



INNOVATION IQTISODIYOT

Ilmiy-amaliy elektron jurnal

2026

No 1

ИННОВАЦИОННАЯ ЭКОНОМИКА

Научно-практический электронный журнал

INNOVATIVE ECONOMY

Scientific and practical electronic journal



Indexlanadigan bazalar:  Google Scholar  Crossref  OpenAIRE  CYBERLENIKA



INNOVATION IQTISODIYOT

ILMIY-AMALIY
ELEKTRON JURNAL

**1-jild
1-son
yanvar, 2026**

**January, 2026
Volume 1
Number 1**

**ИННОВАЦИОННАЯ
ЭКОНОМИКА
Научно-практический
электронный журнал**

**INNOVATIVE ECONOMY
Electronic scientific and
practical journal**



INNOVATSION IQTISODIYOT

ILMIY-AMALIY ELEKTRON JURNAL

ISSN: 3030-315X

ojs.kstu.uz

Muassis:

Qarshi davlat texnika universiteti

Tahririyat Kengashi raisi:

R.X.Ergashev, iqtisodiyot fanlari doktori, professor

Tahririyat Kengashi raisi o‘rinbosari:

S.N.Xamrayeva, iqtisodiyot fanlari doktori, professor

Mas’ul muharrir:

N.A.Ochilova, PhD, dotsent

Texnik muharrir:

S.J.Qulmurotov

Jurnal har oyda bir marotaba elektron shaklda jurnalning rasmiy sayti orqali nashr etiladi.

Tahririyat manzili:

180100, Qarshi shahri, Mustaqillik ko‘chasi 225-uy Tel.:

+998 (75) 221 09 23

+998 (93) 902 72 63

Faks: +998 (75) 221 1395

innoeconomic@kstu.uz

“Innovatsion iqtisodiyot” ilmiy - amaliy elektron jurnali O‘zbekiston Respublikasi Oliy ta’lim, fan va innovatsiyalar vazirligi huzuridagi **Oliy attestatsiya komissiyasi rayosatining 2025-yil 5-apreldagi 369-sonli qarori** bilan milliy ilmiy nashrlar ro‘yxatiga kiritilgan.

Jurnalda quyidagi ruknlar asosida maqolalar nashr etiladi:

1. Nazariya va metodologiya
2. Raqamli iqtisodiyot
3. Mintaqa va tarmoqlar iqtisodiyoti
4. Kichik biznes va xususiy tadbirkorlik
5. Inson kapitali iqtisodiyoti
6. Menejment va marketing
7. Buxgalteriya hisobi, iqtisodiy tahlil va audit
8. Moliya, kredit va investitsiya
9. Ekonometrika va statistika
10. Xizmat ko‘rsatish va turizm sohasi

TAHRIRIYAT KENGASHI:

Tahririyat Kengashining xalqaro a'zolari:

Ovchinnikov Viktor Nikolayevich - i.f.d., professor, akademik (Janubiy Federal Universitet, Rossiya)

Solodovnikov Sergiy Yurevich - i.f.d., professor (Belorussiya milliy texnika universiteti)

Sidorov Viktor Aleksandrovich - i.f.d., professor, (Kuban davlat universiteti)

Shevchenko Igor Viktorovich - i.f.d., professor (Kuban davlat universiteti, Rossiya)

Kusainov Xalel Xaymullievich - i.f.d., professor, akademik (Qozog‘iston Respublikasi Milliy fanlar akademiyasi)

Samandarzoda Iskandar Hakim - Iqtisodiyot fanlari doktori (Sh.Shotemur nomidagi Tojikiston agrar universiteti)

Gibadullin Artur Arturovich - i.f.n. dotsent (Milliy tadqiqot universiteti, Moskva energetika instituti, Rossiya)

Sergey Aleksandrovich Voynash - ilmiy xodim (P.Lumumbi nomidagi Rossiya xalqlar do‘stligi universiteti)

Valentina Nikolayevna Pulyayeva - iqtisod fanlari nomzodi, dotsent (Rossiya Federatsiyasi hukumati qoshidagi Moliya universiteti)

Dmitriy Evgenievich Morkovkin, iqtisod fanlari nomzodi, dotsent (Moliya universiteti, Rossiya Federatsiyasi hukumati)

Sadriddinov Manuchehr Islomiddinovich - i.f.d., professor, (Tojikiston Respublikasi Milliy fanlar Akademiyasi)

Perskaya Viktoriya Vadimovna - i.f.d., professor, (Rossiya Federatsiyasi hukumati huzuridagi Moliya universiteti)

Molchanov Igor Nikolayevich - i.f.d., professor, (Lomonosov nomidagi Moskva davlat universiteti)

