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# Why Does Sharecropping Survive? Agrarian Institutions and Contract Choice in Kazakhstan and Uzbekistan

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## Abstract

A century ago, Alfred Marshall demonstrated the inefficiency associated with farmers receiving only a portion of their marginal product. Farmers will supply less labor than under arrangements in which they receive their marginal product; output will be sub-optimal. Explanations of sharecropping are based on market imperfections, e.g., high transactions costs or inability to insure against risk, suggesting that sharecropping should disappear with economic development. Nevertheless, sharecropping survives. In Kazakhstan and Uzbekistan, sharecropping has no legal status but farm surveys provide evidence of its existence. Despite farmers' awareness of the Marshallian paradox, institutional uncertainty contributes to the persistent attractiveness of sharecropping.

**Keywords** Sharecropping · Central Asia · Agriculture

**JEL Classification** Q13 · O12 · J43 · D23

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## Introduction

Agrarian contracts that make farmers less than full residual claimants may lead to potentially low agricultural productivity. Marshall (1920, Book VI, Chapter X.4fn) pointed out the inefficiency associated with rewarding farmers with only a portion of their marginal product; farmers will supply less labor than under arrangements in which they receive their full marginal product, and output will be sub-optimal.<sup>1</sup> Even if sharecropping as an institutional feature of agriculture has historical roots, it should disappear because landowners can obtain more by self-managing the production or by offering fixed rental contracts. However, rural agricultural societies recurrently opt for output-sharing contracts in which a tenant farmer pays a share of his output to the landowner. Hence, the Marshall Paradox: Why do we still observe sharecropping?

Drawing on survey evidence and qualitative study of land and labor institutions in Central Asia, we focus on tenancy and labor contracts and particularly on sharecropping as a second-best response in a situation where agents are constrained by inefficient institutions. Central Asian rural societies and agricultural systems have experienced major institutional changes over the last half century from responses in the late Soviet era to the inefficiency of collective agriculture and through the dissolution of the Soviet Union and end of central planning, to separate reform trajectories in the newly independent countries. Over a quarter century after independence, the institutional evolution is still ongoing, and a complex re-arrangement of old and new institutions is taking place.<sup>2</sup>

In the Soviet farming systems, experiments in contractual relations linking land and labor aimed at increasing productivity by moving workers from wage contracts to alternative forms of remuneration (Wädekin 1989; Brooks 1990). Since independence, Central Asian countries have been searching to construct new organizational forms of agriculture. Fragmentation of the large-scale farm system promoted the establishment of smaller family farms, which were expected to achieve higher levels of productivity and efficiency than corporate farms (Lerman 2009). The limited field evidence (Veldwisch and Spoor 2008; Djanibekov et al. 2013) suggests that the new systems have not yet led to efficient contractual arrangements, such as generally characterize agriculture in high-income countries, and evidence of sharecropping, although of uncertain legality, is reported.

The first section of this paper reviews the sharecropping debate. Section 2 describes the main institutional changes in Central Asia and the data. The third

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<sup>1</sup> Marshall was echoing Adam Smith who had argued in the *Wealth of Nations* that sharecropping, even in the eighteenth century, was a hangover from the past: fixed rents plus well-defined tenant rights “contributed more to the present grandeur of England than all their well-boasted regulations of commerce taken together”. We do not address a potential longer-term inefficiency that neither party has an incentive for land improvement (Johnson 1950), that has been studied empirically by Deininger et al. (2013) on West Bengal and Garrido (2017) on European viticulture.

<sup>2</sup> Institutions are social relations, behaviors which involve rules and norms and underlying perceptual frames created by actors (North 1990). Although North saw institutions as exogenous and stable, implementation can be endogenous (Shepsle 2014).



section cites respondents' views clearly indicating that they appreciated the Marshallian inefficiency argument and also understood the potential for dispute among participants in a sharecropping arrangement that could destroy friendships or even family ties. At the same time, respondents recognized that in the presence of institutional constraints (e.g., bans on subleasing, limited access to irrigation and other inputs, or valuable non-marketed benefits from some actions) some form of sharecropping could be the second-best contractual arrangement. The fourth section revisits the determinants of sharecropping by differentiating between crops; cotton harvesting is relatively easy to supervise and is associated with fixed wages, while labor inputs in rice or vegetable production are harder to monitor, favoring a fixed land rent. By taking evidence from two countries, we examine the importance of the institutional differences between the more market-based allocation of labor and land in Kazakhstan and the more regulated markets in Uzbekistan. The final section concludes.

## Why Sharecropping?

Explanations of the Marshall Paradox have focused on transactions cost and risk sharing, or more generally a risk-incentive trade-off (Holmstrom and Milgrom 1987). The policy implication of these explanations is that institutional reform to reduce transaction costs and to facilitate insurance against risk will reduce the attractiveness of sharecropping, and the ensuing institutional change will be associated with increased productivity.

Cheung (1968) explained the Marshall Paradox in terms of transaction costs, especially monitoring costs. If the landlord were able to efficiently monitor inputs, he could condition contracts on the appropriate level of inputs, including labor; sharecropping is observed because monitoring is costly or inadequate.<sup>3</sup> Eswaran and Kotwal (1985) modeled tenants as prone to shirking on work and landlords as prone to shirking on management. The choice of contract arrangement will depend on the technical skills of the farmer and monitoring skills of the landowner; sharecropping gives the best outcome if the landlord cannot efficiently supervise inputs and the tenant cannot make efficient management decisions (Eswaran and Kotwal 1985; Hayami and Keijiro 1994; Sadoulet and de Janvry 1995).

A second approach to the Marshallian Paradox is based around risk aversion, and spreading risk between landowner and tenant (Stiglitz 1974).

