Agricultural Market Participation and Household Welfare in Kyrgyzstan

Damir Esenaliev (IGZ/ISDC), Golib Sanaev (IAMO)

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1. Summary

2. Motivation and country context

3. Data source

4. Analytical sample

5. Descriptive statistics

6. Next steps

- Structural transformation takes place when labor moves from agriculture to other sectors and agriculture closes the productivity gap with other sectors

- This requires commercially oriented agriculture

- We examine whether participation in agricultural markets improve welfare of farming households

- We use rotating panel data from Kyrgyzstan for 2013-2020

- Our preliminary descriptive results indicate a modest, if any, difference in poverty from market participation

- The transition from low productivity, semi-subsistence agriculture to high productivity, commercialized agriculture has been a core theme of development and agricultural economics (Barrett, 2008; Bellemare et al, 2022)

- Commercialization reduces both income poverty and multidimensional poverty in Kenya; higher-income farmers gain more (Ogutu & Qaim, 2019)

- Positive impact of agricultural commercialization on assets, livestock ownership and income in Ethiopia (Ojong et al, 2022)

Kyrgyzstan

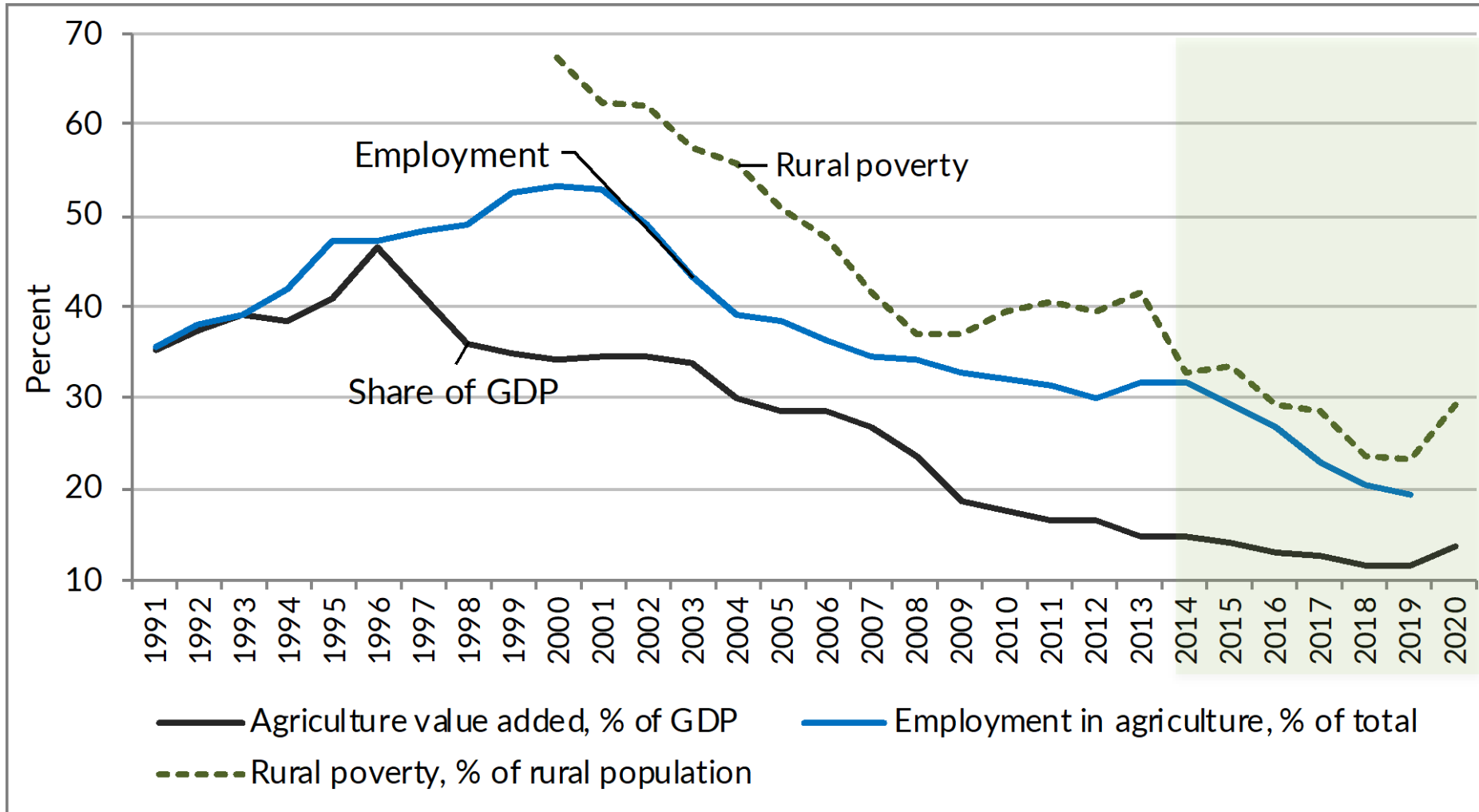Landlocked, mountainous

Population- 6.9 mil (2022)

Rural population - 2/3

GDP per capita – 1,174$ (2020)

Poverty rate – 25% (2020)

Food insecurity - 24% (2017)

Source: http://www.nationsonline.org/oneworld/map/kyrgyzstan-administrative-map.htm

Source: WDI and NSC

