

Public Investment and Unpaid Work in India: Selective Evidence from Time Use Data



Dr Lekha S Chakraborty
Senior Economist
NIPFP, India



Focus of Presentation

- Theory of Time Allocation
- Time Budget Data: Statistical Invisibility of Unpaid Work
- Valuation Issues of Care Economy
- Implications of Time Budget Data for Public Investment
- Conclusion and Policy Suggestions



Theory of Allocation of Time

- Historically market-time has never been consistently greater than non-market time.
- Allocation and efficiency of non-market time is more significant for economic growth and welfare.
- Non-market time : Aggregation of leisure and unpaid work time ?
- Growing recognition of significance of unpaid work and its valuation issues.
- Lifting the veil of statistical invisibility of unpaid work (care economy) has significant implications in terms of macro policies.



Time Budget Data

- Time budget data challenged the existing theories of allocation of time.
- Dichotomy of time only into market and non-market and aggregation of leisure and unpaid work in nonmarket: Flawed assumption.
- Two elements (leisure and unpaid work) not affected in same way by changes in socio-economic variables.
- Findings of time budget data led to trichotomy of time allocation into market, nonmarket and leisure.



Implications of Time Budget Data

- Integrating unpaid care economy into economic modeling and in turn macro policy making.
- In the context of developing countries, deficit of public infrastructure investment induces locking of time in unpaid work, otherwise available for market economy activities and/or eroding leisure.
- Time budgets can be revealing in terms of lessening poverty or reducing time stress through identifying right public investment priorities.

Time Use Statistics in India

States	Female		Male		Total	
	SNA	Ext-SNA	SNA	Ext-SNA	SNA	Ext-SNA
Haryana	21.26	31.06	37.72	1.99	30.19	15.24
Madhya Pradesh	19.85	35.79	42.07	4.43	31.54	19.22
Gujarat	17.6	39.08	43.63	3.19	31.24	20.27
Orissa	17.07	35.7	40.12	4.47	28.69	19.91
Tamil Nadu	18.97	30.46	42.54	3.19	30.68	16.87
Meghalaya	26.34	34.52	45.94	7.16	35.88	21.28
Combined States	18.72	34.63	41.96	3.65	30.75	18.69

Distribution (%) of Time Use in Paid and Unpaid Work

States	Male			Female			Total		
	Paid	Unpaid	% of time	Paid	Unpaid	% of time	Paid	Unpaid	% of time
Haryana	33.09	18.12	35.38	4.13	25.34	85.99	20.6	21.37	51.58
Madhya Pradesh	29.41	23.34	44.25	14.31	15.75	52.4	22.99	20.12	46.67
Gujarat	44.37	14.17	24.21	17.18	13.87	44.67	33.26	14.05	29.7
Orissa	31.25	22.42	41.77	8	18.18	69.44	20.55	20.47	49.9
Tamil Nadu	41.42	13.36	24.39	21.8	10.32	32.45	32.74	12.04	26.89
Meghalaya	17.34	35.39	67.12	7.83	25.34	76.39	12.65	30.44	70.64
Combined	36.54	18.12	33.15	14.87	15.18	50.52	27.16	16.85	38.29



Valuation of Unpaid Work

- Input Method (imputing value to labour time spent on unpaid work)
 - Global Substitute Method
 - Specialized Substitute method
 - Opportunity Cost method
- Output method (imputing market prices to goods and services produced)
- INTENSIFIED EFFORT : Input related method

Valuation of Unpaid Care Economy

States	Value of Care Economic Activity			SDP	'Care' as % of State Domestic Product		
	(Rs. crores)			(Rs. cr.)			
	Male	Female	Total	1997-98	Male	Female	Total
Haryana	928.74	10209.3	11138.04	37427	2.48	27.28	29.76
Madhya Pradesh	4466.03	29034.09	33500.12	70832	6.31	40.99	47.3
Gujarat	2209.55	22577.63	24787.18	86609	2.55	26.07	28.62
Orissa	1463.78	11343.88	12807.65	32669	4.48	34.72	39.2
Tamil Nadu	3073.37	19922.04	22995.4	87394	3.52	22.8	26.31
Meghalaya	260.45	862.97	1123.42	2250	11.58	38.35	49.93



Ex-ante Interventions in terms of Public Investment: Sen's Capability Approach

- Sen's Capability Approach: an advanced analytical framework over mainstream economic welfare criteria and its overemphasis on GDP.
- Scope of time budget statistics in identifying the *capability deprivation* and related *functionings* across gender has been an area underresearched.
- Three crucial layers, *capabilities*, *functioning* and *commodities*, which need interpretation in the context of time budgets, unpaid work and macropolicies.

