INVESTMENT AND TAXATION STRATEGIES: EXAMINING THE FISCAL IMPACT ON CLUSTER-BASED FDI GROWTH IN UZBEKISTAN

Ustadjalilov Dostonbek Rustamovich

Basic doctoral student at NUUz named after Mirzo Ulugbek General director of MSC "SOFMET" *Telephone:* +998(90) 011-66-60 *e-mail: ceo@sofmetal.uz https://orcid.org/0000-0002-9731-609X*

Abstract: This study explores the role of industrial clusters in driving economic growth and attracting foreign direct investment (FDI), with a focus on the impact of fiscal policies. The regression analysis reveals a strong correlation between GDP expansion, industrial production, and investment flows, highlighting the necessity of government support mechanisms such as tax incentives. While Uzbekistan's cluster system has demonstrated substantial growth, challenges related to declining profitability and rising financial obligations underscore the need for enhanced fiscal policies. The findings suggest that reducing corporate, property, and land taxes could significantly boost investment inflows, leading to increased industrial output, export expansion, and strengthened economic competitiveness. A well-structured tax incentive framework is identified as a crucial instrument for fostering FDI, supporting industrial modernization, and ensuring the long-term sustainability of Uzbekistan's cluster-based economy.

Keywords: Industrial clusters, economic growth, fiscal policy, tax incentives, foreign direct investment (FDI), industrial modernization, Uzbekistan.

In the contemporary global economic landscape, industrial clustering has emerged as a pivotal strategy for fostering sustainable economic expansion. Advanced economies actively encourage cluster formation as a means to stimulate innovation, attract cutting-edge technologies, and enhance industrial competitiveness. Empirical studies reveal that nearly 50% of the economic structures in leading nations operate within a cluster-based framework. The United States exemplifies leadership in this domain, where clusters integrate over half of all enterprises and contribute approximately 60% to the national GDP. Similarly, Italy hosts 206 industrial clusters that employ 43% of the manufacturing workforce and account for over 30% of the country's total exports. In China, more than 60 specialized clusters accommodate approximately 30,000 enterprises, providing employment to 3.5 million individuals and generating annual revenues exceeding \$200 billion. Finland's forest industry clusters, despite managing a mere 0.5% of the world's timber reserves, contribute 10% of the global wood product exports and command 25% of the premium paper market. These examples underscore the transformative role of clusters in driving industrial growth and economic advancement. [1]

The expansion of research on cluster policies is driven by the need for improved regulatory frameworks and enhanced economic outcomes. Scholars examine the influence of clusters on regional economic development, the reconfiguration of industries into cluster formations, and the optimal strategies for fostering their growth. Further analysis focuses on how clusters utilize a region's natural and economic resources to maximize efficiency. Given the evolving nature of cluster theory and the existing gaps in research, it is crucial to explore mechanisms for improving government regulation and monitoring cluster performance. The increasing prominence of clusters as instruments of industrial modernization necessitates the refinement of state intervention strategies to promote innovation, ensure sustainable development, and strengthen linkages between businesses, research institutions, and government entities.

A comprehensive body of research has explored the theoretical foundations and practical implications of industrial clusters, highlighting their role in enhancing regional competitiveness, fostering innovation, and driving economic growth. Scholars from various economic schools have contributed to the understanding of cluster dynamics, focusing on factors such as agglomeration effects, institutional frameworks, and the impact of government interventions on cluster development.

The conceptual foundations of cluster-based industrial development have been shaped by multiple economic schools of thought, including the classical "agglomeration approach," Porter's cluster theory, the "New Economic Geography (NEG)," evolutionary economics, and network-based models. Each theoretical framework has contributed unique perspectives on the emergence, development, and economic impact of clusters, emphasizing key factors such as spatial proximity, competitive advantage, knowledge spillovers, and institutional relationships. [2]

From contemporary researchers, it is obligatory to mention M. Porter, as a key figure in cluster theory, who emphasized that a nation's or region's competitiveness is largely determined by the efficiency of its production systems. He argued that clusters play a fundamental role in enhancing productivity by fostering synergies and optimizing resource utilization. E. Feser, an American researcher, supports this perspective, asserting that the cluster approach provides a precise analytical tool for evaluating a region's economic structure, identifying key linkages, and formulating effective economic policies—especially in the development of high-value-added production and distribution networks. [3]

