Communication between Partial Migrated Household and Left Behind Women's Labor Market Participation

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Research Question and Motivation

Research Question

How does communication between left behind women and migrant husbands influence women's labor market participation?

1. Income gap between urban and rural China. Rural husbands migrate, 17.17 million are left behind women.
2. Mixed results, literature on left behind women and labor market participation.
3. Information Communication Technology (ICT) expansion in rural China changed the communication dynamic between separated couples.

Preview of Results

- Contribution; consider communication impacts on partially migrated households and left-behind women's LMP.
- Increased communication between separated couples with misaligned gender preferences shifts left-behind women's LMP to be closer to what husbands prefer.
- Increased communication between progressive wives and conservative husbands shows a significant and negative impact on left-behind women's LMP.

Literature Review

1. Mixed results;
   Yang (2008), Binzel and Assaad (2011), Mendola and Carletto (2012), Bacud et al. (2021), Khanna et al. (2022), Chen (2006); Income effect of remittance ▸ decrease
   Kan and Aytimur (2019), Xu (2017), de Haas and van Rooij (2010); countervailing factors of income effect ▸ null effect
   Heath and Tan (2020), Mu and van de Walle (2011), Datta and Mishra (2011), Zhang (2020); bargaining/decision making power of women ▸ increase
2. Role of ICT infrastructure on rural economy and how it is valued by migrant family members(▸ ICT).
3. Gap in the literature: Increased communication between separated couples, shift on left behind women's decision on LMP.

Testable Hypothesis

Impact of Cell tower on Communication: Channel

Cell tower establishment increases communication between migrant husbands and left behind women.

Increased Communication influence on LMP

Increased communication influences left-behind women about their LMP to be closer to what their husbands' prefer.

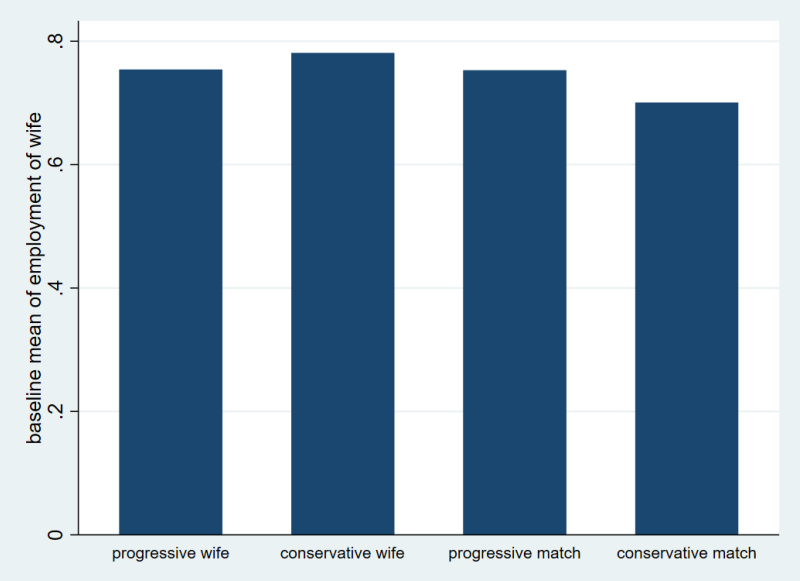
China Family Panel Survey(CFPS)

