

What Does the Evidence Show? Consumption, Poverty and the Labour Market in India - 2011/12-present

Surjit S. Bhalla

International Monetary Fund

sbhalla@imf.org

Tirthatanmoy Das

IIM Bangalore and IZA

tirthatanmoy.das@iimb.ac.in

Presented at

National Council of Applied Economic Research

June 9, 2022

Disclaimer: Views expressed are those of the presenters and should not be ascribed to the IMF, its Executive Board or any other institution with which the presenter or his co-authors are affiliated.



The Goal

We examine two key aspects of Indian Economy

- ❑ Labour force participation rates (LFPR), male and female
- ❑ Poverty (headcount index) for the PPP\$1.9 line

Why do we undertake this research?

- ❑ Estimates of poverty and LFPR are important inputs into understanding Development, and for formulation of policy advice
- ❑ Non availability of official estimates on consumption and poverty for the years following 2011/12
- ❑ Periodic Labor Force [PLFS] reports LFPR post 2011/12, but some argued (initially!) that change in listing methodology of PLFS may render it as non representative

What do we find?

- ❑ As such, CPHS data is a popular data set amongst researchers worldwide, including at institutions like the IMF, World Bank, and IIM-Bangalore
- ❑ We present several “cuts” or interpretations of the CPHS data for two variables of research and policy concern – female labor force participation and estimates of extreme poverty
- ❑ To our surprise and dismay, we find that CPHS data fails several “smell tests” – estimates are extremely divergent from other survey and administrative data
- ❑ Female LFPRs (FLFPR) are less than half that reported by the official PLFS, where as male LFPRs are comparable; also, without explanation FLFPRs in India are the lowest in the world (as per CPHS’s FLFPR estimates)

What do we find?

- ❑ Poverty estimates do not match the comprehensive analysis presented by World Bank [e.g. – Roy-van der Weide(2022)]
- ❑ We find that extreme poverty in India (same poverty line, same CPHS data, same adjusted weights as graciously supplied by World Bank) to be about half (5.5 %) the 10.6 % level reported
- ❑ We hope this seminar will provide us with guidance on future research, and reporting of CMIE-CPHS data

Various data sources

- ❑ CMIE Consumer Pyramid Household Survey [CPHS] – the only available household data post 2014
 - ❑ Panel of households can be tracked over time
 - ❑ High frequency data: continuous changes can be monitored
- ❑ NSSO-EU, NSSO-CE (2011/12): household/individual level data on demographics, consumption and employment
- ❑ PLFS (2017/18-2019/20): individual level data on demographics, consumption and employment

Estimation

Labour force participation rates:
men/women

Poverty (headcount index)

[Estimates of headcount index obtained by estimates of consumption distribution and separate rural and urban poverty lines for each state.

- ❑ Estimate non-parametric bounds for LFPR, both for men and women
- ❑ Estimate historical pass-thru rates (elasticity of survey consumption growth w.r.t. NA consumption growth)
- ❑ Estimate Headcount poverty (PPP\$1.9) and compare with World Bank for 2015-2019

PLFS is representative

We find that PLFS – 2017/18 is comparable to NSSO-EU – 2011/12

We find no significant differences in LFPR or unemployment rate due to sampling differences

Table 1: No evidence of selectivity bias (based on NSSO EU 2011-12)

	Actual data		Simulated data	
	URATE	LFPR	URATE	LFPR
Rural	0.017	0.587	0.017	0.583
Urban	0.034	0.493	0.034	0.492
Total	0.022	0.559	0.022	0.557

Examining CPHS data

- ❑ Many have reported several possible discrepancies with CPHS data
- ❑ Major criticism is concerning the representativeness of CPHS's 'weighting scheme(s)'
- ❑ Evaluate CPHS estimates on various indicators
- ❑ Present own estimates combining CPHS with other data, including recent World Bank study

Examining CPHS data

Anomaly 1

Low sex ratio in
CPHS vs PLFS

Exceptionally low for
the young population

Table 2: sex-ratio (per 1000 men), CPHS and PLFS

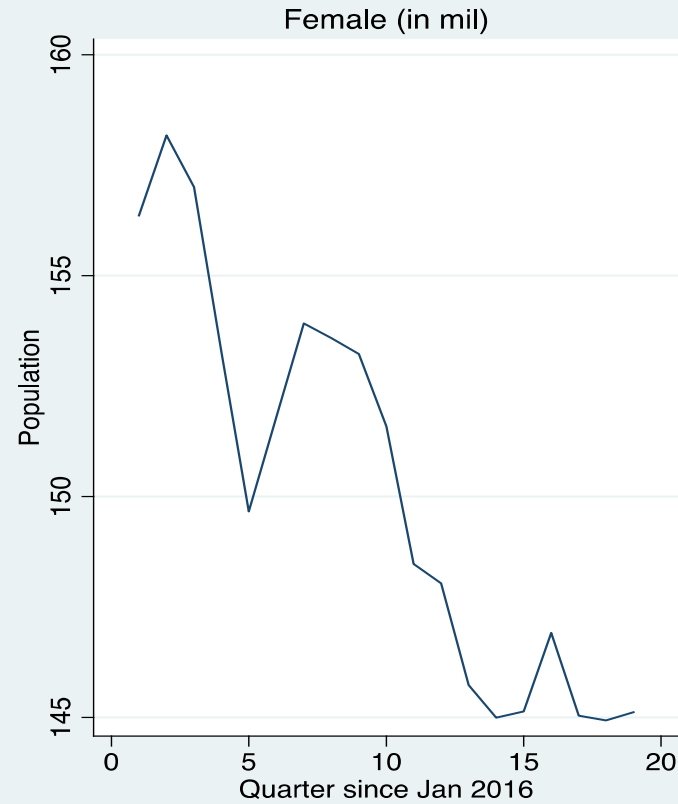
Quarter	Age: over 15		Age: 15-29	
	CPHS	PLFS. (2017/18)	CPHS	PLFS (2017/18)
May-Aug 2017	899	982	779	939
Sep - Dec 2017	899	982	780	939
Jan-Ap 2018	902	982	787	939
May-Aug 2018	903	982	783	939