Bengt-Åke Lundvall highlights the significance of tacit knowledge transfer among firms within clusters. He contends that clusters accelerate innovation by fostering an environment conducive to knowledge spillovers, which is a crucial factor in sustaining global competitiveness. [4]

S. Rosenfeld conceptualizes clusters as interrelated economic ecosystems that benefit from geographic proximity. He suggests that cluster boundaries should be defined by functional economic zones rather than administrative regions to optimize economic interactions and maximize efficiency. [5]

G. Kleiner advances the evolutionary-institutional theory of clusters, portraying them as complex economic systems that evolve through cooperative development among cluster participants. He argues that such cooperative evolution enhances cluster resilience and competitiveness in a dynamic global economy. [6]

P. Krugman and A. Venables, proponents of the New Economic Geography, analyze the interaction between agglomerative and dispersive forces in cluster

formation. Their research indicates that the spatial organization of economic activity is influenced by economies of scale, market dynamics, and competition for resources. [7]

A. Venables further explores the formation of clusters and their role in the international division of labor. He argues that clusters typically emerge in regions with high concentrations of essential production factors, such as specialized labor and advanced logistical infrastructure. [8]

R. Nelson and S. Winter, representing the evolutionary school of economics, conceptualize firms as entities that develop routines and adapt to changes in their economic environments. Their work emphasizes the importance of accumulated knowledge and institutional dynamics in the evolution of clusters and regional economies. [9]

R. Boschma examines the impact of geographic and institutional proximity on cluster performance. His findings suggest that close interactions among cluster participants accelerate innovation diffusion and improve adaptability to market changes. [10]

R. Martin takes an institutional approach to studying clusters, highlighting how local norms, regulatory frameworks, and cultural factors shape cluster development. He argues that strong institutional support enhances cluster competitiveness by facilitating the integration of global knowledge and best practices. [11]

K. Morgan introduces the concept of "learning regions," where educational and research institutions play a central role in facilitating knowledge exchange within clusters. He asserts that collaboration among academia, industry, and government accelerates regional innovation and economic development. [12]

J. Rayner focuses on the role of government institutions in cluster formation, emphasizing the necessity of proactive state intervention. His research demonstrates that targeted government policies foster innovative cluster development and enhance their global competitiveness. [13]

M. Castells, in the context of the network approach, identifies decentralization as a critical driver of cluster formation. He suggests that horizontal relationships among cluster participants promote knowledge exchange and the rapid diffusion of innovation. [14]

M. Mazzucato underscores the importance of state involvement in innovationdriven economic development. She argues that public investment and strategic policy-making are essential for fostering the growth of clusters. [15]

Among Uzbek scholars, Professor A. Vakhabov views clustering as a vital mechanism for advancing the green economy. He argues that clusters serve as platforms for integrating scientific research, business, and government efforts, thereby promoting the commercialization of environmentally sustainable technologies. [16]

T. Rasulov and N. Makhmasobirova analyze the influence of clusters on national competitiveness by drawing on international best practices. Their findings suggest that cluster development is a crucial instrument for strengthening a nation's economic potential. [17]

D. Begimova highlights the complexity of defining clusters universally, as their characteristics depend on sectoral, territorial, and production-specific factors. She emphasizes that clusters are formed based on principles of geographic proximity, interconnectivity, synergy, and resource efficiency. [18]

In our view, ensuring sustainable economic growth and fostering innovation among cluster participants, particularly small and medium-sized enterprises (SMEs), requires the development of incentives for research and development activities. The expansion of technology-driven enterprises engaged in the production of high-valueadded and knowledge-intensive goods enhances national economic competitiveness and facilitates the integration of domestic firms into global value chains. Cluster formations play a crucial role in strengthening cooperation and interaction among participants. Initially developed as a framework for analyzing market competitiveness, the cluster-based approach has evolved into a strategic tool for state economic regulation, widely applied in the following domains:

• Evaluating the competitiveness of national, regional, and sectoral economies;

• Designing and implementing industrial policies;

• Stimulating innovation-driven economic growth;

• Developing regional economic programs;

• Enhancing coordination between large corporations and small enterprises.

