

Internal and international remittances in India: Implications for Household Expenditure and Poverty

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Background

- 10 million+ international migrants
- International remittances contribute \$70 bn. (4%+ of India's GDP) – largest recipient in world
- 300 million+ internal migrants in India

Evidence from India on international migration and remittances

- Remittances increased at 10% a year in 1992-2010 (Gupta 2010)
- International remittances improve the foreign reserve position of the country (Singh & Hari 2011)
- International remittances into Kerala accounted for 20% of state income in 1999-2004 (Aziz & Begum 2009, Kannan & Hari 2002); 25% of State GDP (Rajan 2011)
- Kerala, Punjab and Goa account for over 40% of international remittance flows to India (Tumbe 2011)

Internal migration and remittances in India

- 226 million internal migrants in 1991 & 309 million in 2001 (30% of pop.) based on Census (Bhagat 2005)
- Domestic remittances US\$10 billion in 2007-08 (Tumbe 2011) based on NSS 2007-08
 - 80% went to rural households
 - 30% of household consumption expenditure
 - Domestic remittance dependency was high in Bihar, Uttar Pradesh and Rajasthan, and most notably Orissa

- Internal migration is more likely to involve the poor, lower caste, and less educated and hence has implications for poverty reduction goals (Deshingkar et al. 2008)
- But no empirical analysis of impact of remittances on consumption expenditures and poverty in India so far
- Some evidence for Sri Lanka 2002-03 using PSM (Arunatilake et al. 2011)

This paper aims to fill that gap in the literature

Evidence on remittances, consumption and poverty from other countries

- Substantial literature suggests that *international migration and remittances*:
 - Increase incomes and lower poverty headcount, depth and severity of poverty (Adams & Page 2005, Adams 2006, Gupta et al 2010)
 - Improve education outcomes, greater access to healthcare, reduced child mortality (Cox-Edwards and Ureta 2003, Amuedo-Dorantes, and Pozo 2009; Drabo and Ebeke 2010)
 - Lower vulnerability to adverse shocks (Mohapatra, Joseph & Ratha 2009)
- But very little empirical evidence on development impact of *internal remittances* on incomes and poverty
 - Increase in rural income and reduced income inequality in Hubei province of China (Luo 2011)
 - Rising income inequality in Vietnam due to impediments to migration (Phan and Coxhead 2010)

Data and approach

- Use NSS 2007-08 nationally representative survey
 - 125,578 households (79,091 rural, 46,487 rural)
 - 3,961 households in sample have intl. migrants
 - 49,905 households have only domestic migrant
 - 71,712 have no domestic or international migrant
- Remittances
 - 3,060 (77.2% of migrant-sending households) received international remittances
 - 26,881 (53.9%) received domestic remittances
[Only 22 non-migrant households received remittances]

Household characteristics

- International migrant households more urban; domestic migrant households more rural
- Higher % of migrant households possess land
- Education of household head highest for international migrant households
- 36.5% of international migrant households are female headed vs. 24% domestic migrant households (vs. 8.4% of non-migrant households)
- % of households with domestic migrants that are SC & ST is three times more than international migrant households (Domestic migrant households similar to non-migrant hh)

Summary statistics on remittances & consumption

	Households with international migrant	Households with domestic migrant	Households with no migrant
Number of households receiving remittances	3,060	26,881	22
% of migrant-sending households receiving remittances	77.2%	53.9%	..
Mean Remittances (Rupees)	Rs. 72,522	Rs. 21,260	..
Median remittances (Rupees)	Rs. 46,000	Rs. 12,000	..
% urban households receiving remittances	83.6%	51.1%	..
% of female headed households receiving remittances	50.6%	34.5%	
Mean household consumption expenditure (Rupees)	Rs. 83,651	Rs. 51,421	Rs. 48,698
Mean household consumption expenditure per capita (Rupees)	Rs. 19,274	Rs. 11,058	Rs. 10,797
Median household consumption expenditure (Rupees)	Rs. 66,260	Rs. 41,573	Rs. 39,213
Median household consumption expenditure per capita (Rupees)	Rs. 16,255	Rs. 10,393	Rs. 9,803
Median remittance as % of consumption expenditures of remittances receiving households	72%	34%	..
Median food expenditure (Rupees)	Rs. 27,497	Rs. 22,143	Rs. 21,170
Median education expenditure (Rupees)	Rs. 1,500	Rs. 550	Rs. 580
Median health expenditure (Rupees)	Rs. 2,513	Rs. 1,217	Rs. 730
Number of households in sample	3,961	49,905	71,712

