Labor market outcomes and the financial crisis: A case study of Tajikistan 2007-2009

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Motivation

- Case of Tajikistan is interesting:
  - Limited natural resources and manufacturing industry (main commodities are cotton and aluminum).
  - About 50% of the land is 3000 meters (or more) above sea level. Only about 6% of the land is arable.
  - High unemployment, with labor migration (mostly to Russia) as a common livelihood mitigation strategy.
  - Therefore heavy economic dependence on remittances of migrant workers.
- So far little research on possible impacts of the 2008/2009 financial crisis in Central Asia in general and Tajikistan in particular.

Research questions

The questions investigated are:

- What were the effects of the 2008/2009 financial crisis on labor market outcomes in Tajikistan?
- Were certain subgroups (e.g. females, poor households, high-altitude dwellers) affected more than others?
- Since Tajikistan highly depends on labor migration (mostly to Russia), can changes in migration patterns be observed during the crisis?

Previous literature and results

- **Dimova et al, 2005, 1996 crisis in Bulgaria:**
  - Substantial move out of paid labor
  - Reduction of public sector
- **Blunch and Sulla, financial crisis in Serbia:**
  - Both men and women affected by loss of paid labor
  - Harder for women to move into paid labor during first year of the crisis
- **McKenzie, 2004, 2002 crisis in Argentina:**
  - Young workers especially vulnerable to job loss
- **Danzer and Ivaschenko, 2010, financial crisis in Tajikistan:**
  - Strong effect of economic downturn in Russia due to decreasing remittances
  - Increase of Tajik labor migrants during crisis

TLSS Dataset

- Tajikistan Living Standard Survey (TLSS) for 2007 and 2009 (panel data).
- Representative on national, rural/urban and oblast level.
- Only working-age individuals (between 14 and 65 years) are included in the analysis.
- After strongly balancing the panel and adjusting for missing values/mistakes, 3042 individuals (1495 households) remain.

How can the effect of the crisis be investigated?

- An impact evaluation in the true sense is impossible, for lack of a suitable control group.
- However, before/after comparisons of labor market outcomes can yield interesting insights.
- Transition probabilities into the different labor market states (as used in the analysis of markov chains) can be estimated.

Domestic labor market vs. labor migration

Reasons for analyzing them separately:

- Decision to send a migrant abroad is assumed to take place on the hh level, since sending a migrant
  - is costly
  - requires redistribution of labor/responsibilities inside the household
- Influences of migrant hh members on labor decision of those at home:
  - Costs of migration have to be covered
  - HH members usually working might have to stay at home to fill the place of the person leaving

Domestic labor market vs. labor migration, ctd.

- Influence also might work the other way around:
  - If a hh member has a well-paying job, no one in the hh might have to migrate
- Endogeneity problem, but no suitable instrument available
- Solution: Only hhs without migrants enter the analysis of domestic labor market outcomes

The transition probability matrix

- The transition probability matrix p contains the probabilities of moving to state l in 2009 if the individual/household is in state m in 2007.
- If there are k states, it has the dimension k x k.
- Element p_{lm} denotes the probability to move from state l to state m.

$$p = \begin{pmatrix} p_{11}\ p_{12}\ p_{13} \ldots\ldots p_{1k} \\ p_{21}\ p_{22}\ p_{23} \ldots\ldots p_{2k} \\ .. \\ .. \\ .. \\ p_{k1}\ p_{k2}\ p_{k3} \ldots\ldots p_{kk} \end{pmatrix}$$

Estimating transition probabilities using predictions from a multinomial probit

- Allows for inclusion of covariates.
- Labor outcomes in 2009 are estimated on the subsamples of labor outcomes in 2007.
- Labor outcome in 2007 = base category against which the outcomes in 2009 are evaluated.
- Drawback: Quite data-intensive. Cannot be used for small cell populations, therefore categories have to be aggregated.