- Kyrgyz Integrated Household Survey (KIHS) is a multi-topic rotating panel survey of households.

- Launched in 2003, conducted annually.

- Total sample is around 5,000 households, representative at regional and national levels.

- We use data 2013-2020 (new sample); eight waves of the data.

- We use data on agricultural production and sales at product-household level; both crops and livestock (products); we have data on AG inputs and own consumption.

- We use household consumption and income data compiled by the National Statistical Committee to analyze welfare.

- We use the sample of 30K households who have AG land and livestock, representing 5.4K unique HHs.

- About 47% of HHs are present in all waves; +19% present at least in three waves.

- About 47% of the sample HHs produce and sell their AG products

Year	Total # of HHs	No AG activity	Non-sellers	Sellers	% sellers
2013	3,786	1,001	895	1,890	50
2014	3,824	1,102	740	1,982	52
2015	3,825	1,180	853	1,792	47
2016	3,819	1,140	878	1,801	47
2017	3,794	1,252	992	1,550	41
2018	3,782	1,221	833	1,728	46
2019	3,778	1,226	879	1,673	44
2020	3,750	1,221	732	1,797	48
Total	30,358	9,343	6,802	14,213	
% to total			31	22	47

Not a trivial question as it seems: the denominator matters

$Market\ participation = Sales_{year} / (Stocks_{beg\_year} + Production_{year})$

Which prices to use to calculate value of stocks, production, and sales?

   - We used transaction prices at product-household level for sales;

   - Used product average prices at regional and country level for stocks and production.

What is 'production' in livestock?