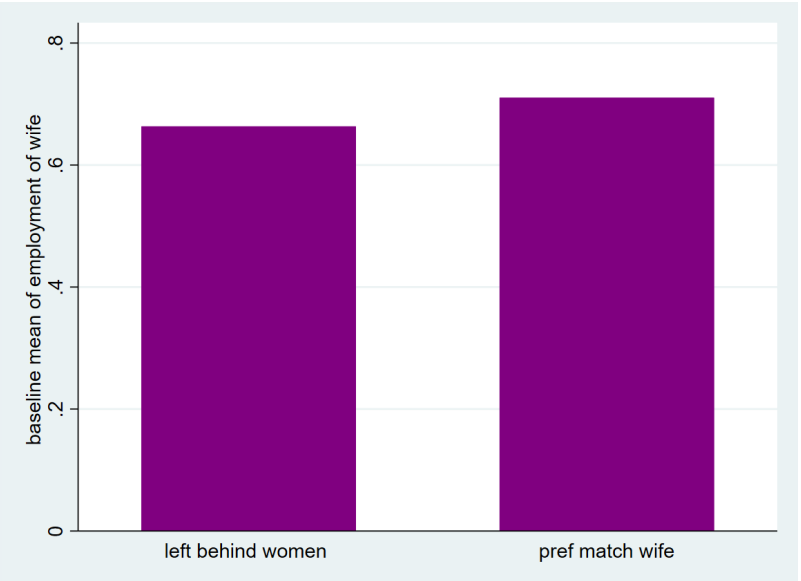
- Individual, household, and community-level information covers 2010 - 2018 years. 95% of the population covered.
- Information on year and location of cell tower installation (community level).
- The sample of interest is women in rural China with migrated husbands.
- Observe gender role preference variable of migrant husbands and left behind wives.

Gender Role Preference Variable

- The treatment effect of communication (cell tower) will be strongest for couples with misaligned preferences.
- "Men should focus on their careers, while women should focus on the family"
- Degree to which individual agrees with the statement on a scale of 1-5. A higher value represents agreement with conventional gender roles.
- ▸ Gender Role Composition
- ▸ Sample Selection and Attrition

