

Impact of Worker's Remittances on Housing Affordability: A Case of Sri Lanka

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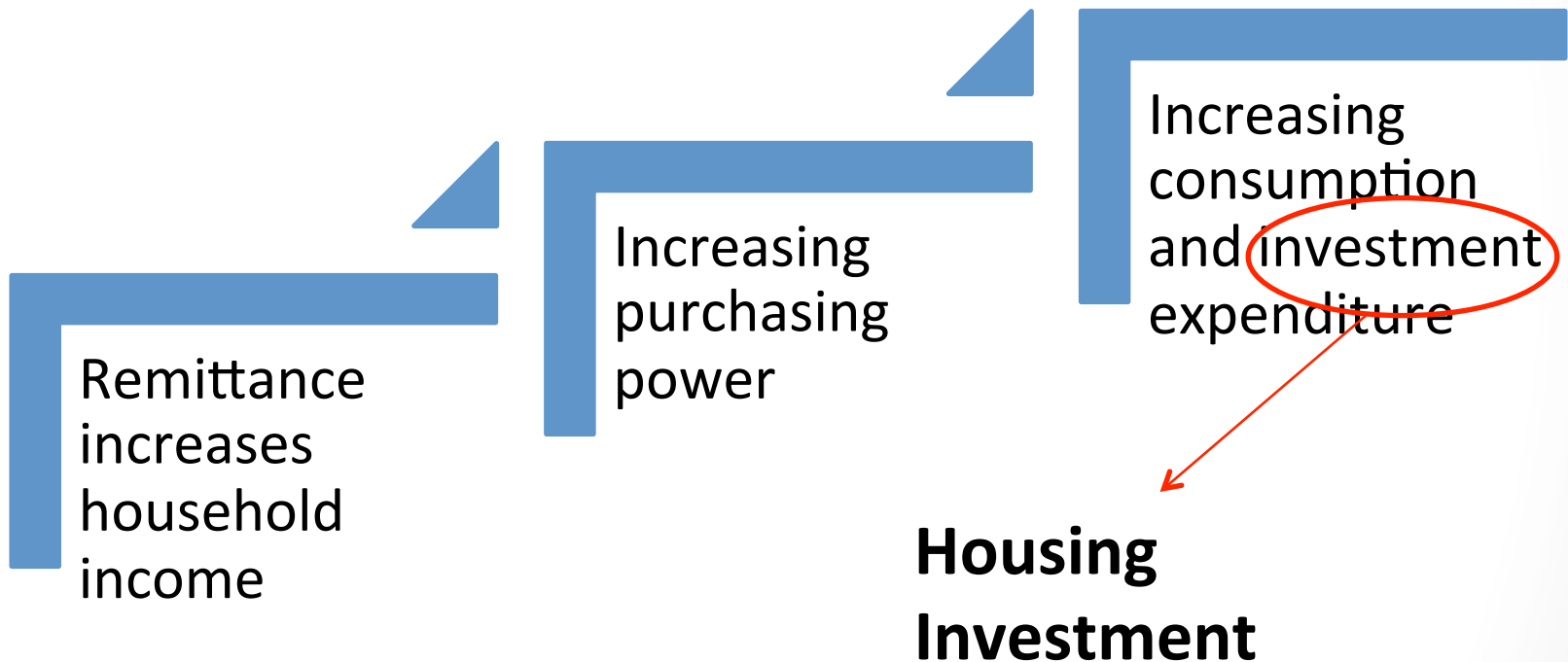
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INTRODUCTION

Motivation....



Objective....

- To examine the impact of remittances on housing affordability in a remittance receiving country

- **What is housing affordability?**

“Households should be able to occupy housing that meets well established norms of adequacy at a net rent which leaves them enough income to live on without falling below some poverty standard”

Bramley (1990)

“Any rent would be affordable , which leaves the consumer with socially acceptable standard of both housing and non-housing consumption after rent is paid”

Hancock (1993)

Gaps in the literature....