Summary Satistics for domestic labor market outcomes

	2007	N	2009	N	09-07 Sign.
All					
no paid work	0.580	1789	0.608	1862	0.029 **
wage regular	0.214	631	0.180	545	-0.034 ***
wage piece	0.117	357	0.135	401	0.017
self-employed	0.089	265	0.077	234	-0.012
Men					
no paid work	0.423	637	0.461	681	0.038 **
wage regular	0.262	380	0.239	345	-0.024
wage piece	0.187	271	0.194	287	0.008
self-employed	0.127	186	0.106	161	-0.022
Women					
no paid work	0.726	1152	0.746	1181	0.020
wage regular	0.168	251	0.124	200	-0.044 ***
wage piece	0.052	86	0.079	114	0.026 **
self-employed	0.053	79	0.051	73	-0.002

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Summary Statistics Labor Migration

	2007	N	2009	N	09-07 Sign.
No of migr					
zero	0.745	3703	0.655	982	-0.091 ***
one	0.196	896	0.248	365	0.052 ***
two and more	0.059	261	0.097	148	0.038 ***

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Full results from multinomial probit regression

No paid work in 2007

	(1)	(2)	(3)
	no paid work	wage employed	self-employed
age	-.005***	.003***	.002***
sex	-.174***	.128***	.046***
knowing Russian	-.031	.051**	-.021
secondary edu	.012	-.031	.019
dependency ratio	.029	.001	-.031**
location	.068**	-.083***	.015
altitude	.0001***	-.0001**	-.00001
material sector	-.098***	.057**	.041**
Predicted probabilities	.800	.141	.059
N	1789	1789	1789

Marginal effects

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Full results from multinomial probit regression

Wage work in 2007

	(1)	(2)	(3)
	no paid work	wage employed	self-employed
age	-.001	.001	-.0001
sex	-.095**	.031	.064**
knowing Russian	-.060	-.019	.079**
secondary edu	-.041	.095	-.053**
dependency ratio	-.025	.066**	-.041**
location	.041	-.048	.007
altitude	.00002	-.00002	-3.02e-07
material sector	.094**	-.116***	.022
Predicted probabilities	.326	.598	.076
N	988	988	988

Marginal effects

(d) for discrete change of dummy variable from 0 to 1

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Full results from multinomial probit regression

