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Policy Brief
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Enhancing agricultural resilience in Uzbekistan through farmers' decision-making autonomy

KEY MESSAGE

- Greater farmer's decision-making autonomy enhances resilience in technical efficiency during economic shocks.
- Technical efficiency improves with autonomy, as farmers can adjust resource use, sustain productivity, and make adaptive choices regarding crop selection and input management.
- Eliminating top-down land allocations, granting secure land use rights, expanding financial and market access, and decentralizing training programs can improve the capacity of farmers to become more productive and adaptable in the face of current and future challenges.

INTRODUCTION

Agriculture remains the cornerstone of Uzbekistan's economy, playing an important role in employment and food security. However, the sector is vulnerable to external shocks, such as fluctuating global input prices and environmental challenges. A critical factor in overcoming these vulnerabilities and enhancing the resilience of Uzbekistan's agricultural sector is improving farmer autonomy in decision-making. Historically managed under a state-controlled system, Uzbekistan's agricultural sector has long been constrained by production quotas and limited decision-making autonomy of farmers. This structure has restricted flexibility, obstructing farmers' ability to respond to environmental changes and market conditions. Evidence from recent research emphasizes that increasing the decision-making autonomy of farmers significantly enhances their capacity to maintain productivity and resilience under adverse economic conditions. Current reforms, such as the Agri-Food Development Strategy 2020–2030, signal a shift toward a market-oriented agricultural sector, but further steps are needed to enhance the autonomy of agricultural producers, especially through land tenure security, land use rights, crop choice, and access to extension services and finance.[1]

This policy brief, which builds on findings from Takeshima et al. (2024)[2], underscores the importance of empowering Uzbekistan's farmers by granting them greater autonomy in their farming decisions, allowing them to navigate various external shocks better. The evidence is clear: empowering farmers through increased autonomy will enhance the of Uzbekistan's agricultural sector's resilience and drive long-term economic and environmental sustainability. These recommendations focus on reducing restrictive state mandates, securing land tenure, decentralizing agrarian support services, and promoting access to financial resources to enable sustainable and adaptive farming practices.

Farmers' decision-making autonomy

Decision-making autonomy in agriculture is the freedom for farmers to choose crops, inputs, resources, farming practices, marketing channels, and investments based on their knowledge of local conditions and market demands. In Uzbekistan, farmers have historically operated within a regulatory framework that limits their flexibility in crucial production decisions. The government's long-standing system of state-mandated crop quotas, primarily for cotton and wheat, and centralized control over input application and output channels restrict farmers' ability to adapt their practices to local conditions or changing economic circumstances[3/4] highlights that this lack of autonomy discourages farmers from adopting more efficient practices or investing in technologies that could improve productivity. Additionally, farmers' perceived insecurity in land tenure discourages long-term investments, as they fear losing access to their land or facing unexpected regulatory changes.

Comparative studies of neighboring Kazakhstan, where farmers enjoy greater autonomy, show that decision-making freedom can foster innovation and efficiency. Kazakh farmers are more likely to adapt their practices to market signals and adopt sustainable agricultural methods, contributing to their resilience against economic shocks.[5] Secure land tenure is a cornerstone of decision-making autonomy. Farmers who are confident in their land rights are more likely to make long-term investments in their land, adopt sustainable practices, and take calculated risks to improve productivity. In Uzbekistan, however, frequent

[1] Djanibekov, N., Petrick, M., Herzfeld, T. (2024) Agriculture and Rural Development Reforms. In Mirkasimov, B., Pomfret, R. (eds.) New Uzbekistan: The Third Renaissance. Routledge, London, pp. 112–134.

[2] Takeshima, H., Djanibekov, N., Abduvallieva, B., Mirkasimov, B., Akramov, K. (2024) Resilience in technical efficiency and enabling factors: Insights from panel farm enterprise surveys in Kazakhstan and Uzbekistan. Applied Economics. https://doi.org/10.1080/00036846.2024.2405203.