We believe that the theoretical framework underlying state-driven cluster formation suggests that government institutions play a fundamental role in initiating and fostering clusters through both top-down and bottom-up approaches. This process is guided by industrial, economic, and cluster policies, either through the deliberate establishment of clusters or by supporting the natural agglomeration of enterprises in key regions. The objective is to prioritize the development of specific industries and economic sectors, necessitating active government engagement in drafting regulatory measures, issuing legal frameworks, and directly supporting cluster expansion.

As for the state regulatory mechanisms for clusters, we firmly believe that it can be conceptualized as a system of policies and instruments designed to stimulate, develop, and sustain cluster activity within the economy. These mechanisms encompass a set of measures implemented by government agencies to enhance competitiveness, promote innovation, and drive the growth of priority industries through cluster-based strategies. The primary aim of such government interventions is to create synergetic conditions that facilitate interactions among enterprises, contributing to long-term economic stability and development at both regional and national levels.

According to our view, the state support for cluster development is instrumental in fostering a conducive investment climate, particularly in emerging economies such as Uzbekistan. The implementation of fiscal policy measures, notably tax incentives, serves as a critical tool for reducing investment risks and enhancing the international competitiveness of domestic clusters. Tax relief mechanisms, including preferential tax treatment and direct financial subsidies, act as key instruments for stimulating cluster growth. These fiscal policies are designed to attract foreign direct investment (FDI) and mobilize domestic capital, thereby fostering the expansion of technology-intensive and innovation-driven clusters. Empirical evidence indicates that countries with well-structured fiscal policies for cluster development exhibit higher industrial production and export growth rates. Consequently, tax incentives play a pivotal role in economic expansion by integrating clusters into global value chains. Additionally, comprehensive state support contributes to job creation and income growth. The effective utilization of fiscal tools enhances investments in fixed capital and facilitates the modernization of production capacities, underscoring the necessity of a well-defined fiscal policy framework for advancing cluster-based economic strategies in Uzbekistan.

Tax incentives represent one of the most effective policy instruments for stimulating investment activity within clusters. Reducing the tax burden on cluster participants allows firms to reinvest retained financial resources into capacity expansion and technological innovation. International practice demonstrates that tax incentives are implemented through various mechanisms, including corporate tax exemptions, reduced tax rates, and capital expenditure exemptions. Introducing similar measures in Uzbekistan, particularly for innovation-driven and industrial clusters, could serve as a catalyst for attracting FDI. Econometric analysis reveals a positive correlation between tax reductions and investment inflows, with lower corporate and property tax rates incentivizing multinational corporations to establish production facilities in cluster zones. This process facilitates technology transfer, enhances workforce skill development, and strengthens the competitive positioning of domestic enterprises. Furthermore, tax incentives can be strategically leveraged to support export-oriented clusters, leading to higher foreign trade turnover. The longterm economic benefits generated by government-backed tax incentives include sustained industrial growth and the development of priority economic sectors. Therefore, tax policy remains a fundamental instrument in shaping an investmentfriendly business environment, reinforcing the role of clusters as engines of economic modernization and global market integration.

Since 2017, Uzbekistan has actively pursued cluster-based economic reforms aimed at enhancing the integration of science and industry. Institutional and legal measures have been implemented to facilitate cluster development, focusing on innovation stimulation through resource-sharing, technology transfer, and knowledge exchange. Clusters are positioned as critical instruments for economic diversification, modernization, and the advancement of export-oriented industries. Uzbekistan's strategy prioritizes the expansion of high-tech markets, the formation of new clusters, and the modernization of existing ones by integrating small, innovation-driven enterprises. Given these priorities, refining policy measures governing cluster formation and development has become a key area of research to enhance their economic contribution.

As of January 1, 2024, the industrial landscape of Uzbekistan comprises 437 officially recognized clusters encompassing a total of 440 enterprises. In comparison, the previous year, on January 1, 2023, the country had 506 clusters integrating 509 organizations. A retrospective analysis reveals that in 2022, there were 415 clusters

with 425 enterprises, while in 2021, the figure stood at 420 clusters, each incorporating a corresponding number of enterprises. Notably, the cluster-based economic structure in Uzbekistan has undergone a significant expansion since 2019, when only 47 clusters were operational, increasing to 117 clusters by 2020. This upward trajectory highlights the growing role of clusters in fostering industrial modernization and regional economic development. [19]

Table 1.