Sharecropping is an arrangement, whereby the landlord rents land to his tenant and also packages crop and price insurance with the land. The landlord is richer than the tenant and can more easily bear the risk. Moreover, the landlord can use the land as collateral and can thus smooth consumption by lending and borrowing so that risk has a lower impact.

<sup>3</sup> Marshall himself anticipated the high transaction costs if "[The] landlord has to spend much time and trouble, either of his own or of a paid agent, in keeping the tenant to his work,..." (Marshall 1920, VI,x,4).



By trading off the tenant's comparative advantage in labor supervision with the landlord's comparative advantage in risk bearing, a crop share contract could provide a superior welfare outcome to the fixed rental contract even allowing for Marshallian inefficiency. Newberry (1977) incorporated uncertainty over the tenant's wage from alternative employment into this framework. Other risk-themed approaches have explained sharecropping as a means for landowners to curb excessive risk taking by tenants subject to limited liability (Ghatak and Pandey 2000), or as a consequence of adverse selection rather than moral hazard (Hallaghan 1978; Allen 1982).

An important issue under sharecropping is who pays for the inputs? Landlords with better access to credit may be better placed to bridge the time gap between paying for inputs and receiving revenue from outputs. However, a farmer may be tempted to sell landlord-supplied inputs or to apply them to his own land. Responsibility for input purchase is often divided between the farmer and the landlord, with the farmer having responsibility for inputs for which there is a ready resale market and where monitoring is difficult (e.g., fertilizers). If the landlord provides inputs, this increases the incentive to the farmer to devote his labor time to the farm. Allen and Lueck (1992) show that when the landlord and the tenant share the cost of inputs and the crop share is set equal to the cost share, sharecropping can be an efficient arrangement.

The empirical literature generally supports the existence of Marshallian inefficiency. Tenants are less productive under share tenancy than under fixed rent. Studies using observational data that have found at least partial support for Marshallian inefficiency include Bell (1977), Shaban (1987), Deininger and Goyal (2012) on India, Laffont and Matoussi (1995) on Tunisia and Jacoby and Mansuri (2006) on Pakistan. However, the presence of unobserved plot-level characteristics and the endogeneity of contract choice are potential sources of bias in their findings (Jacoby and Mansuri 2009).<sup>4</sup>

Rather than focusing on evidence of efficiency and incentive effects, the development literature discusses the unobservable factors driving the adoption of certain contractual arrangements and agricultural output. Risk-sharing considerations can make sharecropping attractive even if yields are diminished. Features of the environment, in which developing country farmers operate, that may be conducive to sharecropping arrangements include missing insurance markets, poorly developed credit markets and inadequate input provision. There may be a dynamic dimension; as countries develop, rural credit becomes more easily available, farm households have enough non-labor income or accumulate sufficient wealth to be able to survive poor or even disastrous harvests, and input markets become more efficient.<sup>5</sup> Marshall's argument that English agriculture was more prosperous than French agriculture because the French used sharecropping contracts may have confused the direction of causality; the English used pure rental

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<sup>4</sup> Sample selection bias due to unobserved heterogeneity of land and households is a potentially serious problem. Households with more efficient farmers may choose fixed rent contracts or own their own land, and the least productive land is more often sharecropped, creating a false impression that sharecropping is inefficient.

<sup>5</sup> Allen and Lueck (1992, 399 n.6), whose paper is based on evidence from US Midwest farmers in 1986, dispute the withering away of sharecropping as economies develop.



agreements because English agriculture was more prosperous than its French counterpart, and sharecropping was a consequence rather than a cause of low yields.

## Farming in Central Asia Before 1991

Farming in Central Asia passed through major institutional changes in the twentieth century with collectivization and decollectivization. Through these changes, the institution of sharecropping was a recurring feature, from the *chorikor*, *koranda*, *ortashilik* and *supryaga* pre-Soviet tenancy arrangements to the return of sharecropping-type contracts in the late Soviet era (Table 1).

Prior to Russian conquest, agrarian institutions in Central Asia developed unevenly due to the various types of agricultural production systems rooted in their environmental, cultural and governance structure difference (present-day Kazakhstan, Kyrgyzstan and Turkmenistan consisting more of nomadic pastoralists and Uzbekistan and Tajikistan sedentary farmers).<sup>6</sup> The peculiarity of large land ownership in nineteenth century Central Asia was that landowners did not manage production using the labor of cultivators who were bound to the land, but rather divided the land into parcels among the rural population based on sharecropping agreements (Navalkin et al. 2016).

The arrival of Russian migrants in the late nineteenth century and later the establishment of the Soviet rules of collective and state production systems changed Central Asian agrarian institutions. Wage labor and formal contracts gradually replaced traditional tenancy and other types of agrarian institutions. In the Soviet Union, land became the property of the state (Wädekin 1990). However, the patron–client relationship involving extended families and village communities remained and was transformed by the Soviets into solidarity groups/teams (*brigada*) for organizing agricultural production (Platteau 1995; Lubin 1984). Yet, organizational and incentive problems remained (Osofsky 1974; Bradley 1971), together with growing efficiency cost of free riding under team production.

On Soviet cooperative and state farms, leasing of land to individuals or small groups evolved after 1983 from attempts to make agricultural work groups more responsible for their work. In order to increase the productivity of the large-scale farms, *podryad* or *arendniy podryad* (internal leaseholders) units were introduced (Wädekin 1989, p. 31).<sup>7</sup> *Podryads* were the contractors, selected out of farm workers and their families, whose earnings depended on output rather than payment for individual operations. They remained subject to all the farm's rules and were poorly placed to enforce managers' commitments to supply inputs or other assistance, if

<sup>6</sup> By the terms “agrarian institutions” or “agrarian contracts” we understand various social rules, norms, behaviors governing agrarian arrangements and transactions.

