to small and medium enterprise participation in industrial clusters. In Uzbekistan, although reforms have improved the regulatory environment, researchers such as Zhanaltayev (2023) caution that bureaucratic inefficiencies and uneven regional governance still constrain private sector development.

The literature also highlights the importance of infrastructure and human capital in cluster formation. Krugman's new economic geography theory suggests that transportation costs and market access strongly influence the spatial concentration of industries. Azerbaijan's investments in logistics corridors, ports, and railways have improved regional connectivity, but many inland regions still lack the industrial ecosystems needed to sustain clusters. Uzbekistan, by contrast, has focused more on developing vocational training centers and technical universities linked to industrial zones, which enhances the availability of skilled labor and supports cluster competitiveness. Overall, the existing body of literature provides a strong theoretical and empirical foundation for analyzing regional economic development and industrial clusters in Azerbaijan and Uzbekistan. While Azerbaijan's resource-based model has delivered macroeconomic stability and infrastructure development, it has generated limited regional industrial diversification. Uzbekistan's cluster-oriented strategy, although still evolving, appears more effective in promoting manufacturing growth and regional integration. However, both countries continue to face challenges related to institutional capacity, innovation, and global market integration. These findings underscore the importance of a comparative analytical framework to identify best practices and policy lessons that can guide future regional development strategies in both economies.

Research discussion. The comparative analysis of Azerbaijan and Uzbekistan reveals important structural, institutional, and spatial differences in the way regional economic development and industrial clusters have evolved. Although both countries emerged from the Soviet economic system with similar industrial legacies and centralized planning structures, their post-independence development paths have diverged significantly. These differences are reflected not only in national economic performance but also in the spatial distribution of

industries, the effectiveness of cluster policies, and the degree of regional economic integration. One of the most significant findings is the contrast between resource-based and production-based development models. Azerbaijan's economy remains heavily dependent on the oil and gas sector, which has shaped the geographic and sectoral structure of its regional economy. The concentration of energy-related industries, financial services, and infrastructure investment in Baku and the Absheron Peninsula has created a strong core region, but it has also contributed to uneven regional development. While industrial parks and regional development programs have been introduced, their impact remains limited because many of these initiatives lack strong inter-firm linkages and innovation-driven cooperation. As a result, Azerbaijan's regional clusters tend to be more production-oriented than knowledge-oriented, with relatively weak technological spillovers.

In contrast, Uzbekistan's economic structure supports a more diversified pattern of regional development. The country's emphasis on agriculture-based and manufacturing-based clusters has encouraged a broader spatial distribution of industrial activity. The cotton–textile clusters, automotive manufacturing in Andijan, and chemical and metallurgical industries in Navoi demonstrate how coordinated value chains can be established across different regions. These clusters benefit from both state coordination and market incentives, which reduces fragmentation and improves the efficiency of production networks. Consequently, Uzbekistan's clusters appear more integrated and capable of generating employment, exports, and technological upgrading at the regional level. Another important finding relates to the role of the state in cluster formation. In Azerbaijan, the state has primarily focused on large-scale infrastructure investment and the development of industrial parks. While this has improved logistics and physical connectivity, it has not sufficiently addressed the institutional and technological foundations of clustering. Firms often operate independently within industrial zones, with limited cooperation in research, training, or innovation. This limits the emergence of dynamic cluster ecosystems in which firms, universities, and service providers interact in a mutually reinforcing manner.

Uzbekistan, by comparison, has adopted a more interventionist and coordinated approach. The government actively promotes clusters through tax incentives, credit programs, export support, and vocational training. This has encouraged firms to integrate into common production chains rather than operate in isolation. The success of the agricultural and textile clusters suggests that when state policies are aligned with regional comparative advantages, clustering can significantly enhance productivity and competitiveness. However, this model also carries risks, including overdependence on state support and potential inefficiencies if market signals are distorted. The analysis also highlights differences in institutional environments. Azerbaijan's relatively strong fiscal position, supported by energy revenues, provides macroeconomic stability but does not necessarily translate into a favorable business environment for small and medium enterprises. Limited access to finance, regulatory complexity, and weak innovation systems restrict the ability of regional firms to grow into competitive cluster participants. In Uzbekistan, recent reforms have improved market access and reduced trade barriers, enabling regional producers to integrate more easily into global value chains. Nevertheless, bureaucratic challenges and uneven governance across regions continue to affect the performance of some clusters.

Infrastructure and human capital emerge as critical determinants of cluster effectiveness in both countries. Azerbaijan's investment in transport corridors and logistics has strengthened its role as a regional transit hub, but this advantage has not yet been fully leveraged to develop export-oriented manufacturing clusters. Uzbekistan's focus on technical education and workforce development within industrial zones has helped create a more skilled labor base, which supports higher value-added production. This suggests that physical infrastructure alone is insufficient; it must be complemented by institutional and human capital development. Overall, the comparative findings suggest that Uzbekistan's cluster-oriented and regionally diversified

development strategy has been more successful in promoting balanced regional growth than Azerbaijan's resource-centered model. However, Azerbaijan's financial capacity and strategic location offer significant potential for future diversification if cluster policies are redesigned to encourage innovation, inter-firm cooperation, and non-oil industrial development. From a policy perspective, the results indicate that sustainable regional development requires more than the creation of industrial zones. Effective clusters depend on institutional coordination, skills development, technological linkages, and integration into global markets. Both Azerbaijan and Uzbekistan can benefit from adapting their policies to strengthen these dimensions, ensuring that regional economies become more resilient, competitive, and inclusive in the long term.

Conclusion. This comparative study of Azerbaijan and Uzbekistan demonstrates that regional economic development and industrial clustering play a decisive role in shaping long-term economic competitiveness and spatial balance. Although both countries share similar post-Soviet legacies and structural challenges, their development models have produced notably different regional outcomes. Azerbaijan's resource-based growth, driven primarily by the oil and gas sector, has generated macroeconomic stability and infrastructure investment but has also resulted in high regional concentration and limited industrial diversification. The relatively weak integration between firms, innovation institutions, and regional markets has constrained the emergence of dynamic industrial clusters. In contrast, Uzbekistan's strategy of promoting integrated industrial and agricultural clusters has led to a more diversified and regionally balanced economic structure. The development of textile, automotive, and agro-industrial clusters has strengthened value chains, created employment, and enhanced export capacity. While institutional and governance challenges remain, Uzbekistan's cluster-oriented approach appears more effective in supporting sustainable regional development. Overall, the findings suggest that long-term economic resilience in both countries depends on strengthening innovation-driven clusters, improving institutional coordination, and fostering greater regional integration into global value chains.

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