

TOWARDS UNDERSTANDING REGIONAL DEVELOPMENT DYNAMICS IN THE KYRGYZ REPUBLIC

Synthesis Note



Why is it important? National trends may conceal important regional disparities.

Over the last two decades, the Kyrgyz Republic enjoyed significant growth, which has largely transferred into poverty reduction. The Kyrgyz economy grew significantly prior to the COVID-19 pandemic: real GDP growth averaged above 4% between 2000 and 2019. This period of sustained growth yielded significant welfare benefits and poverty reduction: The international poverty rate fell from 50% in 2005 to 12% in 2019.¹ Poverty reduction was driven largely by movement from low-productivity agriculture to manufacturing and services; from rural areas to the two largest Kyrgyz cities (Bishkek and Osh); and from international migration, with remittances (sent mainly from Russia) being an important contributor to the consumption growth (World Bank, 2022). Because of the COVID-19 pandemic, the Kyrgyz economy experienced a contraction of 8.4% in 2020, but it rebounded, growing at 3.6% in 2021, 9.0% in 2022, and 6.2% in 2023. These dynamics have been reflected in the changing patterns of consumption growth and poverty reduction: the international poverty rate increased to 18.7% in 2020, dropped to 12.5% in 2021, and then marginally increased again to 13.0% in 2022.

1 International poverty rate is calculated using \$3.65 2017 PPP adjusted per day poverty line, and consumption aggregate based on Kyrgyz Integrated Household Survey.





Poverty reduction at the national level over the last two decades may conceal important regional heterogeneities. The Kyrgyz Republic is divided into seven oblasts and two independent cities (Bishkek and Osh). The seven oblasts are further subdivided into 40 districts (rayons) and 12 regional cities.² Did all oblasts and rayons benefit equally from the recent periods of economic growth? Were all equally affected by the contraction during the COVID-19 pandemic? Do the same factors drive conversion of economic growth into poverty reduction? The answer to all these questions is likely to be no.

A confluence of geographic and historical factors has made the Kyrgyz Republic a country with high regional diversity. It is landlocked, and 90% percent of it is mountainous. Between the mountain ranges, there are several valleys and basins, such as the Fergana Valley in the south and the Chuy Valley in the north. The climate varies regionally, ranging from hot and dry valleys to temperate mountains and cold high-mountain regions. The country is also ethnically diverse, with people of Kyrgyz, Uzbek, Russian, and other ethnicities forming its 7 million population. Geographic and historical factors, such as proximity to the border, altitude, and development of specific industries during the Soviet era, have shaped population distribution and labor markets. All these factors are likely to affect the opportunities available to people living in different parts of the country and how these opportunities translate into welfare outcomes: consumption, income, poverty, and inequality at the regional level.

Spatial inequalities affect the country's long-term growth and prosperity. First, spatial inequalities are likely to limit the productive capacity of residents in the lagging areas, leading to suboptimal utilization of the country's human resources. Second, distances may impede access to markets and basic services, perpetuating both monetary and nonmonetary poverty. Third, spatial inequalities are likely to lead to social tensions and conflict, causing human misery and undermining the country's growth potential. Understanding the extent of spatial inequalities, what drives their emergence, and what options there are for reducing them is important for ensuring sustainable growth, poverty alleviation, and shared prosperity.

² For clarity of presentation, this note refers to 40 districts and 14 cities (12 regional plus Bishkek and Osh) collectively as rayons.

This note is a first step in understanding regional development dynamics in the Kyrgyz Republic. It provides estimates of consumption in two points in time (2009 and 2022) at the rayon level based on small area estimation techniques (described in greater detail in the Box below). Based on the analysis of rayon-level consumption, the note outlines three trends in the regional development that require policy attention: the increasing growth of inequality within rayons against the backdrop of average consumption growth and convergence; the promising role that agriculture plays in consumption growth in some rayons; and the declining returns to agglomeration and stalling development in the cities. The note discusses which factors may be driving these trends and identifies additional analysis needed to verify the proposed hypotheses. It concludes by suggesting several policy directions aimed at fostering inclusive regional development.³

Small area estimation (SAE): Overcoming the challenge of measurement at the low levels of geographical disaggregation.

The lack of data at the low level of geographical disaggregation (e.g., rayons) frequently precludes analysis of regional disparities. In most countries, the surveys that national statistical organizations use for poverty measurement are representative at only the first administrative level, which in the Kyrgyz Republic would be oblasts—and indeed, the Kyrgyz Integrated Household Survey (KIHS), collected by the National Statistical Committee (NSC) as the main source of data for estimating levels of consumption, income, poverty, and inequality, is representative at the oblast and urban/rural levels.

To overcome the problem of the lack of data representative at lower levels of disaggregation, such as rayons, small area estimation (SAE) can be used. SAE is a statistical technique that enables generation of statistics for areas beyond a survey’s level of representativeness with much better quality than that obtained directly from that survey. For estimation of rayon-level consumption and poverty, the World Bank team relied on the Fay-Herriot (FH) SAE method, which uses KIHS rayon-level estimates as a basis and improves them through using auxiliary data. Auxiliary data include census aggregates and administrative data, as well as other variables correlated with poverty (e.g., nightlight data, precipitation data) that are frequently available from public sources. The resulting estimate is a weighted average of the estimate from the KIHS survey and predictions based on auxiliary variables.

The main metrics and the period for regional and time comparisons are determined by data availability and limitations. Census data provide the actual measure of specific rayon-level variables, rather than estimates, as the census aims to include every resident. Thus, census data are critical for production of SAE. The two most recent censuses in the Kyrgyz Republic were carried out in 2009 and 2022, so SAE are produced for these years, and most of the comparisons in the analysis contrast these two years. However, the national poverty line in the Kyrgyz Republic changed in 2011, 2021, and 2022, because Kyrgyz law requires recalculation of the poverty line when annual inflation exceeds 10%. Although this requirement ensures better reflection of actual consumption of the relevant population group in the poverty analysis, it precludes comparability of poverty levels over time. To ensure comparability, this note relies mainly on average consumption at the rayon level, which underlies poverty measures but is calculated consistently over time.