<sup>7</sup> Internal leasing gathered momentum after General Secretary Gorbachev praised the practice in a 1987 speech, although the practice was not legalized until 1989.



**Table 1** Sharecropping evolution and variations in Central Asia. *Sources:* Aldashev and Guirkinger (2017), Djanibekov et al. (2013), Usmonov et al. (2006), Nabiev (1996), Wadekin (1989), Nalivkin et al. (2016)

| Period       | Tenancy   | Length               | Share  | Tenant's inputs   | Landowner's inputs   | Incentives for the tenant   |
|--------------|---|----------------------|--|---|--|---|
| 19th Century | <b>Chorikor</b><br>( <i>Uzbek word for a sharecropper</i> )                               | 1 year               | 1/4 Wheat<br>1/3 Cotton/sorghum from the harvest after tax   | Labor   | Land, water, monetary loan, seeds, forage, food  | Flour, grains, agricultural instruments, bulls, horses  |
|              | <b>Ortashiik</b> ( <i>Kazakh word for a sharecropper</i> )                                | 1 to several years   | Significant share of the harvest given to the rich kin of the tenant   | Labor   | Land and livestock for cultivation works and other tools   | Using tools and bulls of the landlord.  |
|              | <b>Koranda</b><br>( <i>Uzbek word for a tenant farmer</i> )                               | Long-term            | 1/2 Harvest after tax  | Labor, agricultural tools   | Land, water, shelter, seeds, food  | Tenant may buy the land from its owner  |
| 20th Century | <b>Supryaga</b><br>( <i>Russian word for partnership</i> )                                | Short- and long-term | Joint cultivation of hay or other crops by several households. Harvest was divided equally among participating parties                   | Laborer from each household, agricultural tools   | Individual household lands, or common land assigned to the community                                       | Reducing costs, joint risk taking, following traditions of joint work                                   |
|              | <b>Podrat/arendniy podryad</b><br>( <i>Uzbek/Russian word for internal leaseholders</i> ) | 1-year, long-term    | Usually specific to fruits and vegetables. Pre-determined amount of harvest delivered to state, the rest of the share is worker's bonus. | Labor of collective/state farm workers as a family or other small cooperation units. State output plan should be fulfilled. | State rents or leases land and machinery. These costs and outputs are monetized based on the state prices. | Possibility of making profit from excess (after plan fulfillment) production and officially selling it. |
| After 1990   | <b>Permanent and seasonal dehkans</b> ( <i>individual or household-based farmers</i> )    | Long-term; Seasonal  | 50/50<br>33/67<br>Flexible & mixed<br>Labor arrangements   | Labor, Skills, knowledge, tools   | Land access, machinery, irrigation tools   | Fixed wage, In-kind produce, by-products.   |



these were not provided. Farm management had no obligation to pay the worker, if no produce was grown and any uncertainty was born by the farmer (in contrast to Stiglitzian risk analysis of sharecropping).

## Evolution of Rural Institutions in Kazakhstan and Uzbekistan

After the dissolution of the Soviet Union, Central Asian countries encountered various challenges of reforming the centralized, structured and bonded political and economic systems (Pomfret 2019). For Kazakhstan and Uzbekistan, agrarian reforms were one of the first to be initiated, but also, one of the most complex reforms, since they were related to food security and rural livelihoods. Although the transition in the two countries followed different paths, similar elements of agrarian reforms can be observed such as reforms in land tenure and use, water and farm restructuring and restructuring of old and introduction of new agricultural production units. These agricultural transformations, as well as political and socioeconomic changes in general, resulted in appearance of new groups of agrarian actors with different access possibilities to land, production inputs, outputs, capital and with various levels of knowledge and experience.

In Uzbekistan, new categories of rural agricultural actors legally were presented in three types of farms: collective farms (*shirkats*), commercial farms (*fermer khojaligi*) and smallholder farms represented by households (*dehkans*). The conversion of state farms into *shirkats* continued to follow the Soviet production style based on *pudrats*. During the first year of farm restructuring, agricultural workers stayed in their work places; they no longer received monthly wages but rather entered into various sharecropping arrangements with shirkat farms (Veldwisch and Spoor 2008, p. 429). Although land reforms opened access to long-term land lease for the rural population, the state reserved full land ownership and farmers could not operate as autonomous actors (van Assche and Djanibekov 2012).

The Soviet agricultural legacy was transferred in elements of state interventions, with quotas and production targets on strategic crops. The state experimented with institutional tools such as terms of leasing, farm size controls and government loans. The state-controlled cropping pattern was changed with wheat gaining second importance after cotton, and became centered on production of exports or import substitutes. The production obligation for wheat provided a chance for second crops to become vital for commercial farms and for reciprocal relationships between commercial farms and smallholders (Platonov et al. 2014).<sup>8</sup> This controversial approach to a market economy, with state orders and little bargaining power of commercial production, has been characterized as a divided economy (Ilkhamov 1998). The first economy is based on cotton and grain, and the second economy oriented toward food production for the domestic market.

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<sup>8</sup> Second crops are crops which are grown after wheat and other crops which can be harvested early enough to be able to plant and harvest the second crop.





Over the years of independence, the functionality of formally administered farm categories has been questioned since various non-administered, informal interdependencies connected to accessing state resources, production quotas or second crop plots appeared. The shift to commercial farms has also increased the share of seasonal, daily workers and reduced the share of permanent workers in the farming system. In these conditions, *dehkans* became the main labor source, while commercial farms were seeking labor for both state-ordered and commercial crop production.

