The Impact of Migration and Remittances on Crop Production and Rural Income in the Kyrgyz Republic

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Outline

I. Why a study on migration in KR?

II. Theory, methods and data

III. Empirical estimates of migration effects

IV. Discussion and conclusion

I. Introduction

- Migration and development

  → Impact of M on economic development in source communities

  → Impact on agricultural sector

  → Impact on crop production

- Possible implications for policies:

  - food security/self-sufficiency

  - rural development policy

I. Introduction: the case of Kyrgyz Republic

- Small, open, transition economy
- Number of migrants:
  - Up to **500** thousand people (IOM, 2006)
  - Up to **600** thousand people (MLSD, 2010)
  - vs. **5.7** mln total population
- Main destination: Russia
- Remittances to GDP ratio in 2013: **31.4%** (World Bank, 2014)
- Majority from rural areas

I. Introduction: Research Questions

1) How does **out-migration** of household members affect crop production in the KR?

2) What is the impact of **remittances** on crop production?

3) What is the **impact** of migration on rural welfare?

II. Theories on migration and development

The New Economics of Labor Migration

- First defined: Stark and Bloom (1985); Stark (1991)
- Migration
  - a risk-sharing behavior of households
  - a strategy to overcome market constraints
- A household (not an individual migrant) is an appropriate decision-making unit
- Migration can help achieve transition from familial to commercial production

II. Theories on migration and development

NELM hypothesis (Stark 1991, Rozelle et al. 1999):

1. In the presence of market imperfections (e.g. absence of labor markets), migration may constrain rural production → the **"lost labor" effect**.

2. Remittances can compensate for the "lost labor" effect via resolving households' cash constraints: e.g. **credit constraints**.

II. NELM: Empirical evidence (1)

Total Agricultural Output

- Short-run decline, but increased investments through remittances in the long run
- Lucas (1987) for Botswana, Malawi, Lesotho, Mozambique, TS data

Yields

- Negative effect from migration; positive, but smaller from remittances (Rozelle et al. (1999) for China)
- No impact from migration nor remittances (Jokisch (2002) for Ecuador)
- Decrease with migration, marginal increase with remittances (Gray (2009) for Ecuador)

II. NELM: Empirical evidence (2)

Farm technical efficiency

- Migration has an efficiency decreasing effect
- The effect present even at low levels of migration intensity
- Sauer et al. (2015) for Kosovo

Crop income

- Negative effect from migration, positive but smaller from remittances
- Taylor et al. (2003) for China; Atamanov and van den Berg (2012) for Kyrgyz Republic

II. Data and methods

- Data used: cross-sectional household level data for 2012

- Source: *Life in Kyrgyzstan* (LiK) Survey

- LiK is a country-wide survey; sample incl. 2,816 households

- Individual, household and community levels

- Urban:41%; Rural: 59%

II. Data and methods (2)

A system of recursive equations (Rozelle et al. 1999):

$$Y^C = \gamma_0 + \gamma_1 M + \gamma_2 R + \gamma_3 Z_Y + \varepsilon_Y \qquad (1)$$

$$R = \alpha_0 + \alpha_1 M + \alpha_2 Z_R + \varepsilon_R \qquad (2)$$

$$M = \beta_0 + \beta_1 Z_M + \varepsilon_M \qquad (3)$$

Y - Crop Production Value

R - Remittances

M - Number of migrants

Z_Y, Z_R, Z_M - household demographic, human- and physical-capital variables

II. Data and methods (3)

Estimation issues:

1. Endogeneity of migration and remittances with crop production

2. Self-selection bias from migration

Computational approach:

1. General Method of Moments Three-Stage-Least - Squares (GMM 3SLS)

2. Propensity Score Matching

III. Empirical Results

3.1 Migrants

Households in total: **1224**
Migrant households: **213 (17.4%)**

Migration intensity	Education level
With 1 migrant: 57.3% With 2 migrants: 33.3% With 3 or > migrants: 9.2%	Secondary general: 87.6% University degree: 12.4%
Destination Russia: 92% Kazakhstan: 6% Other: 2%	**Sector of employment** Construction: 41% Trade and repair: 24% Hotels and restaurants: 15%