[3] Djanibekov, N., Petrick, M., Herzfeld, T. (2024) Agriculture and Rural Development Reforms. In Mirkasimov, B., Pomfret, R. (eds.) New Uzbekistan: The Third Renaissance. Routledge, London, pp. 112–134.

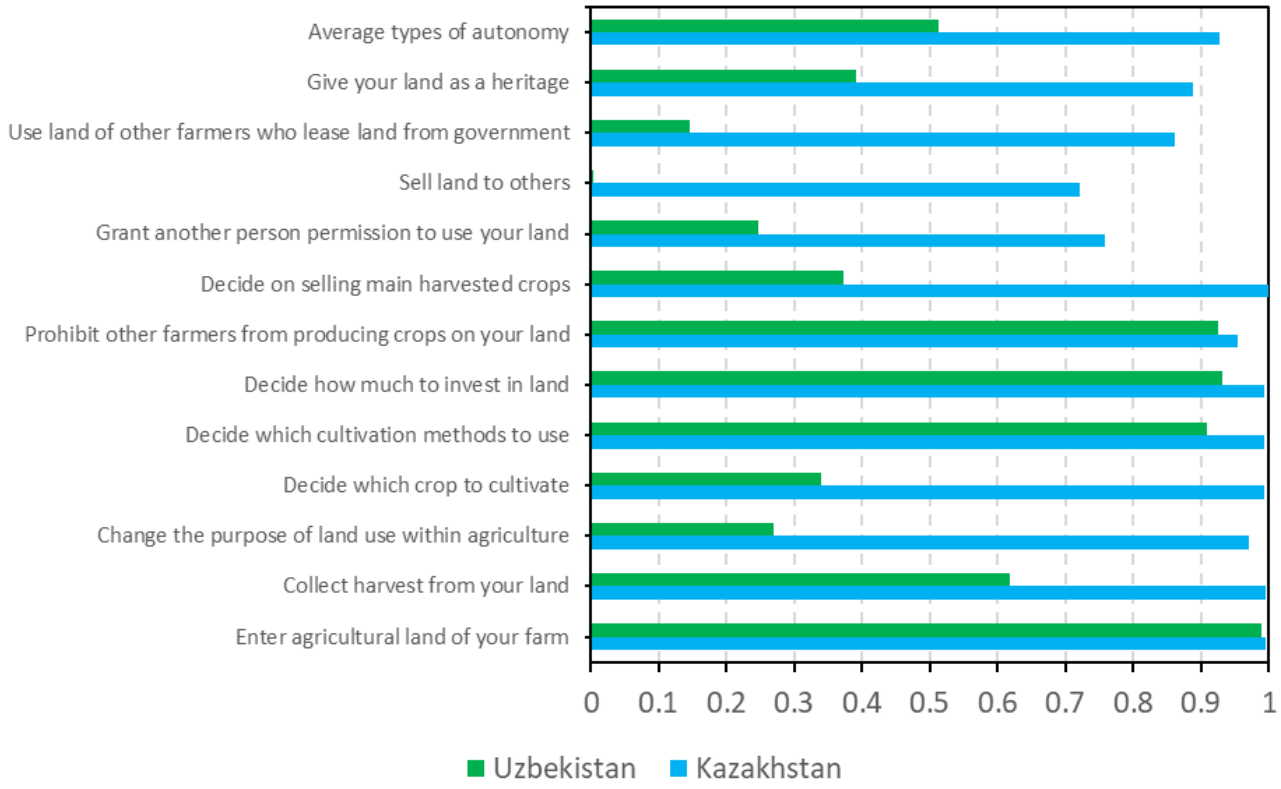
[4] Takeshima, H., Djanibekov, N., Abduvallieva, B., Mirkasimov, B., Akramov, K. (2024) Resilience in technical efficiency and enabling factors: Insights from panel farm enterprise surveys in Kazakhstan and Uzbekistan. Applied Economics. https:doi.org/10.1080/00036846.2024.2405203.