Population growth

Anomaly 2

Number of young males increasing, number of young females declining

CPHS population estimates (age: 15-29 years)



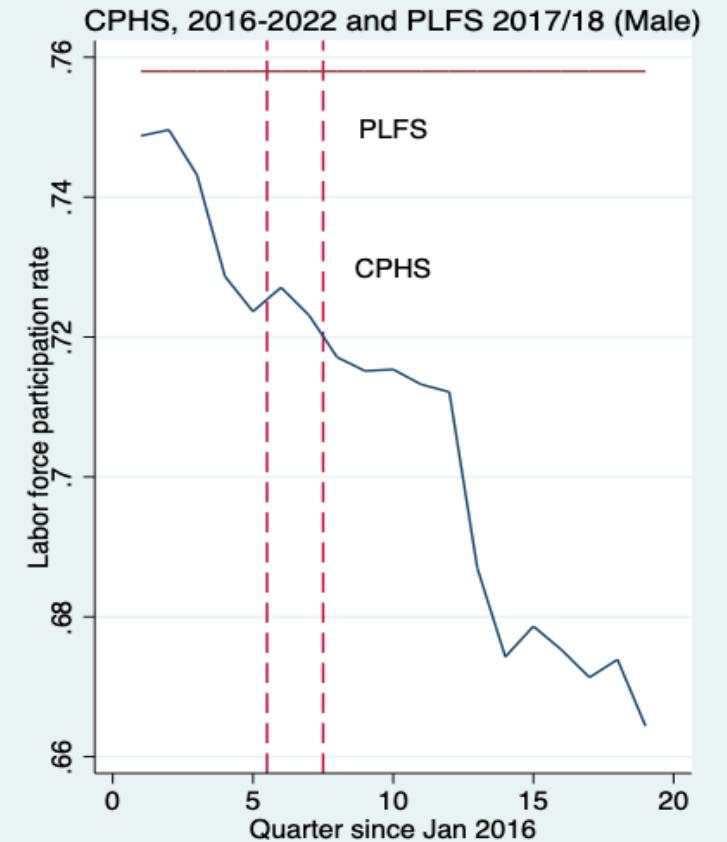
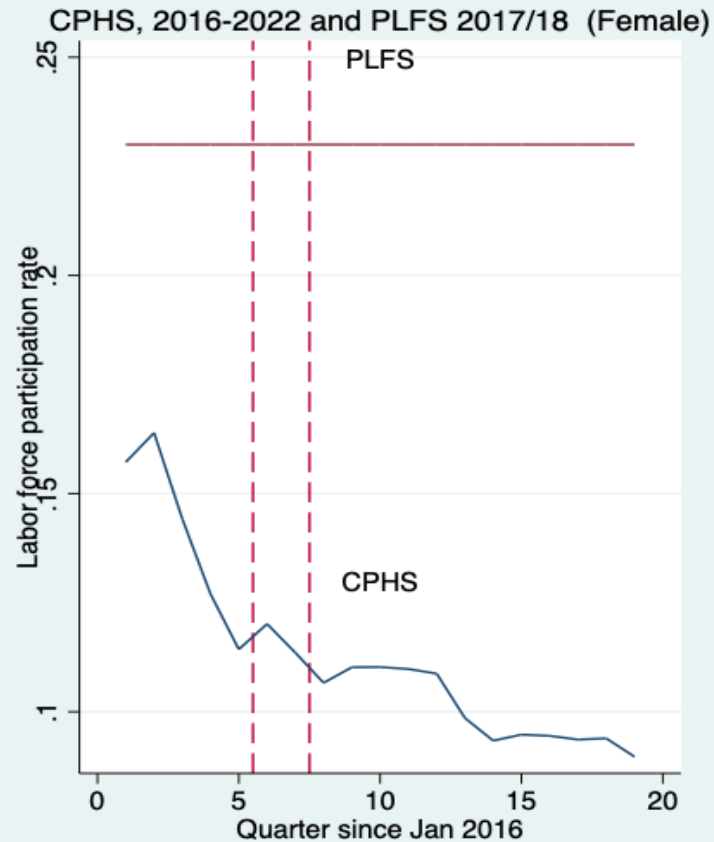
LFPR, (age \geq 15)

Anomaly 3a

Low FLFPR: half that PLFS reports in the same year

Lowest FLFPR for the same year in the world

labor force participation rates (age \geq 15)