Empirical methodology

- Regression of consumption expenditures on indicator for whether the household has migrant or receives remittances
 - Expect positive sign
 - Coefficient will give difference in consumption between remittance-receiving and non-receiving households
- However, simple Ordinary Least Squares (OLS) will give biased estimates
 - Self-selection of migrants according to wealth, education, skills, networks
 - Unobserved heterogeneity, e.g. innate unobserved skills of migrants
- We use two approaches
 - Instrumental variables (IV)
 - Propensity score matching (PSM)

Methodology (ctd.)

Two stage IV regression

- First stage

Probit regression of the factors affecting the probability of migration and receiving remittances

Instruments:

- Domestic migration by past state-level migration in 1961 (as proxy for historical migration networks)
- International migration by distance from nearest US consulate

- Second stage

Use the predicted value of likelihood of receiving remittances as explanatory variable, along with household and community characteristics in consumption equation

First stage regression

- Factors Affecting Migration and Remittance Probability

$$P(R_{ij}) = \alpha + \beta_1 \text{Household characteristics}_{ij} + \beta_2 * \text{Household head characteristics}_{ij} + \beta_3 * \text{Community characteristics}_{ij} + \beta_4 * \text{State fixed effects}_j + \beta_5 * \text{Historical state level emigration}_j + \varepsilon_{ij}$$

- Household Size, Urban, Number of Children, Number of Women, Land Dummies, Scheduled Caste and Tribes, Other Backward Castes, Religion, Age of the Household Head, Female Headed Households, Married Head, Education of the Household Head: Primary, Secondary and Tertiary, Technical, Self Employed Head, Salaried Head, Casual Worker Head, State Dummy
- Instrumental Variables: distance from consulates (for international households) and migrants out of state in 1961 (for domestic households)
- Control group: Households with no domestic or international migrants

VARIABLES	intl_mig_hh	dom_mig_hh	remit_dummy_intl	remit_dummy_dom
Hhsize	-0.120***	-0.102***	-0.134***	-0.210***
Urban	0.143***	-0.226***	0.168***	-0.179***
Numberchild	0.125***	0.0341***	0.147***	0.166***
Numberwomen	0.217***	0.213***	0.236***	0.316***
Noland	0.0299	-0.538***	-0.0983	-0.323**
land1acreless	0.177	-0.279**	0.0898	-0.114
land1to3acre	0.257	-0.116	0.181	0.0376
land4to6acre	0.262	0.00669	0.207	0.0923
landmore6acre	0.380	0.228*	0.307	0.164
Scandstcaste	-0.220***	0.00751	-0.214***	-0.0164
Obcaste	-0.0322	-0.00484	-0.0362	-0.0220*
Hindu	-0.558***	0.00728	-0.567***	0.0317**
AgeHead	0.0163***	0.0319***	0.0143***	0.0225***
FemaleHead	0.652***	1.006***	0.682***	1.169***
MarriedHead	0.587***	0.686***	0.608***	0.901***
PrimEduOnlyHead	0.129***	0.0371***	0.161***	0.0519***
SecEduOnlyHead	0.263***	0.0732***	0.245***	0.0744***
TerEduHead	0.464***	0.0520***	0.377***	0.0660***
TechEduHead	0.169***	-0.0551*	0.185***	-0.121***
SelfEmplHead	-0.210***	-0.259***	-0.254***	-0.391***
SalariedHead	-0.487***	-0.375***	-0.515***	-0.528***
CasualWorkerHead	-0.395***	-0.336***	-0.468***	-0.525***
DistConsulate (km)	-0.0019***		-0.00181***	
migration1961		0.188***		0.102***
State fixed effects	Yes	Yes	Yes	Yes
R-square	0.28	0.18	0.28	0.19

