

Contract choice under Institutional Uncertainty

Agrarian institutions and contract choice in Kazakhstan and Uzbekistan.

Nozilakhon Mukhamedova and Richard Pomfret

Abstract

Sharecropping continues to be a widespread phenomenon, but its prevalence is often difficult to explain. This paper follows an evolutionary approach to investigate changes in contract choices that have occurred between Soviet and present times in two rural regions of Central Asia: South Kazakhstan and Samarkand province of Uzbekistan. Contractual relationships are placed in an uncertain environment over the last half century from the late-Soviet planned economy to different approaches to land reform in the successor states. Actors might incline towards opportunism and contract failures, often found in manipulation of timelines, payments arrangements and farm maintenance. The main conclusion is that under institutional uncertainty actors will adopt variations of sharecropping arrangements as a second-best contractual arrangement.

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Sharecropping is a recurrent institutional feature of agriculture that has puzzled economists. Marshall 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.¹ Even if sharecropping has historical roots, it should disappear because landowners can obtain more by offering fixed rental contracts. Hence the Marshall Paradox: Why do we still observe sharecropping?

Drawing on survey evidence of land and labor institutions in Central Asia, we focus 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, through the dissolution of the Soviet Union and end of central planning, to separate reform trajectories in the newly independent countries. A quarter century after independence the institutional evolution is still ongoing. With institutional uncertainty, past choices can persist long after the conditions underlying the choices have changed, and thus can influence current economic outcomes. Therefore, path-dependency plays an important role in shaping institutional arrangements in agricultural production and decision making.²

Our evidence is drawn from structured interviews of farmers, which were conducted in conjunction with a larger survey of farmers in South Kazakhstan and Samarkand region of Uzbekistan in November 2016. Interviewees were encouraged to relate their current

¹ 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.

² Our approach is consistent with economic historians, notably Douglass North, who emphasize the importance of institutions and the difficulty of institutional change, e.g. in explaining the timing and location of agricultural revolutions in Europe.

contract choices to earlier experiences. In the Soviet farming systems, experiments in contractual relations linking land and labor variation aimed at increasing productivity by moving workers from straight wage contracts to alternative forms of remuneration (Wadekin 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 & 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 empirical data. The third 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.

1. Why Sharecropping?

Explanations of the Marshall Paradox have focused on transactions cost and risk-sharing, or more generally a risk-incentive trade-off (Holmstrom & Milgrom, 1987).

Cheung (1968) explained the Marshall Paradox in terms of transactions 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; shareholding is observed because monitoring is costly or inadequate.³ Eswaran and Kotwal (1985) modelled 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 Otsuka, 1993; Sandoulet and de Janvry, 1995).

A second approach to the Marshall 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. By trading off the tenant's comparative advantage in labor supervision with the landlord's comparative advantage in risk-bearing, a share-cropping contract could provide a superior welfare outcome to the fixed rental contract even allowing for Marshallian inefficiency. Newbery, (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 (Hallagan, 1978).

An important issue under share-cropping 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-

³ 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, *Principles*, VI,x,4).

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.⁴ Studies that have found at least partial support for Marshallian inefficiency include Bell (1977) and Shaban (1987) on India, Laffont and Matoussi (1995) on Tunisia, and Jacoby and Mansuri (2006) on Pakistan. However, the development literature often concludes that 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.⁵

Even if Marshall was correct in arguing that sharecropping is generally inefficient, if farmers have off-farm options, sharecropping contracts can raise yields by making it more attractive for risk-averse farmers to devote time to farm activities. 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

⁴ 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.

⁵ 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.

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

2. Farming in Central Asia

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

Table 1: Sharecropping Evolution and Variations in Central Asia

Tenancy	Length	Share	Tenant's inputs	Landowner's inputs	Incentives
Chorikor (18 th century)	1 year	¼ wheat ⅓ cotton/sorghum from the harvest after tax	Labour	Land, water, monetary loan, seeds, forage, food	Flour, grains, ag. instruments, bulls, horses
Koranda (18 th century)	Long-term	½ harvest after tax	Labour, ag. tools	Land, water, shelter, seeds, food	Tenant may buy the land from its owner
Pudrat (80-90's)	1-Y, long-term	Share mixed with quota plan	Labour	Everything except labour	Actual – Fact = yield incentives
Permanent, Seasonal agricultural workers (today)	Long-term; Seasonal	50/50 33/67 Flexible & mixed Labor arrangements	Labour, Skills, knowledge, tools	Land access, Machinery, Irrigation Tools	Fixed wage, In kind produce, by-products.

