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Leibniz Institute of Agricultural Development
in Transition Economies

*Organization of rural labor and
contractual arrangements*

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- I. Introduction : Challenges for rural agrarian institutions in Central Asia
- II. Objectives and questions of the research
- III. Theoretical framework:
 - theory of sharecropping
 - empirical evidence
- IV. Methods and materials
- V. Expected outcomes

I. Challenges for rural agrarian institutions

- Incomplete markets
- Imperfect information
- Stratification of population in agrarian economies (e.g. access to land)
- Risks (e.g. water shortages, land degradation)

May lead to...

- low productivity
- inefficient resource allocation or overexploitations of resources
- agency problem (low performance of workers)
- high transaction costs
- Unattractiveness of agricultural labour markets

I. Challenges of rural agrarian institutions

- **Transition to market economy**
 - Mix of old and new institutions
 - Land reforms, farm restructuring
 - new actors
 - different levels of access to land, production inputs and outputs
 - crop diversification
- **Capacities of rural actors to cooperate and decide on institutional arrangements is leading to higher productivities and rural welfare improvements**
 - Land reforms and establishment of commercial farms and smallholder households changed the structure of the labour sector and land relations.
 - Several variation of labour arrangements are observed in Central Asia including sharecropping.

(Djanibekov, et. al 2013; Lerman 2009; Veldwisch 2008)

- **Sharecropping** = ancient institution which occurs when a farmer (tenant) uses the landowner's farmland in exchange for a share of agricultural output which the peasant farmer grows. Proportions of the shares are fixed in advance.
- Sharecropping has become a history and geography persistent evolutionary selected institution.
- Theoretical puzzle for neoclassical economists
 - Less efficient than other types of farm tenancies (issues with monitoring and supervision of labour effort and use of inputs)
 - Coexistence with cash tenancy and wage-labour farming
 - Customary crop shares (50/50)

(Hayami and Otsuka 1993; Ellis 1993)

Incentive provision if effort is non-contractible

- A linear payment schedule

$$w = r + \alpha y$$

where w =wage, r =fixed rate, y = farm output, α = output share

Define different contractual modes:

	r	α
Fixed wage	> 0	0
Piece rate	0	$0 < \alpha < 1$
Mixed / sharing	< 0	$0 < \alpha < 1$
Fixed rent tenancy	< 0	1

Solution = **risk-incentive trade-off**

(Holmstrom Milgrom 1987)

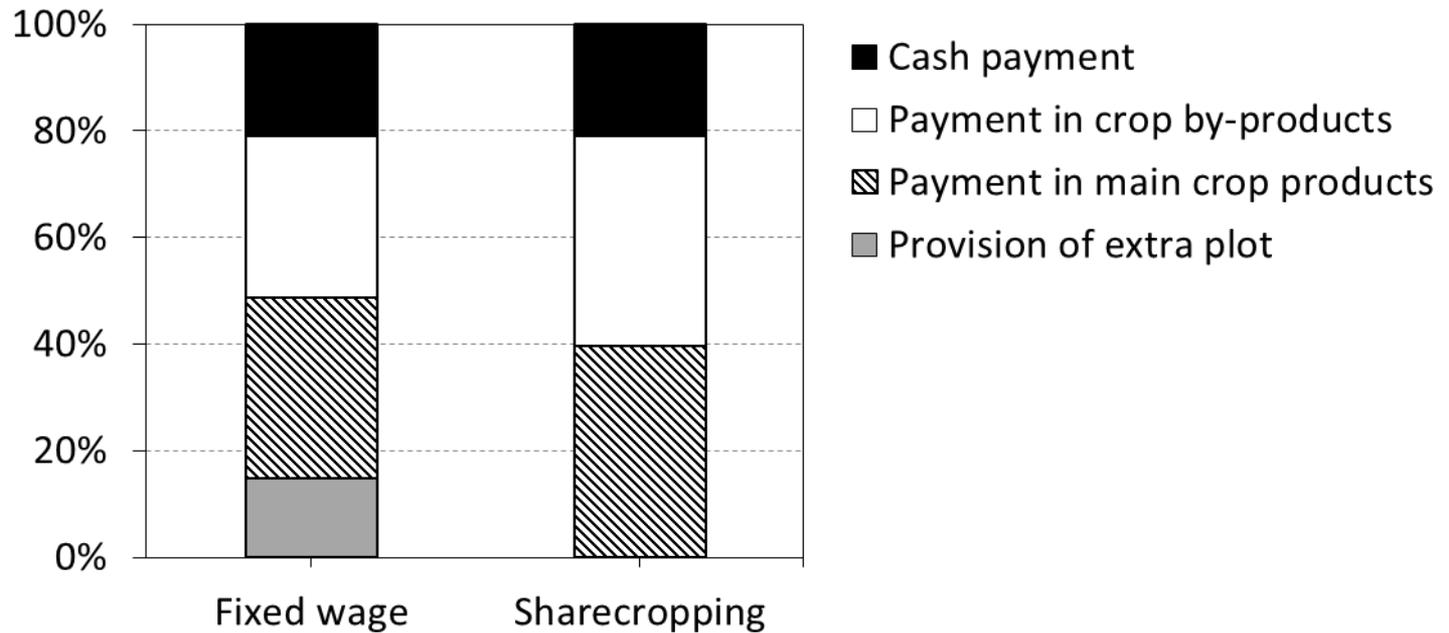
- What kind of tenancy and labour arrangements can be observed in Central Asia?
- How efficient are these contractual arrangements measured in terms
 - of productivity and variations of tenancies such as sharecropped and owner-operated land ...
 - of labour incentive systems applied to tackle the supervision and monitoring issues.