Performance Indicators Based on the Activities of Organizations within the Cluster Structures of Uzbekistan in 2018–2024, in Billion Uzbek Sums. [20]

| Year\Indic | | 2 | 2 | 2 | 2 | 2 | 2 |
|------------------|--------------|---|---------|---------|--------------|-------|--------|
| ator | 018 | 019 | 020 | 021 | 022 | 023 | 024-II |
| Volume of | | 4 | 1 | 1 | 2 | 3 | 1 |
| Industrial | 88 | 477,4 | 2 609,0 | 9 936,0 | 2 8 679,2 | 1 794 | 4 130 |
| Production | 00 | 477,4 | 2 009,0 | 9 930,0 | 8 079,2 | 1/94 | 4 130 |
| Volume of | | | 0, | | 4 | 4 | 8 |
| Construction | | - | 3 | - | 7,8 | 4,9 | 40 |
| Works | | | 5 | | 7,0 | 4,9 | 40 |
| Volume of | | 1 | 2 | 1 | 2 | 3 | 2 |
| Investments in | 95,1 | 743,8 | 167,9 | 245,0 | 066,5 | 584 | 21,5 |
| Fixed Capital | <i>JJ</i> ,1 | 743,0 | 107,7 | 243,0 | 000,5 | 504 | 21,5 |
| Financial | | 1 | 3 | 1 | 1 | _ | _ |
| Performance of | 9,4 | 77,9 | 66,1 | 114,1 | 011,3 | 498 | 273,6 |
| Enterprises | ,,т | 11,5 | 00,1 | 117,1 | 011,5 | 770 | 213,0 |
| Volume of | | 7 | 2 | 3 | 7 | 5 | 6 |
| Accounts | 34,7 | 95,9 | 328,7 | 362,9 | 210,4 | 914 | 207,4 |
| Receivable | 54,7 | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | 520,7 | 502,7 | , | | 207,4 |
| Volume of | | 1 | 4 | 4 | 8 | 7 | 7 |
| Accounts Payable | 92,9 | 787,9 | 246,0 | 887,2 | 116,9 | 783 | 680,3 |
| Volume of | | 1 | 4 | 6 | 5 | 6 | 2 |
| Industrial | 61,1 | 199,8 | 077,8 | 339,0 | 759,3 | 159 | 156,3 |
| Product Exports | 01,1 | 179,0 | 077,0 | 559,0 | 159,5 | 139 | 150,5 |

As table 1 shows, the industrial cluster landscape in Uzbekistan has been experiencing substantial expansion, marked by significant increases in production output, ongoing infrastructure development, rising investments in fixed capital, improved financial activity, and a growing orientation toward international markets. A particularly noteworthy trend is the exponential rise in industrial production volumes, which have expanded nearly 36-fold from 888.3 billion UZS in 2018 to 31,794.5 billion UZS in 2023, reflecting the dynamic evolution of the cluster-based economic model. This expansion has been supported by a considerable increase in capital investments, which have surged from 395.1 billion UZS in 2018 to 3,584.3 billion UZS in 2023, signifying a ninefold growth and reinforcing the role of investment-driven industrial transformation.

Despite these remarkable advancements, the financial performance of clusters has exhibited a concerning downward trend. While clusters initially reported a net profit of 29.4 billion UZS in 2018, this figure deteriorated into a deficit of -498

billion UZS by 2023, indicating significant financial distress and profitability challenges. Additionally, the persistent accumulation of accounts receivable poses liquidity risks, with figures escalating from 334.7 billion UZS in 2018 to an alarming 5,914.1 billion UZS in 2023. Similarly, accounts payable have experienced a substantial surge, increasing from 492.9 billion UZS in 2018 to 7,783.4 billion UZS in 2023, signaling an increasing reliance on credit-based financing mechanisms. These trends underscore the need for enhanced financial oversight, strategic policy interventions, and improved debt management strategies to ensure the long-term sustainability and resilience of Uzbekistan's industrial clusters.