Self-employment in 2007

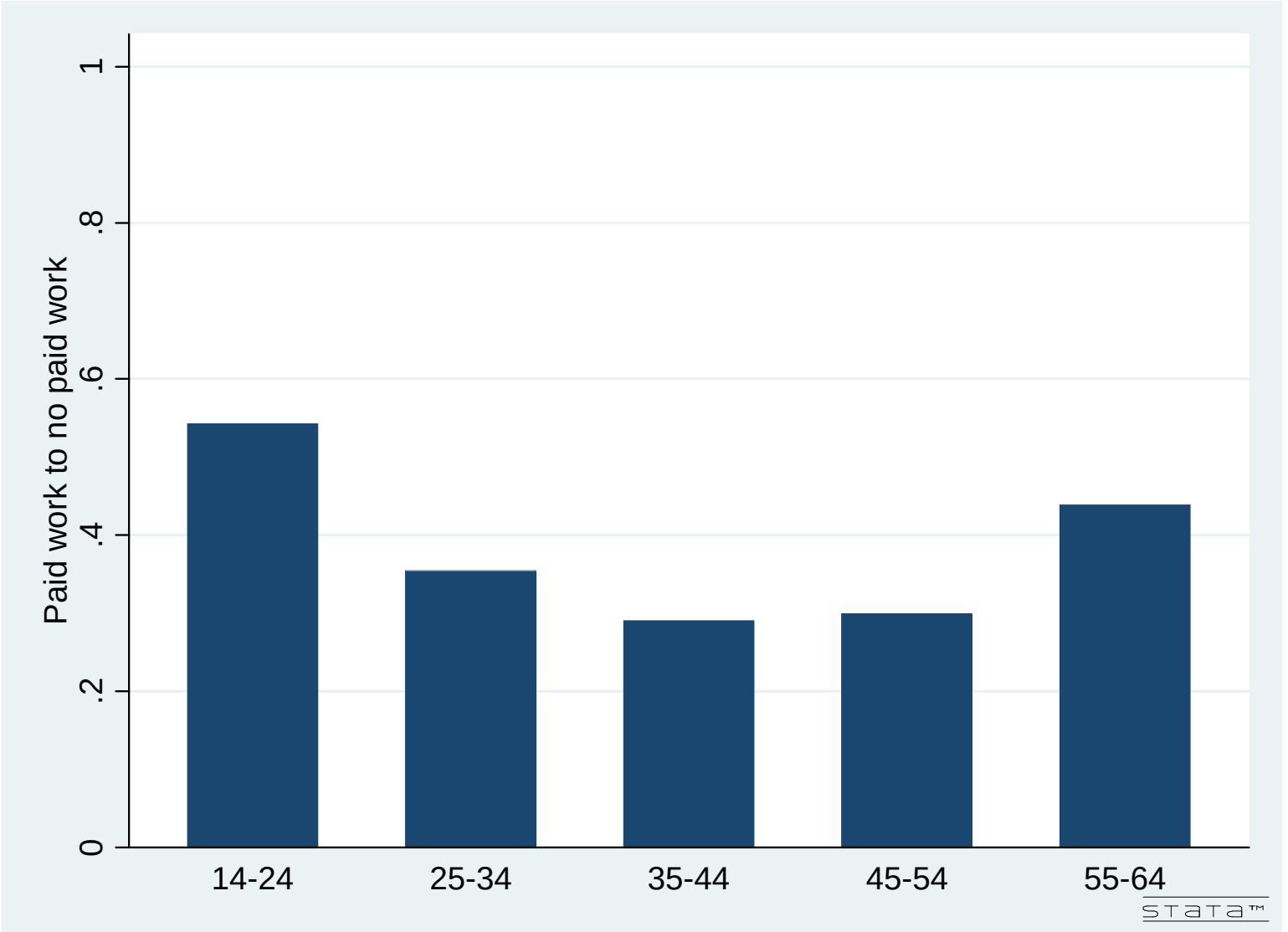
	(1)	(2)	(3)
	no paid work	wage employed	self-employed
age	. 002	.001	.001
sex	-.266***	.227***	.039
knowing Russian	.081	.029	-.110*
secondary edu	.012	-.060	.048
dependency ratio	-.050	.060	-.010
location	.080	-.278***	.199***
altitude	.0001	-.0002**	.00005
material sector	.068	-.038	-.030
Predicted probabilities	.414	.379	.208
N	265	265	265