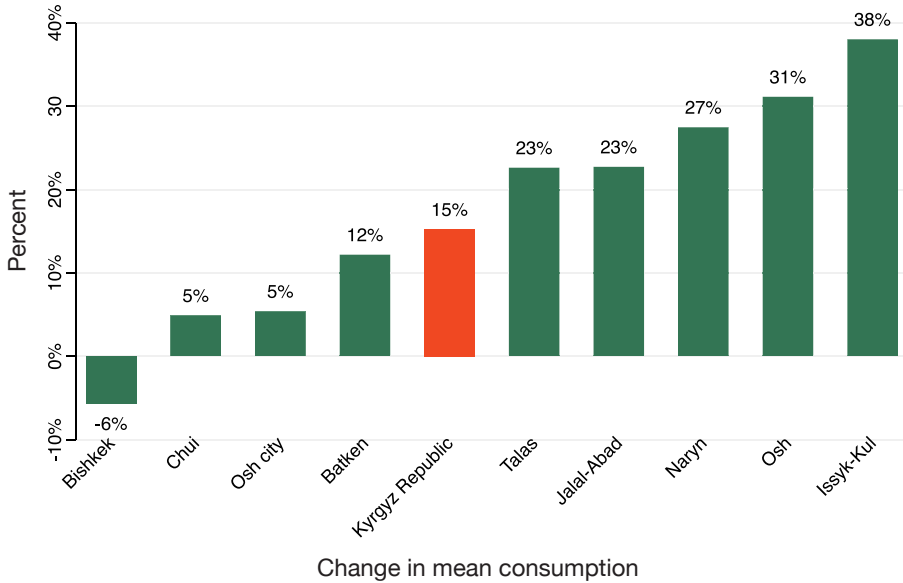
³ Two complementary pieces provide additional technical details to this note: a supplementary technical note that describes how the FH SAE was applied to create rayon-level consumption and poverty estimates in the Kyrgyz Republic, as well as tests of assumptions underlying its validity, and a report that provides details of the analysis summarized in this note.

Average consumption growth and convergence coexist with polarization within oblasts and increases in inequality within rayons.

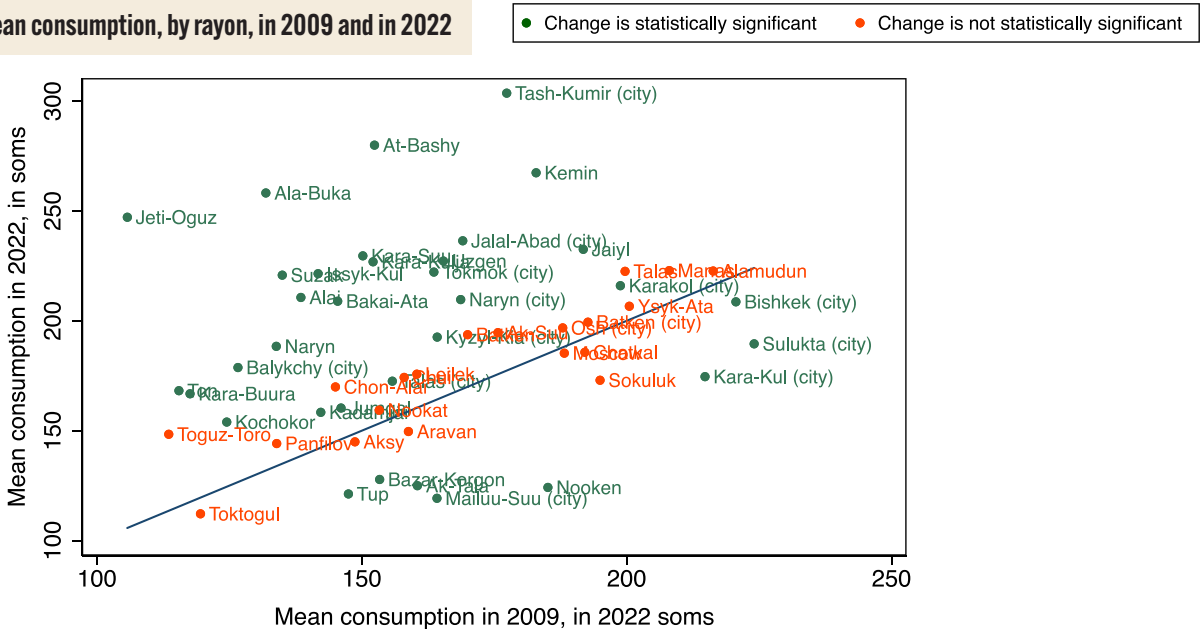
Although consumption increased nationally, oblasts and especially rayons experienced very diverse changes in mean consumption, with some areas leaping ahead and others falling behind (Figure 1, Panel A). Oblast-level consumption growth rates ranged from -6% in Bishkek to 38% in Issyk-Kul. Eight rayons experienced statistically significant decreases in consumption: Bazar-Korgon, Kara-Kul city, Mailuu-Suu city, and Nooken (in Jalal-Abad oblast); Sulukta in Batken; Ak-Tala in Naryn; Tup in Issyk-Kul; and Bishkek. In 20 rayons, consumption levels in 2009 and 2022 were not different in a statistically significant way. Twenty-six rayons experienced statistically significant increases in consumption, averaging 44%. In eight of these rayons, consumption grew by more than 50%: Jeti-Oguz and Issyk-Kul (in the Issyk-Kul oblast); Ala-Buka, Tash-Kumir, and Suzak (in Jalal-Abad); Alai and Kara-Sulu (in Osh); and At-Bashy (in Naryn).