Basova Mariya Mixaylovna - i.f.d., professor, (Rossiya Federatsiyasi hukumati huzuridagi Moliya universiteti)

Aleksandr Leonidovich Chupin, iqtisod fanlari nomzodi (P.Lumumbi nomidagi Rossiya xalqlar do‘stligi universiteti)

Nezamaykin Valeriy Nikolayevich - i.f.d., professor, (Rossiya davlat gumanitar universiteti)

Nikonorova Alla Vladimirovna - i.f.n., dotsent, (Rossiya Federatsiyasi hukumati huzuridagi Moliya universiteti)

Dmitriyeva Olga Aleksandrovna - i.f.n., dotsent, (Rossiya Federatsiyasi hukumati huzuridagi Moliya universiteti)

Shvets Yuriy Yuryevich - i.f.n., dotsent, (Rossiya Fanlar akademiyasining Nazorat fanlari instituti)

Kolosova Yelena Valeryevna - i.f.n., dotsent, (Plexanov nomidagi Rossiya iqtisodiyot universiteti)

Tahririyat Kengashi a'zolari:

Gulyamov Saidaxror Saidaxmedovich - i.f.d., professor, akademik

Pardayev Mamayunus Qarshiboyevich - i.f.d., professor

Navruz-zoda Baxtiyor Negmatovich - i.f.d., professor

Xatamov Ochildi Qurbonovich - i.f.d., professor

Fayziyeva Shirin Shodmonovna - i.f.n., professor

Jumayeva Gulrux Jo‘raqulovna - i.f.n., professor

Egamberdiyeva Salima Raimovna - i.f.n., dotsent

Erkayeva Gulbahor Panjiyevna - i.f.n., professor

Yakubova Shamshinur Shuxratovna - i.f.d., (DSc) dotsent

Amirqulov Shuhrat Olimovich - i.f.f.d., (PhD), dotsent

Samiyeva Gulnoza Toxirovna - i.f.f.d., (PhD), dotsent

Aliqulov Azamat Tuyg‘unovich - i.f.f.d., (PhD), dotsent

Aminov Fazlitdin Baxadirovich - i.f.n., dotsent

Xo‘jaqulova Nigora Rustamovna - i.f.f.d., (PhD), dotsent

Turobov Sherzod Alisherovich - i.f.f.d., (PhD), dotsent

Alimova Munisa Yulchiyevna - i.f.f.d. (PhD) dotsent

Ergasheva Nasiba Raxmatullayevna - i.f.d., (DSc), dotsent

Boboqulov Sanjar Baxromkulovich - i.f.f.d., (PhD), dotsent

Djalilov Raxmonkul Hamidovich - i.f.f.d., (PhD), dotsent

Nomazov Baxrom Bobomurodovich - i.f.f.d. (PhD) dotsent

Alimxanova Nigora Alimxanovna - i.f.f.d. (PhD) dotsent

Jonuzokov Mirzabek Kulmamatovich - i.f.f.d. (PhD), dotsent

Muxammadiyeva Yulduz Yusupovna - i.f.f.d. (PhD)

Tursunova Aziza Xoshimovna - i.f.f.d. (PhD)

Xolliyev Sherali Baxtiyorovich - i.f.f.d. (PhD)



ИННОВАЦИОННАЯ ЭКОНОМИКА

Научно-практический электронный журнал

ISSN: 3030-315X

ojs.kstu.uz

Учредитель:

Каршинский государственный технический университет

Председатель редакционного совета:

Р.Х.Эргашев, доктор экономических наук, профессор

Заместитель председателя редакционного совета:

С.Н.Хамраева, доктор экономических наук, профессор

Ответственный редактор:

Н.А.Очилова, PhD, доцент

Технический редактор:

С.Ж.Кулмуротов

Журнал издается один раз в месяц в электронной форме и публикуется через официальный сайт журнала.

Адрес редакции:

180100, г. Карши, ул. Мустакиллик, дом 225

Тел: +998 (75) 221 09 23

+998 (93) 902 72 63

Факс: +998 (75) 221 1395

E-mail: innoeconomic@kstu.uz

Научно-практический электронный журнал «Инновационная экономика» включён в перечень национальных научных изданий на основании решения Президиума Высшей аттестационной комиссии при Министерстве высшего образования, науки и инноваций Республики Узбекистан от 5 апреля 2025 года № 369.