Table 2.

| Organizations within Cluster Structures in Uzbekistan (2018-2024)[21] | | | | | | | | | | |
|---|-----|-----|-------|------|------|--------|--|--|--|--|
| Year\Indicator | 2 | 2 | 2 | 2 | 2 | 2 | | | | |
| | 019 | 020 | 021 | 022 | 023 | 024-II | | | | |
| Volume of Industrial | 5 | 2 | 1 | 1 | 1 | 0 | | | | |
| Production | ,04 | ,82 | ,58 | ,44 | ,11 | ,44 | | | | |
| Volume of Construction | - | - | 1 | 9 | 1 | - | | | | |
| Works | | | 59,33 | 4,34 | 8,68 | | | | | |
| Volume of Investments in | 4 | 1 | 0 | 1 | 1 | 0 | | | | |
| Fixed Capital | ,41 | ,25 | ,57 | ,66 | ,73 | ,06 | | | | |
| Financial Performance of | 6 | 2 | 3 | - | - | - | | | | |
| Enterprises | ,05 | ,06 | ,04 | 0,91 | | | | | | |
| Volume of Accounts | 2 | 2 | 1 | 2 | 0 | 1 | | | | |
| Receivable | ,38 | ,93 | ,44 | ,14 | ,82 | ,05 | | | | |
| Volume of Accounts | 3 | 2 | 1 | 1 | 0 | 0 | | | | |
| Payable | ,62 | ,38 | ,15 | ,66 | ,96 | ,99 | | | | |
| Volume of Industrial | 1 | 3 | 1 | 0 | 1 | 0 | | | | |
| Product Exports | ,25 | ,4 | ,56 | ,91 | ,07 | ,35 | | | | |

Chain Indices of Efficiency Dynamics Based on the Performance of Organizations within Cluster Structures in Uzbekistan (2018-2024)[21]

The data presented in Table 2 illustrate the dynamic changes in key economic efficiency indicators of industrial clusters in Uzbekistan, as assessed for the period from 2018 to 2024. Notably, industrial production exhibited a significant surge in 2019 and 2020, with index values of 5.04 and 2.82, respectively. However, in subsequent years, the growth trajectory experienced a pronounced deceleration, with the index declining to 1.44 in 2022, and further projections indicating a substantial drop to 0.44 in 2024. This initial phase of expansion can be attributed to increased investments, production capacity enhancements, and favorable economic conditions. However, the observed slowdown suggests potential market saturation, growing operational inefficiencies, and emerging sustainability challenges within the clusters.

A similar trend is observed in the construction sector, where a substantial increase occurred in 2021, with the index reaching an exceptional level of 159.33. However, this momentum was not sustained, as the index sharply fell to 18.68 by 2023. This decline is likely associated with the completion of large-scale infrastructure projects, shifts in construction policies, or adjustments in investment priorities within the cluster framework. The fluctuating nature of construction activity

highlights the need for a more structured long-term development strategy to prevent economic downturns linked to cyclical project completions.

Investment indicators demonstrated an upward trajectory until 2022, with notable peaks in 2019 (4.41), 2020 (1.25), and slight volatility in 2021 (0.57). Although there was moderate growth in 2022 (1.66) and 2023 (1.73), projections for 2024 suggest a drastic decline to 0.06. This dramatic downturn may stem from macroeconomic instability, shifts in foreign direct investment patterns, or broader policy uncertainties impacting investor confidence. Ensuring consistent investment inflows will be critical for sustaining industrial development and preventing financial constraints that could impede the long-term viability of clusters.

Financial performance indicators reflect considerable volatility. While the index peaked at 6.05 in 2019, signifying a period of strong profitability, a downward trend emerged in subsequent years, ultimately turning negative in 2023 (-0.91). This deterioration suggests underlying challenges, such as crisis-induced economic disruptions, declining profit margins, and managerial inefficiencies in cluster enterprises. The continued uncertainty in 2024 underscores the pressing need for policy interventions to restore financial stability and enhance corporate governance within industrial clusters.