Figure 1. National, oblast and rayon level changes in consumption between 2009 and 2022

Panel A: Changes in consumption by oblast and at the national level between 2009 and 2022

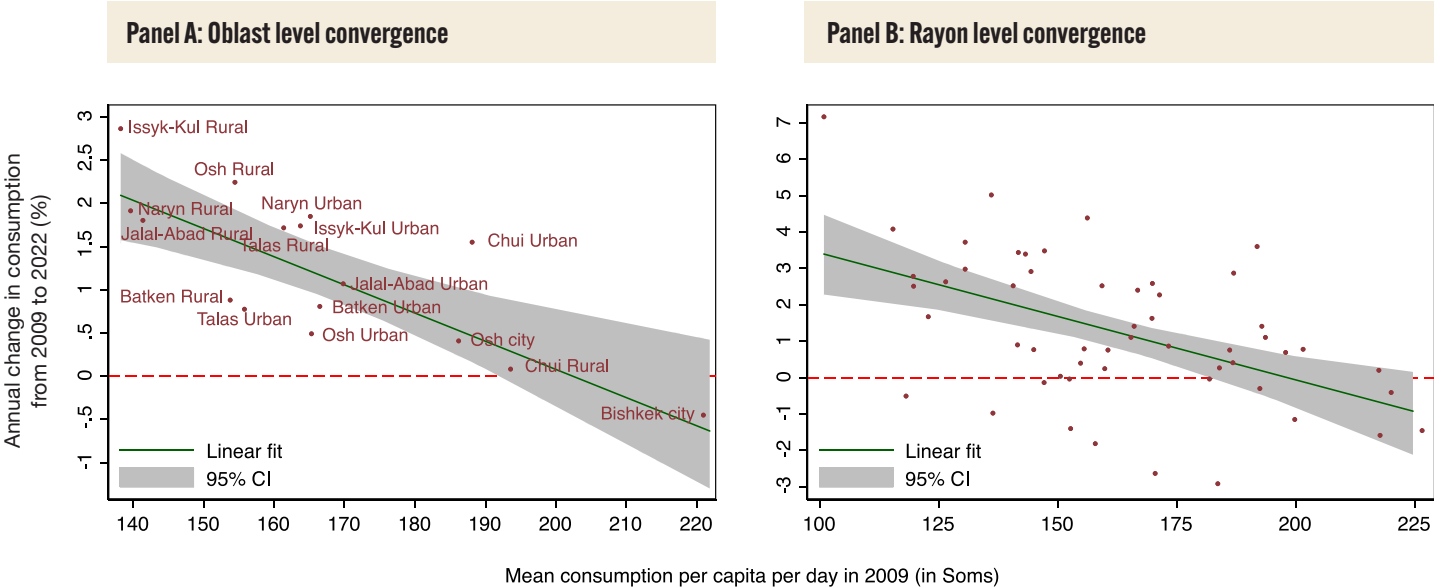


Panel B: Mean consumption, by rayon, in 2009 and in 2022



Regional convergence is accompanied by two concerning trends: polarization within oblasts and increasing inequality within rayons. Oblasts and rayons with lower levels of consumption in 2009 experienced higher consumption growth between 2009 and 2022 (Figure 2). Such catching up by lagging oblasts and rayons suggests possible gradual reduction in inter-regional inequalities. However, convergence of oblasts and rayons is occurring at the same time as polarization of rayons within oblasts. Figure 3 (panel A) shows that the gap between the poorest and wealthiest rayons within most oblasts increased from 2009 to 2022 in five out of seven oblasts.⁴ In Jalal-Abad, Chui, and Osh, the gap nearly doubled; in Naryn, it tripled. As lagging oblasts are catching up, the distance between the top and the weakest rayons within oblasts is widening. Another concerning trend is a reversal of steady inequality reduction from 2009 to 2016. Even though the 2022 Gini coefficient is still lower than 2009’s, changes in inequality over the same period followed a V-shaped trajectory, and the Gini coefficient has been climbing up from 2016. Several decompositions of changes in inequality suggest that—consistent with convergence trends—increases in within-rayon inequality are a primary driver of overall increases in inequality.⁵

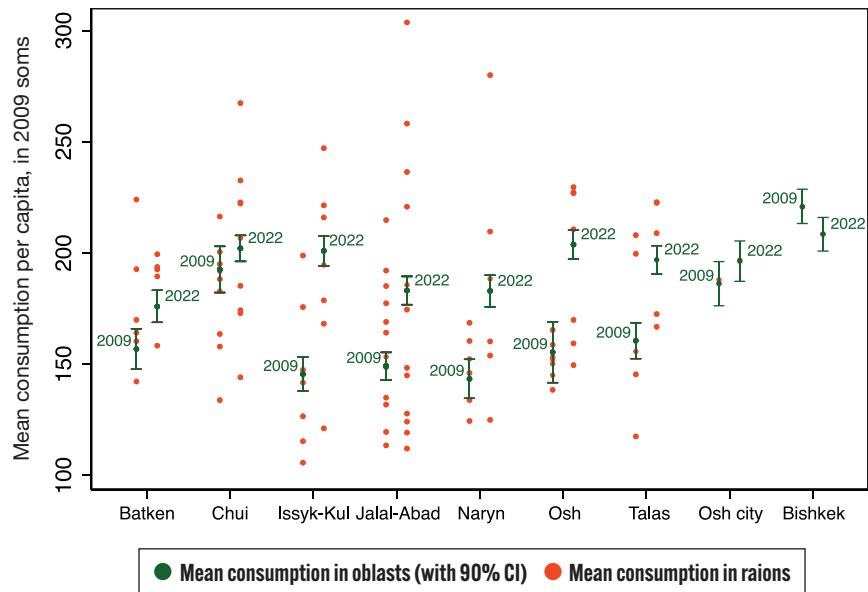
Figure 2. Oblasts and rayons with lower levels of consumptions experienced faster growth



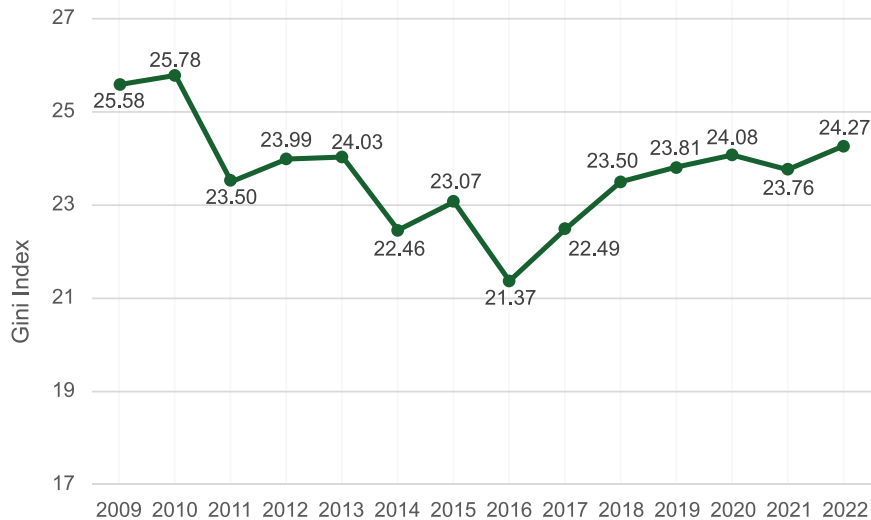
4 The cities of Osh and Bishkek each include only one rayon, so this analysis could not be applied.
 5 For detailed results of the general entropy decomposition and Mookherjee and Shorrocks (1982) decompositions, please see the full report.