Second-stage regression

- Factors affecting log of expenditures per capita
 - Urban, Land Dummies, Scheduled Castes and Tribes, Other Backward Castes, Religion, Age of the Household Head, Female Headed Households, Married Head, Education of the Household Head: Primary, Secondary and Tertiary, Technical, Self Employed Head, Salaried Head, Casual Worker Head,
 - Predicted Probability of Migration/Remittances (from first stage regression), State Dummies
- Both stages estimated simultaneously using “treatreg” (maximum likelihood IV estimator)

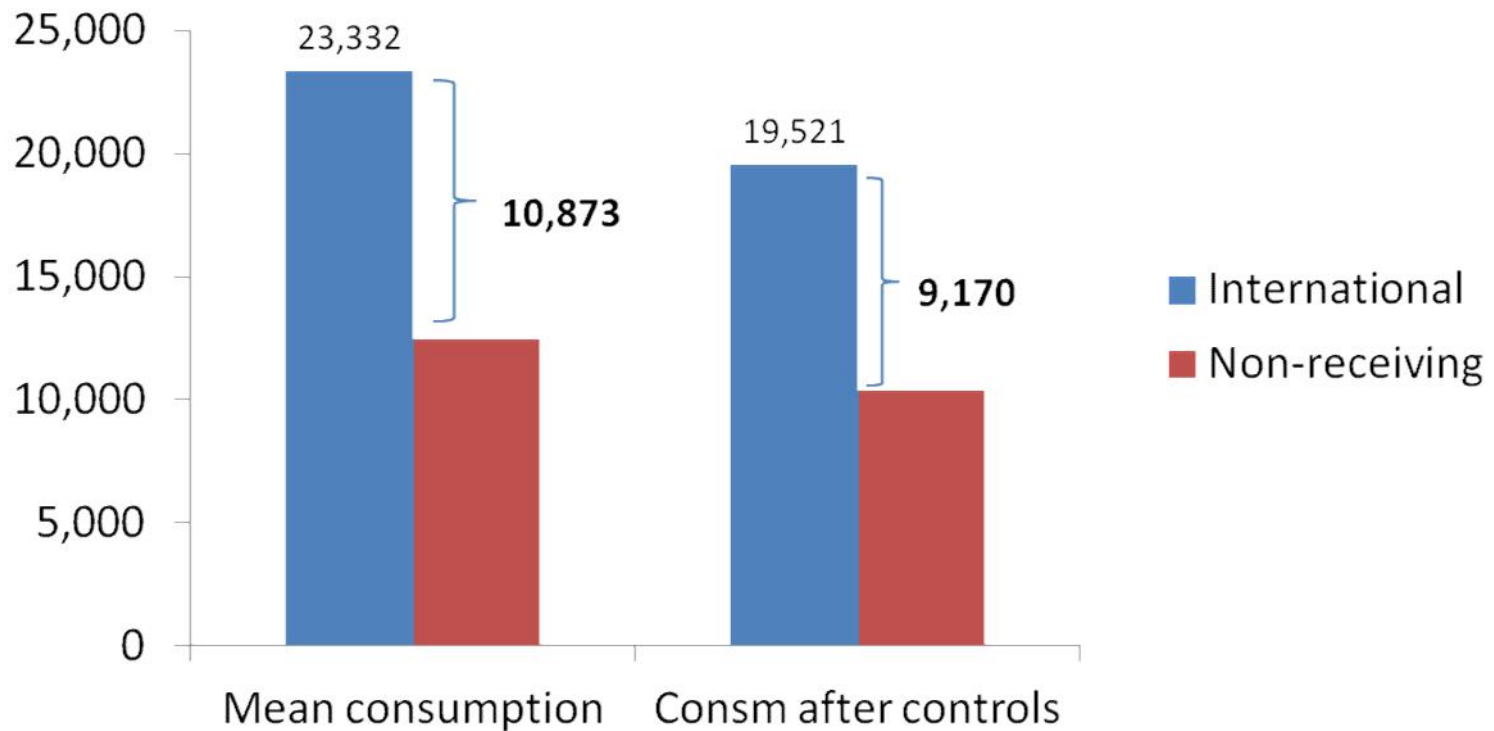
2nd stage regression: Dependent variable: Log (Total expenditure per capita)