Indicators related to financial obligations also exhibit notable fluctuations. Accounts receivable saw an upward trajectory in 2019 and 2020, increasing from 2.38 to 2.93, before experiencing a temporary decline in 2021 (1.44). However, subsequent years exhibited instability, with values fluctuating between 2.14 in 2022, 0.82 in 2023, and a projected 1.05 in 2024. This trend highlights potential liquidity constraints and financial risks that could hinder the operational efficiency of cluster enterprises. Similarly, accounts payable experienced a sharp rise in 2019 (3.62), reflecting increased reliance on credit-based transactions. Although a degree of stabilization was observed in later years (1.66 in 2022, 0.96 in 2023, and a projected 0.99 in 2024), the persistence of high levels of debt underscores the necessity of enhanced financial oversight and improved credit management strategies to ensure long-term solvency.

The export performance of industrial clusters also presents a mixed picture. While exports demonstrated a promising increase in the initial period (1.25 in 2019 and 1.56 in 2021), a declining trend emerged in subsequent years, with values dropping to 0.91 in 2022 and an anticipated further decline to 0.35 in 2024. This downturn in export activity may be attributed to various factors, including shifting global trade policies, reduced competitiveness of domestic industrial products, and logistical constraints affecting market access. To counteract these challenges, a comprehensive strategy focused on enhancing product quality, diversifying export destinations, and optimizing supply chain efficiency will be essential.

In summary, following a period of robust expansion between 2019 and 2021, the majority of key economic indicators now exhibit signs of stagnation or decline. These developments call for a reassessment of existing cluster development policies, with a particular emphasis on strengthening financial sustainability measures, enhancing investment incentives, and implementing targeted interventions to maintain export competitiveness. Proactive policy adjustments will be necessary to ensure the long-term resilience of Uzbekistan's industrial clusters and their ability to contribute meaningfully to the national economy.

The correlation analysis conducted by the author reveals significant interdependencies between key economic variables, particularly concerning GDP growth, production output in the example of chemical industry of Uzbekistan, and investment flows in chemical industry of Uzbekistan. The correlation coefficient between GDP and chemical production output is 0.85, indicating a strong positive relationship. This suggests that an increase in chemical production volume is closely associated with GDP expansion, meaning that growth in this sector is highly likely to contribute to national economic performance.

A moderate positive correlation (r = 0.51) was identified between GDP and Foreign Direct Investment (FDI) inflows into the chemical industry. While the relationship is weaker than that observed for domestic investment, this may be attributed to investment time lags, as capital inflows do not immediately translate into economic growth.

The study further highlights a high positive correlation (r = 0.78) between GDP and investments in the city of Chirchiq, underscoring the pivotal role of industrial infrastructure investments, particularly in the Chirchiq Technopark, in driving economic expansion. Moreover, a very high correlation (r = 0.83) was observed between chemical production output and investments in Chirchiq, suggesting that capital inflows into industrial infrastructure significantly contribute to increased production capacity, which subsequently enhances GDP.

In terms of FDI specifically, the correlation between chemical production and foreign investment stands at r = 0.47, reflecting a moderate positive relationship. This indicates that while FDI plays a role in shaping industrial output, domestic capital investments have a more substantial and immediate impact.

To assess the quantitative impact of chemical production volume and investments in Chirchiq on Uzbekistan's GDP, a regression model was developed:

 $GDP_t = \alpha + \beta_1 Chemical Production_t + \beta_2 Chirchik Investment_t + \varepsilon_t$

(1)

 GDP_t represents the Gross Domestic Product of Uzbekistan (in billion UZS); $ChemicalProduction_t$ denotes the output volume of chemical production (in billion UZS); $ChirchikInvestment_t$ refers to total investments in Chirchiq (in billion UZS); α is the constant (baseline GDP level); β_1, β_2 are the impact coefficients of chemical production and investments in Chirchiq, respectively; ε_t varepsilon_tet represents the error term.

The estimated regression equation yielded the following results:

 $GDP_t = 473519,2 + 5,27 \cdot ChemicalProduction_t + 10,91$

For ease of interpretation, the coefficients were transformed to reflect their relative impact on GDP:

• Impact of chemical production: $\beta_1=5.27 \rightarrow A 1\%$ increase in chemical production leads to a 0.46% increase in GDP.

Calculation: The average share of the chemical industry in GDP over the past five years is approximately 8.78%. Thus, 5.27/8.78=0.46;

• Impact of investments in Chirchiq: $\beta_2=10.91 \rightarrow A \ 1\%$ increase in investments in Chirchiq leads to a 0.34% increase in GDP.