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.⁶ Internal lease-holders were inside contractors, 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 these were not provided. Farm management had no obligation to pay the

⁶ Internal leasing gathered momentum after General Secretary Gorbachev praised the practice in a 1987 speech, although the practice was not legalized until 1989.

worker if no produce was grown, and any uncertainty was born by the farmer (in contrast to Stiglitzian risk analysis of sharecropping).

Although not 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, fixed rents in rice and vegetable production, and sharecropping arrangements for wheat and other cash crops. In these studies and in our research, a variety of forms of sharecropping was observed (Table 2).

Table 2: Examples of Hybrid Sharecropping

Cases of hybrid sharecropping

Actors	Benefiting conditions
Landlord	<ul style="list-style-type: none"> • Sharecropping on wheat and renting it (for free) for the second crop: The state plan burden shared. • Renting or sharecropping (even with lower profit) land on second cropping: land is fertilized –less costs to fertilize following year. • Tenants –Principals : Tenants are not only workers but are also investors • High-value, but capital intensive crop sharing (melons, potatoes): obtaining experience and Investment from tenant <p style="color: blue; font-size: small;">Contra: high-value cash crops are grown more commonly in owned than share-cropped plots in the same farms (Bell 1977)</p> <ul style="list-style-type: none"> • Not enough family/hired labor or wage works not affordable
Tenant	<ul style="list-style-type: none"> • Two stage sharecropping mechanism: labor for the 1 crop exchanged to rent or sharecropping on the 2 crop • Possibility to combine agricultural work on their own land with additional • Possibility of showing good performance and skills to get the land for a rent in future • Migrant tenants from Uzbekistan: better earnings, long term

The field research was conducted by Nozilakhon Mukhamedova in November 2016 in the Maktaaral district of South Kazakhstan and in Samarkand Province, Uzbekistan, within the framework of the AGRICHANGE project survey of 900 farms. Although questions about sharecropping were not included in the survey, the existence of sharecropping-type arrangements became apparent. Sixty semi-structured interviews were conducted among farmers during which communicative validation techniques were utilized to reconstruct possible subjective theories and definitions such as “sharecropping”. In the interviews,

sharecropping appears as an alternative to renting or owner'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 to a second crop. The free land or the land available after the first crop is given to workers to plant any crops they want; the only restriction with plots where wheat is to be planted is that the second crop should be harvested on time for planting the next crop.

3. Sharecropping as Second-best Option in the Presence of Institutional Constraints

In spite of 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).

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, Maktaaral)

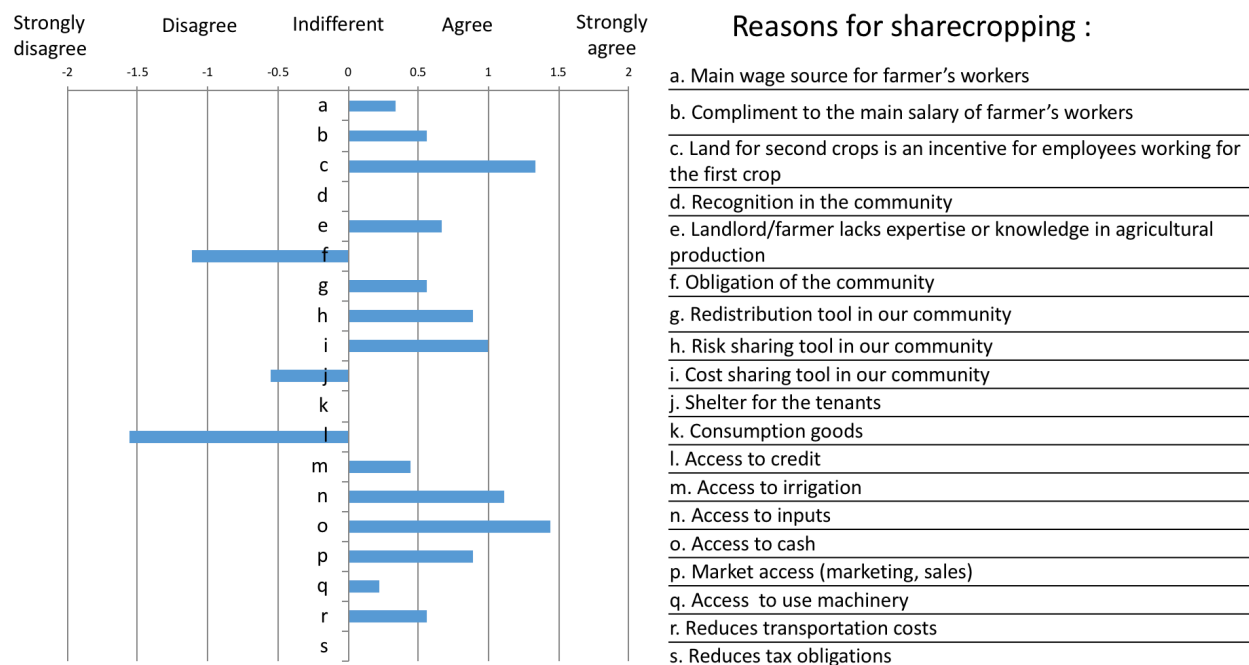
If farmers don't like sharecropping, recognize the potential for conflict among relatives and friends, and see it as a second-best arrangement, why does the institution exist?