VARIABLES	Intl. mig hh	Dom. mig hh	Intl. remit-	Dom. remit
intl_mig_hh	0.274***		0.280***	
dom_mig_hh		0.065		0.108***
urban	0.296***	0.300***	0.296***	0.300***
noland	0.152***	0.139***	0.153***	0.135***
land1acreless	0.132***	0.157***	0.132***	0.153***
land1to3acre	0.156***	0.228***	0.157***	0.226***
land4to6acre	0.228***	0.295***	0.229***	0.298***
landmore6acre	0.306***	-0.111***	0.308***	-0.110***
scandstcaste	-0.185***	0.0703***	-0.186***	0.0694***
obcaste	-0.118***	0.000644***	-0.118***	0.00101***
religion	0.0703***	0.0180***	0.0686***	0.00276
AgeHead	0.00160***	-0.139***	0.00167***	-0.148***
FemaleHead	0.0429***	0.141***	0.0434***	0.141***
MarriedHead	-0.123***	0.340***	-0.123***	0.340***
PrimEduOnlyHead	0.145***	0.615***	0.145***	0.615***
SecEduOnlyHead	0.347***	0.183***	0.348***	0.184***
TerEduHead	0.629***	0.164***	0.632***	0.158***
TechEduHead	0.180***	-0.181***	0.181***	-0.180***
SelfEmplHead	-0.0468***	-0.0365***	-0.0471***	-0.0281***
SalariedHead	0.0249***	0.0416***	0.0234***	0.0499***
CasualWorkerHead	-0.171***	-0.160***	-0.171***	-0.150***
State fixed effects	Yes	Yes	Yes	Yes

International remittances & consumption – national level - using IV

- Even after controlling for self-selection, intl. remit.-receiving households have higher per capita consumption of Rs. 9,170 per annum than non-receiving households