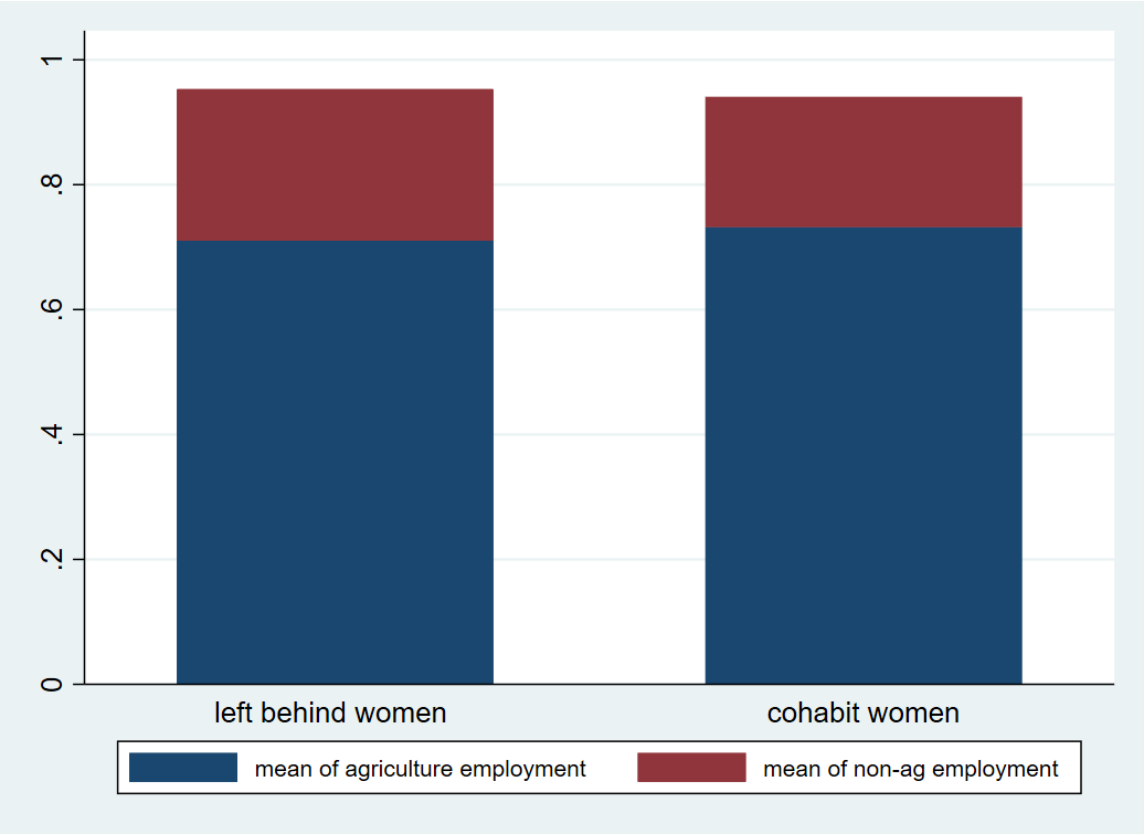
Summary Statistics: Baseline Output





▸ full table

Summary Statistics: Type of work



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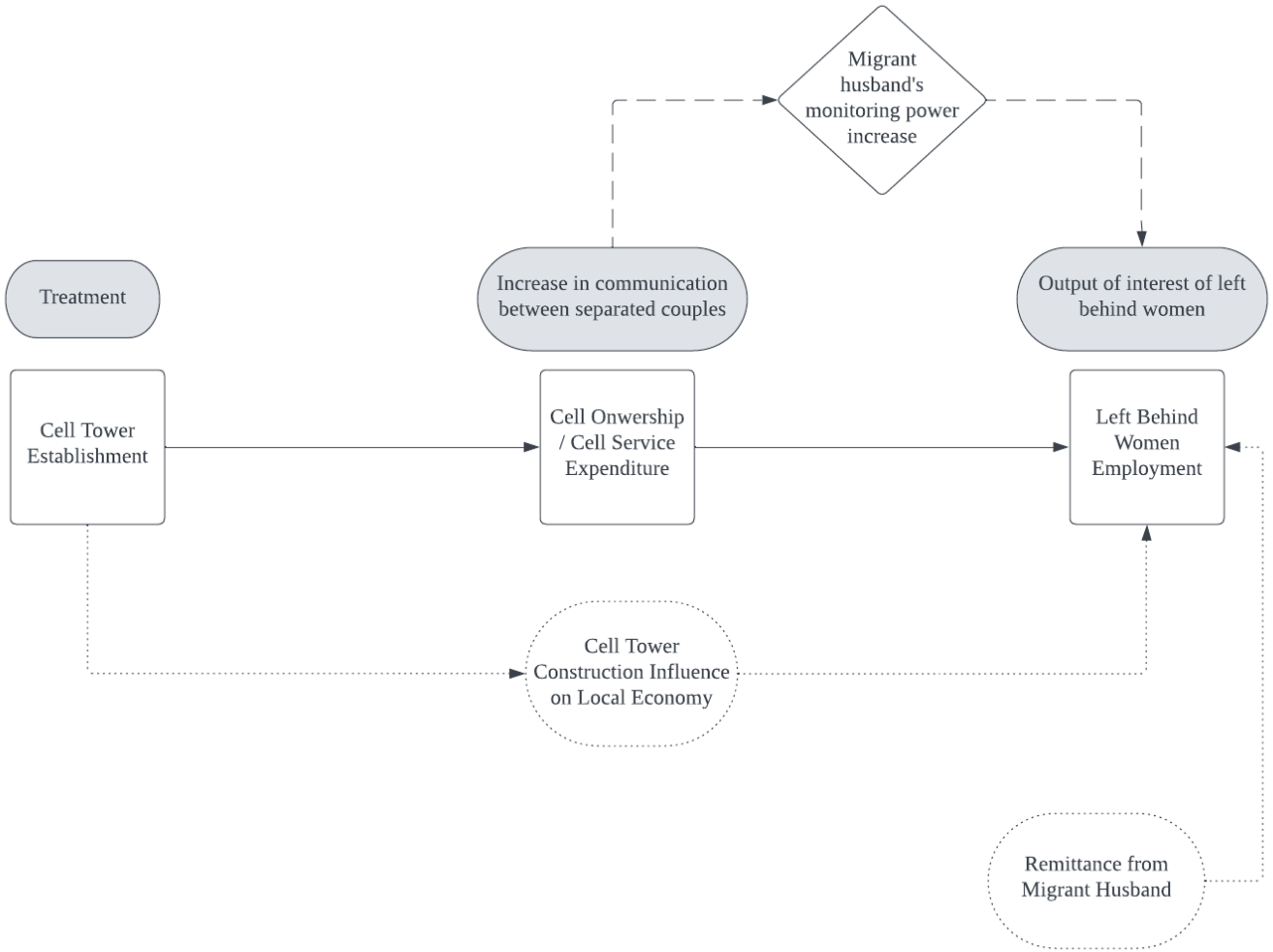
Mechanism of the Research



Strategy of Finding Treatment Effect of Communication

- Preference-misalignment group will show the impact of increased communication between separated couples that may lead to a shift in left behind women's LMP to be similar to husband's preference.
- If successfully isolated the impact of communication then, preference alignment group will show a null effect.