В журнале публикуются статьи по следующим рубрикам:

1. Теория и методология
2. Цифровая экономика
3. Экономика регионов и отраслей
4. Малый бизнес и частное предпринимательство
5. Экономика человеческого капитала
6. Менеджмент и маркетинг
7. Бухгалтерский учет, экономический анализ и аудит
8. Финансы, кредит и инвестиции
9. Эконометрика и статистика
10. Сфера услуг и туризм

Редакционная коллегия:

Международные члены Совета редколлегии:

Овчинников Виктор Николаевич - д.э.н., профессор, академик (Южный федеральный университет, Россия)

Солодовников Сергей Юрьевич - д.э.н., профессор (Белорусский национальный технический университет)

Виктор Александрович Сидоров - д.э.н., профессор, (Кубанский государственный университет)

Шевченко Игорь Викторович - д.э.н., профессор (Кубанский государственный университет)

Кусаинов Халел Хаймуллович - д.э.н., профессор, академик (НААН Республика Казахстан)

Самандарзода Искандар Хаким - д.э.н., профессор (Таджикистанский аграрный университет им. Ш. Шотемура)

Гибатуллин Артур Артурович - к.э.н., доцент (Национальный исследовательский университет «Московский энергетический институт»)

Войнаш Сергей Александрович - научный сотрудник (Российского университета дружбы народов имени П.Лумумби)

Пуляева Валентина Николаевна - к.э.н., доцент (Финансовый университет при Правительстве РФ)

Морковкин Дмитрий Евгеньевич - к.э.н., доцент (Финансовый университет Правительство РФ)

Садриддинов Манучехр Исламиддинович - д.э.н., профессор (Национальная академия наук Республики Таджикистан)

Перская Виктория Вадимовна - д.э.н., профессор (Финансовый университет при Правительстве РФ)

Молчанов Игорь Николаевич - д.э.н., профессор (Московский государственный университет имени М.В. Ломоносова)

Басова Мария Михайловна - д.э.н., профессор (Финансового университета Российской Федерации)

Чупин Александр Леонидович - к.э.н. (Российского университета дружбы народов имени П. Лумумби)

Незаймакин Валерий Николаевич - д.э.н., профессор (РГТУ)

Никонорова Алла Владимировна - к.э.н., доцент (Финансового университета Российской Федерации)

Дмитриева Ольга Александровна - к.э.н., доцент (Финансового университета Российской Федерации)

Швец Юрий Юрьевич - к.э.н., доцент (Институт проблем управления РАН)

Колосова Елена Валерьевна - к.э.н., доцент (Российский экономический университет имени Г.В. Плеханова)

Члены Совета редколлегии:

Гулямов Саидхорр Саидхмедович - д.э.н., профессор, академик

Пардаев Мамаюнус Каршибоевич - д.э.н., профессор

Навруз-зода Бахтиёр Негматович - д.э.н., профессор

Хатамов Очилди Курбанович - д.э.н., профессор

Файзиева Ширин Шодмоновна - к.э.н., профессор

Жумаева Гулрух Журакуловна - к.э.н., профессор

Эгамбердиева Салима Раимовна - к.э.н., доцент

Еркаева Гулбахор Панжиевна - к.э.н., профессор

Якубова Шамина Шухратовна - д.э.н., (DCs), доцент

Амиркулов Шухрат Олимович - д.ф.э.н., (PhD), доцент

Самиева Гулноза Тохировна - д.ф.э.наук., (PhD), доцент

Алигулов Азамат Туйгунович - д.ф.э.н., (PhD), доцент

Аминов Фазлитдин Бахадирович - к.э.н., доцент

Хужакулова Нигора Рустамовна - д.ф.э.н., (PhD), доцент

Туробов Шерзод Алишерович - д.ф.э.н., (PhD), доцент

Алимова Муниса Юльчиевна - д.ф.э.н., (PhD), доцент

Эрашьева Насиба Рахматуллаевна - д.э.н., (DCs), доцент

Бобоккулов Санжар Бахромкулович - д.ф.э.н., (PhD), доцент

Джалилов Рахмонкул Хамидович - д.ф.э., (PhD), доцент

Номазов Бахром Бобомуродович - д.ф.э.н., (PhD), доцент

Алимханова Нигора Алимхановна - д.ф.э.н., (PhD), доцент

Джанузакон Мирзабек Кулмаматович - д.ф.э.н., (PhD), доцент

Мухаммадиева Юлдуз Юсуповна - д.ф.э.н., (PhD)

Турсунова Азиза Хошимовна - д.ф.э.н., (PhD)

Холлиев Шерали Бахтиёрович - д.ф.э.н., (PhD)



Mintaqa va tarmoqlar iqtisodiyoti
Economy of the region and industry
Экономика региона и отрасли