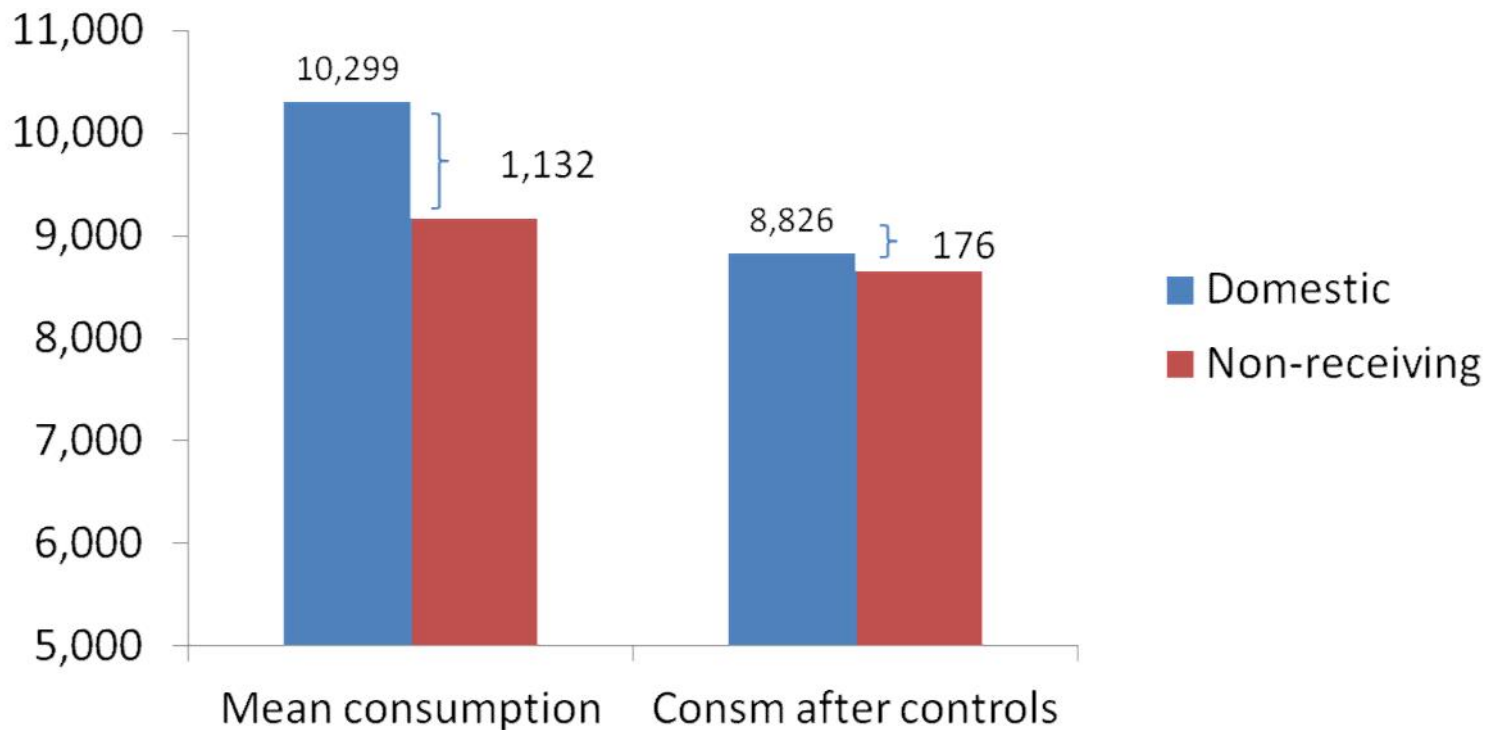
Mean consumption per capita



Domestic remittances & consumption for rural households – using IV

- After controlling for self-selection, rural domestic remit.-receiving households have slightly higher per capita consumption exp. than non-receiving households