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.

Djanibekov, et. al 2013 Usmonov et al. 2006

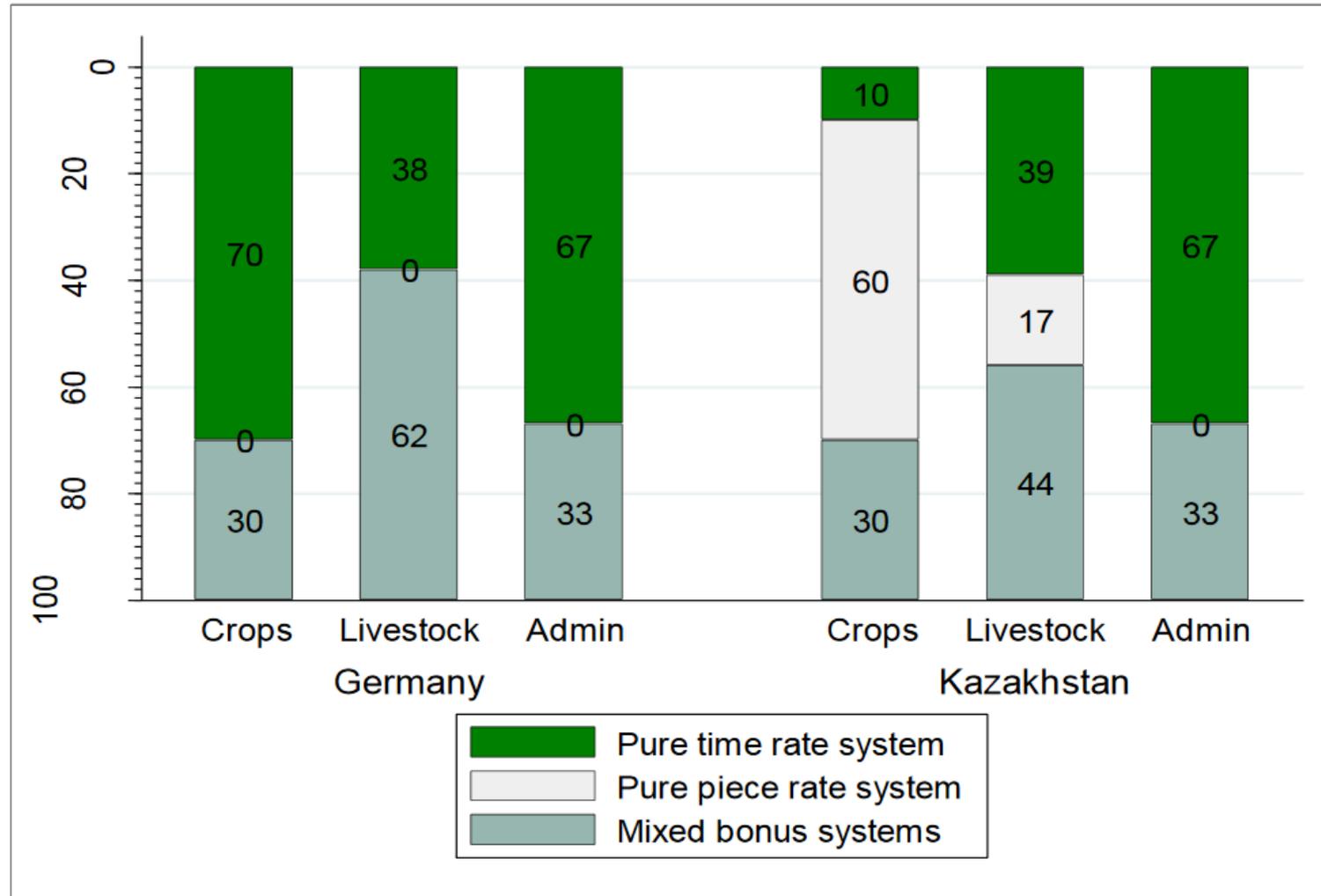
% of all observations



Source: Djanibekov et al., (2013)

Pay systems compared

Corporate farms in East Germany (N=92) & North Kazakhstan (N=50)



Source: Petrick M. 2016 based on Davier 2007

- “Rules of community control may be explicitly codified with a formal organization of enforcement (state mediation), or they may be enforced by norms implicitly understood by members of the community with application on an ad hoc basis”.

(Aoki, 2001, p.)

- Sharecropping arrangements are considered to be enforced under interlocked markets that formally or informally might be contained in such a contract.

(Ellis, 1993)

Authors	Sharecropping Models
Marshall (1920)	Sharecropping is inefficient because the tenant is paid only a percentage of marginal product.
Cheung (1969) Stiglitz (1974)	Risk sharing: risk dispersion makes sharecropping a dominant arrangement under some conditions
Allen (1982)	Self-selection effects: sharecropping can effectively tackle the tenant's adverse selection problem
Eswaran and Kotwal (1985), Agrawal (1999)	Moral hazard: sharecropping can handle different types of opportunistic behavior on the part of the landlord or the tenant under different restraints
Ray and Singh, 2001	Limited liability: limited liability tenants with insufficient collateral seek and obtain share crop contracts
Kassie and Holden (2007;2008)	Threat of eviction: Threat of eviction upon unsatisfactory performance of the tenant increases the incentive to work hard in the first period

Main drivers of agrarian contracts

Legal institutions

Land, water legislations
Labour code

- Taxation
- Farming entities
- Agrarian contracts

Socio-political environment

Policy agenda
Public policies
Institutional stability
Socio-demographical status

Land structure

Forms of access to land
Distribution of land tenure
Procedures of registering
and unregistering from land
ownership/leasing rights

Environment and resource availability

Soil quality
Water availability