UDC 332.122

<https://doi.org/10.70769/3030-315X.II.1.1.2026.8>

DYNAMIC ANALYSIS OF INDUSTRIAL PRODUCTION IN KASHKADARYA REGION IN THE CONTEXT OF REGIONAL ECONOMIC DEVELOPMENT

Valiev Oybek Shukhrat ugli

HUDUDIIY IQTISODIY RIVOJLANISH SHAROITIDA QASHQADARYO VILOYATI SANOAT ISHLAB CHIQRARISHINING DINAMIK TAHLILI

Valiyev Oybek Shuxrat o'g'li

ДИНАМИЧЕСКИЙ АНАЛИЗ ПРОМЫШЛЕННОГО ПРОИЗВОДСТВА В КАШКАДАРЬИНСКОЙ ОБЛАСТИ В КОНТЕКСТЕ РЕГИОНАЛЬНОГО ЭКОНОМИЧЕСКОГО РАЗВИТИЯ

Валиев Ойбек Шухрат угли

Received: January 14, 2026 Revised: January 16, 2026 Accepted: January 21, 2026 Published: February 1, 2026

Abstract: This study analyzes industrial production growth across districts of the Kashkadarya region of Uzbekistan during 2010–2025. Using district-level data on year-on-year industrial growth, the paper examines spatial differences, growth instability, and regional responses to economic shocks. A fixed effects panel model is applied to account for stable district characteristics and common time effects, including the COVID-19 period. The results show clear spatial differences in industrial growth, with stable performance in urban and industrial centers and more unstable growth in peripheral districts. The COVID-19 shock increased existing regional inequalities, and recovery after the crisis was uneven across districts. Overall, the findings show no full convergence in industrial growth but suggest club convergence among core districts. The study highlights the need for region-specific industrial policies to support stable and balanced regional development.

Keywords: Industrial growth, spatial dynamics, regional development, Kashkadarya region, Uzbekistan.

Annotatsiya: Mazkur tadqiqot 2010–2025 yillar davomida O'zbekistonning Qashqadaryo viloyati tumanlari bo'yicha sanoat mahsuloti ishlab chiqarish o'sishini tahlil qiladi. Tadqiqotda sanoat mahsuloti ishlab chiqarishining yilma-yil o'sish sur'atlari asosida hududiy farqlar, o'sishdagi beqarorlik va iqtisodiy pasayishlarga mintaqaviy javoblar o'rganiladi. Tumanlarga xos barqaror xususiyatlar va umumiy vaqt omillarini, jumladan COVID-19 davrini hisobga olish uchun fiksatsiyalangan effektlar panel modeli qo'llanildi. Natijalar sanoat o'sishida aniq hududiy tafovutlar mavjudligini ko'rsatdi: shahar va sanoat markazlarida o'sish barqaror bo'lsa, chekka tumanlarda o'sish nisbatan beqaror. COVID-19 inqirozi mavjud hududiy nomutanosibliklarni kuchaytirdi va inqirozdan keyingi tiklanish tumanlar bo'yicha notekis kechdi. Tadqiqot natijalari to'liq yaqinlashuv mavjud emasligini, biroq asosiy sanoat tumanlari o'rtasida klub yaqinlashuvi kuzatilishini ko'rsatadi. Olingan xulosalar hududiy xususiyatlarni hisobga olgan sanoat siyosatini ishlab chiqish zarurligini ko'rsatadi.

Kalit so'zlar: Sanoat o'sishi, hududiy dinamika, mintaqaviy rivojlanish, Qashqadaryo viloyati, O'zbekiston.

Аннотация: В статье анализируется рост промышленного производства по районам Кашкадарьинской области Узбекистана за период 2010–2025 гг. На основе районных данных о годовых темпах роста промышленности исследуются пространственные различия, нестабильность роста и реакция регионов на



экономические шоки. Для учета устойчивых районных особенностей и общих временных факторов, включая период COVID-19, используется панельная модель с фиксированными эффектами. Результаты показывают значительные пространственные различия в промышленном росте: городские и промышленные центры демонстрируют более стабильное развитие, тогда как периферийные районы характеризуются большей нестабильностью. Пандемия COVID-19 усилила существующие региональные различия, а восстановление после кризиса проходило неравномерно. В целом результаты указывают на отсутствие полной конвергенции и наличие клубной конвергенции среди ключевых промышленных районов. Сделанные выводы подчеркивают необходимость дифференцированной региональной промышленной политики.

Ключевые слова: Промышленный рост, пространственная динамика, региональное развитие, Кашкадарьинская область, Узбекистан.

■ INTRODUCTION

Industrial development is a key driver of regional economic growth and structural change, especially in developing and transition economies. Over the past decades, Uzbekistan has followed an active industrialization strategy aimed at modernizing production, expanding manufacturing capacity, and supporting more balanced regional development. Despite these efforts, industrial growth has developed unevenly across regions and districts, resulting in persistent spatial differences in economic performance.

Understanding these differences requires analysis beyond regional averages. Aggregate indicators often hide important local variations caused by unequal access to infrastructure, differences in investment concentration, institutional capacity, and historical development paths. At the district level, such factors can strongly shape industrial outcomes, leading to diverse growth patterns even within the same region. For this reason, district-level analysis is essential for a more accurate assessment of regional industrial dynamics.