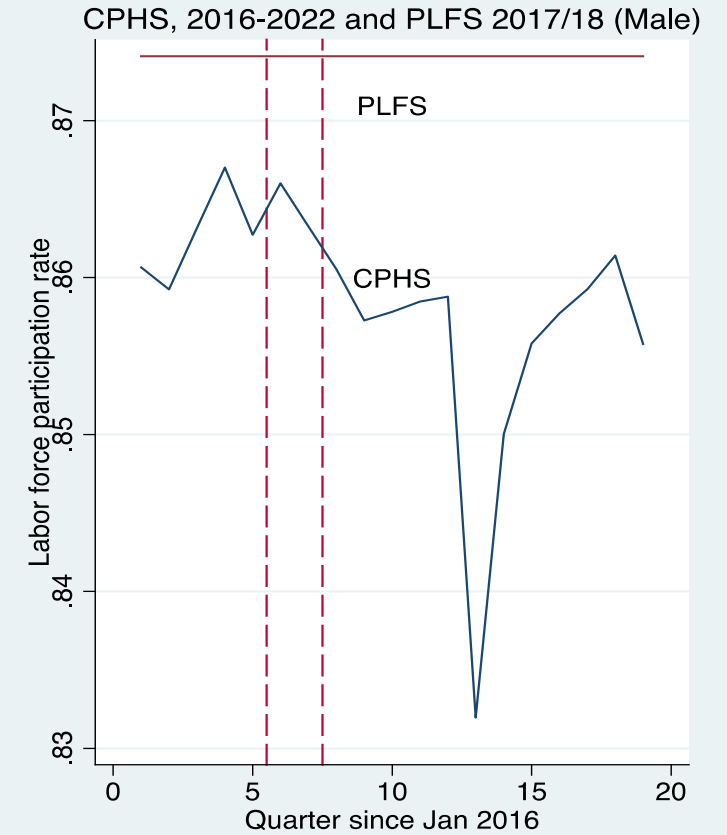
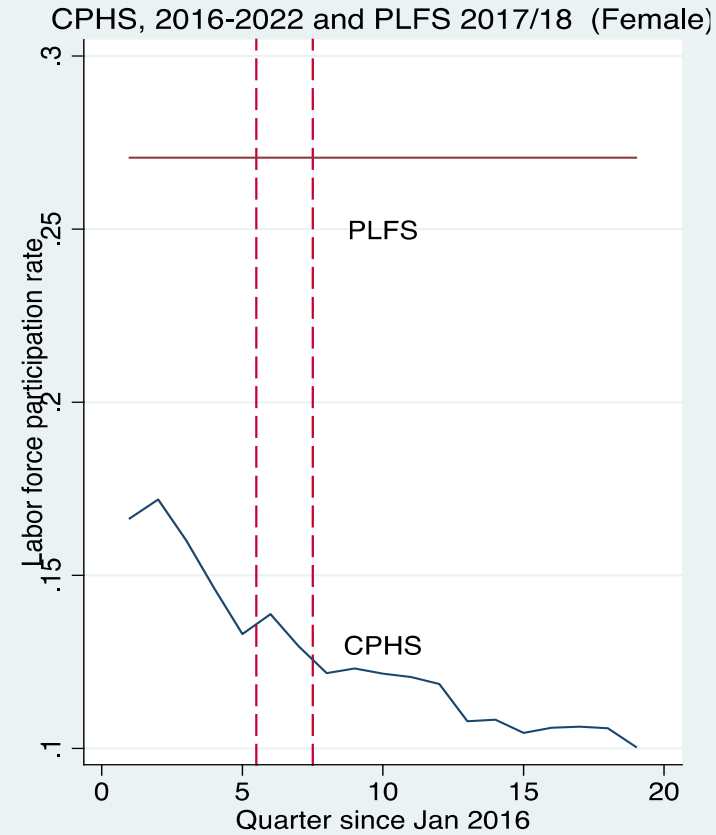


LFPR, (age>24)

Anomaly 3b

Low FLFPR (older age groups don't differ)

labor force participation rates (age \geq 25)

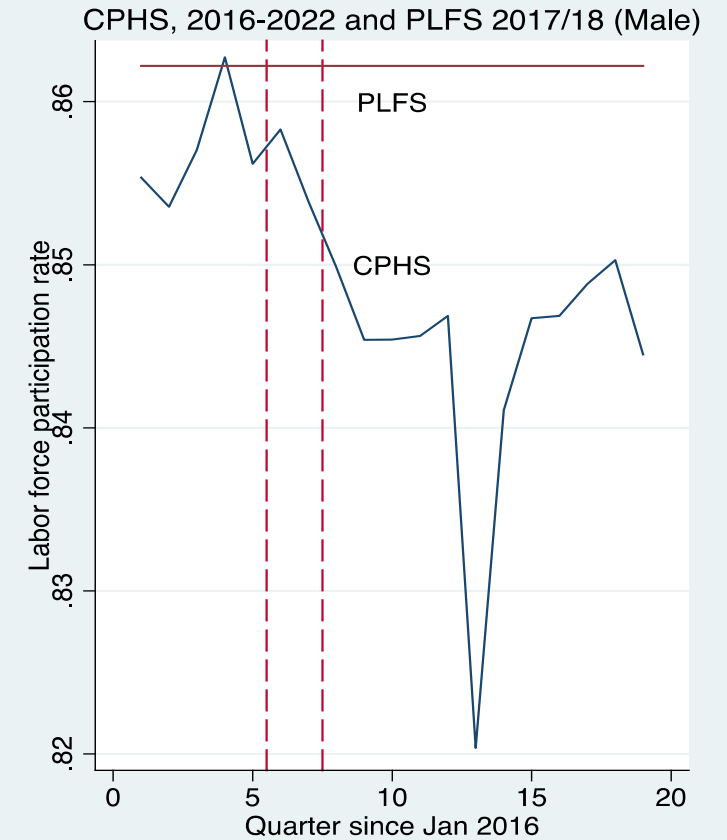
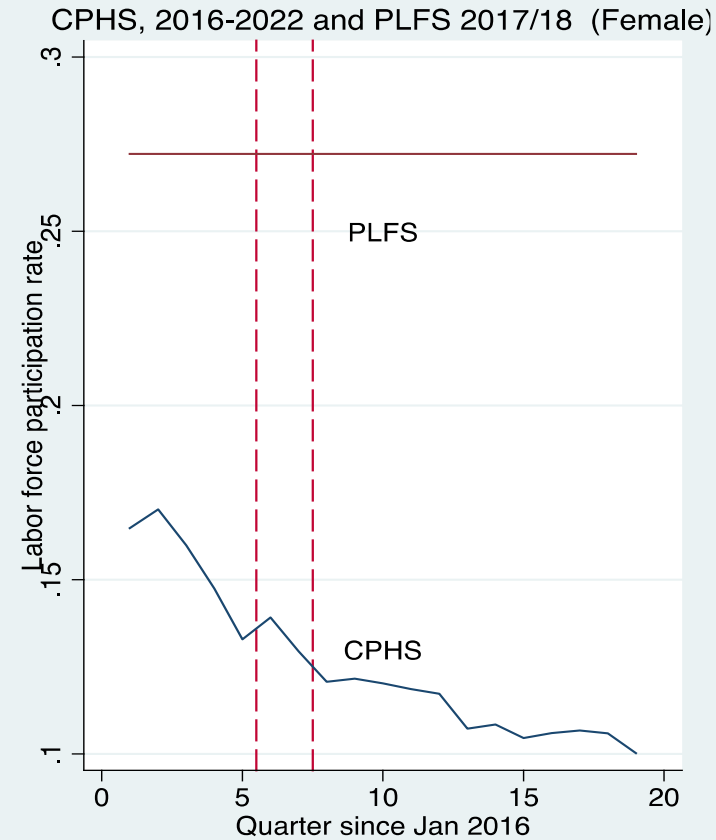