Mean consumption per capita



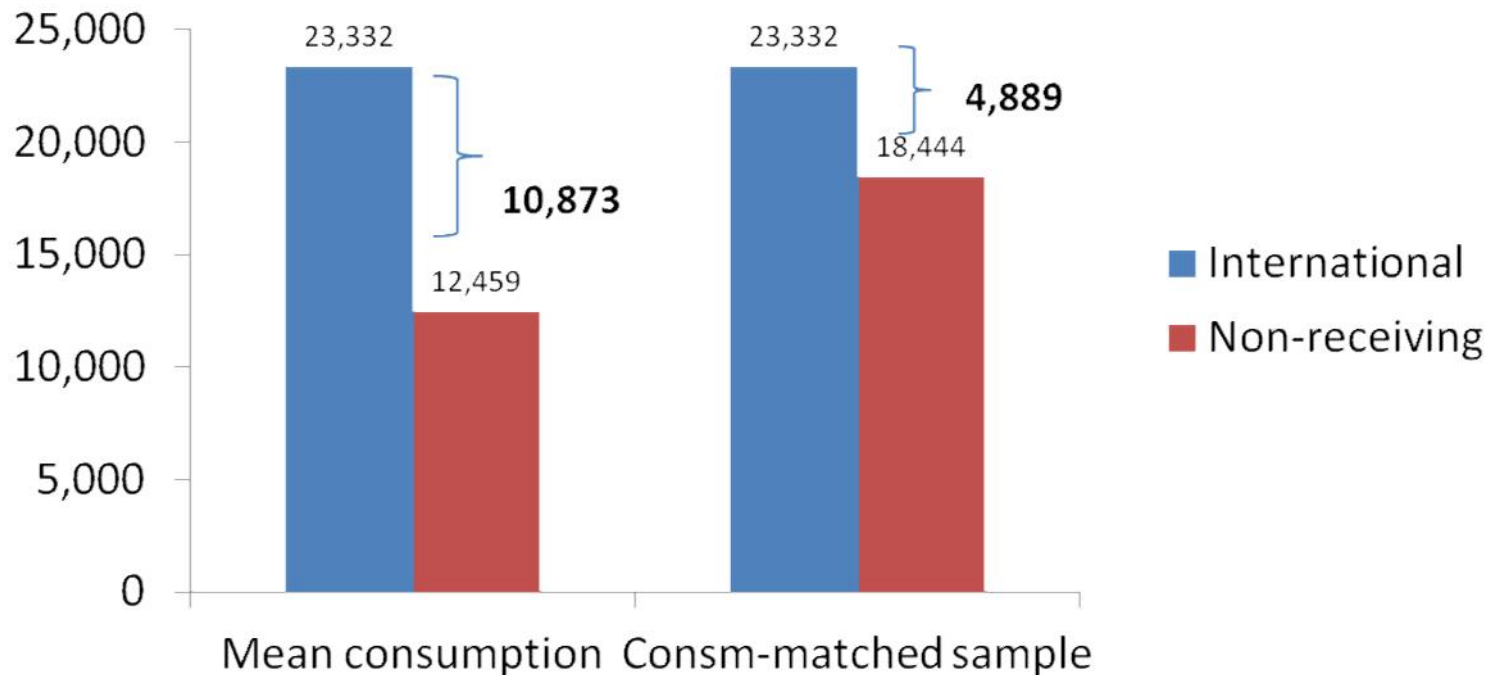
PSM for creating counterfactual

- Propensity score matching (PSM) creates a counterfactual sample
 - Group of households that don't receive remittances but are similar in characteristics to households that receive remittances
- Addresses self-selection and endogeneity

International remittances & consumption – national level - using PSM

- Comparing matched sample of non-receiving households, intl. remit.-receiving households have higher per capita consumption of Rs. 4,889 p.a than non-receiving households