Relating Sen's Capability Framework to Time Use Budgets, Unpaid Work and Investment

Capabilities	Functioning ¹	Commodity Space (in terms of Fiscal Stance)
Ability to stay alive and be long.	<ol style="list-style-type: none"> 1. Life Expectancy 2. Time use and % access to water and sanitation 3. Time use and % access to health infrastructure. Including travel time. 4. PEM Malnutrition 5. IMR/ CMR/ Sex Ratio 6. Time Stress data (Non-SNA activity) 	<ol style="list-style-type: none"> 1. Food Security 2. Infrastructure Policies in terms of water, fuel and sanitation 3. Environmental Policies 4. Immunization/Nutrition Programmes
Ability to have knowledge	<ol style="list-style-type: none"> 1. Gross Enrolment Ratio 2. Time use of child on care economy and schooling. 3. Time use budgets of unpaid work of school-going children. 4. Literacy rate/ Drop Out rate/ Completion rate 	<ol style="list-style-type: none"> 1. Education Policy with complementary fiscal services, viz., water infrastructure projects
Ability for Social Interaction	<ol style="list-style-type: none"> 1. Mobility: Travel time in time use statistics for economic activities, paid and unpaid. 2. Security and Safety 3. Time use budgets in community activities (including participatory process of building local infrastructure) 	<ol style="list-style-type: none"> 1. Public Transport System 2. Better Road Infrastructure 3. Public Safety and Security (Law and Order)
Ability to earn livelihood	<ol style="list-style-type: none"> 1. Work Participation Rate estimated from Time Use Statistics 2. Time Use in Care Economy activities (dual burden) 3. Time Poverty data 	<ol style="list-style-type: none"> 1. Employment Policies 2. Micro finance programmes
Ability to communicate decision making/ governance	<ol style="list-style-type: none"> 1. Time Use in participation in decision making Time use statistics in governance of publicly provided services 	<ol style="list-style-type: none"> 1. Policies for decentralized provisioning of public services with client participatory approach



Ex-post Incidence Analysis of Public Investment: Benefit Incidence

» Mathematically, benefit incidence is estimated by the following formula:

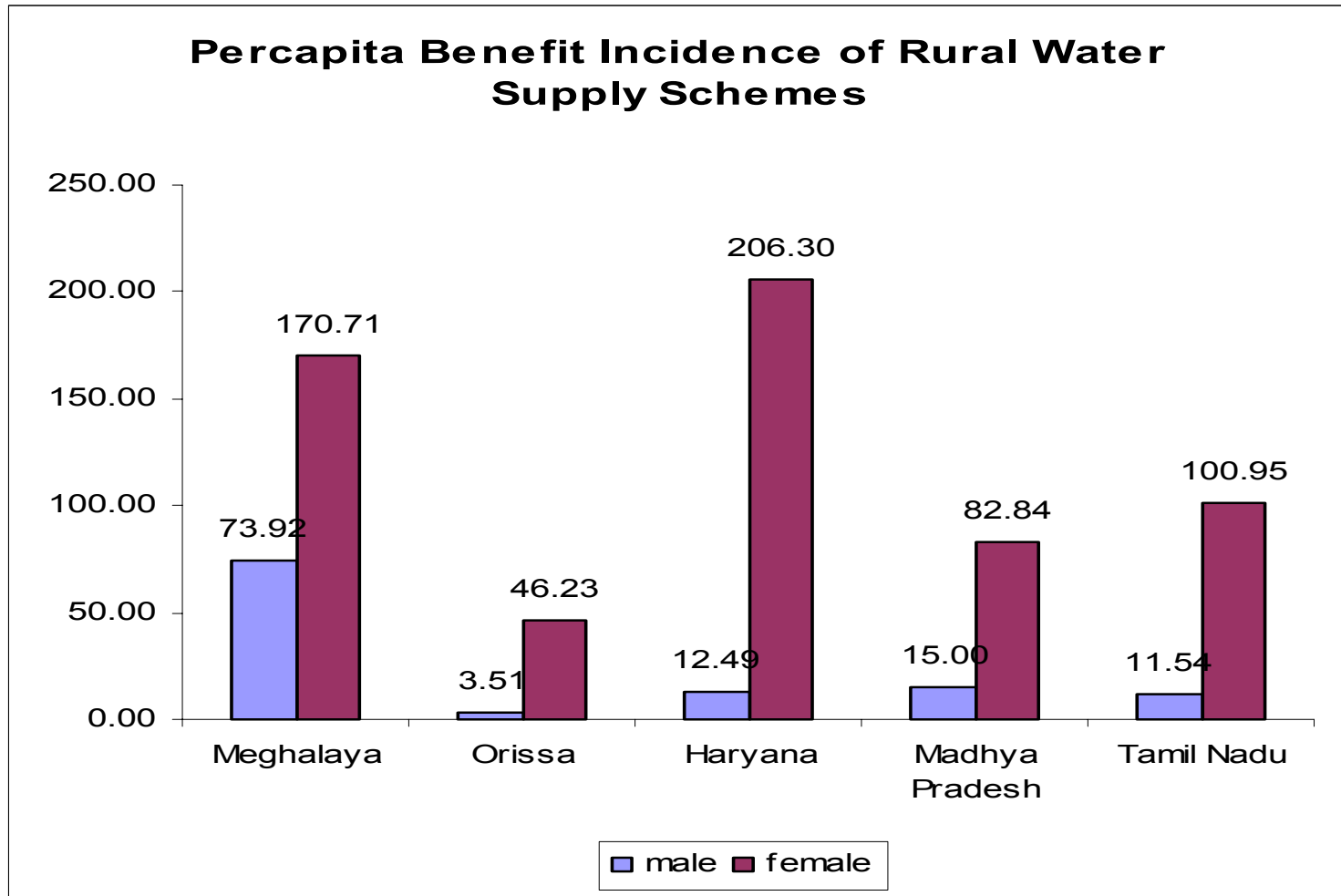
$$\text{» } X_j \equiv \sum_i U_{ij} (S_i/U_i) \equiv \sum_i (U_{ij}/U_i) S_i \equiv \sum_i e_{ij} S_i$$

- where, X_j = sector specific subsidy enjoyed by group j .
- U_{ij} = utilization of service i by group j .
- U_i = utilization of service i by all groups combined
- S_i = government net expenditure on service i .
- e_{ij} = group j 's share of utilization of service i .

Deriving Unit Utilised Data on Water Supply from Time Use Budgets (in per cent)

	Rural		urban		total	
	male	female	male	female	male	female
Meghalaya	31.08	68.92	40.00	60.00	33.08	66.92
Orissa	7.14	92.86	-	100.00	6.67	93.33
Haryana	6.58	93.42	7.69	92.31	6.71	93.29
Madhya Pradesh	16.17	83.83	14.63	85.37	15.99	84.01
Tamil Nadu	10.41	89.59	13.32	86.68	11.23	88.77
Gujarat	100.00	0.00	-	-	100.00	0.00
Combined	13.42	86.58	17.07	82.93	14.23	85.77

An Illustrative Benefit Incidence Analysis from Time Use Budgets





Link between Public Infrastructure and Time Allocation: Sign of Regression Coefficients

	Female	Male	Total
Time Allocation	-	-	-
Number of Persons involved in Activity	+	-	-
Travel Time	- (*)	-	-
SNA	- (*)	-	+
Extended SNA	-	+	-
Non-SNA	+(*)	-	-



Conclusions

- Direction of regression coefficients suggests that public infrastructure investment affects market work, non-market work and leisure time in different ways with evident gender differentials.
- Time allocation in SNA activity of women is found significant and inversely related to the public infrastructure related to water supply.
- No evidence that the release of time locked up in unpaid SNA work through better infrastructure can have substitution effect towards market work.
- Further reinforced by the significant positive link between infrastructure and time allocation in Non-SNA activity, which manifests *forced leisure* .



Policy Conclusions (contd..)

- Though infrastructure investment lessens the time stress in unpaid SNA activity; complementary *employment policies* are required along with infrastructure investment to ensure substitution effect of unpaid work with market work, which in turn can have impact on household poverty.
- Time budget statistics enables the identification of the *complementary fiscal services* required for better gender sensitive human development.



■ *Much Thanks!*