- A substantial literature which examines the housing expenditure is available.
- A few studies on housing affordability.
 - Impact of migration on housing affordability in migrant receiving countries...

DATA AND METHODOLOGY

Data....

- Household income and expenditure data (2016/17)
- 25000 households
- **7 %** remittance receiving households
- Two main questions
 - Remittances
 - Housing conditions
 - Housing structure
 - Number of bed rooms
 - Floor area
 - Principle materials for construction of wall
 - Principle materials for construction of floor
 - Nature of the tenure
 - Main source of drinking water
 - Availability and type of toilet facilities
 - Garbage dispose method
 - Principle type of lighting, cooking
 - Whether housing unit affected by natural disasters

Selected Variables....

- **Shelter poverty** = *after housing expenditure residual income / non-housing consumption poverty threshold*
- **Housing Expenditure to Income Affordability Index (HEIAI)**
30% of household annual household income – total household housing expenditure
- **Composite index of shelter poverty and HEIAI**
Principal component analysis –(PCA)

- **Housing expenditure**
✓ Housing rent, house building cost, repair cost and water bills
- **Housing Quality Index**
✓ Multiple correspondence analysis (MCA)
- **Housing Assets index**
✓ MCA

Choice of the model....

- Migration and remittances are not random, but self selected
- To capture the self selection
 - Randomized experiments
 - Difference of the difference method
 - Instrumental variable
 - Truly endogeneity (unrelated to the outcome variable)
 - Strong relationship with endogenous variable
 - Propensity Score Matching Technique (PSM)

Propensity score matching technique

- PSM method controls for selection of observable characteristics by comparing treatment group with very similar control groups.
- This method controls for unobservable characteristics based on the conditional independence assumption (Lechner, 1999).
- Conditional independence assumption is that there exists a set of observable conditioning variables for which the outcome is independent of treatment condition.
- PSM gives more accurate non-experimental estimates when there is self-selection problem (McKenzie et al 2006; White, 2006; Dehejia and Wahba, 2002).

Propensity score matching technique

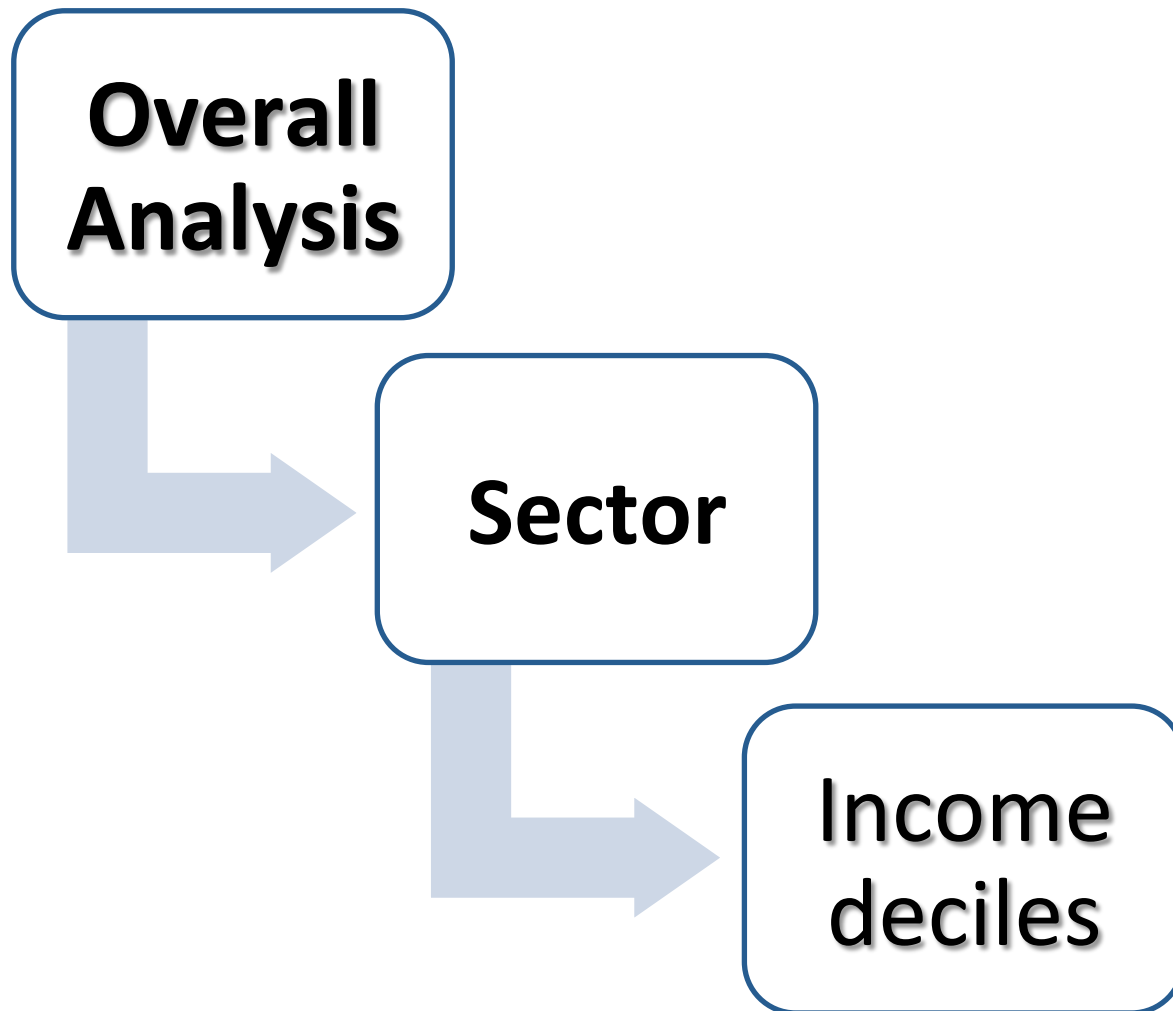
Cont....