Source: Own calculations based on the LiK Survey

# 3.2 Characteristics of migrant and non-migrant households

Fig.1. Average crop land and migration rate across regions
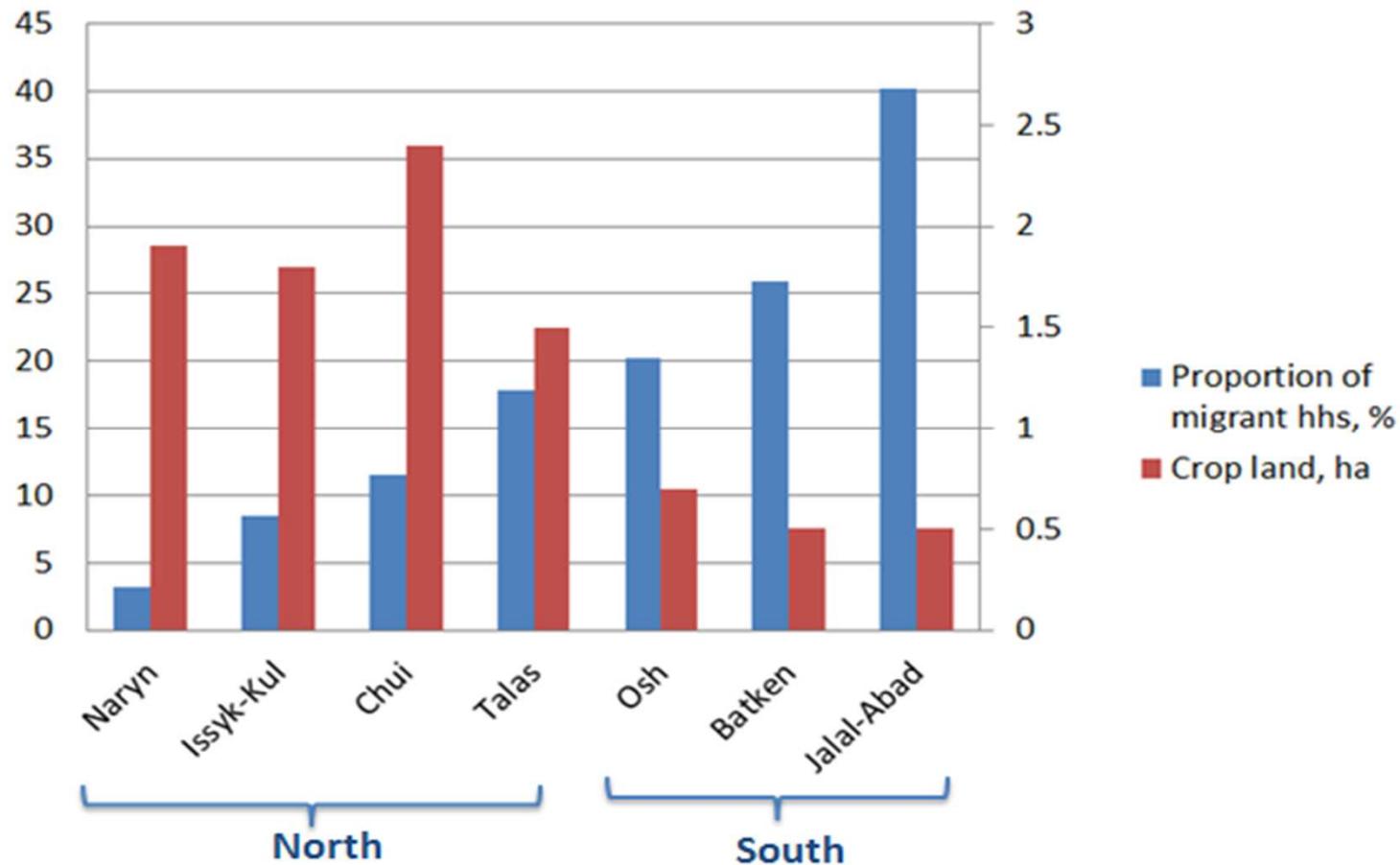
Source: Own estimates based on the LiK Survey