[5] Akhmadiyeva, Z., Herzfeld, T. (2021) How does Practice Matches Land Laws in Central-Asia? Land Use Policy 109:105726. https://doi.org/10.1016j.landusepol.2021.105726.

land reallocations and state-driven farm-size optimization and agri-cluster policies create uncertainty, discouraging farmers from investing in practices that enhance their productivity and resilience.[6] Insecure land tenure thus hinders not only technical efficiency but also the adoption of innovative, sustainable practices that could mitigate environmental and economic challenges.[7]

Figure 1. Contrasting scales of autonomy types among farmers in Kazakhstan and Uzbekistan in 2018:

Figure 1 highlights significant contrasts in decision-making autonomy between farmers in Kazakhstan and Uzbekistan in 2018 based on the AGRICHANGE farm survey.[8] Farmers in Kazakhstan reported about substantially higher levels of autonomy across most decision-making categories, with nearly universal freedom to enter their agricultural land, collect harvests, and decide on land use, crop choice, and cultivation methods. In contrast, farmers in Uzbekistan faced more restrictions. For instance, about one-third of Uzbek farmers could choose which crop to cultivate



Source: Based on Table 4 from Takeshima et al. (2024).

[6] Zorya, S., Djanibekov, N., Petrick, M. (2019) Farm restructuring in Uzbekistan: How did it go and what is next?. World Bank Group, Washington, D.C.

[7] Kurbanov, Z., Tadjiev, A., Djanibekov, N. (2022) Adoption of sustainable agricultural practices and investments in productive assets in irrigated areas of Central Asia: Farm-survey evidence from Kazakhstan and Uzbekistan. IAMO Annual 24, Halle (Saale), pp. 69–79.

[8] Takeshima, H., Djanibekov, N., Abduvallieva, B., Mirkasimov, B., Akramov, K. (2024) Resilience in technical efficiency and enabling factors: Insights from panel farm enterprise surveys in Kazakhstan and Uzbekistan. Applied Economics. https://doi.org/10.1080/00036846.2024.2405203.

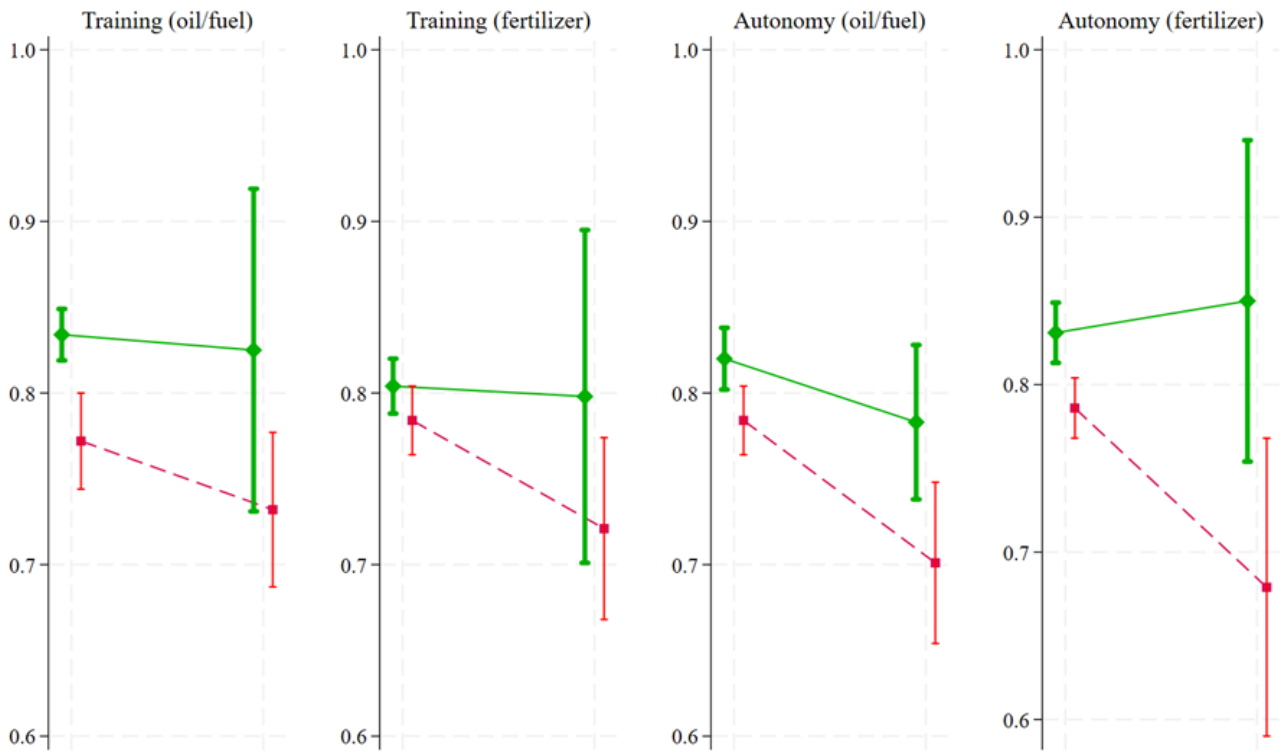
compared to 99% in Kazakhstan, and just one-quarter could change the purpose of land use within agriculture, as opposed to 97% in Kazakhstan. Additionally, while all of the respondents in Kazakhstan have autonomy over whom to sell their main harvested crops, only 37% of Uzbek farmers have this freedom. Land-related decisions also show stark differences between the two countries. On average, farmers in Kazakhstan have almost double the autonomy score of their peers in Uzbekistan.