The Kashkadarya region offers a suitable case for examining these issues. As one of Uzbekistan's economically important regions, Kashkadarya includes urban industrial centers as well as resource-based and predominantly rural districts. In recent years, the region has received significant public investment and hosted major industrial projects, particularly in energy, processing, and manufacturing. At the same time, it has been affected by external shocks, most notably the COVID-19 pandemic, which disrupted production activities and exposed differences in local economic resilience.

This study analyzes industrial production growth across districts of the Kashkadarya region during the period 2010–2025. The main objectives are to assess spatial differences in industrial growth, examine growth stability and volatility across districts, and evaluate how districts responded to economic shocks. To address these objectives, the study applies a panel data framework with district and time fixed effects. This approach allows the analysis to separate persistent district-specific characteristics from common time-related influences affecting all districts simultaneously.

The contribution of this paper is threefold. First, it provides one of the few district-level empirical studies of industrial growth in Uzbekistan using a long series of official statistical data. Second, it focuses explicitly on spatial heterogeneity and growth volatility, rather than relying only on average growth rates. Third, by linking empirical results to a fixed-effects modeling framework,

the study offers policy-relevant insights for designing region-specific industrial strategies aimed at promoting stable and balanced regional development.

■ LITERATURE REVIEW

Industrial development in Uzbekistan has largely been shaped by state-led industrial policy and targeted development programs. Burkanov [1] provides a comprehensive policy-oriented assessment of Uzbekistan's industrial policy, emphasizing the role of government intervention in the formation and modernization of industrial systems. The study highlights how state target programs, sectoral prioritization, and public investment have been used to stimulate industrial expansion and re-industrialization. At the same time, Burkanov [1] notes that uneven implementation and concentration of industrial projects may lead to differentiated regional outcomes, suggesting the importance of sub-regional analysis.

From a comparative perspective, Bae and Mah [2] examine the role of industrial policy in Uzbekistan's economic development within the broader context of post-communist transition economies. Their empirical analysis shows that industrial policy has contributed positively to structural change and economic growth, particularly through manufacturing development and state-supported industrial upgrading. However, the authors also emphasize that the effectiveness of industrial policy depends on institutional quality and regional absorptive capacity, implying that industrial growth effects may vary across regions and districts.

Yormirzoev [3] provides a recent empirical assessment of economic growth and productivity performance in Central Asia using growth accounting techniques. His analysis shows that Uzbekistan's economic growth has been driven primarily by capital accumulation, while total factor productivity growth has been uneven across countries and over time. The study highlights significant structural differences within and across economies, implying that productivity gains are not uniformly distributed. This finding is particularly relevant for district-level analysis, as it suggests that variations in industrial productivity and growth performance across regions may reflect differences in structural composition, investment efficiency, and absorptive capacity.

From a policy perspective, Popov [4] offers a critical evaluation of Uzbekistan's industrial policy and its broader implications for economic development in transition economies. He argues that Uzbekistan's experience challenges conventional views on industrial policy by demonstrating that selective state intervention

can support industrialization under certain institutional conditions. At the same time, Popov [4] emphasizes the trade-offs associated with such policies, including the risk of resource misallocation and uneven regional development. This perspective is directly relevant for interpreting core–periphery industrial patterns within regions such as Kashkadarya, where state-led industrial projects may generate rapid growth in selected districts while leaving others behind.

Pomfret [5] analyzes the early development path of Uzbekistan by examining the institutional and policy foundations of the so-called “Uzbek model” of economic development. His study highlights the role of gradual reforms, state control over strategic sectors, and selective industrial policies in shaping economic growth during the transition period. Importantly, Pomfret [5] points out that this development model produced uneven regional outcomes, as industrial activity and investment tended to concentrate in specific locations with favorable infrastructure and administrative importance. This historical and institutional perspective provides an essential background for understanding contemporary regional disparities in industrial production growth, including the persistence of core–periphery patterns within regions such as Kashkadarya.

Recent regional development literature increasingly emphasizes the persistence of spatial inequalities and the long-term consequences of uneven growth. Rodríguez-Pose [7] argues that economic development is often spatially concentrated, leaving certain regions structurally disadvantaged despite overall national growth. His analysis highlights how differences in investment allocation, infrastructure, and institutional capacity reinforce long-lasting regional disparities. This

perspective is particularly relevant for analyzing industrial production growth at the district level, as it suggests that spatial inequalities are not temporary deviations but the result of cumulative and path-dependent processes. In the context of Kashkadarya, this framework supports the interpretation that persistent differences in industrial growth across districts reflect deeper structural factors rather than short-term fluctuations.