Contractual arrangements on strategic crops with the state (the land-leasing entity) do not secure lease rights and require yields to be sold at fixed and lower than market prices (surplus extraction by the landowner). Such conditions are not of interest to the tenant. In order to overcome the inefficiencies of such an arrangement, production loans and credit-based input supply provisions were established by the state. The state-subsidized inputs (fertilizers, seeds, and diesel) are reported to be sometimes misused by the input suppliers as well as by the farmers, indicating the inefficiency of these contracts and of how state subsidies are organized.

Several stages of farm reorganization, fragmentation and consolidation (also called *optimization*) were implemented by the Uzbek state, to improve the efficiency and productivity of commercial farms (Pugach et al. 2016). Such frequent changes have increased uncertainty in agricultural production. Commercial farmers with access to land do not have secure property rights, and are restricted in their decisions on production and own-farm management and profit-making as non-strategic crops depending on state-mandated land and input allocations (Zorya et al. 2019). This uncertainty together with the non-transparent allocations and shuffling of land shortens time horizons and increases the risk associated with investment. The farmer avoids concluding long-term contracts for labor or for sales of his products and cannot expand or intensify his production. As a response or protective measures to uncertainties, agricultural actors in Uzbekistan were pushed into informal institutional arrangements such as informal sublease, bartering land in return for labor (Veldwisch and Spoor 2008) or resale of inputs obtained at state prices and designated for cotton and wheat. As agricultural actors often rely on informal arrangements (Trevisani 2010), the importance of formal institutions diminishes; nevertheless, this helps to maintain the “formally imposed stability of the system” (Djanibekov et al. 2013).<sup>9</sup> In other words, variety of contractual forms and combinations of formal and informal arrangements potentially facilitate incentives for agricultural actors.

Although not formally legal in Uzbekistan, case studies have found examples of sharecropping arrangements. Veldwisch and Spoor (2008) in a 2006 study of Khorezm found family work teams in cotton production, and a variety of rental, wage and sharecropping arrangements in rice and vegetable production. In the same region in 2010, Djanibekov et al. (2013) observed fixed wages for cotton workers,

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<sup>9</sup> For the commercial farm under state mandate or observed to export and make profit, it is costly to hire workers officially, registering them or contracting them formally. The wage workers, who are not likely to receive a top-up for the tax payments in case of a formal contract, opt for informal work that would also provide a possibility to access land or the harvest as an addition to their wage.



fixed rents in rice and vegetable production and sharecropping arrangements for wheat and other cash crops.

In the above cases, the rural population in Uzbekistan has no or limited access to financial resources and credit and insurance markets, and the subsidies provided for inputs are limited to state-order crops and of low quality. Hence, potential tenants in rural areas might be more risk averse, preferring less profitable sharecropping to more risky fixed-rent tenancy that under uncertainty might drive them below their subsistence level. Similar trends are found in the Ferghana Valley, where the administered farming systems are financially profitable owing to inexpensive labor that is motivated by the in-kind wage or second crop plot given for sharecropping (Jozan et al. 2005, p. 189). The same authors also distinguish types of non-administered farming systems consisting of orchards and micro-farms, which function in support of the administered system through access to off-farm jobs (day laborers, permanent employee), access to second crop or subsidiary plots and connection to the public gas networks that enable the construction and operation of greenhouses on the plots.

After independence, Kazakhstan initiated restructuring of its Soviet collective and state enterprises. As a result of land reforms, different legal types of farms appeared including limited and joint-stock companies, agricultural cooperatives, individual (peasant) farms and state and non-state entities. Several stages of land reforms were directed at the redistribution of land based on share plots. According to the Land Code (2003), however, permanent rights associated with land shares were void and the “share-holders had to either acquire a land plot from the state (by outright purchase or by leasing) or by investing the land share in the equity capital of a corporate farm” (Lerman 2009). Land in rural areas was and continues to be held in forty-nine-year leases from the state.<sup>10</sup> The state is the ultimate owner of the land, and sub-leasing of previously distributed land plots or land shares is outlawed.

Private ownership and market turnover of the agricultural land is still implemented unevenly and selectively. The authority to issue and control land rights is granted to the local government, *akimats* and local land commissions. Low motivation or lack of finance to turn from a cheap land lease to private land and the not-always-transparent process of granting or bidding for land hinder private ownership of land in Kazakhstan (Hanson 2017). Moreover, regardless of ownership status, if land is not used in accordance with its designated use or if cultivation is held up over two years, it can be seized by district or city officials (Land Code of Republic of Kazakhstan art. 49). Such institutional construction, which formally allows, but at the same time demotivates or informally restricts reform implementation, creates uncertainty and complexity for rural dwellers.

The southern regions of Kazakhstan are more specialized in cotton crops. Although the cotton industry is not prioritized by the state as strategic or significant for the economy, farmers benefited from cotton-growing activity practiced during the Soviet period (Shtaltovna and Hornidge 2014). The majority of the rural population in small and medium farms considers cotton as the most profitable crop, and it

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<sup>10</sup> However, it is uncertain whether current leaseholders can keep their land until the end of the given period.



contributes 70% of total produce in five districts of South Kazakhstan. As the knowledge of cotton production was specialized, with the commercialization of farms, the production process remained interdependent and vertically coordinated with ginneries. The vertical coordination of cotton-growing farmers by ginneries includes provision of input subsidies, renting harvesters and providing seeds, fuel and fertilizers. Thus, ginneries have strong bargaining power over small cotton-producing farmers.

This resembles in a way the case of Uzbekistan's subsidies to their cotton farmers; however, in Kazakhstan, the cotton prices are not fixed but are directly connected with international markets which makes cotton-growing both attractive and risky. Urbanization to bigger cities, and movement of employed persons to other sectors, with better working conditions, created labor scarcity in rural areas. These changes induced farmers to attract workers from outside, which made Kazakhstan a major destination for migrant and seasonal workers, in particular, from neighboring countries (Dosybiev 2007).