3.2 Characteristics of migrant and non-migrant households

Fig.3. Income sources and their relative importance
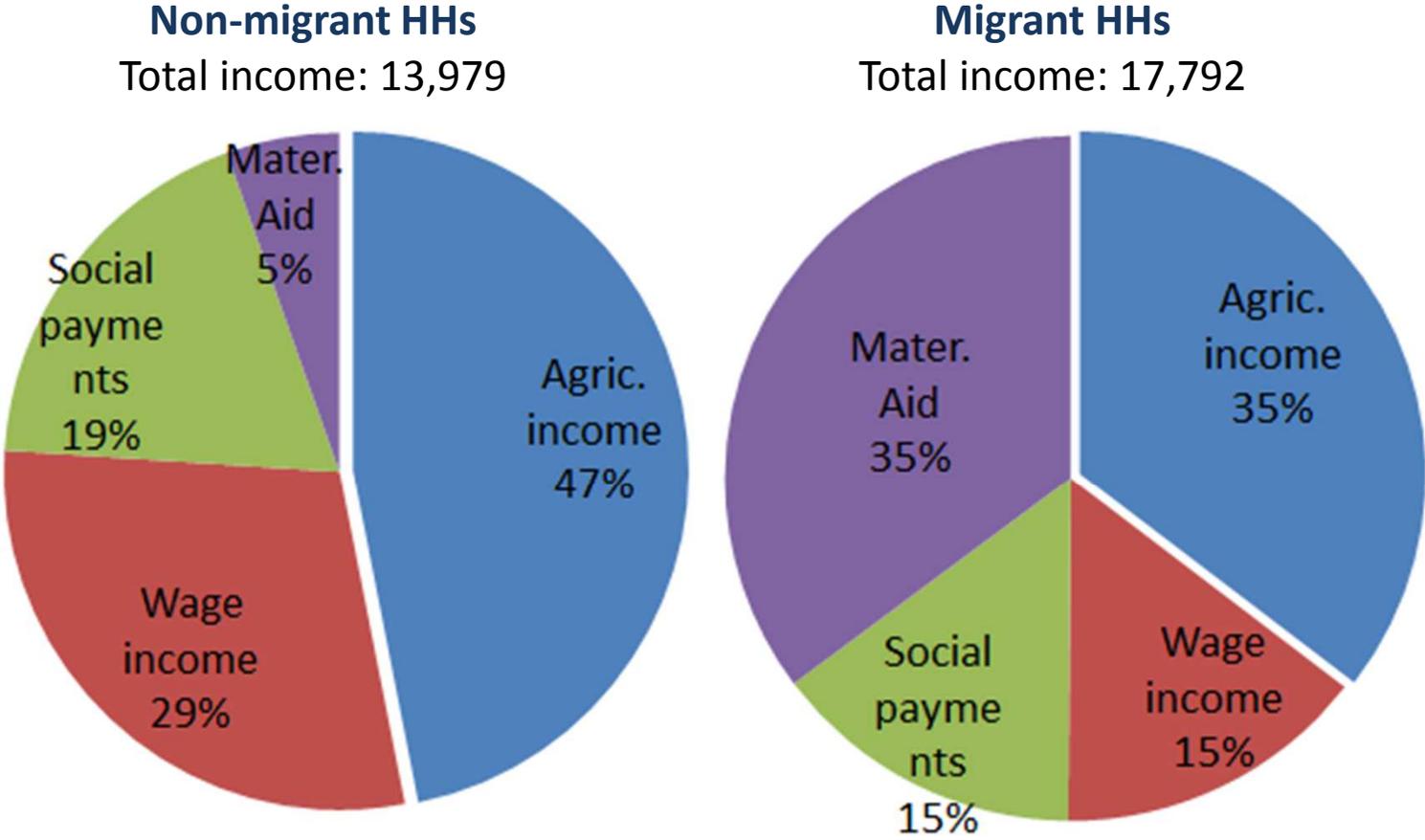
Non-migrant HHs
Total income: 13,979