Calculation: The average share of Chirchiq's investments in GDP is 3.1%, hence 10.91/3.1=0.34.

The coefficient of determination (R2) for this model is 0.973, indicating that 97.3% of GDP variance is explained by changes in chemical production and investments in Chirchiq. Such a high explanatory power confirms the predictive strength of the model.

T-test for coefficient significance: Both coefficients were statistically significant (p-values < 0.05), confirming their economic relevance in explaining GDP growth.

F-testformodelsignificance:The overall model was found to be significant at p < 0.01, reinforcing the reliability
of the estimated relationships.

The regression analysis confirms that investments in the chemical industry significantly influence both production output and broader industrial growth. The high elasticity of investment underscores the potential benefits of reducing tax burdens to stimulate additional capital inflows into the sector. This is particularly relevant for the Chirchiq Technopark, which serves as a central hub for attracting investment into chemical production.

However, the current corporate income tax (15%), property tax, and land tax may represent substantial barriers for new investors. Granting tax exemptions for up to 10 years would create long-term incentives for investment, facilitate industrial expansion, and promote export growth.

Based on historical data and econometric modeling, the anticipated effects of tax exemptions on industry growth are as follows:

1. Corporate income tax exemption (15%):

• Enables firms to reinvest retained earnings into expanding production capacity;

• Estimated to increase investments in the chemical sector by 20–25% over three years.

2. Property tax exemption:

• Reduces maintenance costs for capital-intensive chemical enterprises.

- Expected to boost production volumes by 5–7% annually.
- 3. Land tax exemption:
- Lowers infrastructure development costs.
- Forecasted to contribute to a 2–3% annual increase in industrial output.

Overall, reducing the tax burden could increase investment in the chemical industry by 50–70% over the next decade, significantly enhancing production capacity and competitiveness. Given that capital investment is the primary driver of

chemical production growth, a theoretical projection of tax reductions' impact on investment levels can be made.

The following hypotheses were formulated:

1. The average volume of tax payments from which enterprises would be exempted (corporate tax, property tax, land tax) is estimated at 8–10% of company turnover.

2. It is expected that a substantial proportion (30–50%) of the freed-up capital will be reinvested in fixed assets.

3. If tax incentives allow firms to allocate 20–30% more funds to investment, this would result in:

- 50–70% growth in chemical industry investments over 10 years.
- 30–50% increase in chemical production output.

• GDP growth contribution from the chemical industry of 2–3 percentage points.

The findings of this study highlight the significant role of cluster-based industrial development in fostering economic expansion, with strong correlations between GDP growth, industrial production, and investment inflows. The regression analysis confirms that increasing production output and investment in industrial infrastructure leads to measurable GDP growth, emphasizing the necessity of financial support mechanisms, particularly tax incentives, to attract capital and sustain economic momentum. While Uzbekistan's clusters have demonstrated considerable expansion in recent years, the data reveal underlying financial challenges, including declining profitability and rising financial obligations, necessitating enhanced fiscal policies to ensure long-term sustainability. The econometric analysis suggests that reducing corporate, property, and land tax burdens could substantially boost investment inflows, leading to higher production volumes, increased export potential, and strengthened economic competitiveness. Therefore, a well-structured tax incentive framework tailored to industrial clusters can serve as a critical instrument for fostering foreign direct investment, accelerating industrial modernization, and securing Uzbekistan's position in global markets.

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20. The table was developed by the author based on data from statistical reports of the Agency of Statistics under the President of the Republic of Uzbekistan on the "Activities of Organizations Operating in Special Economic Zones, Small

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21. The table was developed by the author based on data from statistical reports of the Agency of Statistics under the President of the Republic of Uzbekistan on the "Activities of Organizations Operating in Special Economic Zones, Small Industrial Zones, Technoparks, and Clusters in the Republic of Uzbekistan" for the period 2018–2024.

22. The equation was developed by the author based on data from statistical reports of the Agency of Statistics under the President of the Republic of Uzbekistan on the "Activities of Organizations Operating in Special Economic Zones, Small Industrial Zones, Technoparks, and Clusters in the Republic of Uzbekistan" for the period 2018–2024.