- $Y(t) \downarrow i = E(Y(1) \downarrow i / D \downarrow i = 1) - E(Y(0) \downarrow i / D \downarrow i = 0) \text{-----}(1)$
 - If $D \downarrow i = 1$ means household i is receiving remittances
 - $Y(t) \downarrow i$ potential outcome

- $P(X \downarrow i) = \Pr(D \downarrow i = 1 / X \downarrow i) \text{-----}(2)$
 - $P(X)$ – Propensity score (the probability of household receiving remittances conditional on a vector of observable characteristics)
 - $X \downarrow i$ - pre-treatment variables

- average treatment effect (ATT)
- $ATT = E(Y(t) / D=1, P(X)) - E(Y(t) / D=0, P(X)) \text{---}(3)$

Analytical Process



RESULTS

Descriptive Statistics....

Housing Expenditure

Annual Housing Expenditure (LKR)

	All Households	RRHHs	Non-RRHHs
All Island	75,387	80,880	74,860
Urban sector	1,61,183	1,38,238	1,64,499
Rural Sector	61,127	65,663	60,728
Estate sector	25,907	29,805	25,601

- Average annual housing expenditure is higher among remittance receiving households

Housing Quality

	All Households	RRHHs	Non-RRHHs
All Island	0.003	0.005	0.03
Urban sector	0.009	0.01	0.008
Rural Sector	-0.002	0.003	-0.002
Estate sector	-0.006	-0.005	-0.006

Housing quality is lower among RRHHs in rural and estate sectors

Housing Assets

	All Households	RRHHs	Non-RRHHs
All Island	0.06	0.28	0.03
Urban sector	0.48	0.60	0.45
Rural Sector	0.06	-0.21	0.08
Estate sector	-0.62	0.33	-0.64

Housing assets are higher among RRHHs.

However, in the rural sector assets index is lower than non-RRHHs.

Housing Expenditure

LKR 75,387

Housing expenditure is higher among RRHHs
All three sectors

Housing Quality

Housing quality is lower among RRHHs in Sri Lanka.
But in the rural and estate sector, housing quality is slightly higher.