- *In average, market participants sell 31% of the production*

- *HHs in South regions sell 33%; in North – 30%.*

- *Some variation over time*

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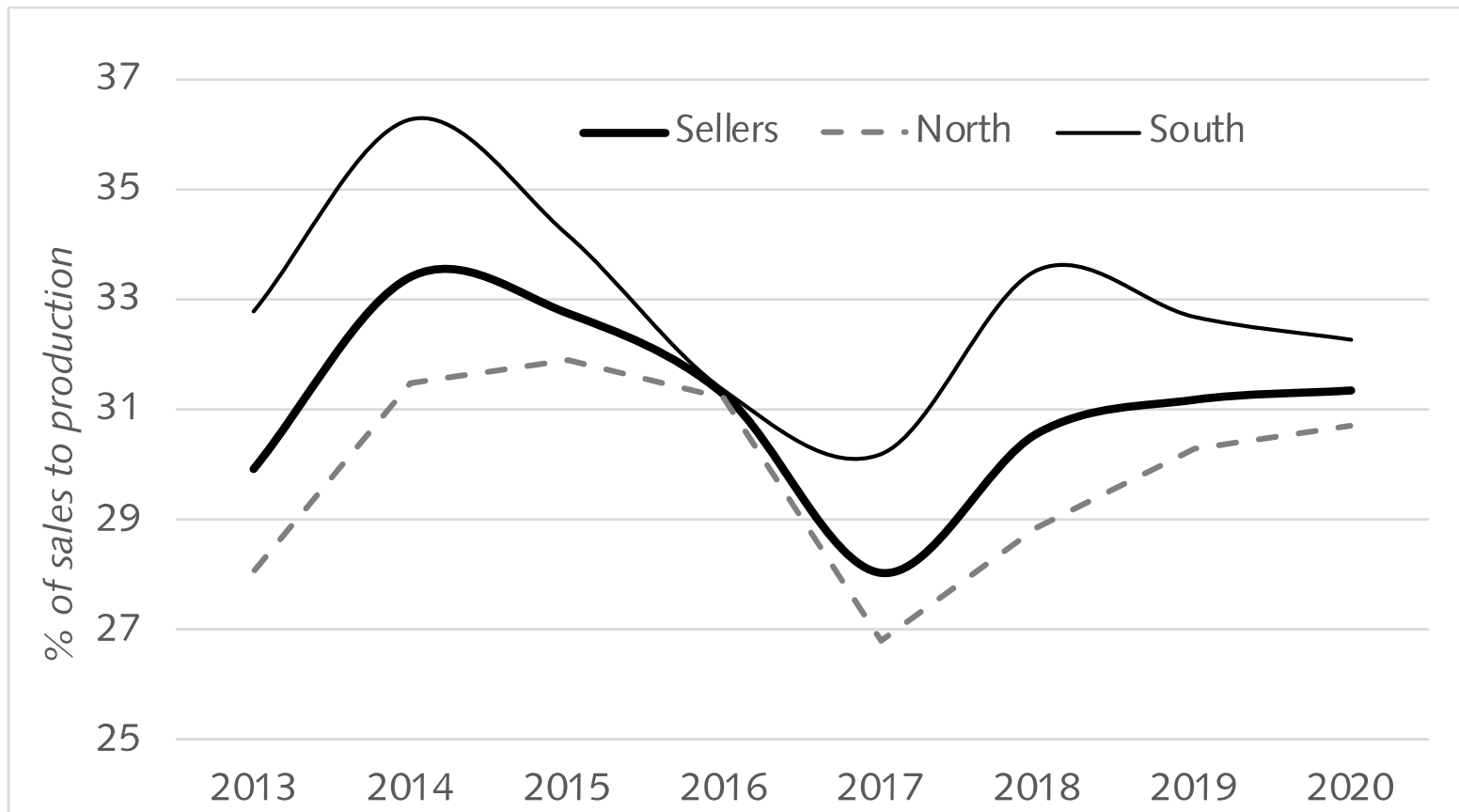
Poverty rate of market participants seem to be about the same for other groups
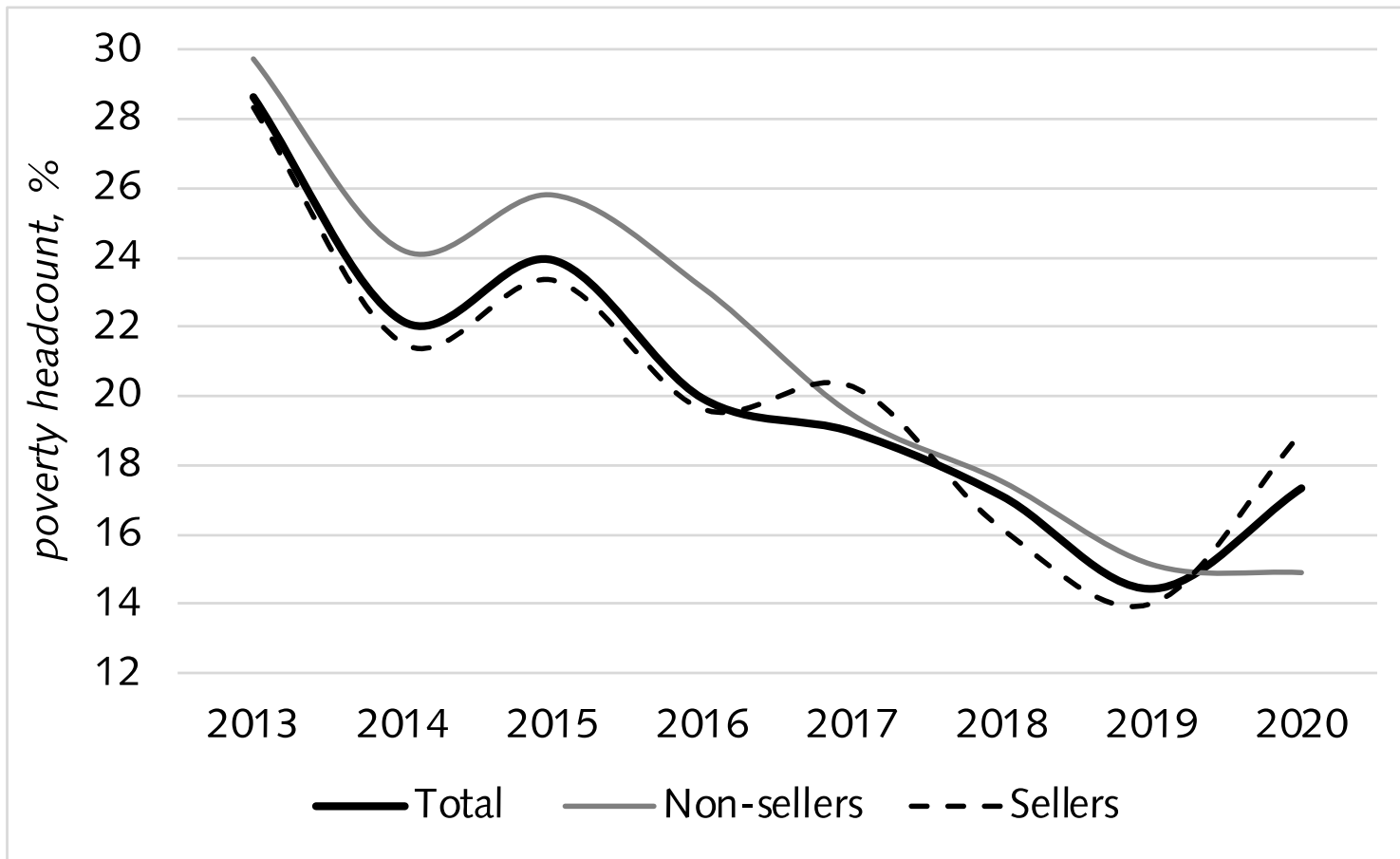
	Total	Non-seller	Seller	Diff.
Welfare indicators				
Poverty rate, %	20.3	20.2	20.4	
Extreme poverty rate, %	0.8	0.8	0.7	
Per capit HH consumption, Soms/day	143	147	138	***
Per capita HH income, Soms/year	69,835	79,387	58,985	***
Household demographics				
Years of schooling	9.9	10.1	9.7	***
Household size	4.2	3.9	4.5	***
Workage members	2.3	2.2	2.4	***
Household assets				
Operational AG land, ha	0.78	0.26	1.38	***
Livestock units	7.1	1.5	13.5	***
House area, m2	85	80	91	***
No. of cars owned	0.32	0.27	0.38	***
No of mobile phones owned	2.2	2.1	2.4	***
Products				
No of AG products produced	6.3	2.2	10.9	***
No of crops & livestock-based products	4.5	3.7	4.8	***
No of livestock types owned	4.1	2.7	4.4	***
Location				
South oblasts, share	0.43	0.46	0.38	***
Rural residents, share	0.54	0.30	0.81	***
Sample size	30,358	16,145	14,213	
Source: KIHS 2013-20				