LFPR (age>29)

Anomaly 3c

Low FLFPR (older age groups don't differ)

labor force participation rates (age>=30)

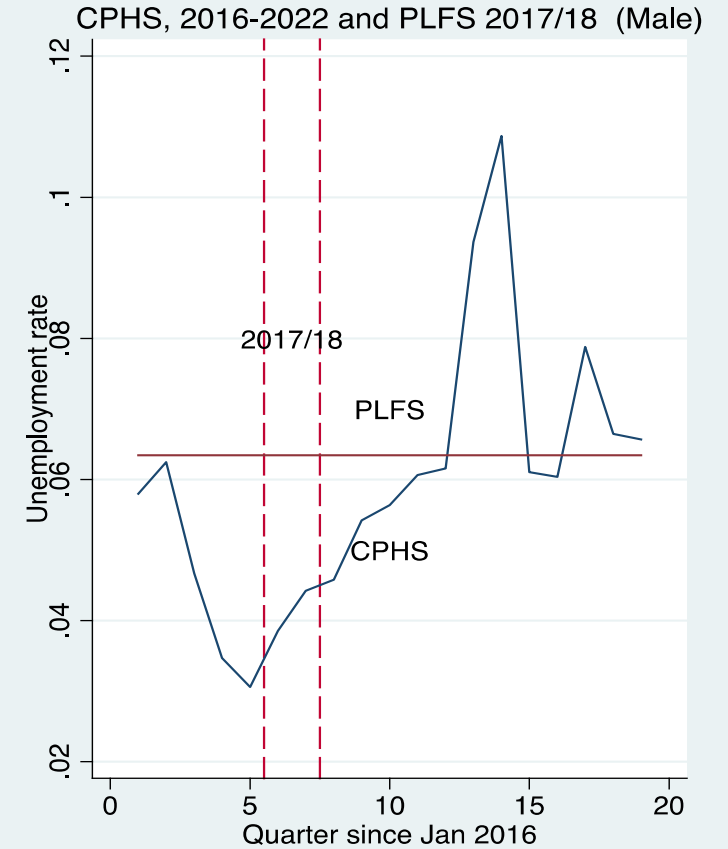
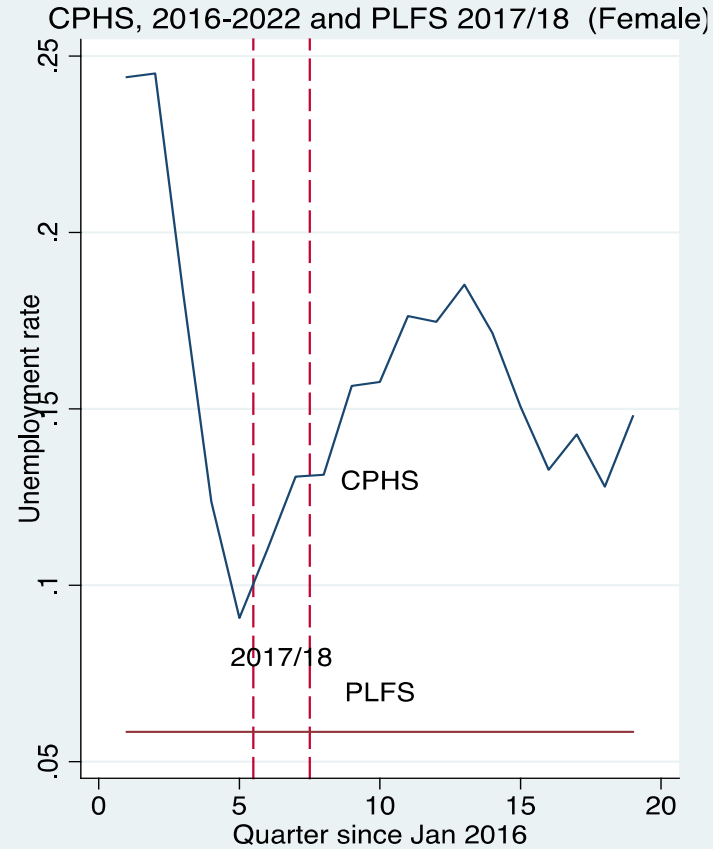


Unemployment Rates

Anomaly 4

Inexplicable fluctuations in CPHS unemployment rates, for *both* men and women

Unemployment rates (age ≥ 15)