Housing Assets

Housing assets index is higher among RRHHs in Sri Lanka.
But in the rural sector, housing assets index is lower.

US\$ 1 = LKR 158

Shelter Poverty

% households with housing affordability issues

	All Households	RRHHs	Non-RRHHs
All Island	29	29	29
Urban sector	24	26	24
Rural Sector	30	29	30
Estate sector	40	29	41

- The percentage of households facing shelter poverty is higher among RRHHs in the urban sector
- Shelter poverty is lower among RRHHs in the rural and estate sector

Housing Expenditure to income affordability index

% households with housing affordability issues

	All Households	RRHHs	Non-RRHHs
All Island	18	17	18
Urban sector	29	26	29
Rural Sector	16	15	17
Estate sector	7	4	7

Housing affordability issues are lower among RRHHs

Composite Index.....

% households with housing affordability issues

	All Households	RRHHs	Non-RRHHs
All Island	36	34	36
Urban sector	35	36	35
Rural Sector	36	34	34
Estate sector	46	29	47

- Housing affordability issues are lower among RRHHs.
- It is slightly higher among RRHHs in urban sector

Shelter Poverty

29 %

No difference between RRHHs and non-RRHHs.

Urban – higher among RRHHs

Rural and Estate – lower among RRHHs

HEIA index

18 %

HEIA index is lower among RRHHs in Sri Lanka.

All three sectors

Composite index

36 %

Housing affordability is lower among RRHHs

Urban –higher

Rural – no difference

Estate – lower

Results

Impact of Remittances

Housing Expenditure (LKR)

	Coefficient	Z value
Overall	15453***	3.94
Urban	12329	0.89
Rural	15285***	4.37
Estate	2907	0.74
3 rd Decile	7146**	2.80
4 th Decile	8376**	2.20
10 th Decile	-47537**	-2.15

- Remittances positively affect on housing expenditure in the rural sector and lower income deciles
- Housing expenditure is lower among RRHHs in the top income deciles

Housing Quality

	Coefficient	Z value
Overall	0.001***	4.87
Urban	0.0005	1.25
Rural	0.001***	4.76
Estate	0.001***	5.33
2 nd Decile	0.001***	3.59
3 rd Decile	0.001**	2.61
7 th Decile	0.001*	1.75
9 th Decile	0.001**	2.98

- Housing Quality is higher among RRHHs (overall, rural and estate)
- Low and high income deciles

Housing Assets

	Coefficient	Z value
Overall	-0.22***	-8.21
Urban	-0.057	-1.07
Rural	-0.27***	-9.63
Estate	-0.25***	-8.69
5 th Decile	-0.17**	-2.32
8 th Decile	-0.005**	2.59
9 th Decile	0.002**	3.24
10 th Decile	-0.11***	-6.20

- Housing assets index is lower among RRHHs
- Urban sector- no difference
- Housing assets higher only in 9th decile. Lower only in 5th, 8th and 10th

Housing Expenditure

- Housing expenditure is significantly higher among RRHHs.
- Only in rural sector
- 3rd and 4th deciles.
- Top two deciles it is lower.

Housing Quality

- Housing quality is slightly higher among RRHHs.
- Rural and estate sector- housing quality is higher.
- housing quality is higher only in 2nd, 3rd, 7th and 9th.

Housing Assets

- Housing assets index is lower among RRHHs
- Urban sector- no difference
- Housing assets higher only in 9th decile. Lower only in 5th, 8th and 10th

Shelter Poverty

	Coefficient	Z value
Overall	-0.06***	-4.06
Urban	-0.06**	-2.58
Rural	-0.06***	-3.77
Estate	-0.23***	-7.83
8 th Decile	-.058*	-1.84
9 th Decile	-0.07***	-3.94

- Shelter poverty is lower among RRHHs, no impact on intensity
- Same results in all three sectors- **ESTATE**
- 8th and 9th deciles– shelter poverty lower