Figure 3. Polarization within oblast (Panel A) and changes in inequality from 2009 to 2022 (Panel B)

Panel A: Mean consumption at oblast and rayon levels in 2009 and 2022



Panel B: Evolution of inequality in the Kyrgyz Republic



This pattern of regional changes in consumption points to two potential problems: the falling behind of places and of people within places. The Kyrgyz government has several policies that actively target the vulnerable populations at both the geographic and household levels. The residents of high-altitude rayons benefit from allowance for living and working in high altitude conditions, earlier retirement schemes and higher social assistance payments. Equalizing transfers balance local budget to ensure that local self-government bodies have sufficient funding for implementation of their functions. The Uy-Bulogo Komok (UBK) program targets poor households⁶ with children. Growing inequality within rayons and increasing gaps between the poorest and richest rayons within most oblasts point to the need to review these programs' targeting and level of benefits, as well as to consider supplementary interventions aimed at regionally inclusive development.

6 Defined as households earning less than the guaranteed minimum income.

Knowledge gaps:

Several questions still need to be addressed to generate specific policy recommendations for strengthening the convergence trend while preventing further “falling behind” of districts and households:

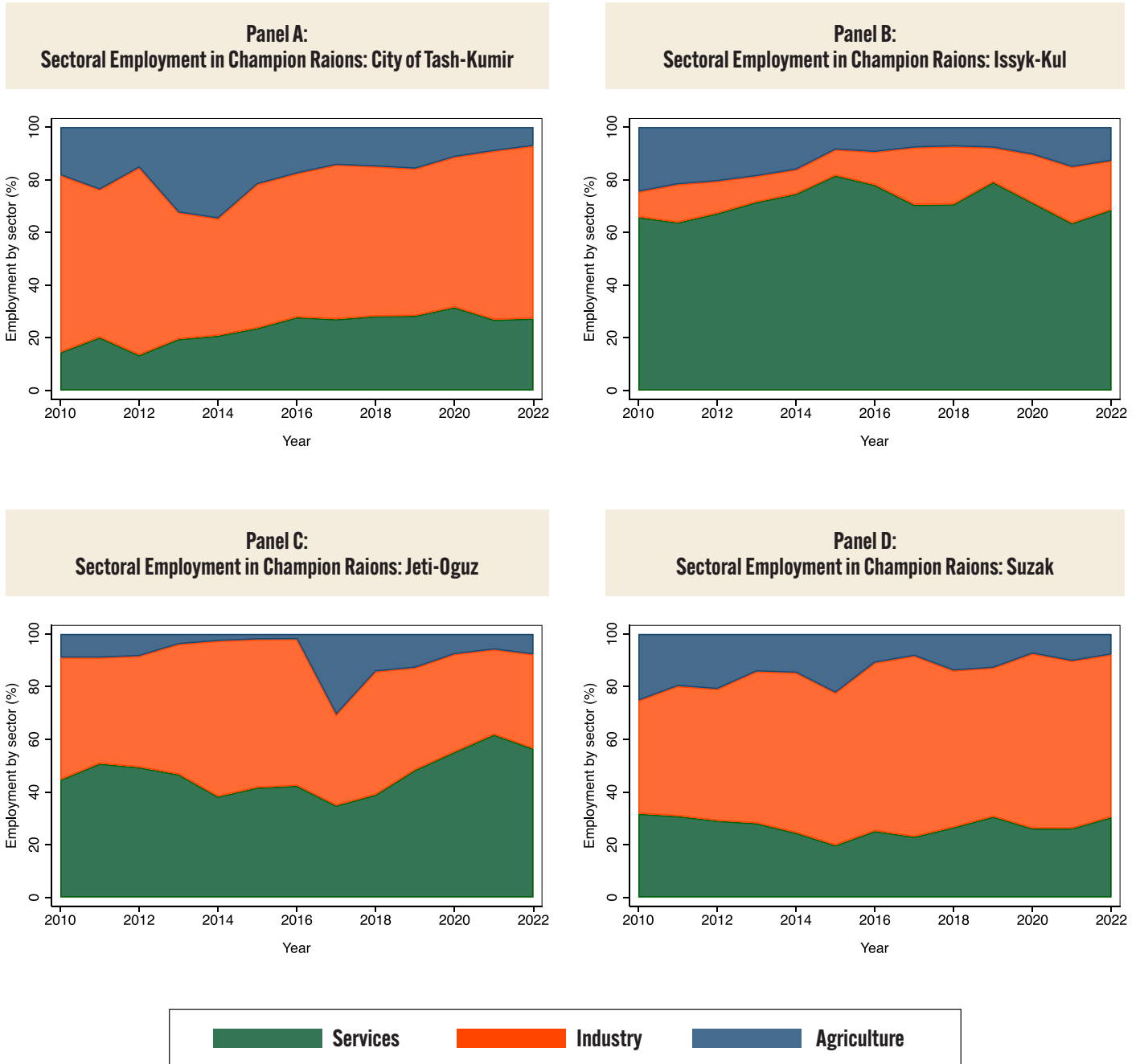
- What are the characteristics of households that experience decreases in consumption in the “falling-behind” districts? Are the same types of households excluded from the consumption growth all over the country, or do their characteristics differ depending on average changes in consumption at the oblast/rayon level?
- How effective has the UBK targeting been (i.e., are all qualifying households taking advantage of the program)? If not, what factors may be preventing enrollment?
- How effective were the equalizing transfers? How will equalizing transfers be affected by the impending administrative reform?

Bespoke drivers of consumption growth: both structural transformation and improvements in agriculture appear to play a role.

The key to success in the eight “champion” districts, where increases in mean consumption between 2009 and 2022 exceeded 50%, appears to be increases in labor productivity. Indeed, labor productivity rose, on average, by 40% in the “champion” districts, more than three times the increase seen in “falling-behind” districts (12%), and almost twice the change seen in all other districts (24%). Notably, “champions” started with very different levels of labor productivity in 2009: Four (At-Bashy, Ala-Buka, Issyk-Kul and Suzak) were among the bottom 15; two (Alai and Jeti-Oguz) were among the top 15; and the remaining two belonged to the middle part of the ranking (Tash-Kumir and Kara-Sulu).