Mean consumption per capita

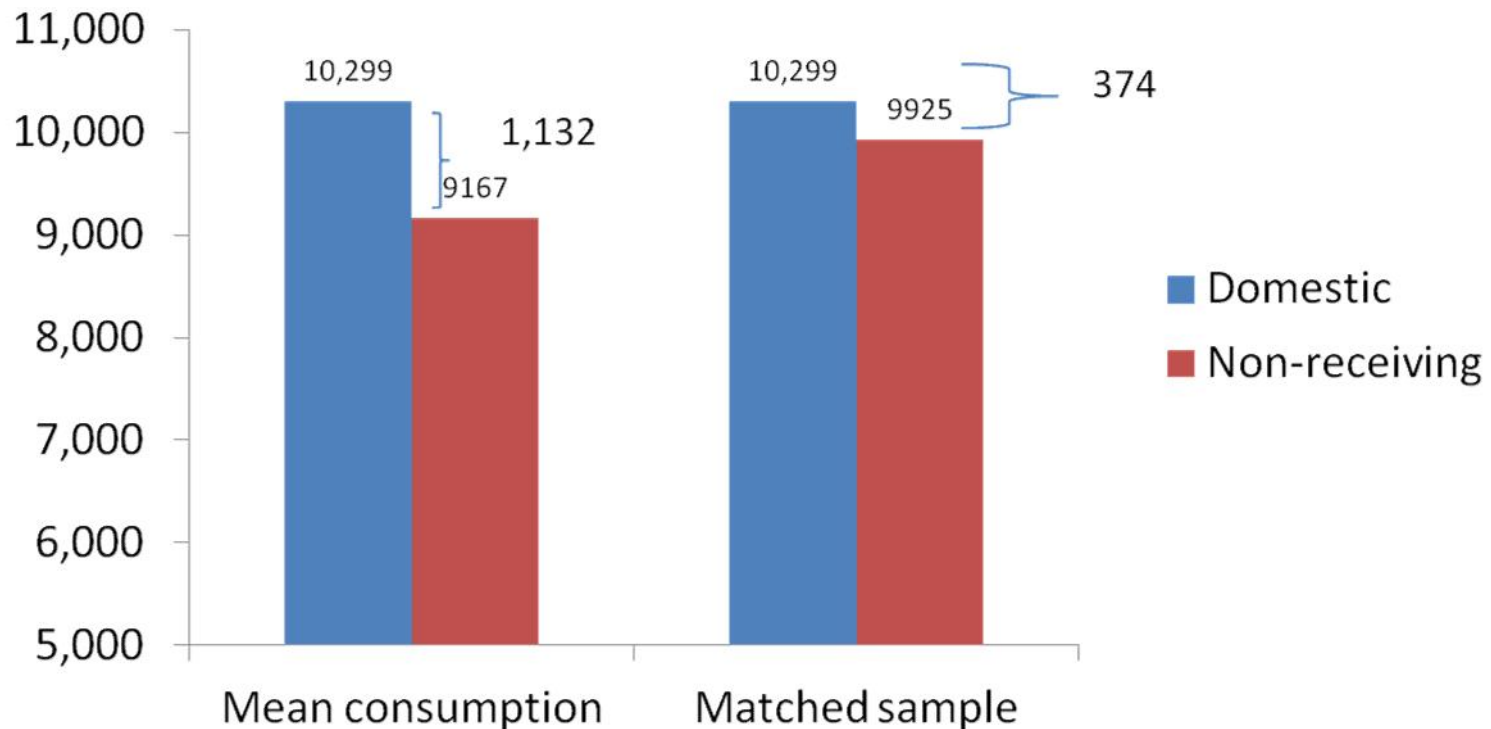


5-nearest neighbor (NN) matching; Kernel matching & radius matching give similar results

Domestic remittances & consumption – rural households – using PSM

- Comparing matched sample of non-receiving households, rural domestic remit.-receiving households have slightly higher per capita consumption exp. than non-receiving households

Mean consumption per capita



Implications for poverty

- Consumption gains do not necessarily imply reduction in poverty
 - if remittances flow to richer households
 - if remittances are concentrated among certain groups
- Consider the direct impact on headcount poverty
 - Tendulkar (Govt. of India Planning Commission) 2011 methodology for poverty line
 - Equivalent to \$1.17/day, instead of World Bank's \$1.25/day
 - Calculate equivalent per capita consumption for urban households (Rs. 8,204 p.a) and rural households (Rs. 6,536 p.a) in 2007-08

Impact of remittances on poverty

Dependent variable: Dummy for Non-Poor (above \$1/day)

	Coef.	Std. Err.	t		Coef.	Std. Err.	t
dom_mig_hh	0.040	0.003	15.9	intl_mig_hh	0.056	0.007	8.3
AgeHead	0.001	0.000	12.4	AgeHead	0.002	0.000	16.8
FemaleHead	0.032	0.004	8.0	FemaleHead	0.042	0.004	10.7
MarriedHead	-0.054	0.004	-14.9	MarriedHead	-0.049	0.004	-13.6
PrimEduOnl~d	0.114	0.003	40.5	PrimEduOnl~d	0.114	0.003	40.2
SecEduOnly~d	0.199	0.004	56.3	SecEduOnly~d	0.198	0.004	55.9
TerEduHead	0.243	0.005	51.4	TerEduHead	0.240	0.005	50.7
TechEduHead	0.014	0.008	1.8	TechEduHead	0.013	0.008	1.6
noland	0.107	0.036	3.0	noland	0.102	0.036	2.9
land1acrel~s	0.093	0.036	2.6	land1acrel~s	0.090	0.036	2.5
land1to3acre	0.110	0.036	3.1	land1to3acre	0.110	0.036	3.1
land4to6acre	0.138	0.036	3.8	land4to6acre	0.139	0.036	3.8
landmore6a~e	0.154	0.038	4.1	landmore6a~e	0.157	0.038	4.2
scandstcaste	-0.123	0.003	-38.4	scandstcaste	-0.123	0.003	-38.1
obcaste	-0.047	0.003	-15.8	obcaste	-0.047	0.003	-15.7
hindu	0.040	0.003	12.8	hindu	0.044	0.003	14.2
SelfEmplHead	0.016	0.004	4.4	SelfEmplHead	0.015	0.004	4.2
SalariedHead	0.054	0.004	12.7	SalariedHead	0.053	0.004	12.3
CasualWork~d	-0.107	0.004	-25.4	CasualWork~d	-0.108	0.004	-25.6
log_mig~1961	-0.008	0.003	-2.7	distconskm	0.000	0.000	-0.5