## The Two Focus Regions

The field research for this paper was conducted in the Maktaaral district of South Kazakhstan and in Samarkand Province, Uzbekistan, within the framework of the AGRICHANGE project.<sup>11</sup> The project included a survey of 900 farms that included questions on tenancy types and on land and labor arrangements. When the full survey was carried out in the beginning of 2017, the majority of farmers did not reveal their tenancy arrangements, apart from long-term leasing of the land plots from the state. Nevertheless, from observations and interviews with the farmers over multiple years (2013–2017), the existence of a variety of tenancy arrangements including hybrid types of sharecropping became apparent, and sixty semi-structured interviews were conducted among farmers in November 2016, during which, communicative validation techniques were utilized to reconstruct the definition of “sharecropping” and investigate variations of arrangements, their mechanisms and functionality. From the semi-structured, in-depth interviews, sharecropping appears as an alternative to renting or landowner's own labor. Hybrid sharecropping was found in both Uzbekistan and Kazakhstan based on 50/50 and 30/70 sharing arrangements, often related to rights for second cropping. The free land or the land available after the first crop is given to workers to plant any crops they want.

To investigate the patterns and variation of the agrarian institutions, we selected Maktaaral district in South Kazakhstan, and Paiarik, Pastdargom and Jomboi

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<sup>11</sup> AGRICHANGE (Institutional change in land and labor relations of Central Asia's irrigated agriculture) was a research project funded from the Volkswagen Stiftung. The study sites were pre-defined by the project coordinators as AGRICHANGE research locations based on the presence of cotton production in both Samarkand province and South Kazakhstan and on availability of collaborating partners in each location.

The six districts in the study including: Maktaaral, Sayragash and Baidibek of South Kazakhstan as well as Paiarik, Pastdargom and Jomboi of Samarkand province, which allow instructive comparisons of the effects of environmental constraints and different policy environments.



Table 2 Main agricultural characteristics of the two study areas by farm types

| Farm types                             | Samarkand province  |  | Households ( <i>dehkans</i> )   |
|--|---|--|---|
|  | South Kazakhstan, (Maktaaral)   | Individual farms (cotton/wheat)  |   |
| <i>Agrarian system characteristics</i> |   |  |   |
| Crops                                  | Private farms and cooperatives  | Individual farms (cotton/wheat)  | Individual farms  |
| Crops                                  | Cotton, melons (capital intensive), forage crops  | Cotton, wheat, second crops  | Vegetables, fruits onions, potatoes—risky crops   |
| Cropping season                        | April–October, no second cropping   | Two cropping seasons   | Three cropping seasons  |
| Land tenure                            | Long-term leaseholds (49 years)<br>Sub-renting is prohibited  | Long-term lease  | Long-term lease   |
| Labor organization                     | Family, permanent and hired workers   | Family, permanent, hired   | Family, permanent, hired  |
| Management decisions                   | Farmers, experienced workers of the farmer or tenants   | State, farmers, farmer's workers   | Agrofirms, farmers  |
| Organization of inputs                 | Subsidized: diesel, saltpeter (30% less of market price), cotton seeds. Self-provision of other inputs.   | Purchased for low-state prices inputs<br>Self-provided on the second crops                                     | Inputs provided as an advance payment for a contract or self-provided by farmer                       |
| State role                             | Depending on the farm type and crop-state subsidies:<br>Inputs (subsidized pricing)<br>Per hectare planted (financial)<br>For yield (financial)<br>Cooperatives get preferential credits/leasing of machinery (if over 15 ha) | Price regulation,<br>Providing credits for production inputs<br>State control over cotton and wheat production | Controlling through: local authorities, farmers' associations, water-users' association and agrofirms |
| Mechanization                          | Semi-mechanized in plowing and combine cotton harvesting  | Tractors used in plowing; very few combines  | Tractors in plowing, or manual labor  |
| Contracts                              | Contractual terms for rent and share-cropping (bilateral and trilateral)—not formal, not written  | Rent and share renting on second crop  | Rent and sharecropping 70/30  |
|  |   |  | Manual labor  |
|  |   |  | Labor rent, sharecropping   |



districts within Uzbekistan, as all of them combine cotton and other crop production. Around one-third of the irrigated land of Kazakhstan is concentrated in South Kazakhstan (559,000 ha). The region has been transformed into an intensive cotton production site since 1924, and cotton became the third largest export item of Kazakhstan during the Soviet Union. Samarkand province (379,700 ha) is one of the ancient irrigated regions of Central Asia where irrigated agriculture of the floodplains was combined with breeding and herding in the uncultivated steppe.

Table 2 summarizes the main agricultural characteristics of the two study areas by farm types based on the qualitative interviews.<sup>12</sup> In Maktaaral, the key crops to consider as an alternative to cotton are melons, forage crops, rice and, to a lesser extent due to soil salinization, vegetables. In two of the three districts in Samarkand province, farmers face state cotton and wheat mandates; Jomboi was released from the cotton mandate in 2012, and almost no cotton is grown there, although the wheat quota remains. Salinity is a major problem in Maktaaral, and the climate conditions allow only six vegetation months and limit multiple cropping, which can be risky even for the first crops like cotton. In the Samarkand districts, farmers report on cropping two and even three times during the vegetation season. A majority of the farms interviewed work either with their families, hire workers or combine both labor types.

Management decisions differ in the two countries. In South Kazakhstan, farmers are not restricted in choosing which crop to grow or how to organize their production. However, they often hire an experienced production manager or tenants when they have a second non-agricultural job or do not have enough agricultural skills. Production decisions in Uzbekistan depend on the type of the farm or whether the farm is under state mandate. Provision of state subsidies depends on types of farms and cropping patterns. In Kazakhstan, there are three main subsidies based on selected types of crops: fertilizers and fuel provided for low-state prices, subsidies for hectare of planted crop and subsidies for yields.