Marginal effects

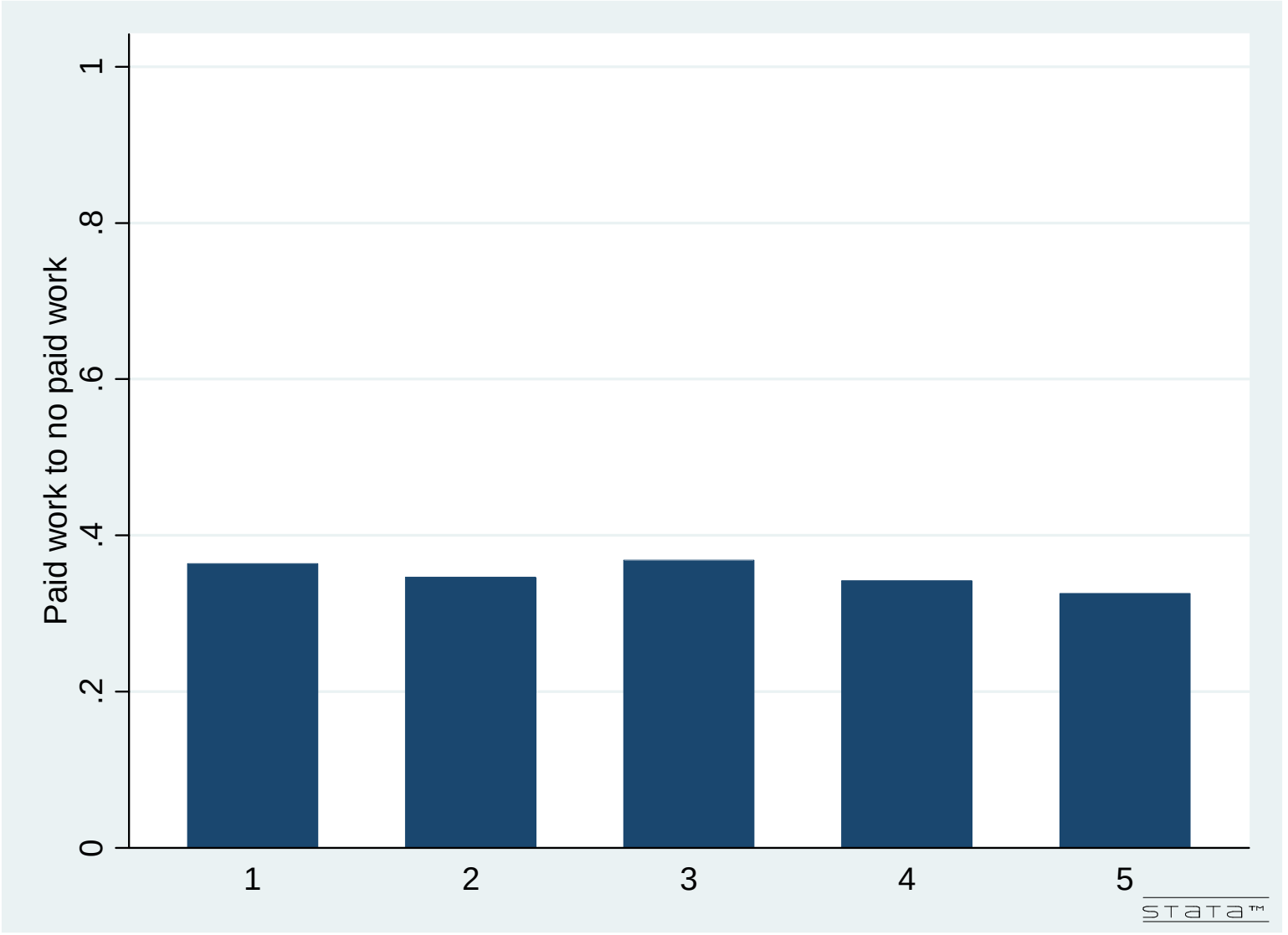
(d) for discrete change of dummy variable from 0 to 1

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Effect of age on transition probabilities



Effect of age on transition probabilities



Conclusion Domestic Labor

- **Data give some hints** at how crisis might have affected labor market outcomes. Results are similar to those by other studies.
- **Unemployment/inactivity/unpaid work is a persistent state** during the crisis.
- Being **middle-aged, male and knowing Russian increase** chances of moving out of it into paid work.
- Having previously worked in the **producing sector decreases** chances of staying in paid labor.
- **Self-employment seems the most vulnerable state**. During the crisis, entrepreneurs either leave paid work or (to a lesser extend) become wage-employed.

Labor migration outcomes

	(1) Migr in 2007	(2) No migr in 2007
r_workage	.188	.821***
r_sex	1.33***	.975***
r_edu_sec	.393	-.0708
trans_cash	-.438*	.0416
plot_pc2	.00261	-.021***
r_know_russian	.731***	-.192
tajik	-.28*	-.0535
altitude	-.0000398	.000144
Predicted Probabilities	.593	.262
N	366	1129

Marginal effects

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Conclusion Migration

- **The percentage of HHs with labor migrants** increased during the crisis.
- Labor migration could be a **possible mitigation strategy** in times of economic turmoil.

Thank you for your attention!