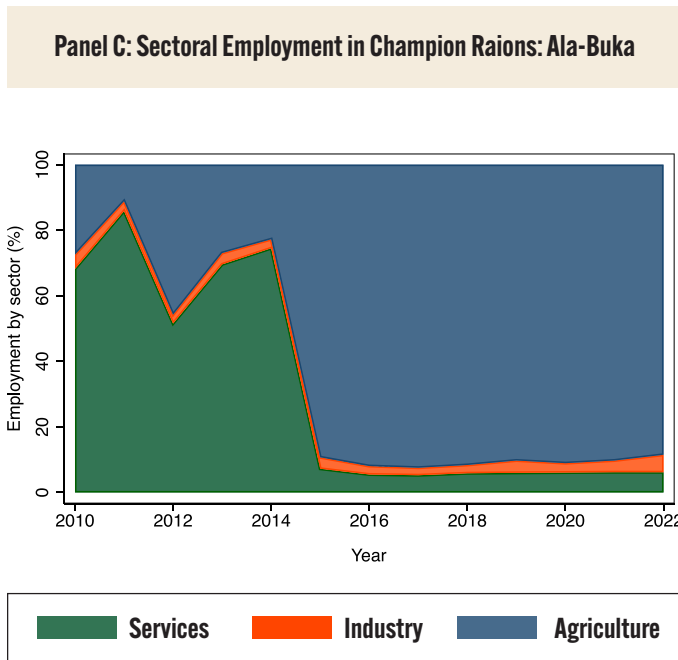
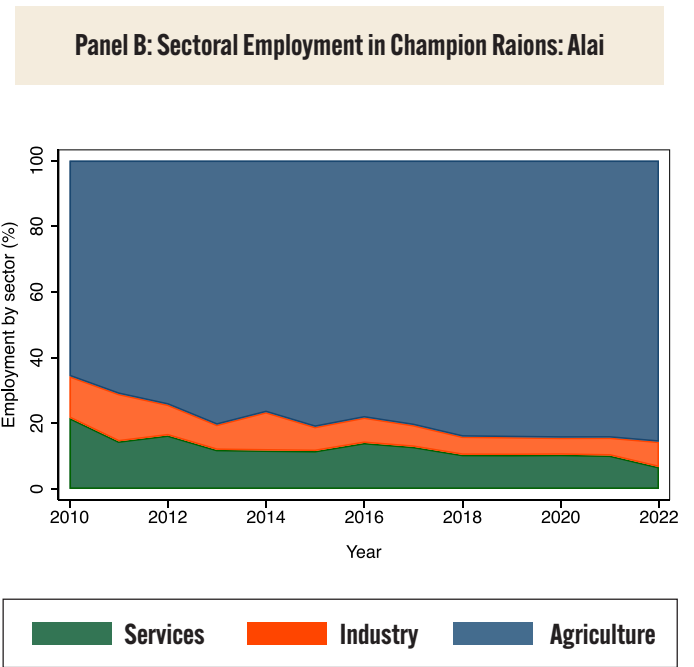
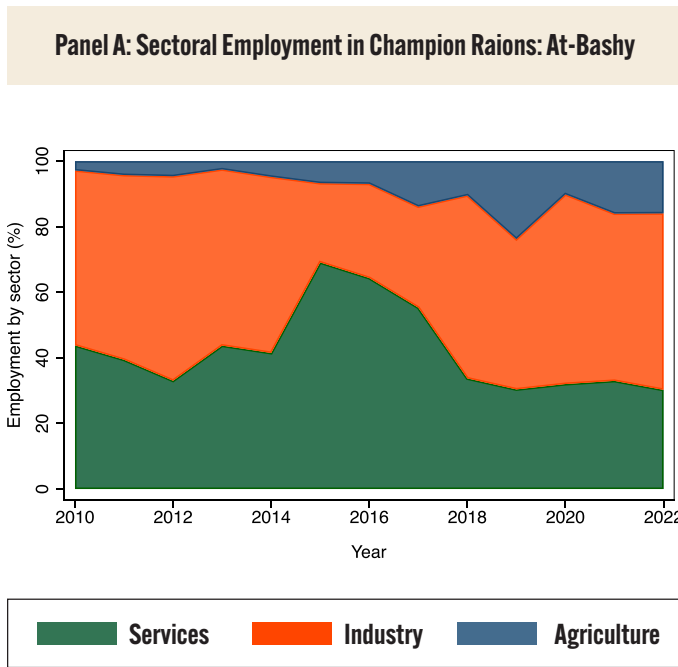
These districts’ paths to higher labor productivity and consumption appear very different. The trajectory of some corroborates prior research that suggests that structural transformation has held the keys to poverty reduction in the Kyrgyz Republic (World Bank, 2022). Other “champion” districts increased consumption while experiencing a “reverse” structural transformation. Figure 4 demonstrates that for several “champion” districts, changes in employment corresponded to the typical pattern of structural transformation: movement of workers from less-productive agriculture to manufacturing and services. In Suzak, Jeti-Oguz, Issyk-Kul, and Tash-Kumir, employment in the agricultural sector contracted, while manufacturing and services expanded, attracting a greater share of employees. For example, in Suzak, percentage of employees in the manufacturing sector increased by 19 percentage points; in Jeti-Oguz, employment share in the service sector expanded by 12 percentage points. At the same time, in other “champion” rayons the opposite movement occurred (Figure 5), with the share of workers in agriculture increasing dramatically, growing by nearly 13 percentage points in At-Bashy, more than 60 percentage points in Ala-Buka, and 20 percentage points in Alai, while employment in manufacturing and services was shrinking.

Figure 4. Structural transformation in the champion rayons



Improvement in agricultural outcomes appears to be a trait shared by all the “champion” rayons, regardless of changes in the share of employment in the agricultural sector. Even the rayons that went through structural transformation, with the share of agricultural employment shrinking, saw increases in agricultural wages and exports. Growth in agricultural exports in the champion districts was 11 times higher than in all other districts. Four “champion” districts (At-Bashy, Ala-Buka, Jeti-Oguz, and Issyk-Kul) did not export agricultural products at all in 2009. The only exception in the pattern of export growth among the champion districts was Suzak, where agricultural exports decreased, though marginally (by less than 1%).