Improved resilience in technical efficiency through better decision-making autonomy

The resilience of farm enterprises refers to their capacity to withstand or recover from disruptions, such as sudden spikes in input prices or supply chain disruptions. Farms with greater autonomy in decision-making are better equipped to absorb shocks, particularly when it comes to input cost fluctuations. For instance, during steep input price increases, farms with higher decision-making control were able to reduce their dependence on costly inputs without compromising productivity. In contrast, farms operating under rigid production quotas or input regulations had limited flexibility to adjust, reducing technical efficiency. This lack of autonomy has significant economic repercussions: without the freedom to select crops based on market signals, farmers miss out on profitable opportunities in horticulture, livestock, and high-value crops. This constraint is especially problematic in a market-driven environment where flexibility and adaptability are essential for economic resilience.

Figure 2 underscores the critical role of decision-making autonomy in maintaining technical efficiency under economic shocks, such as rising input costs. The figure illustrates a clear contrast between farms with higher and lower levels of autonomy. Technical efficiency – the ability to produce maximum output from given resources – was significantly higher in farms with greater decision-making freedom, allowing them to respond more flexibly to external shocks. In other words, farms with greater autonomy sustain higher technical efficiency, even when forced to reduce input use due to price surges in oil and fertilizers. On the other hand, farmers with limited autonomy experience notable declines in efficiency under similar conditions. This finding emphasizes that decision-making autonomy is a vital buffer, enabling farmers to adapt their practices to various external shocks without sacrificing their technical efficiency. Policies that empower farmers with more control over production decisions can mitigate the adverse effects of external shocks on farm performance. This visualization emphasizes the potential of policy frameworks that enhance decision-making autonomy for farmers as a pathway to increased resilience within Uzbekistan's agricultural sector.

Figure 2. Mean technical efficiency without and with 10% reduction in diesel or chemical fertilizer use:



Note: The vertical axis is technical efficiency, while the horizontal axis comprises left and right points. The left point is the mean technical efficiency without a 10% reduction in diesel or chemical fertilizer use. The right point is the mean technical efficiency with a 10% reduction in diesel or chemical fertilizer use. Green lines represent farm enterprises that received training or had autonomy levels above a critical threshold. These farms show minimal changes in technical efficiency, even when reducing inputs. Red lines represent farm enterprises that received less training or had autonomy levels below the threshold. These farms experience more significant declines in technical efficiency with input reductions. Vertical bars show the 90% confidence intervals, illustrating the statistical reliability of the differences in technical efficiency between groups.

Source: Takeshima et al. (2024).