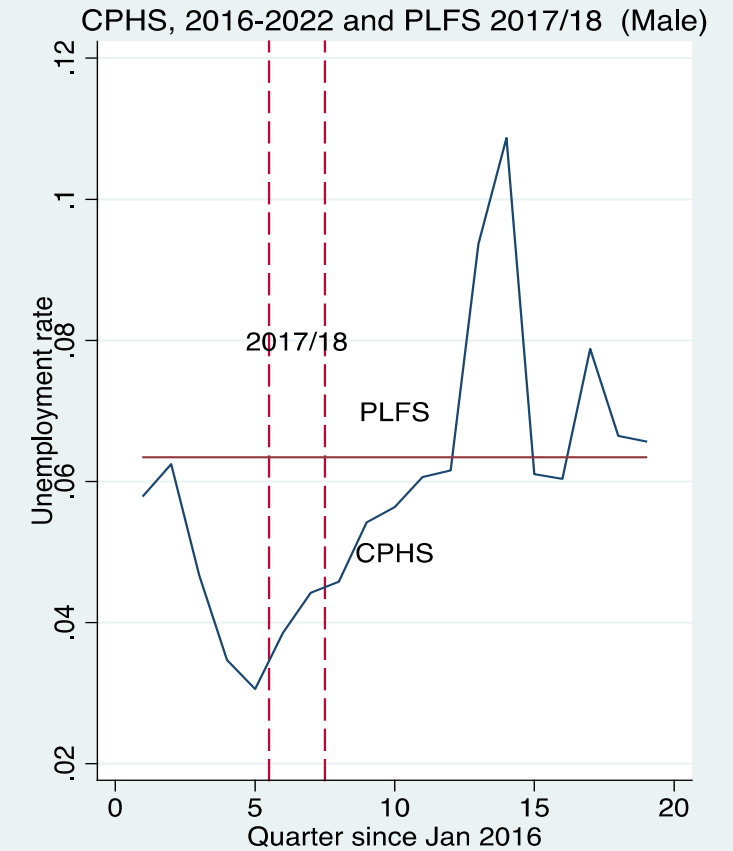
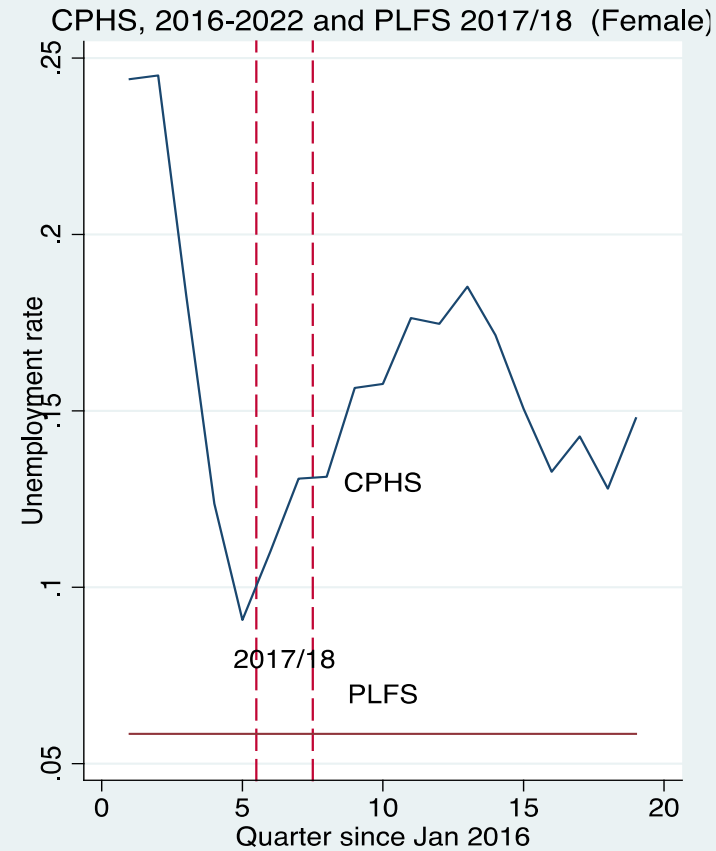


Unemployment Rates [contd]

Anomaly 5a

CPHS unemployment rates for women are considerably higher than PLFS (2X)

Unemployment rates (age \geq 15)