Figure 5. Some champion rayons experienced a “reverse” structural transformation



Capitalizing on global trends in agriculture and local comparative advantage may be a winning development strategy in some rayons. In some parts of the Kyrgyz Republic, labor market opportunities beyond agriculture remain limited. For example, in Alai, a “champion” district, employment in agriculture constitutes more than 60% of overall employment. However, agricultural opportunities may not be fully exploited in the Kyrgyz Republic. Agricultural exports remain limited, with five products accounting for nearly half of the country’s agricultural exports.⁷ Annual investment in agriculture constituted 1.4% of total investment on average between 2009 and 2022. Interventions aimed at generating agricultural surplus, increasing production’s market orientation, and supporting rural enterprise development may strengthen agriculture’s capacity to serve as a pathway out of poverty, especially in rayons where other employment opportunities are limited. However, several knowledge gaps need to be addressed to design such interventions.

7 Beans, cotton lint, cigarettes, dried fruit, and cows’ milk butter (per data from Food and Agriculture Organization Corporate Statistical Database).

Knowledge gaps:

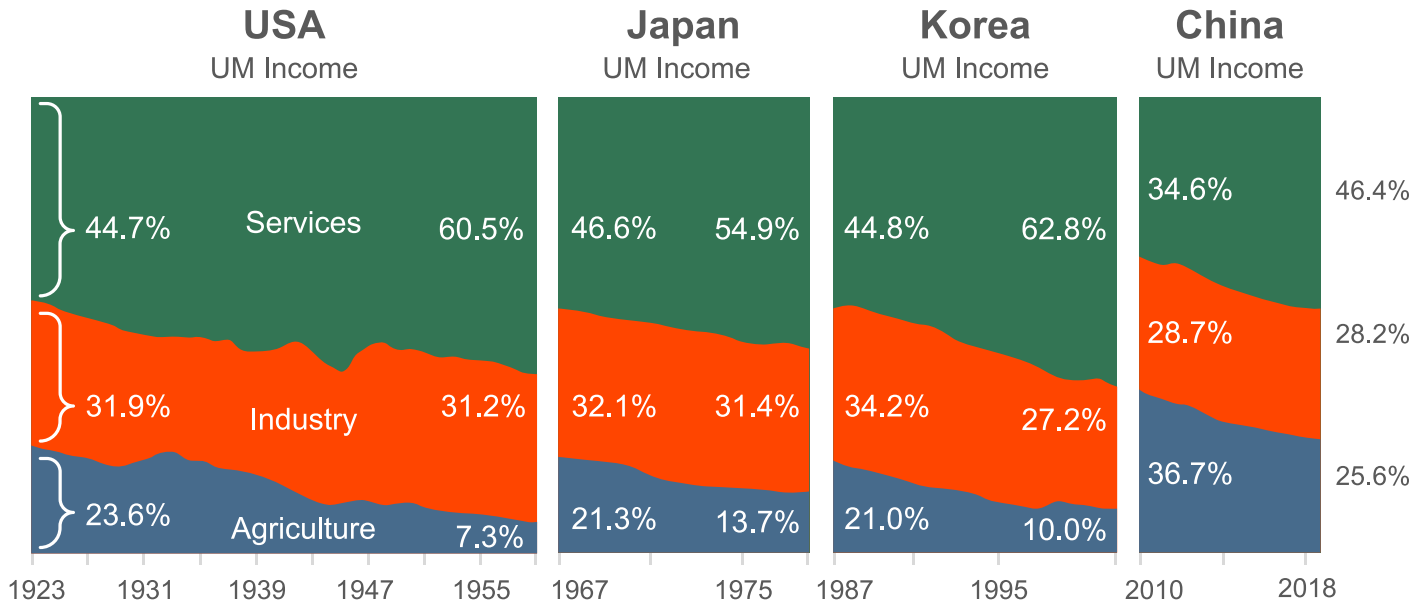
- Was consumption growth in rural districts driven by the temporary effect of increase in global food prices, or were there changes in agricultural production patterns over time (e.g., increased specialization, switches from smallholder to commercial farming)?
- Did development of specialization in some crops contribute to consumption growth in rural areas? If so, which crops are the most promising? Were these crops produced for domestic consumption (and sold in urban areas), or were they exported? If they were exported, what are the prerequisites for doing so successfully?
- Did any specific business arrangements support consumption growth (e.g., was consumption growth supported by smallholder farming, or did larger agricultural producers enter the market in the area)?
- The Kyrgyz Republic government has been implementing its Financing of Agriculture project (a program subsidizing interest rates for agriculture) since 2013. Assessing this program's effectiveness could generate insights into whether expanding or modifying it would provide better results. What other agricultural interventions were implemented during the 2009–2022 period, and what impacts did they have?

Returns to agglomeration are declining and urban areas are starting to fall behind. Reviving “within-country” structural transformation by investing in cities is imperative.

Structural transformation—movement out of agriculture into manufacturing and services, which frequently also implies movement to urban centers—is critical for increasing shared prosperity and eradicating poverty. Structural transformation, characterized by growing urbanization and falling agricultural employment, has been a prerequisite for accelerating development and reducing poverty in countries that have transitioned (U.S., Japan, South Korea) or are transitioning (China) to high-income status (Figure 6). Structural transformation also fueled poverty reduction in the Kyrgyz Republic until 2020 (World Bank, 2022).