Acceptance of a sharecropping type of arrangement is related to a variety of institutional features: absence or lack of landholdings for lease, restricted access to financial resources and accessibility to 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.

To more precisely establish the relative importance of the various institutional features in explaining the presence of sharecropping interviewed farmers were asked whether they agreed or disagreed with nineteen possible reasons for sharecropping. The responses are summarized in Figure 1. 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. Consistent with the examples in Table 2, land for a second crop is 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).

Figure 1: Reasons for Sharecropping, average response, Likert 5-point scale



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 limits that option.⁷

4. Determinants of Contract Choice

Institutional constraints may explain the prevalence, and persistence, of sharecropping. The *puadrat* 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 the degree to which lack of monitoring or land management skills matters may depend on crop and technology choice.

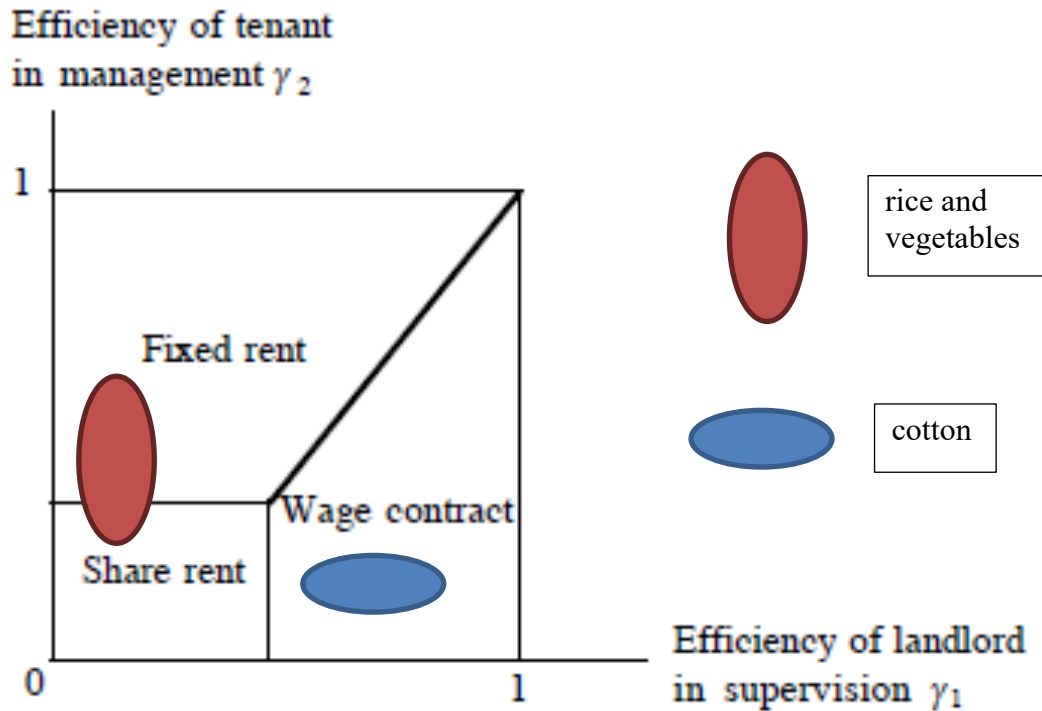
In Figure 1, lack of expertise by the farmer or the landlord is a reason given for preferring share contracts. This fits with Eswaran and Kotwal's theory of sharecropping as a response to inefficiency of landlords in supervision and inefficiency of tenants in land management. Some Central Asian farmers and monitors 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 of Figure 2, although the rectangle may be shrinking as skills are acquired. Eswaran & 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.

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 than in rice and vegetable production. In South Kazakhstan share contracts are common for melons, which are seen as a high-value crop that is risky and in which local

⁷ Interviews were conducted in Uzbekistan in November 2016 before the monetary reforms undertaken by President Mirziyoyev in 2017-18.

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 farmer is paid 30 percent of the value of the crop.

Figure 2: Contract Choice depending on Efficiency of Tenant and Landlord



Source: Eswaran and Kotwal (1985); figure by Martin Petrick, based on Sadoulet and de Janvry (1995).

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. 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.

5. 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.

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