Despite practical acceptance of hybrid sharecropping arrangements, farmers in both study sites had negative views about such arrangements based on their personal experiences and historical knowledge transfer (“*our fathers used to say*”). Farmers in both regions quoted local proverbs such as:

“Do not let a one-time sharecropping divide the thousand years of friendship”  
(farmer, Samarkand).

or

“If you want to quarrel with your relative then enter into a share. It’s better not to enter into sharecropping with relative and I do not enter even with my cousins” (farmer, Maktaaral).

<sup>12</sup> Table 2 is compiled from the data gathered through observations and semi-structured, in-depth interviews.



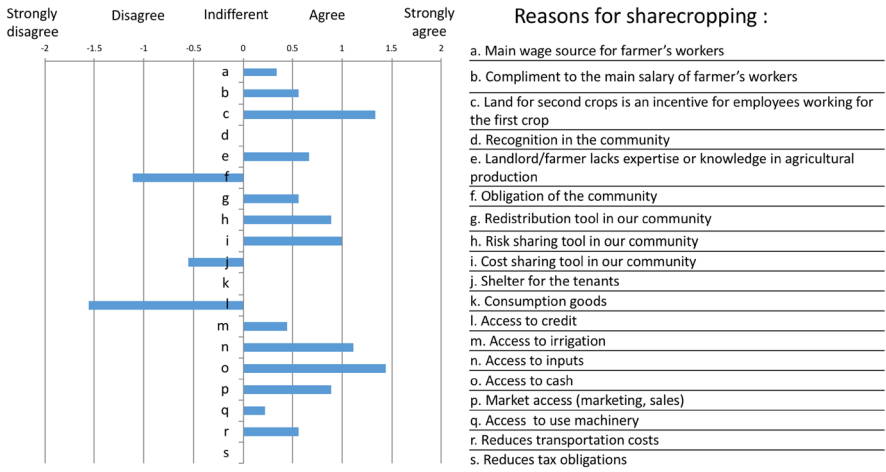


Fig. 1 Reasons for sharecropping, average response, Likert 5-point scale

In sum, the interviewees were aware of the potential for conflict. They also understood the potential for risk, and how sharecropping passed risk from the farmer to the landlord:

“I don’t like this 50/50 sharing, why? Because I don’t want the other person to incur losses” (farmer, Samarkand).

Farmers recognized the second-best nature of sharecropping, although not necessarily in the form of the Marshallian Paradox:

“I think sharecropping is the best option better than then renting, but not better than our own production if you have all the necessary inputs. (farmer, Mak-taaral)

If farmers do not like sharecropping, recognize the potential for conflict among relatives and friends, and see it as a second-best arrangement, why does the institution exist?

### Sharecropping as Second-Best Option in the Presence of Institutional Constraints

Acceptance of a sharecropping arrangement is related to a variety of institutional features: the absence or lack of landholdings for lease, restricted access to financial resources and credits, lack of experience in agronomy and insufficient labor resource among family members. Incomplete land and labor markets as well as scarcity of labor and water resources push farmers to choose sharecropping arrangements that historically and practically are considered to be non-transparent and not satisfying to local farmers. Hybrid contracts allow creation of incentives and linkages among landowners and tenants or workers that make sharecropping more acceptable.



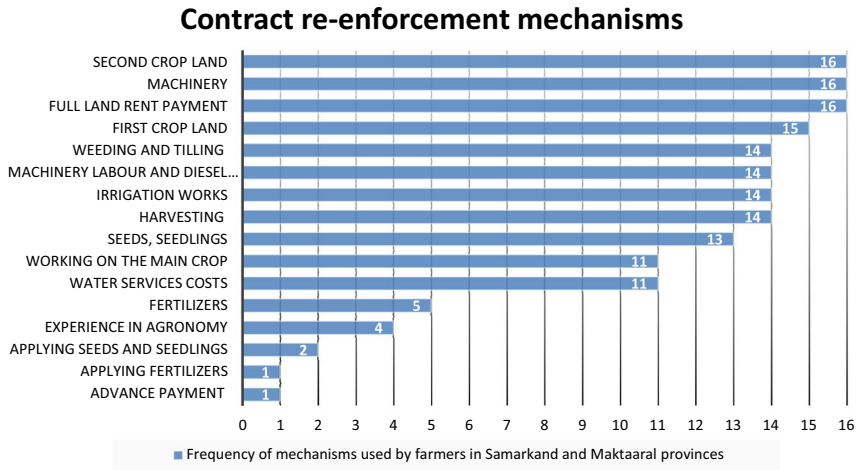


Fig. 2 Contract re-enforcement mechanisms

To more precisely establish the relative importance of the various institutional features in explaining the presence of sharecropping, farmers were asked whether they agreed or disagreed with nineteen possible reasons for sharecropping (Fig. 1).<sup>13</sup> The most common agreement was about access to cash as a reason for sharecropping. Access to inputs, and to a lesser extent irrigation, were also reasons for sharecropping. Land for a second crop was the second-biggest incentive for a share arrangement. Sharecropping was not viewed as a response to community pressure or obligation (f) or a shelter for tenants (j), and more surprisingly unrelated to credit access (l).

These results suggest that sharecropping is a second-best option for farmers facing institutional constraints. In both jurisdictions, land reform has been a slow process, and in the transition to market-based economies, many input markets remain imperfect. The farmer in Kazakhstan who saw having one’s own farm with access to all necessary inputs as the first-best arrangement was referring to a hypothetical counterfactual. Restrictions on sub-leasing of land may encourage landlords to substitute share agreements as a more flexible arrangement than a fixed rent. Even cash rental has often been impractical in Uzbekistan, where shortages of cash and distrust of bank accounts limited that option.<sup>14</sup>

<sup>13</sup> The nineteen reasons were based on theoretical background as well as constructed based on open question interviews with 30 farmers in the study regions.