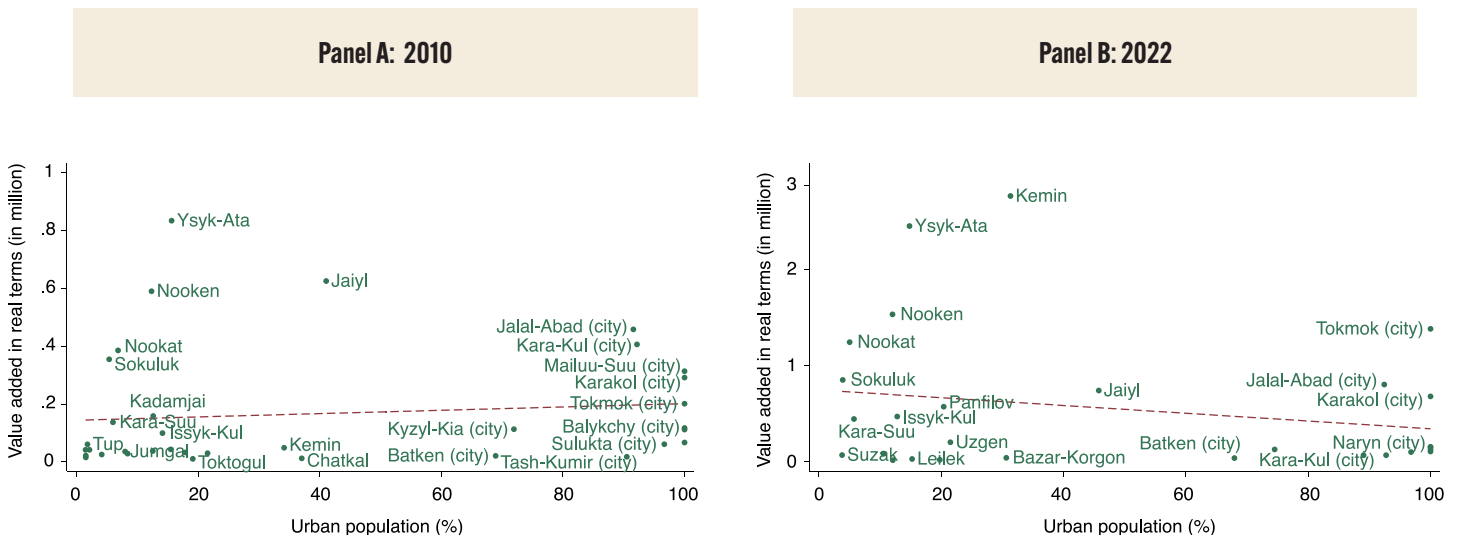
However, returns to agglomeration—movement to urban areas—have been declining in the Kyrgyz Republic. In 2009, there was a strong positive association between the fraction of urban population within a rayon and indicators of the rayon's economic performance, such as value added, sales, and labor productivity. By 2022, however, this relationship had been reversed. Figure 7 demonstrates this relationship for value added: On the left side, the slope coefficient of the regression line, which captures the relationship between urbanization and value added in 2009, is positive. On the right side, which shows the same relationship in 2022, it is negative.

Figure 6. Structural transformation in the upper middle-income countries (at the time of reference)



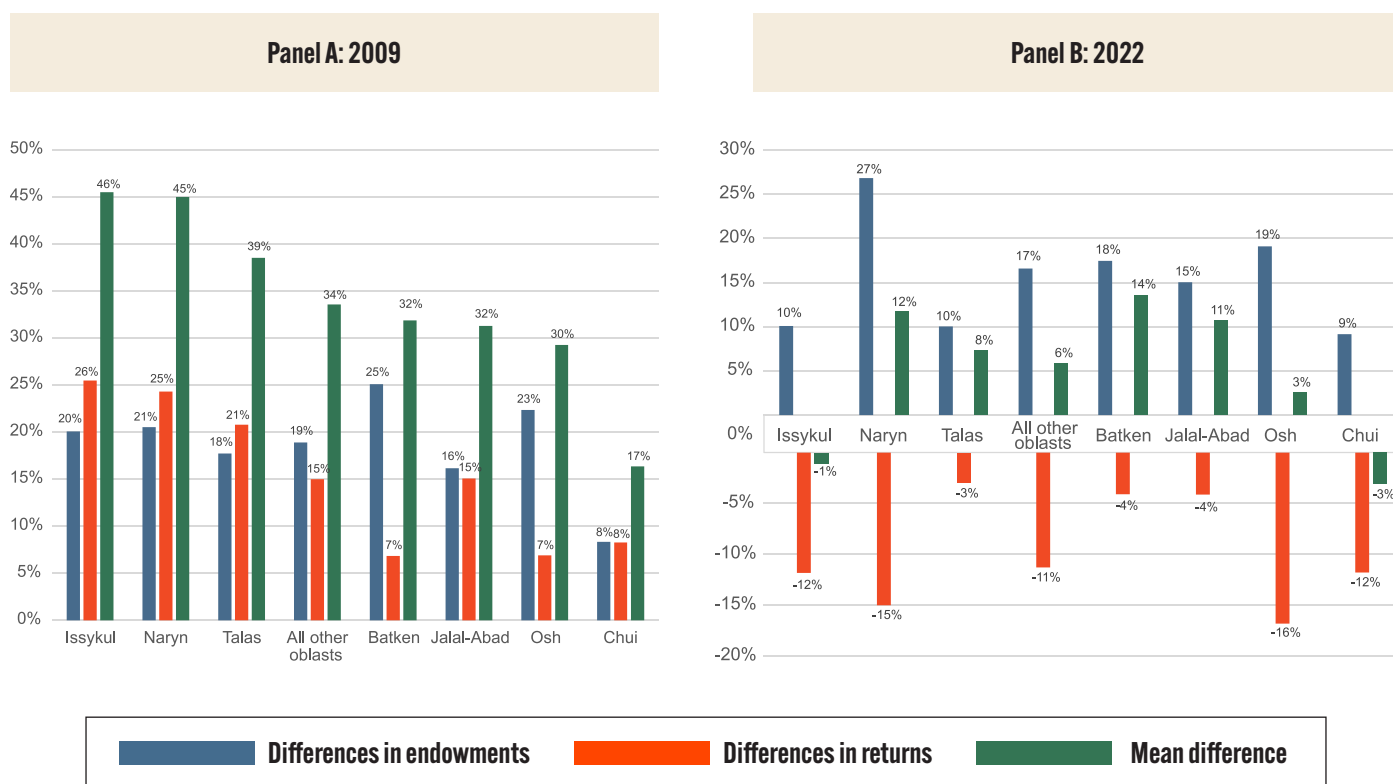
The decline in returns to agglomeration manifests itself in changes in consumption patterns across different regions of the Kyrgyz Republic. Although poverty has historically been a rural phenomenon in the Kyrgyz Republic, the consumption gap between urban and rural areas has been gradually closing. In 2021, the national urban poverty rate reached the same level as the rural poverty rate; in 2022, urban poverty surpassed rural poverty. Eight rayons that experienced significant declines in consumption had increases in the share of urban population; in all other rayons, the share of urban population declined. Consumption gap between the two centers of economic development, the cities of Bishkek and Osh, and all the remaining oblasts declined from 34% in 2009 to 6% in 2022. For some oblasts (Issuk-Kul, Chui, and Osh), the gap is no longer statistically significant.