Difference in Difference with Multiple Treatment Timing

- Cell tower establishment did not happen in one period. Concern regarding canonical difference in difference method, incorrect comparison group, negative weights.
- Callaway and Sant'Anna (2021) fix this problem by correcting the weights and specifying correct comparision group.

$$ATT(g,t) = E[Y_t(g) - Y_t(0)|G_g = 1] \quad (1)$$

g: specific group
t: particular time period

Mechanism: Did Cell Tower increase Communication?

	(1) cell ownership	(2) cell ownership	(3) cell ownership
probability model	linear	logit	probit
access to cell tower	0.185**	1.182*	0.666**
	(0.0695)	(0.463)	(0.256)
marginal effect		0.19**	0.184***
constant	0.782***	1.542***	0.893***
	(0.0637)	(0.422)	(0.235)
baseline mean	0.748	0.748	0.748
time fixed effect	Yes	Yes	Yes
community fixed effect	Yes	Yes	Yes
N	4887	4863	4863

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Mechanism: Did Cell Tower Increase Communication?

	(1) cell expenditure	(2) cell expenditure	(3) cell expenditure	(4) cell expenditure
access to cell tower	8.765***	8.925***	2.672	3.969
	(1.307)	(1.305)	(7.166)	(7.147)
constant	44.24***	31.66***	47.50***	33.14***
	(0.795)	(4.038)	(5.351)	(6.629)
baseline mean	44.24	44.24	44.24	44.24
time fixed effect	No	Yes	No	Yes
community fixed effect	No	No	Yes	Yes
unit	yuan	yuan	yuan	yuan
N	3690	3690	3690	3690

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Main Results: Aggregate

	(1) wife's employment	(2) wife's employment	(3) wife's employment	(4) wife's employment
agg ATT of cell tower	-0.014	0.004	-0.092	0.258
	(0.045)	(0.065)	(0.102)	(0.159)
conditional parallel trend test	fail to reject null	reject null 5%	fail to reject null	fail to reject null
p-value	0.1106	0.0349	0.5287	0.1334
sample	migrant husband	gender role pref available	migrant husband	gender role pref available
community fixed effect	No	No	Yes	Yes
N	6155	3609	3785	2117

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Conditional Pretrend Test: H0 All Pre-treatment are equal to 0

Main Results: Decompose into gender role preference

	(5) wife's employment	(6) wife's employment	(7) wife's employment
agg ATT of cell tower	-0.50***	-0.109	-1.14***
	(0.172)	(0.179)	(0.218)
conditional parallel trend test	fail to reject null	fail to reject null	reject null 1%
p-value	0.4710	0.5128	0.0038
sample	progressive wife conservative husbands	pref match	conservative wife progressive husbands
community fixed effect	Yes	Yes	Yes
N	325	1230	562

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Conditional Pretrend Test: H0 All Pre-treatment are equal to 0

Conclusion

- The paper aims to understand the relationship between rural development policy, gender role preference, and women's LMP decisions.
- Provide insights on why rural women are less responsive to rural LMP policy.
- Considering inter-household communication in labor policy is important for a conservative cultural context.