This study contributes to the literature by providing district-level empirical evidence on the spatial dynamics of industrial production growth in the Kashkadarya region. By analyzing growth patterns, volatility, and resilience over the period 2010–2025, the paper addresses an important gap in the understanding of sub-regional industrial development in Uzbekistan.

■ RESEARCH METHODOLOGY

The data used in this study were obtained from the official statistics of the State Statistics Committee of the Republic of Uzbekistan. Specifically, the analysis relies on district-level data on industrial production growth rates for the Kashkadarya region. The data cover the period 2010–2024 and are reported as ear-on-year percentage changes in industrial output. The dataset includes both urban centers (Qarshi city and Shahrisabz city) and administrative districts of the Kashkadarya region. As some district-year observations are missing in the official statistics, the dataset forms an unbalanced panel, which is suitable for fixed effects estimation.

To analyze spatial differences in industrial production growth across districts, this study applies a fixed effects panel data model.

$$IPG_{i,t} = \alpha + \mu_i + \lambda_t + \varepsilon_{i,t} \quad (1)$$

The fixed effects model estimated in this study can be written explicitly as:

$$IPG_{i,t} = \alpha + \beta_1 D_{Qarshi\ city,i} + \beta_2 D_{Shahrisabz\ city,i} + \beta_3 D_{Guzor,i} + \beta_4 D_{Dehqonobod,i} + \beta_5 D_{Qamashi,i} + \beta_6 D_{Qarshi\ district,i} + \beta_7 D_{Koson,i} + \beta_8 D_{Kitob,i} + \beta_9 D_{Mirishkor,i} + \beta_{10} D_{Muborak,i} + \beta_{11} D_{Nishon,i} + \beta_{12} D_{Kasbi,i} + \beta_{13} D_{Kukdala,i} + \beta_{14} D_{Chiroqchi,i} + \beta_{15} D_{Shahrisabz\ district,i} + \beta_{16} D_{Yakkabog,i} + \gamma_{2011} Y_{2011,t} + \gamma_{2012} Y_{2012,t} + \dots + \gamma_{2024} Y_{2024,t} + \varepsilon_{i,t} \quad (2)$$

where $IPG_{i,t}$ represents the industrial production growth rate of district i in ear t . The term α is a constant, μ_i captures district-specific effects, and λ_t represents ear-specific effects. The error term $\varepsilon_{i,t}$ captures random shocks.

In practical terms, this model allows us to separate persistent district characteristics from common time-related influences. The district fixed effects μ_i reflect structural features that do not change over time, such as industrial structure, infrastructure availability, geographic location, and historical development patterns. The ear fixed effects λ_t capture economy-wide factors that affect all districts simultaneously, including national industrial policies and macroeconomic shocks.

■ ANALYSIS RESULTS

The district-level data reveal substantial spatial heterogeneity in industrial production growth across the Kashkadarya region during 2010–2025. While the regional aggregate exhibits relatively stable growth rates above 100 percent in most ears, district-level dynamics differ markedly.

Urban centers, particularly Qarshi city, display consistently moderate and stable industrial growth with limited volatility. Several districts such as Muborak, Kitob, and Qamashi also demonstrate relatively stable growth trajectories, suggesting the presence of a regional industrial core. In contrast, districts including Dehqonobod, Kasbi, and Koson exhibit highly volatile growth patterns, characterized by sharp spikes and subsequent contractions. These extreme values are indicative of low-base effects and project-based industrial activity, rather than sustained industrial expansion.

These findings suggest that aggregate regional indicators mask significant intra-regional disparities in industrial performance.

The fixed effects panel estimation confirms the presence of persistent district-specific effects in industrial production growth. The joint significance of district fixed effects indicates that time-invariant spatial characteristics – such as industrial structure, infrastructure endowment, and geographic location –

play a statistically meaningful role in explaining growth differences across districts.

Year fixed effects are also significant, reflecting the influence of common macroeconomic conditions and national policy changes. Notably, negative ear effects are observed during 2019–2020, corresponding to the COVID-19 shock, while positive effects emerge in the subsequent recovery period.

The dominance of district fixed effects over time effects suggests that structural spatial factors are more important than temporary macroeconomic fluctuations in shaping long-term industrial growth patterns within the region.

An analysis of growth volatility further highlights spatial inequality in industrial development. Districts identified as part of the industrial core exhibit lower growth volatility, indicating more stable and sustainable industrial activity. Peripheral districts, by contrast, show significantly higher volatility, reflecting vulnerability to external shocks and dependence on a limited number of industrial projects.

High volatility districts often record rapid growth in specific ears followed by sharp declines, reinforcing the interpretation that industrial expansion in these areas lacks diversification and resilience. This pattern aligns with findings in the regional development literature that associate volatility with structural fragility rather than long-term growth potential.