<sup>14</sup> Interviews were conducted in Uzbekistan in November 2016 before the monetary reforms undertaken by President Mirziyoyev in 2017–2018.



## Determinants of Contract Choice

Potential forms of transactions in a sharecropping arrangement vary and can be carried out formally or informally. Interlocking mechanisms of share tenancy are used by landowners as their response to market imperfections. Such efficiency interventions reflect the main forms of sharecropping: (a) share tenancy with consumption loans to tenants, (b) share tenancy with production loans, (c) share tenancy with stipulated input supply or variable cost sharing of inputs and (d) share tenancy with labor services on the landlord's farm. The objectives, mechanisms and resulting inefficiencies of the main sharecropping forms reflect principal-agent relations or enhanced control by one party over another via interlocked transactions. In Maktaal and Samarkand provinces, contract-enforcing mechanisms similar to ones generalized by Ellis (1993) are found. Farmers who experienced or observed sharecropping arrangements in their communities recognize that such arrangement would not exist without mechanisms that bring the landlord's and tenants into sharing agreement (Fig. 2).<sup>15</sup>

Based on the frequencies of sharecropping observations, the following mechanisms prevailed: tenants enter into this arrangement most often because of the possibility to use part of the land for second cropping or use the machinery of the landlord and because sharecropping serves as a rent payment for the landlord. (The respondents often equate sharecropping to renting and called informal, prohibited land rents "share-renting.") In the case of Uzbekistan, the advantage for the landlord is to make labor available for their first crop. Other mechanisms, such as sharing input costs, including experience in agronomy and hired labor, were mentioned in both Kazakhstan and Uzbekistan. Only one case in Uzbekistan mentioned that in his sharecropping agreement, he asked for an advance cash payment that would be subtracted from the total costs that would be shared among the landlord and tenant farmer.<sup>16</sup>

In order to understand the rationality of contracts existing in Kazakhstan and Uzbekistan, it is essential to identify the principal factors that affect the design and compliance with agricultural agreements. The following categories of drivers can be considered: (1) characteristics of actors, (2) environment and resource availability, (3) socio-political environmental and legal institutions, (4) land and farm structures, (5) availability of inputs and access to markets and (6) path

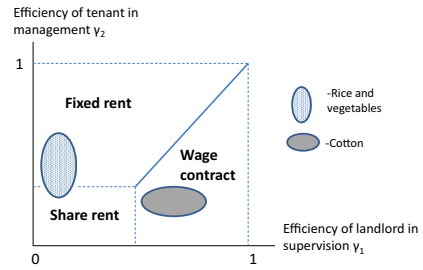
<sup>15</sup> Figure 2 was compiled from responses of 60 farmers to open questions. Farmers were given open questions on what are the elements of their sharecropping agreements and what are the terms and mechanisms. Our goal was to reveal what type of sharecropping re-enforcement mechanisms exist in South Kazakhstan and Uzbekistan. Content analysis helped to analyze, group the mentioned mechanisms into categories based on which frequencies were calculated.

<sup>16</sup> Depending on cultural and governance contexts, many other factors can determine enforcement mechanisms, e.g., the existence of arrangements based on cultural traditions, customs or kinship relations between the landowner and the sharecropper imply that motivations can be influenced by social relations and feelings (Bowles 2006; Otsuka 2007).





**Fig. 3** Contract choice depending on efficiency of tenant and landlord. *Sources:* Eswaran and Kotwal (1985); figure by Martin Patrick, based on Sadoulet and de Janvry (1995)



dependency. These drivers may influence positively or negatively agrarian institutions. There are more embedded factors such as culture or personal attributes and social networks that constitute part of the individual actor or the rural community, as well as exogenous drivers, such as policies, legislations or environmental factors.

Institutional and policy constraints may explain the prevalence, and persistence, of sharecropping. The *pudrat* as a reaction to the incentive problems of collectivized agriculture in the late Soviet era was parallel to the experiments with the household responsibility system in China, although the latter was more efficient in overcoming the Marshallian Paradox and led more directly to major institutional reform. At the same time, the observed crop-specific variation in contract choice in modern Central Asia suggests the need for further explanation. In the lengthy process of transition from central planning to market-based economies landlords and tenants may be slow to develop necessary expertise, and lack of monitoring or land management skills matters may depend on crop and technology choice.

Contract choice may be related to crop-specific features, as reported from Khorezm by Veldwisch and Spoor (2008) and Djanibekov et al. (2013), with different contract choices in cotton farming (wage labor) than in rice and vegetable production (fixed rents), and sharecropping arrangements for wheat and other cash crops. In South Kazakhstan, share contracts are common for melons, which are seen as a high-value crop that is risky and in which local landowners or farmers have little experience. The landowner hires an Uzbek farmer to take responsibility over the four-month growing period for melons, and the tenant farmer is paid 30% of the value of the crop.

In Fig. 1, lack of expertise by the farmer or the landlord is a reason for preferring share contracts. This fits with Eswaran and Kotwal's theory of sharecropping as a response to inefficiency of landlords in supervision and inefficiency of



tenants in land management. Some Central Asian farmers may still be acquiring skills appropriate for market-based agriculture, which is why we observe sharecropping contracts in the rectangle in the bottom left-hand corner in Fig. 3, although the rectangle may be shrinking as skills are acquired. Eswaran and Kotwal (1985) predict that if economic development upgrades tenants' abilities or access to information, then sharecropping is replaced by rental contracts, and, if mechanization or other changes increase landlords' supervision efficiency, then sharecropping is replaced by wage contracts.