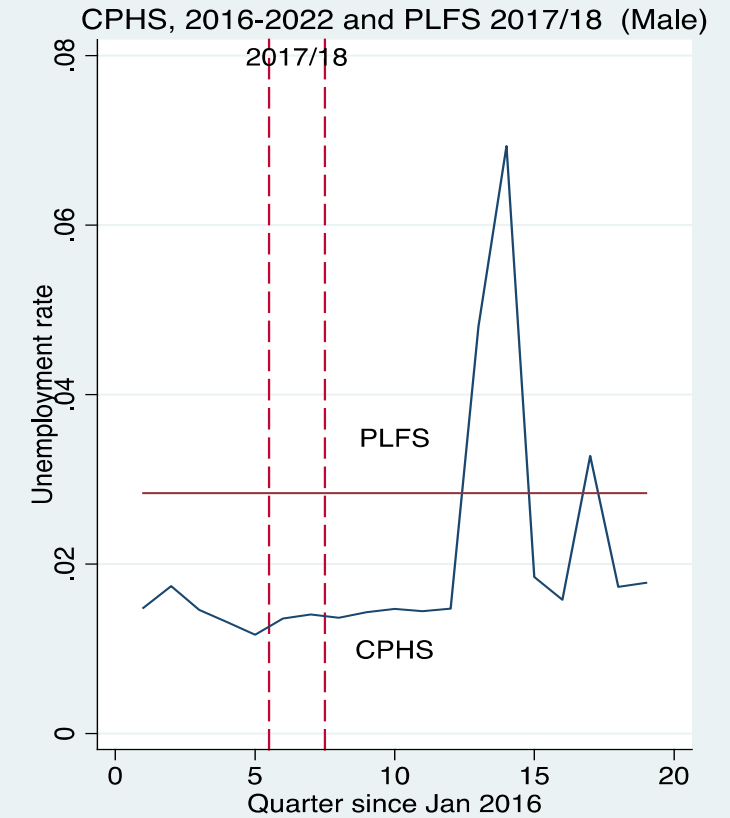
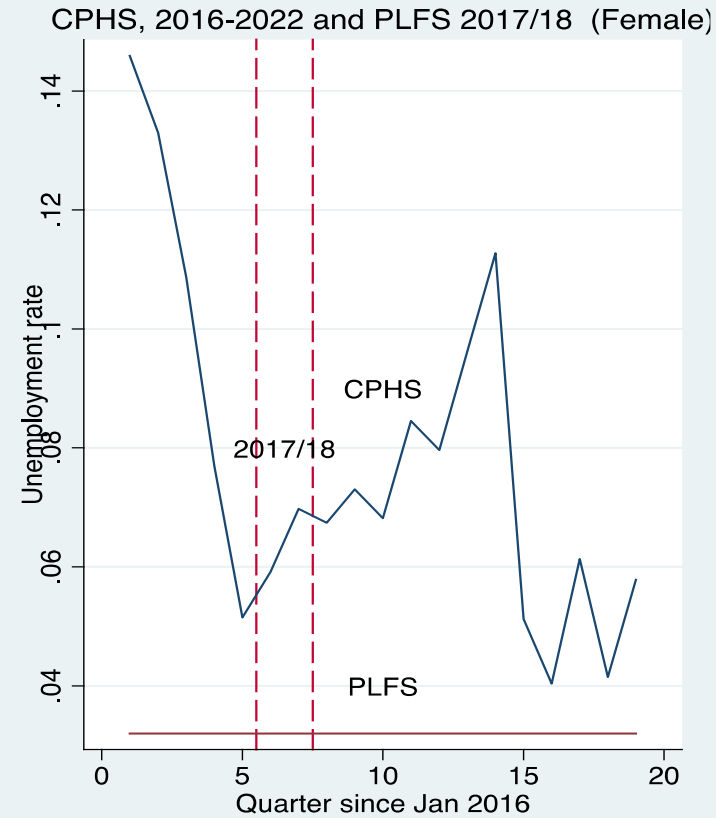


Unemployment Rates [contd]

Anomaly 5b

The large difference remains even for the older age groups (age \geq 25)

Unemployment rates (age \geq 25)

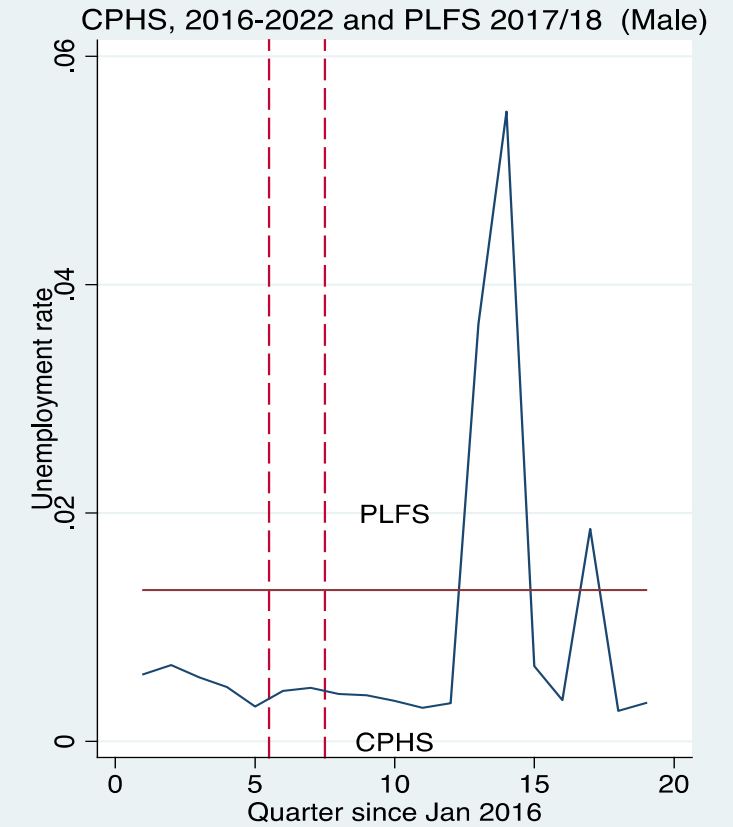
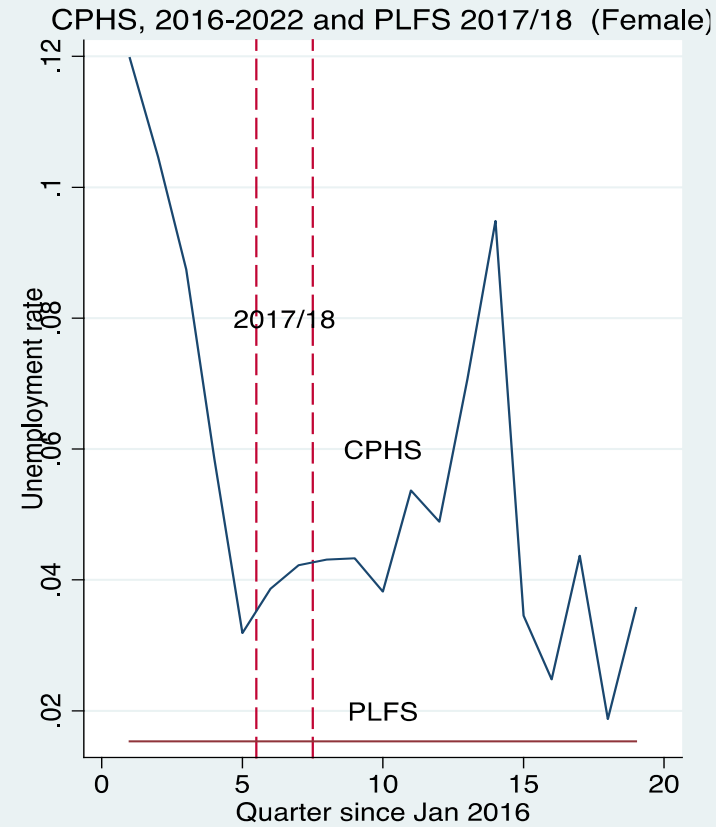