Sub-period analysis reveals that the COVID-19 shock amplified existing spatial disparities. During 2019–2020, industrial growth declined across most districts; however, the magnitude of contraction varied considerably. Urban centers and industrial hubs experienced milder downturns and recovered more rapidly in the post-crisis period.

In contrast, several peripheral districts recorded prolonged stagnation or uneven recovery after 2020. Although regional growth rebounded strongly after 2021, convergence across districts did not materialize. Instead, recovery patterns suggest club convergence, where core districts return to stable growth trajectories while peripheral districts lag behind.

Table 1.

Growth rates of industrial production by district (in percentage) [9]

	2020-y	2021-y	2022- y	2023-y	2024-y
Kashkadarya region	102.9	115.4	110.1	107.4	107.5
Karshi city	103.3	105.5	108.6	105.8	106
Shahrisabz city	101.5	100.4	105.7	103.4	108.7
Guzor	108.5	110.5	98	103.5	108.1
Dehqonobod	102.7	102.8	127.1	73.8	105.4
Qamashi	113.9	100.2	113.3	106.6	109.3
Karshi	82.5	131.3	121.1	101.9	108.1
Koson	102.3	100.2	103.7	106.4	109.7
Kitob	100.4	98.8	117.6	119.2	102.4
Mirishkor	100.8	119.5	132.5	106.5	110.3
Muborak	89	88.6	97.3	104.4	110.4
Nishon	101.6	146.2	104.7	113.8	106
Kasbi	118.8	164.1	112.1	102.3	107.2
Kukdala	-	-	100.3	108.4	109.1
Chiroqchi	109.1	104.1	103.4	104.5	105.6
Shahrisabz	103.6	101.8	104	102.5	102.1
Yakkabog	109.9	102.5	100.1	108.4	98.2

January–March 2025 data suggest that industrial production growth in the Kashkadarya region remains positive in the short term. Most districts recorded growth rates above 100 percent, indicating a continuation of the post-crisis recovery trend observed in previous ears. Urban centers maintained relatively stable performance, while several peripheral districts showed more moderate or uneven growth, consistent with the persistent spatial heterogeneity identified in the main analysis. Given the preliminary and partial nature of these data, the results

should be interpreted with caution and viewed as indicative rather than conclusive for full-year industrial dynamics.

Overall, the empirical results provide strong evidence against full convergence in industrial production growth within the Kashkadarya region. Instead, industrial development follows a core–periphery structure, characterized by stable growth in urban and industrialized districts and volatile, project-driven growth in peripheral areas.

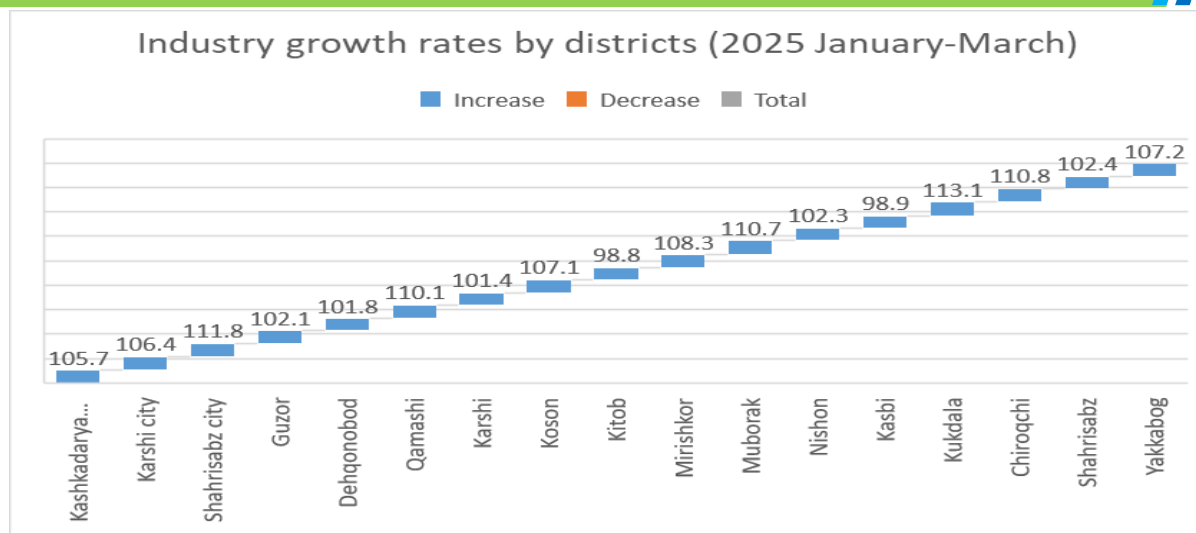


Figure 1. Industry growth rates by districts (2025 January – March) [10]

These findings are consistent with spatial economic theory and empirical studies in transition economies, which emphasize the role of agglomeration effects, infrastructure concentration, and path dependency. The results also highlight the limitations of uniform regional industrial policies, as identical interventions may produce uneven outcomes across districts with different structural characteristics.