Granting farmers greater decision-making autonomy has far-reaching economic implications. Autonomous farmers are better positioned to respond to market conditions, adopt efficient input strategies, and implement adaptive practices – all supporting economic stability and resilience. With autonomy, farmers can select profitable, resilient crops, reduce dependence on state-controlled inputs, and adopt innovative technologies, leading to more stable farm incomes and a less vulnerable agricultural sector overall.

Policy recommendations

The following policy recommendations aim to enhance decision-making autonomy of farmers in Uzbekistan, thereby improving technical efficiency, its resilience, and sustainability.

1. Eliminate top-down land allocations: State-imposed land allocations restrict farmers' ability to respond to market signals and adopt sustainable practices. Flexibility in crop choice allows farmers to adapt to price fluctuations and changing environmental conditions, helping maintain productivity even in adverse circumstances. The government should phase out or reduce mandated land allocations, e.g. for cotton and wheat, allowing farmers to select crops based on market signals and environmental conditions. Moving towards a market-based agricultural system where farmers can make decisions based on demand, pricing, and resource availability will empower them to increase their income and resilience. A pilot program could be launched in select regions to assess the impact of lifting land allocation mandates on productivity and resilience, providing data to guide nationwide reforms.

2. Secure land tenure and strengthen land use rights: Secure land tenure is essential for encouraging farmers to invest in sustainable practices and adopt a long-term perspective. Tenure security, coupled with decision-making autonomy, is critical for technical efficiency, as it provides farmers with the confidence to invest in productivity-enhancing technologies. Currently, farmers often face restrictions on what they can do with their land, which limits their ability to innovate or adapt to changing conditions. Policies should provide farmers with secure, long-term land use rights, allowing them to make independent decisions about how to use their land. Eliminating arbitrary land reallocations, e.g. via top-down farm-size optimization or cluster policy, and ensuring stable tenure agreements could significantly increase farmers' sense of ownership and responsibility, motivating them to improve their land management practices.

3. Expand access to training and agricultural extension services: Agricultural extension services are essential for equipping farmers with the knowledge and skills to make informed decisions. Access to training and extension services contributes to higher technical efficiency, as farmers can adopt sustainable practices and make adaptive decisions independently. Decentralized extension services can ensure accessibility and give farmers the knowledge and tools to make informed decisions independently. Training programs should focus on skills that support autonomous decision-making, such as market analysis, sustainable resource management, and climate adaptation practices. Tailoring extension services to the needs of small and medium-sized farms would empower farmers to operate effectively within a market-driven framework.

4. Promote financial autonomy through access to credit and financial services: Financial independence is crucial for improving resilience in technical efficiency, as it allows farmers to make timely input purchases and investments in equipment.

Thus, decision-making autonomy must be supported by better access to financial resources for farmers to fully capitalize on their decision-making power in input use, technology adoption, and crop choices. *:* Smallholder farmers, in particular, need greater access to credit and financial services. The government should partner with private financial institutions to expand credit access for farmers. Programs offering micro-loans and low-interest loans tailored to agricultural needs would empower small-scale farmers to make investment decisions. Financial literacy programs also help farmers manage credit effectively, enabling more autonomous and responsible decision-making.

5. Enhance farmers' autonomy within cotton-textile clusters through participatory models: Currently, the cotton cluster system limits farmer decision-making autonomy by centralizing control within cluster management. Ensuring that farmers within clusters have input in management decisions would better align cluster operations with individual farm needs. Participatory management models within cotton clusters can enable farmers to provide voices in key production and input use decisions. Establishing farmer councils within clusters would enhance transparency and ensure that cluster management decisions align with the interests of all stakeholders, supporting both collective and individual resilience.

DISCLAIMER

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Takeshima, H., Djanibekov, N., Abduvalieva, N., Mirkasimov, B., Akramov, K. (2024) Resilience in technical efficiency and enabling factors: Insights from panel farm enterprise surveys in Kazakhstan and Uzbekistan. Applied Economics. https://doi.org/10.1080/00036846.2024.2405203.

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