Figure 7. Changes in the relationship between urbanization and value added



What drives declines in the returns to agglomeration? Key factors include closing the gap in endowments (such as education levels and assets) and increases in returns to endowments outside key urban centers. A Oaxaca-Blinder decomposition allows for separating the gap in some monetary outcome between two groups into a part driven by differences in endowments (e.g., education, assets) and returns to these endowments. A Oaxaca-Blinder decomposition of the consumption gap between the key economic centers (i.e., the cities of Bishkek and Osh) and the rest of the country in 2009 and 2022 sheds light on potential explanations for the declining returns to agglomeration. In 2009, differences in endowments and in returns to endowments contributed nearly equally to the consumption gap (Figure 8, left panel): Households outside Bishkek and Osh-city possessed fewer assets, their members were less educated, and they had more children. Returns to education or other productive assets were also lower outside of these economic centers. However, by 2022 the situation had changed dramatically. First, the gap in endowments, while remaining roughly similar on average, shrank for some oblasts. Most importantly, returns to endowments in 2022 appeared to be higher outside the cities of Bishkek and Osh and contributed to the closing of the consumption gap.⁸

Figure 8. Oaxaca-Blinder decomposition of household consumption gap between economic centers (Bishkek and Osh) and other oblasts



The emergence of a cross-border structural transformation may explain this counterintuitive pattern. The process of structural transformation typically optimizes allocation of talent: People move to areas where returns to their endowments, such as innate ability, education, and acquired skills, are higher. In most countries, these are urban areas with more diverse industries and services, potential for economies of scale, and the benefits of agglomeration. However, in the Kyrgyz Republic this common trend appears to be reversed. Large-scale international migration may be playing the role of structural transformation, with individuals moving to areas where returns to their endowments are higher; however, these areas are not economic centers in the Kyrgyz Republic but cities in Russia and Kazakhstan. As people with high levels of human capital leave rural areas for other countries, the returns to human capital of people who stay increase,

8 For more details on the Oaxaca-Blinder analysis please refer to the full report.

as the Oaxaca-Blinder decompositions have shown. Notably, having a female household head appears to be one of the household characteristics that contribute to closing the consumption gap between urban centers and the rest of the country; female headship in this context likely serves as a proxy for the presence of a male migrant who sends remittances.⁹

Such cross-border structural transformation may contribute to poverty reduction through remittances in the short and medium term, but it is not a sustainable development strategy. Reviving domestic structural transformation while also harnessing the benefits of international migration for development is imperative. However, there are several knowledge gaps that need to be closed so that specific policy recommendations to achieve these objectives can be developed.

Knowledge gaps:

- How can the government of the Kyrgyz Republic make cities more attractive to encourage domestic structural transformation and agglomeration economies?
- Which investments in infrastructure and service delivery are most promising for developing urban centers' potential to attract talent and ensure gains from agglomeration economies?
- What are the most promising directions for increasing the country's economic complexity and generating better jobs?*
- What programs can be introduced to encourage productive use of remittances and reap the greatest benefits of return migration?

* Product space analysis, proposed by Hidalgo et al. (2007), may be a promising direction for answering this question.

** The Central Asia Regional Migration Policy Support Advisory Services and Analytics can address this question in greater depth.

Moving forward in understanding regional development dynamics in the Kyrgyz Republic.

This synthesis note barely scratches the surface of understanding the complex drivers of regional development dynamics in the Kyrgyz Republic. The main objective here is to introduce newly generated measures of consumption at the rayon level (based on SAE techniques) and to present several puzzling facts based on early analysis of these statistics, along with a rich set of administrative, census, and georeferenced data. Additional analysis is needed to provide specific policy recommendation to achieve the goals of regionally inclusive development, taking into consideration these puzzling and sometimes counterintuitive facts. To

⁹ The 2009 KIHS did not include questions on the presence of migrants, so migration variables were not included in the core analysis of the two years being reviewed. However, when migration variables are included in the Oaxaca-Blinder decompositions for 2022 only, the same result holds: The presence of a migrant in the household contributes to higher consumption and provides higher returns outside of Bishkek and Osh.

facilitate that analysis, this note includes a list of knowledge gaps that need to be filled. By generating new measures, offering some initial analysis, and identifying policy gaps, this note strives to serve a springboard for more in-depth analysis and formulation of policy measures by World Bank colleagues and their counterparts in the government of the Kyrgyz Republic.

Today, the Kyrgyz government is implementing large-scale administrative/territorial reforms aimed at creating economically strong and independent regions, fostering the formation of regional growth points. Alongside these reforms, the government is developing an ambitious new National Development Program that will guide the country's progress until 2030. Additionally, there is the new State Program for the Complex Socio-Economic Development of Regions for 2024–2028, designed to achieve sustainable and inclusive regional development. These initiatives are expected to boost economic growth, reduce poverty rates, and decrease inequality across the Kyrgyz Republic. Filling in the knowledge gaps can enhance these initiatives' effectiveness, ensuring that they meet their objectives efficiently.

Recommended Policy Directions

Based on the identified patterns of regional development and knowledge gaps, three preliminary policy directions can be discussed:

- 1. Rethinking targeting:** The data suggest that the welfare ranking of rayons has changed and that inequality within rayons increased. The government should evaluate its current targeting strategies for the social assistance and protection programs, taking into consideration new data on changes in welfare.
- 2. Supporting agricultural activities to live up to a promise of poverty alleviation in specific areas:** Agricultural transformation is playing a promising role in consumption growth in some rayons. The government should identify the drivers of agricultural transformation and provide support to accelerate these drivers. Candidates include crop specialization and changes in industrial organization arrangement (movement from smallholder farming to commercial farming), but additional analysis is needed to pinpoint the key drivers.
- 3. Reinvigorating growth in cities:** Congestion costs in urban areas may be approaching or even exceeding agglomeration benefits. The government should make urban centers more attractive by providing better service delivery and facilitating private-sector growth. The government should also modify its migration policies to facilitate productive use of remittances and maximize the benefits of return and circular migration.



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