Migrant HHs
Total income: 17,792

Mater. Aid 5%

Social payments 19%

Agric. income 47%

Wage income 29%

Mater. Aid 35%

Agric. income 35%

Social payments 15%

Wage income 15%

Source: Own estimates based on the LiK Survey

3.2 Characteristics of migrant and non-migrant households

Fig.4. Spending of remittances
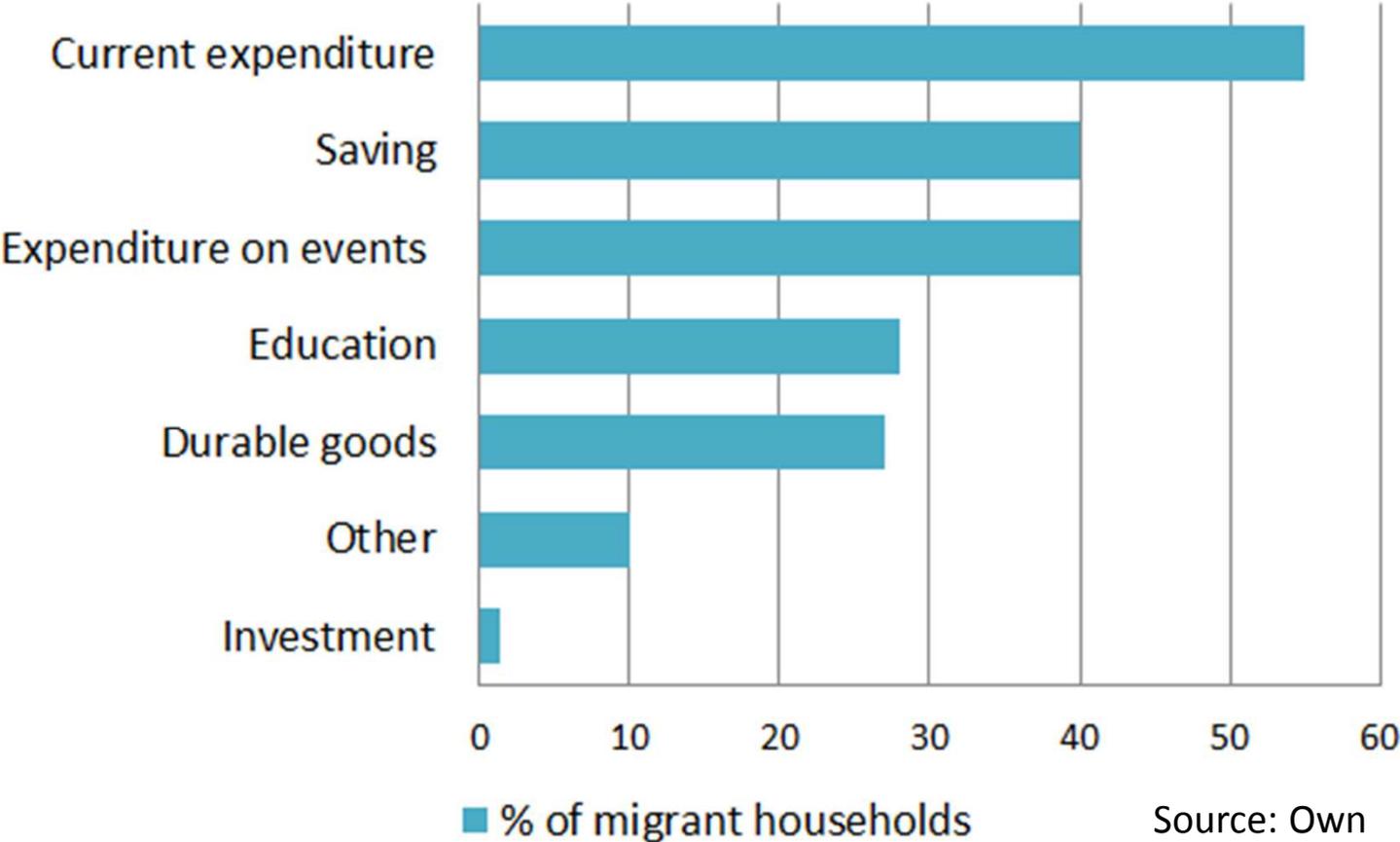
Source: Own estimates based on the LiK Survey