Literature Review 1

1 Husband Migration **Decrease** Left-behind Women LMP
- Income effect of remittance sent by migrant husband drives negative effect.
- Yang (2008), Binzel and Assaad (2011), Mendola and Carletto (2012), Bacud et al. (2021), Khanna et al. (2022), Chen (2006)[1]
- Husband migration shifts decision power from husband to in-laws not to left behind women.
- Ahmed (2020), Gartaula et al. (2012)

▸ lit-review

[1] theory paper

Literature Review 2

2 Husband Migration **Null Effect** on Left-behind Women LMP

- Counter failing factors(labor supply increase factors, high cost of migration) of income effect offset income effect.
- Kan and Aytimur (2019), Xu (2017)[2]
- Husband migration does not shift the decision power of left-behind women due to community pressure.
- de Haas and van Rooij (2010)

▸ lit-review

[2] time-use studies

Literature Review 3

3 Husband Migration **Increase** on Left-behind Women LMP

- Husband migration increase bargaining/decision making power of left-behind women.
- Heath and Tan (2020), Mu and van de Walle (2011), Datta and Mishra (2011), Zhang (2020)

▸ lit-review

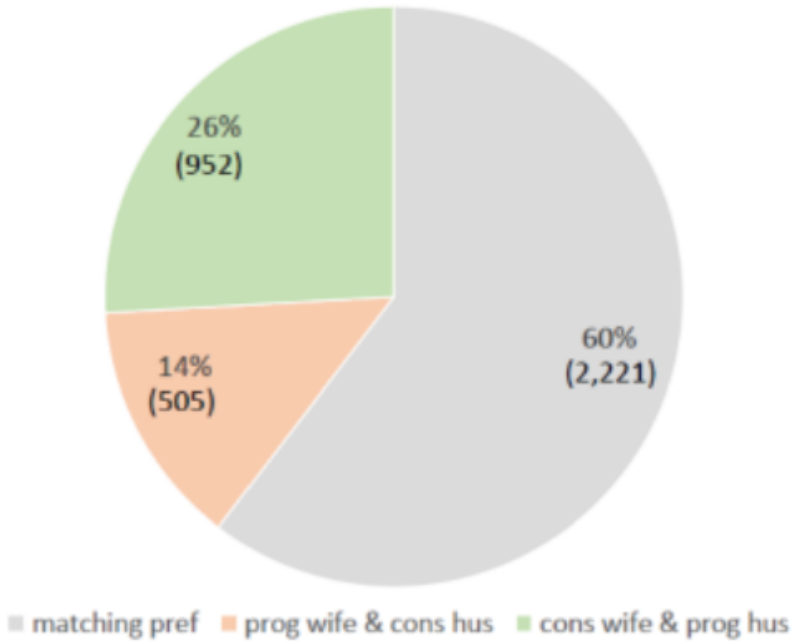
Literature Review 4

4 Cell tower Expansion in Rural China

- Migrant family members value opportunity to communicate with left behind family members. Utilize the asymmetric information to maximize private utility function.
- Ashraf et al. (2015), Castilla and Walker (2013), Ambler (2015), Ashraf (2009), Chen (2022)
- ICT infrastructure in rural area increased off farm income.
- Leng et al. (2020), Min et al. (2020), Rajkhowa and Qaim (2022), Khanal and Mishra (2016), Barnett et al. (2019)