Unemployment Rates [contd]

Anomaly 5c

The large difference remains even for the older age groups (age \geq 30)

Unemployment rates (age \geq 30)



Unexpected fluctuation in panel weights

Anomaly 6

Example: the first 2 Households show unusually large change from year to year for the same household

Table 3: Roy and van de Weide (2022) adjusted CPHS weights (first 2 HH)

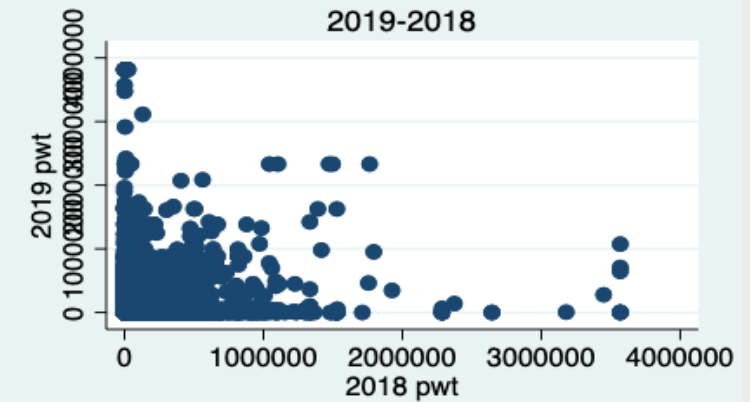
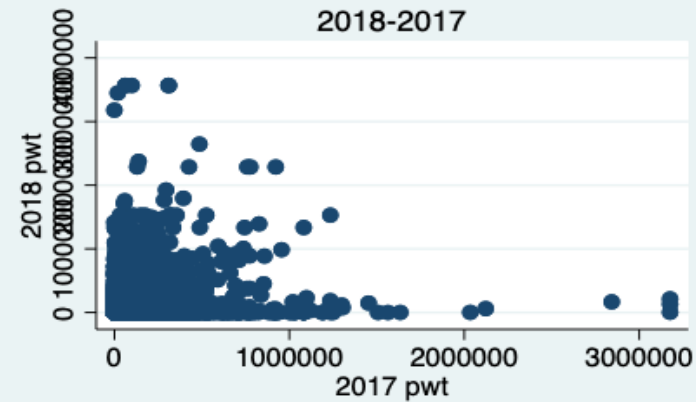
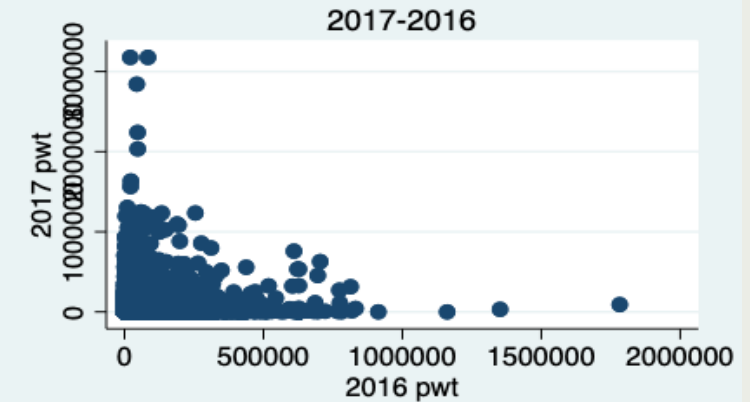
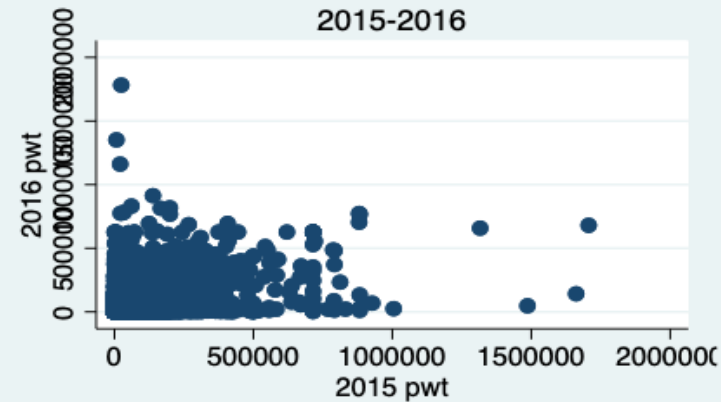
Year	First HH	Second HH
2015	8808	16917
2016	3073	5199
2017	21	645
2018	1	12
2019	0	380

Weights not corrected
after adjustment with
NSS

Anomaly 7

Roy and van der
Weide (2022)
adjustments do not
fully correct the
weighting anomaly