## Conclusions

The literature on sharecropping largely supports the Marshallian view that share arrangements are inefficient, although in the presence of transactions costs or asymmetric risk aversion share arrangements may be rational contract choices. The persistence of sharecropping in Central Asia from pre-Soviet agriculture through the turmoil of collectivization, decollectivization and cautious (and at times haphazard) land reform suggests that sharecropping may also be a response to institutional uncertainty. Specific features of the semi-reformed Central Asian economies, such as cash shortages in Uzbekistan or bans on sub-leasing in Kazakhstan, provide institutional defects that sharecropping may address. Wider uncertainty, associated with insecure land tenure arrangements and distorted (or absent) input markets, provides a more general explanation for adoption of hybrid sharecropping contracts.

The results reported in this paper emerged somewhat unexpectedly from surveys intended to answer various agrarian production questions. In both Kazakhstan and Uzbekistan, the legal status of sharecropping is unclear; subleasing is restricted or banned, but sharecropping is not directly mentioned in legislation. The semi-illegal nature of sharecropping in Central Asia means that we cannot be comfortable that our data are representative, although they do indicate that sharecropping has not disappeared with economic development. Share arrangements clearly exist, but should we be surprised how common they are or how rare they are? Endogenous matching may allocate risk-neutral agents to risky activities, so that in equilibrium little sharing is observed (Ghatak and Karaivanov 2014) and our few sharecropping observations are outliers.

The next stage of our research will be to include questions specifically related to sharecropping in the next round of surveys in South Kazakhstan and Samarkand. We also intend to extend the coverage to the Kyrgyz Republic which has pursued a different, more liberal, approach to land tenure reform (Mogilevskii



et al. 2015) and to Tajikistan which is poorer and had different institutional development following the civil war of the 1990s.

If sharecropping is inefficient but a rational second-best response to institutional uncertainty, the policy implication is to pursue further reforms in which sources of market failure (e.g., access to credit or insurance markets) are addressed with credible commitments to avoid reform revision. Stabilizing institutions would close gaps and provide security within the laws, and should also mean ensuring transparency of land allocation procedures and equal treatment of applicants. Once property rights are secure and not dependent on the strength of property owners' rights or their informal ties with the power structure and sharecropping contracts are legally accepted, we could examine whether currently illegal or semi-legal renting or mixture of rent and sharecropping disappear.

In sum, from our case studies and the evolving agrarian institutions in Central Asia, we learn that there is a prevalence of theoretically inefficient tenancy arrangements such as sharecropping. Besides the fact that these institutions are reviving from the past when such institutions were formally accepted by the ruling state and society, today's sharecropping has an informal character and appears as a second-best option in the absence of formally "working" mechanisms and institutions. When farmers face contract choices, their response is determined by comparable situations, historically or culturally structured standards, and also reacting to strategies or incentives. There are formal responses but also informal responses (sharecropping or subletting lands on second cropping) which are rational in the actual institutional setting.

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## Appendix 1

See Table 3.



**Table 3** Evolution of major agrarian reforms in Kazakhstan and Uzbekistan 1990–2017. *Source:* Compiled by the first author, based on laws of Kazakhstan and Uzbekistan

| Years/countries | Kazakhstan  | Uzbekistan   |
|-----------------|---|--|
| 1990            | Law “on land” of Kazakh SSR<br>Law “on peasant farms in the Kazakh SSR”   | Law “On land” of Uzbek SSR   |
| 1991            | Law on privatization of property of state agricultural enterprises  | Providing land to households<br>Law “on cooperation”   |
| 1992            |   | Exclusive state ownership of land incorporated into the Constitution<br>Law “on dehqan farms”  |
| 1993            |   | Law on water and water use   |
| 1994–1995       | Sale and purchase of land right while maintaining the constitutional foundations of state ownership of land were introduced.  |  |
| 1995            | Decree of the President “on land” adopted, private ownership of land was constitutionally recognized  |  |
| 1998            | Law on peasant farming  | Law “on Farms”<br>Three categories of producers defined: shirkats (collective farms), dehqan ho’jalik (household plots), fermer khojaligi (individual commercial |
| 2001            | The law “on Land”—amendments were made in terms of temporary agricultural land use (short-term use—5 years, long-term use—49 years)                                 |  |
| 2002            | By 2002, owners of conditional land shares exercised their rights based on Land law   | Resolution “On measures for the reorganization of agricultural enterprises into farms”   |
| 2003            | Land Code of the Republic of Kazakhstan adopted—private property of agricultural land was introduced.<br>Law on agricultural water-users cooperatives<br>Water code |  |
| 2004            |   | Law on farm enterprises (determining the minimum size)   |
| 2005            | Law on state regulation of the development of agriculture and rural territories   | Measures for transforming agricultural cooperatives (shirkats) into farm enterprises   |
| 2006            |   |  |
| 2007            | Law on the development of the cotton sector   |  |



Table 3 (continued)

| Years/countries | Kazakhstan  | Uzbekistan  |
|-----------------|---|---|
| 2009            |   | 1. Wave consolidation of farms  |
| 2010            |   | “On Measures to Further Optimize the Size of Land Plots of Farms”   |
| 2011            |   | 2. Wave consolidation of farms  |
| 2012            |   | 3. Wave consolidation of farms  |
| 2013            | Government decree on program of agricultural agribusiness | Also decrease of the land size or farm liquidation became possible<br>“On approving the provision regarding the procedures of optimization of the land size plot of the farms and their liquidation |
| 2014            |   | Optimization toward consolidation   |
| 2015            | Law on agricultural cooperation                           | Further measures of reforms and development of agriculture for 2016–2020.   |
| 2016            |   | Adjustments of cropping structures  |
| 2018            |   | Optimization toward consolidation<br>Cotton and wheat plots (100 ha), crops and vegetables (20 ha), etc   |



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