▸ lit-review

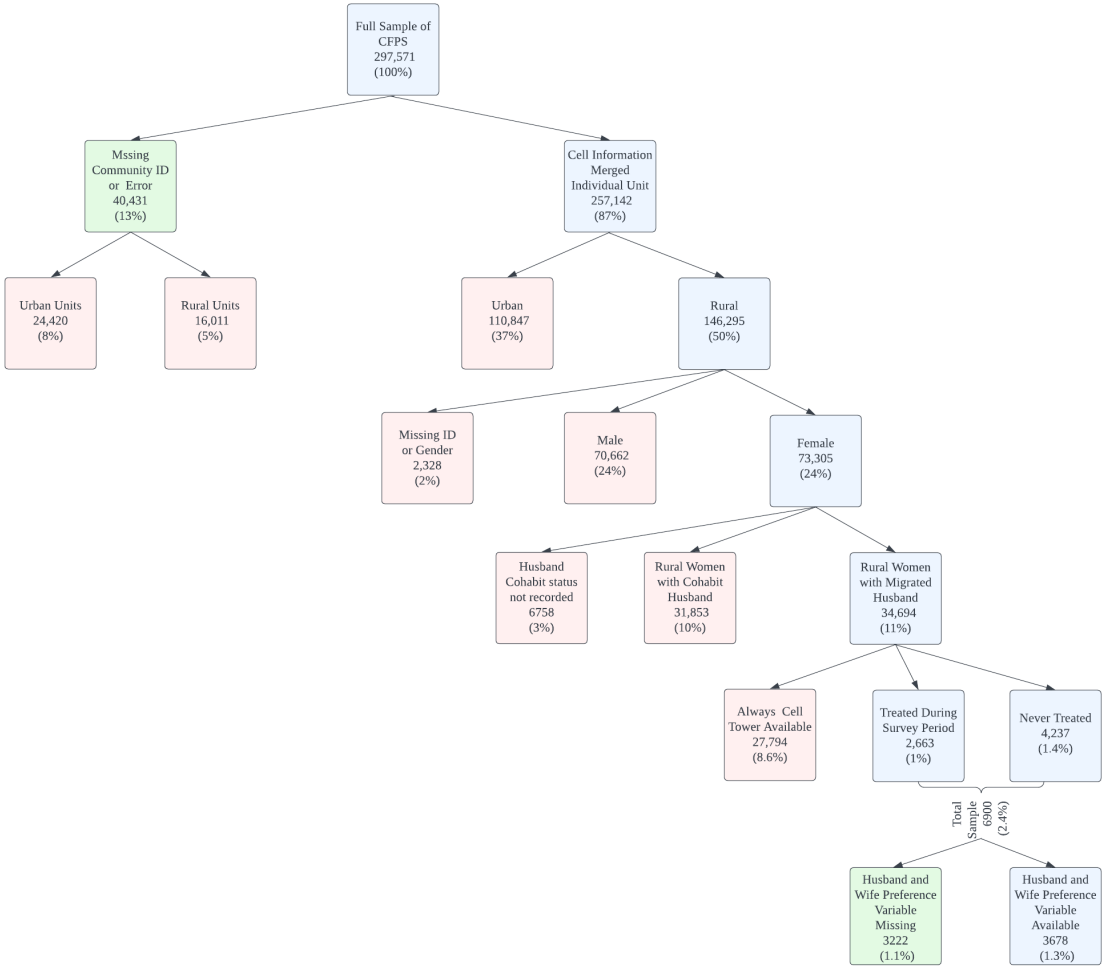
Share of Gender Role Preference of Separated Couples



[1] Questionnaire asked both sides (husbands and wives) 'how much do you agree with the following statement: "Husband should work outside while wife should stay home and take care of family."' '5' indicates strongly agree with the statement while '1' indicates strongly disagree. The most frequent pattern is that both husband and wife has a conservative perspective on gender role. If a couple is considered as a progressive wife and a conservative husband, the wife's gender role preference questionnaire value is lower than the husband's value. The values in the parenthesis represent the sample size. *Source:CFPS*

▸ gender role

Sample Selection Process



▸ gender role

Summary Statistics; Table: Baseline Output

wife's employment	mean	sd	min	max	count
husband migrate& before cell tower	0.68	0.466	0	1	3,764
husband cohabit& before cell tower	0.66	0.474	0	1	2,689
husband migrate& before cell tower& progressive match	0.75	0.432	0	1	263
husband migrate& before cell tower& conservative match	0.70	0.458	0	1	1,118
husband migrate& before cell tower& gender pref match	0.71	0.454	0	1	1,381
husband migrate& before cell tower& progressive wife	0.754	0.431	0	1	309
husband migrate& before cell tower& conservative wife	0.781	0.414	0	1	543

cell ownership	mean	sd	min	max	count
husband migrate& before cell tower	0.748	0.434	0	1	3,179
cell expenditure	mean	sd	min	max	count
husband migrate& before cell tower	44.24	34.94	0	450	2,327

type of work	mean	sd	min	max	count
ag employment & left behind women	0.710	0.454	0	1	24,764
ag employment & cohabit women	0.732	0.443	0	1	20,186
non-ag employment & left behind women	0.243	0.429	0	1	23,813
non-ag employment & cohabit women	0.208	0.406	0	1	18,612