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Average marginal effects with 95% CIs
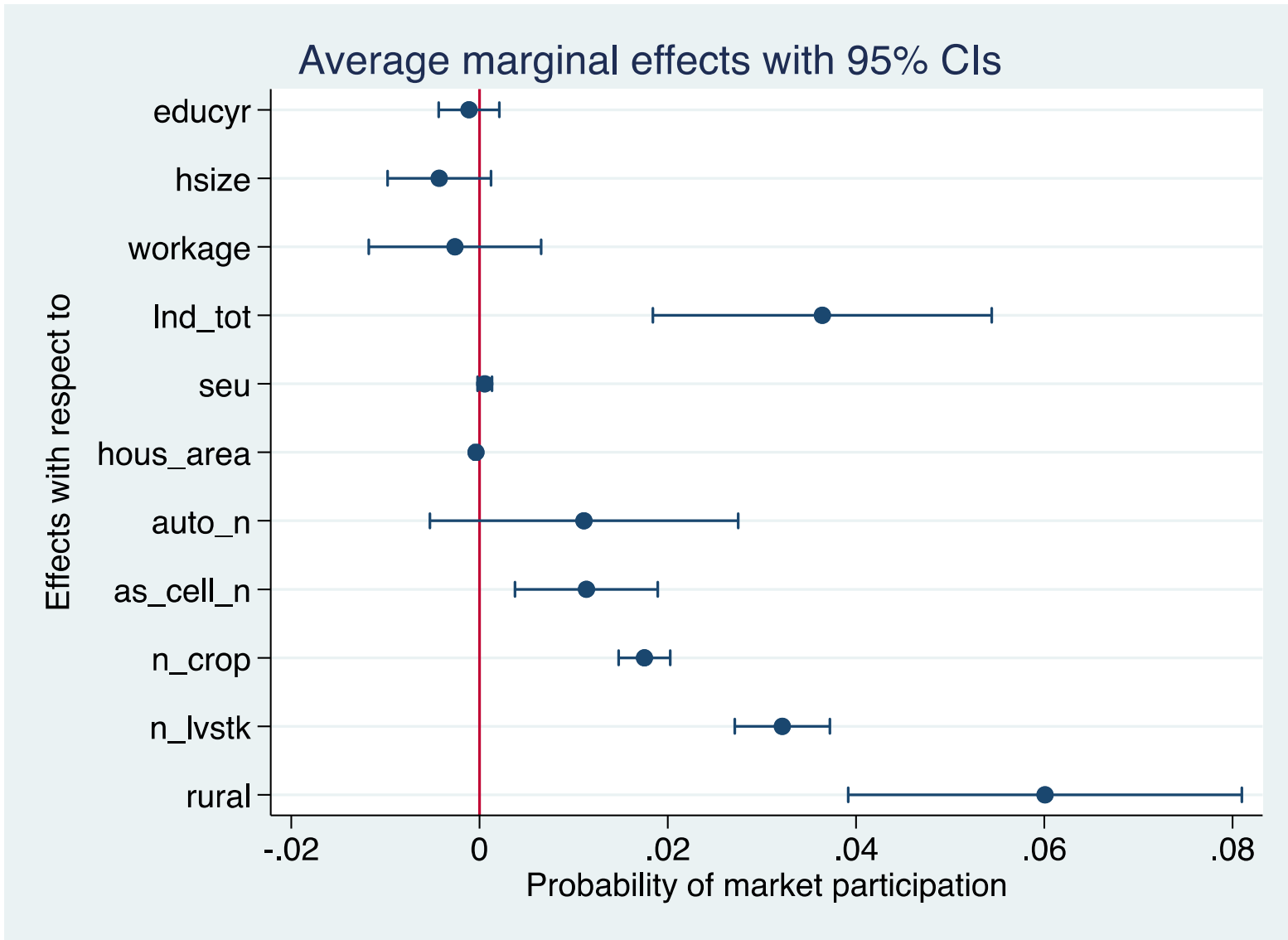
- Next steps:
  - Make decisions on analytical sample (e.g. min size of land plot and production)
  - Include labor allocation data
  - Estimate welfare effects
- The data is detailed at product-household level and has potential for more research topics
  - Price shocks and production decisions
  - Evolution of self-subsistence to firm-like farms
  - Interplay between crops and livestock production

- We explore the determinants and welfare effects from market participation by farm households in Kyrgyzstan

- We use the KIHS rotating panel data for over 30 thousand households in the period from 2013-2020

- We find that about half of our analytical sample participate in markets; they sell about a third of produce in markets

- Descriptive analysis does not reveal advantage in lower poverty for sellers compared to non-sellers

- The productive assets, such as land, seem to drive market participation

- Positive welfare effects are not found at this stage of research

email: esenaliev@igzev.de