Interpretation of results

- Average consumption gains from migration highest for international remittance-receiving households
- Average consumption gains for domestic migration small relative to non-migrant households
 - However, gains spread over more (poorer & rural) households
 - Migration acts as survival strategy to maintain consumption similar to households that don't migrate
 - Domestic migration reduces poverty – on similar scale as international remittances

Marginal expenditure on nutrition, health and education

- Engel curve approach

$$\text{Max } U (q_1, q_2, \dots, q_n)$$

st

$$Y = (p_1 q_1 + p_2 q_2 + \dots + p_n q_n)$$

- Resulting demand equation

$$q_i = f (p_1, p_2, \dots, p_n, Y)$$

- Engel curve equation

$$p_i q_j = a_i + \beta_i Y$$

where $p_i q_j$ is the expenditure on a specific commodity and Y is the income of the household

Marginal budget shares devoted to expenditure categories

Engel curve estimation by SUREG

	Households receiving international remittances	Households receiving domestic remittances
<hr/>		
<i><u>Coefficient of log of total expenditure</u></i>		
Food expenditure share	-0.14***	-0.12***
Health expenditure share	0.06***	0.05***
Education expenditure share	0.04***	0.04***
Number of observations	3,060	26,881

Interpretation of expenditure shares

- Share on food expenditure declines with increase in total expenditure of remittance-receiving households
 - Declines faster for international remittance receiving households
 - Share on health and education expenditure increases with increase in total expenditure of remittance-receiving households
 - Increases faster for international remittance receiving households for health (education increase same)
- => As income levels increase, remittance-receiving households spend less on food and more on education and health

Marginal budget shares of domestic remittance-receiving households by income quintiles

Engel curve estimation by SUREG

	Poorest Quintile	Middle Quintile	Richest Quintile
<u><i>Coefficient of log of total expenditure</i></u>			
Food expenditure share	-0.06***	-0.15****	-0.17***
Health expenditure share	0.04***	0.06***	0.08***
Education expenditure share	0.01***	0.04***	0.05***
Number of observations	5,712	5,233	5,332

Results on budget shares of domestic remittance receiving households by quintile

- Marginal budget share spent on food drops less rapidly for poorest quintiles relative to middle and highest quintile with increase in remittances
 - Marginal budget share on health and education expenditure increases more rapidly for middle and highest income quintiles
- => With increase in domestic remittances, poorest households spend a relatively higher marginal budget share on food, while richer households spend more on education and health

Conclusion

- International remittances larger but reach fewer households
- Domestic remittances are small, but distributed to larger number of households and in rural areas
- Poorest households depend on remittances for food (for survival), while richest households use remittances for education and health

Policy implication

- Facilitate both international and domestic remittances
- Innovative technologies to reach unbanked migrants and recipients
 - Mobile money transfers (e.g. M-Pesa in Kenya)
 - MFIs, credit unions, Post offices
 - Low cost/free basic banking accounts
 - Reduce burdensome identification documents
- Facilitate domestic migration to reduce poverty!