▸ baseline

Theory Model 1

wife's labor hours x, $0 \leq x \leq 24$
wife's wage rate (w)
migrant husband's preferred labor hours by his wife (X)
strength of monitoring technology (T)
dis-utility (c) from paid labor
remittance (R) is only transferred to wife when she is not caught

$$\begin{cases} R + wx & \text{if wife is not caught by husband working } x > X \\ wx & \text{if wife is caught by husband} \end{cases} \tag{2}$$

Theroy Model 2

$$U_w(x) = x + (1 - \frac{1}{2}T(x - X)^2)R - \frac{1}{2}cx^2 \tag{3}$$

$$\frac{\partial U_w}{\partial x} = w + TRX - (TR + c)x = 0 \tag{4}$$

Working equilibrium of left behind wife:

$$x^* = \frac{w + TRX}{TR + c} \tag{5}$$

Theory Model 3

wife's labor input when there is no remittance from husband

$$x^*|_{R=0} = \frac{w}{c} \tag{6}$$

$$x^* = \underbrace{[\frac{c}{TR+c}] \cdot x^*|_{R=0}}_{\text{wife's preference of LMP without husband's pref}} + \underbrace{[\frac{TR}{TR+c}] \cdot X}_{\text{husband's wife's LMP pref}} \tag{7}$$

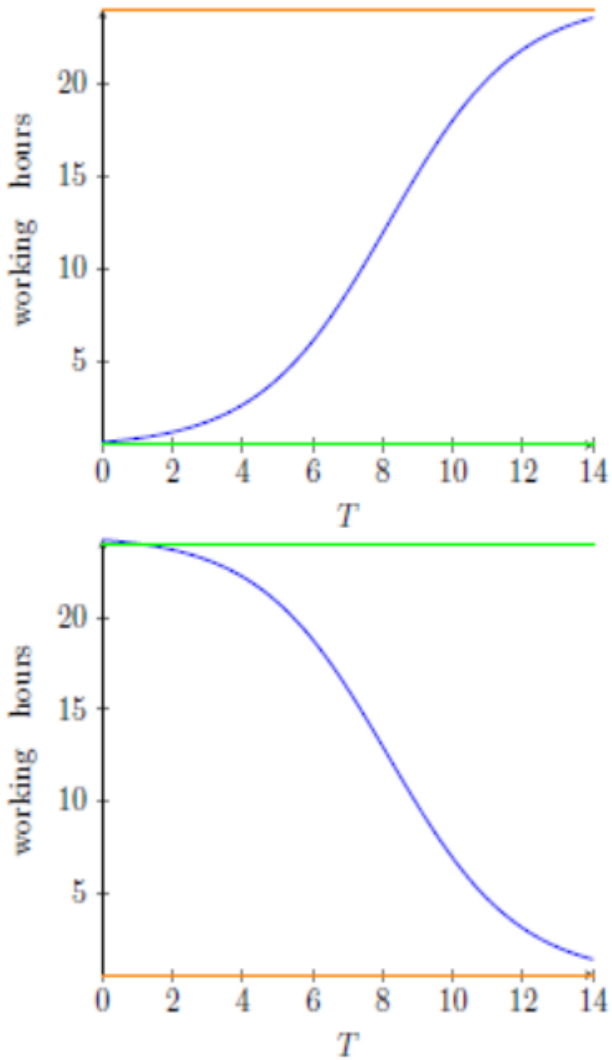
Theory Model 4

Increase of monitoring power has different implications on each weight.

$$\frac{\partial x^*}{\partial T} = [-\frac{Rc}{(RT+c)^2}] \cdot \frac{w}{c} + [\frac{Rc}{(RT+c)^2}] \cdot X \tag{8}$$

As monitoring power(T) increases, the weight on the husband's preference(X) goes up

Theory in Graph



T; monitoring power of migrant husbands

Top panel; husband's preferred working hours (orange) are larger than wife's working hours(green)

Bottom panel: husband's preferred working hours (orange) are smaller than wife's working hours(green)