3.3 Regression Analysis

Table 1. Regression output: comparing different indicators

	Crop Production Value, Soms	Crop income, Soms
Number of Migrants	-31 625	**-54 057***
	(28 808)	(28 853)
Remittances	**1.32***	**1.32***
	(0.747)	(0.70)

Source: Own estimates based on the LiK Survey. *,**,*** significant at 0.1, 0.05 and 0.01 confidence levels respectively. Robust standard errors in parentheses.

Crop income: sold quantity*price (in the LiK Survey stated by the farmers themselves)

Crop production value: produced quantity*price (computed by authors)

3.4 Average Treatment Effect on the Treated (ATT)

Table 2. Average Treatment Effects of International Migration

Outcome variables:	ATT coefficient	Bootstrapped std. error	z-stat
Total annual income of the household, Soms	**56 382**	10 968.1	5.14***
Annual income from individual entrepreneurship, Soms	**-10 755**	6 338.4	-1.70*
Total value of physical assets, Soms	12 361	26 112	0.47
Total value of livestock, Soms	-26 894	16 458.6	-1.63

Source: Own estimates based on the LiK Survey. *,**,*** significant at 0.1, 0.05 and 0.01 confidence levels respectively.

IV. Discussion and Conclusions (1)

What do the results imply?

1. Number of migrants abroad does not affect the total crop production, but decreases crop income
   - →less commercialization of farms with migrants abroad?
   - →more consumption?
   - →less reliance/dependency from crop income?

2. Total income increases because of migration:
   - → Direct contribution of remittances
   - → Remittances invested elsewhere? (other than crop production)
   - → No multiplier effects yet

IV. Discussion and Conclusions (2)

Implications for agricultural/rural development:

- Investment in crop production not attractive. How to realize positive effects of remittances?

- Micro-credit programs rather not successful → could remittances be an alternative?

- Cooperatives against smallness of scale → migrant households can improve crop income?

- Changes due to the EAEU accession?

- Implicit discouragement of migration due to land policy?

References

ATAMANOV, A. and VAN DEN BERG, M. (2012): Heterogeneous Effects of International Migration and Remittances on Crop Income: Evidence from the Kyrgyz Republic. *World Development*, vol. 40, No. 3, pp. 620-630

INTERNATIONAL ORGANIZATION FOR MIGRATION (2006): Migration Perspectives Eastern Europe and Central Asia. Planning and Managing Labour Migration (Ed. By R.R. Rios) October 2006, Vienna.

ROZELLE, S., J.E. TAYLOR and A. de BRAUW (1999): Migration, Remittances, and Agricultural Productivity in China. *The American Economic Review*. Vol. 89, No.2, Papers and Proceedings of the 111th Annual Meeting of the American Economic Association, pp. 287-291

TAYLOR, J.E. (2006): International Migration and Economic Development. International Symposium on International Migration and Development. Turin, Italy, 28-30 June 2006.

WORLD BANK (2014): Annual Remittances Data. Last retrieved on 22.01.2016 from: www.econ.worldbank.org

Thank you for your attention!

II. Theories on migration and development

- "Developmentalist" views:
  - Migrants as agents of change and innovation
  - Investment of remittances; transfer of knowledge
  - Diffusion of modernization
  - Dominated development policies in the 1950s and 1960s (De Haas, 2006)
- The "migrant syndrome"
  - Underdevelopment; dependency, consumerist, "brain drain" (Adams, 1969; Lipton, 1980)

II. Theories on migration and development

The neoclassical Harris-Todaro model (Harris and Todaro, 1970):

- Two-sector model to explain rural-urban migration

- Migration depends on *expected* wage differentials

- Wage subsidy to agriculture and restricting free migration lead to welfare improvement

- The developmental role of migration is realized through factor price equalization