Geographical characteristics/
Location

Availability of inputs and access to market

Seeds	Infrastructure
Fertilizers	Labour
Machinery	Credit
Other technology	

Farmer/ Household characteristics

Educational level, personal attributes, prior experience, management and entrepreneurial skills;
Financial capital (income, assets, social benefits)
Social capital
Access to markets (agricultural and non-agricultural employment, output markets etc.)

- **Testing for efficiency of sharecropping**

- Sharecropping associated with an average loss of productivity
- Controlling for irrigation, plot value and observed soil characteristics, farmers are more productive and use inputs more intensively on their own lands

(Bell, 1977; Shaban, 1987)

- Share tenancy can be no less efficient than owner –operated or fixed rent contracts

(Jacoby and Mansuri, 2009; Otsuka et. al, 2003, Sadoulet et al, 1997;)

- Farm managers' surveys (plot level) - landlords perspective
 - Land ownership & land transactions
 - Land tenure & production
 - Productive inputs and product outputs
 - Tenure arrangements
 - Labour and non-labour characteristics
 - Monitoring and supervision
- Farm workers' surveys (plot level) – tenants perspective
- Econometric analysis of the generated and collected data
- Qualitative Comparative Analysis approach (case study analysis and in-depth interviews).

We would like to receive answers for the following questions:

- How efficient are contractual arrangements across the tenancy variations (sharecropped vs owner-operated land)?
- Which are the factors that determine labour/tenure contract choices and what is their influence on productivity?
- Which incentives and rewarding systems are the most efficient and persistent?

- Which institutions or their combinations effect the existence of certain types of tenancy contracts in Central Asia?
- Which are the venues of enforcement between formal rules (e.g. regulations) and informal constraints (conventions, norms of behavior)...
- and complementarity between top-down(state) and bottom-up (farmers) approaches as well as market mechanisms?