CONCLUSION

This study analyzed the spatial dynamics of industrial production growth across districts of the Kashkadarya region of Uzbekistan over the period 2010–2025 using district-level panel data. The empirical results reveal strong spatial differences in industrial growth within the region. Although regional aggregate indicators point to continuous industrial expansion, district-level evidence shows a persistent core–periphery structure. Urban and industrialized districts demonstrate relatively stable growth, while peripheral districts experience more volatile and project-based industrial development.

The fixed effects results confirm that time-invariant district characteristics play a key role in shaping industrial growth outcomes. Structural spatial factors such as industrial structure, infrastructure availability, and geographic location are found to be more influential than short-term macroeconomic fluctuations. The analysis of growth volatility further indicates that rapid growth observed in some peripheral districts reflects instability rather than sustainable industrial progress. In addition, the COVID-19 shock intensified existing spatial disparities, and post-crisis recovery patterns suggest club convergence rather than full convergence across districts.

These findings have important policy implications. First, regional industrial policy should move away from uniform, region-wide approaches and adopt spatially differentiated strategies. Peripheral districts require targeted support focused on industrial diversification, development of small and medium-sized enterprises, and improvements in basic infrastructure to reduce volatility and strengthen resilience. Second, industrial core districts should prioritize productivity growth, technological upgrading, and deeper integration

into value chains to maintain stable growth and create spillover effects for neighboring areas. Third, regular monitoring of district-level industrial indicators is essential for identifying structural weaknesses at an early stage and for designing evidence-based regional development policies.

Muallif (lar) haqida / Сведения об авторе / Author details

Valiyev Oybek Shuxrat-o'g'li Qarshi Davlat Texnika Universiteti katta o'qituvchisi / Валиев Ойбек Шухрат-угли Старший преподаватель Каршинского государственного технического университета / Valiyev Oybek Shukhrat-ugli, senior lecturer at Karshi State Technical University
e-mail: oybekjon.valiev@gmail.com
<https://orcid.org/0009-0005-1573-938X>

REFERENCES

- [1] Burkhanov, A. U. (2015). *Industrial policy and development of industrial systems in Uzbekistan*. Tashkent: [Publisher/Institution].
- [2] Bae, E. Y., & Mah, J. S. (2019). The role of industrial policy in the economic development of Uzbekistan. *Post-Communist Economies*, 31(2), 240–257.
<https://doi.org/10.1080/14631377.2018.1537734>
- [3] Yormirzoev, M. (2021). Economic growth and productivity performance in Central Asia. *Comparative Economic Studies*, 63(3), 393–418.
<https://doi.org/10.1057/s41294-021-00146-9>
- [4] Popov, V. (2015). *What can Uzbekistan tell us about industrial policy that we did not know?* UN DESA Working Paper No. 139. United Nations Department of Economic and Social Affairs.
<https://www.un.org/development/desa/dpad/publication/working-paper-no-139/>



5. [5] Pomfret, R. (2000). The Uzbek model of economic development, 1991–1999. *Economics of Transition*, 8(3), 733–748. <https://doi.org/10.1111/1468-0351.00060>
6. [6] Krugman, P. (1991). Increasing returns and economic geography. *Journal of Political Economy*, 99(3), 483–499. <https://doi.org/10.1086/261763>
7. [7] Rodríguez-Pose, A. (2020). The rise of populism and the revenge of the places that don't matter. *Journal of Economic Geography*, 18(1), 189–209. <https://doi.org/10.1093/jeg/lbx024>
8. [8] Valiev, O., & Meylikov, F. (2024). Investment dynamics and regional disparities: Evidence from Kashkadarya region of Uzbekistan (2010–2024). *Innovation Science and Technology*, 1(11)
9. [9] State Statistics Committee of the Republic of Uzbekistan. (2024). *Industrial production statistics of Kashkadarya region*. Official statistical database. <https://www.qashstat.uz/uz/rasmiy-statistika/industry-2>
10. [10] State Statistics Committee of the Republic of Uzbekistan. (2024). *Industrial production statistics of Kashkadarya region*. Official statistical database. <https://www.qashstat.uz/uz/rasmiy-statistika/industry-2>



INNOVATION
IQTISODIYOT
ILMIY-AMALIY ELEKTRON
JURNAL

ISSN: 3030-315X



t.me/kstu_uz



Qarshi shahri,
Mustaqillik ko'chasi 225



www.kstu.uz
www.ojs.kstu.uz