Housing expenditure to income affordability

	Coefficient	Z value
Overall	-0.010	-0.70
Urban	-0.013	-0.48
Rural	-0.017	-1.18
Estate	-0.04***	-3.29
1st Decile	-0.08*	-1.72
7 th Decile	-0.05*	-1.79
8 th Decile	-0.07*	-1.76
9 th Decile	0.07*	1.76

- No significant difference between RRHHs.
- **Estate** - HIEA index is lower
- Lower among 1st, 7th and 8th. Higher 9th

Composite index

	Coefficient	Z value
Overall	-0.086***	-5.26
Urban	-0.067**	-2.31
Rural	-0.085***	-4.54
Estate	-0.29***	-9.77
1st Decile	-0.16**	-2.52
5 th Decile	-0.08**	-2.02

- Composite index is significantly lower among RRHHs
- All sectors – same results – **ESTATE**
- First and fifth - lower

Shelter poverty and intensity

- Shelter poverty is lower among RRHHs, no impact on intensity
- Same results in all three sectors
- 8th and 9th deciles– shelter poverty lower

HEIA index and its intensity

- No significant difference between RRHHs.
- Estate - HIEA index is lower
- Lower among 1st, 7th and 8th. Higher 9th

Composite index

- Composite index is significantly lower among RRHHs
- All sectors – same results
- First and fifth - lower

Summary and Conclusion

- Overall – housing expenditure is higher among RRHHs.
 - But, no significant difference in urban and estate sectors
 - Housing expenditure is highest among lower decile, and lower among top two deciles.
- Higher housing quality can be seen in both lower deciles as well as higher deciles
- Remittances do no influence on increasing housing assets
- Remittances significantly affect housing affordability among deprived groups
- Both shelter poverty and HEIAI – remittances mostly affect RRHHs in estate sector
- Composite index - 1st decile

Thank You

Indicator	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Shelter poverty	0.045	-0.11	-0.003	0.121	-0.097	-0.007	0.003	-0.058*	-0.07** *	-0.021
	0.75	-2.46	-0.03	1.96**	-1.27	-0.16	0.07	-1.84	-3.94	-1.26
Initial housing expenditure to income affordability index	-0.08*	-0.062	0.036	0.006	0.004	-0.004	-0.05*	-0.07*	0.067*	-0.07
	-1.72	-1.48	0.48	0.15	0.10	-0.11	-1.79	-1.76	1.76	-1.56
Quality adjusted Initial housing expenditure to income affordability index	-0.76*	-0.06	0.04	0.006	0.004	-0.004	-0.05*	-0.07*	0.067*	-0.07
	-1.72	-1.48	0.48	0.15	0.10	-0.11	-1.79	-1.76	1.76	-1.56
Composite of SP and II	-0.16**	0.001	-0.04	-0.03	-0.08**	-0.04	0.0004	-0.047	0.059	-0.039
	-2.52	0.02	-0.47	-0.59	-2.02	-0.93	-0.01	-1.14	0.37	-0.90
Composite of SP and quality adjusted II	0.02**	-0.02	0.007	0.05*	-0.012	-0.11*	-0.07	-0.16** *	0.02	-0.09
	2.22	-0.54	0.16	1.84	-0.27	-1.81	-1.55	-3.10	0.14	-1.61
Housing expenditure	2457	3004	7146**	8376**	-126	10980	5548	560	29451*	-47537* *
	0.80	1.37	2.80	2.20	-0.04	1.49	0.94	0.06	1.80	-2.15
Housing Quality	-0.0003	0.001***	0.001**	0.0005	0.0002	0.0008	0.0009*	0.0003	0.001**	-0.0003
	-0.25	3.59	2.61	1.31	0.35	1.32	1.75	0.71	2.98	-0.08
Housing assets	0.007	0.004	0.002	0.003	-0.17**	0.00	-0.0005	-0.005* *	0.002**	-0.11***
	0.62	1.16	1.01	0.46	-2.32	0.02	-0.35	2.59	3.24	-6.20