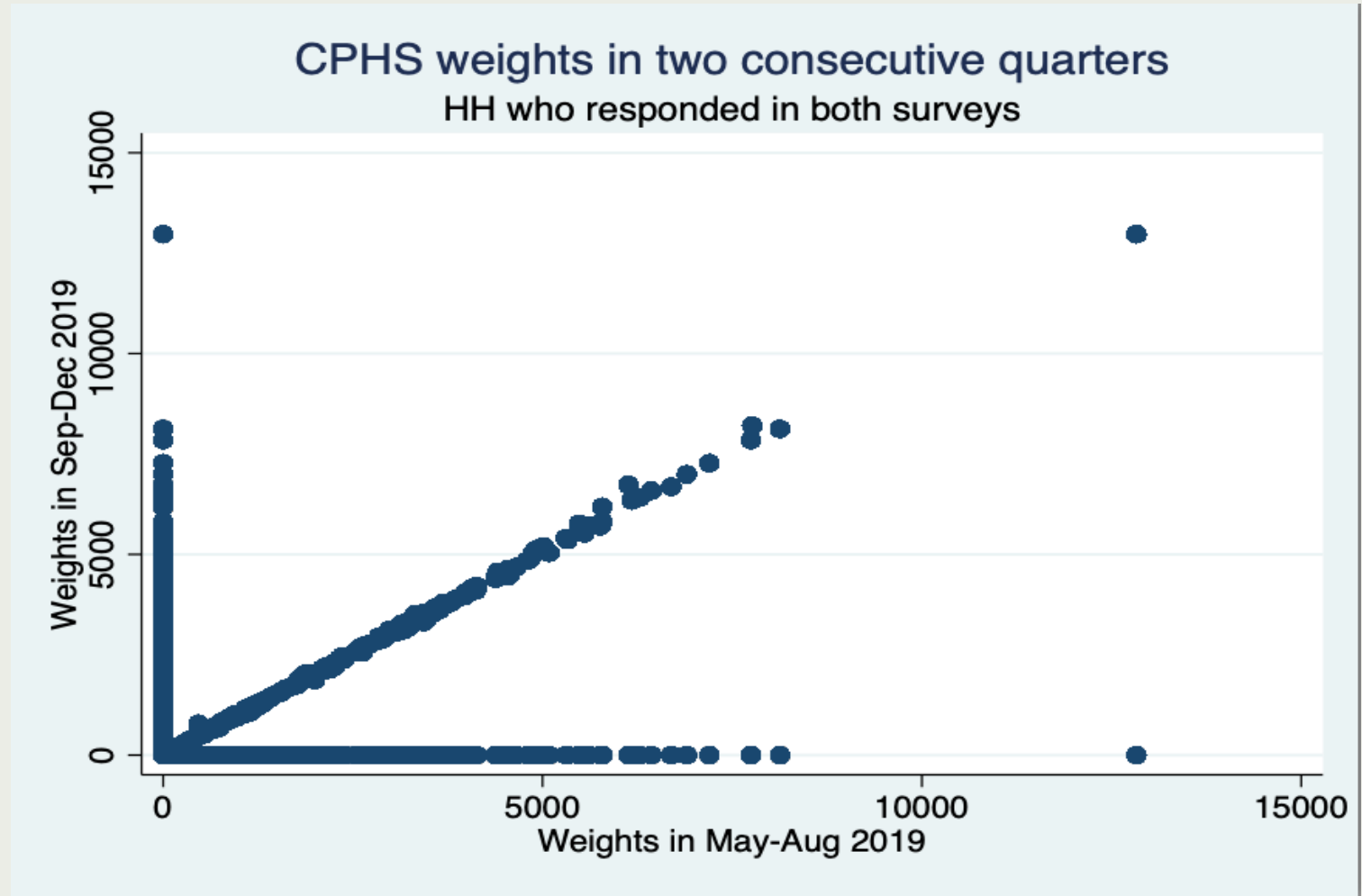
Weights in two consecutive years



The problem with weights

Anomaly 8

For the same households, weights vary in neighbouring quarters



LFPR – nonparametric bounds

Proportion of
responders and non-
responders are
observed

LFPR for responders
are also observed

LFPR for non-
responders are *not*
observed (the
problem)

- Let $LF = 1$ means a person participates in the labor market
- Let $z = 1$: the person is a responder; $z = 0$ means non-responders
- The goal is to identify $\Pr[LF = 1]$, that is the *LFPR*
- Non-parametric bounds:
$$\Pr[LF = 1|z = 1]\Pr[z = 1] \leq \Pr[LF = 1] \leq \Pr[LF = 1|z = 1]\Pr[z = 1] + \Pr[z = 0]$$

Non-parametric estimates for LFPR

Female: way lower than PLFS, though upper bound is close to PLFS

Male: closer to PLFS and to the upper bound estimates

Female subsamples do not reflect reality of FLFPR

Table 4: Labour force participation rates (Age \geq 15)

Quarter	CPHS (reported)	CPHS (uncensored)	Bounds		PLFS
			Lower	Upper	
Female					
May-Aug 2017	0.114	0.115	0.097	0.254	0.233
Sep-Dec 2017	0.120	0.116	0.092	0.294	0.233
Jan-Apr 2018	0.114	0.112	0.096	0.242	0.233
May-Aug 2018	0.107	0.106	0.092	0.220	0.233
Male					
May-Aug 2017	0.724	0.728	0.613	0.771	0.758
Sep-Dec 2017	0.727	0.726	0.576	0.783	0.758
Jan-Apr 2018	0.723	0.725	0.616	0.766	0.758
May-Aug 2018	0.717	0.720	0.629	0.756	0.758

Good Policy is dependent on Good Data

- ❑ Big Data the new Oil – and justifiably – informs policy
- ❑ Important aspect of development and progress are changes in head-count index of Poverty.
- ❑ As a research community, we have to be vigilant, and co-operative, on both provision and analysis of data.
- ❑ It is in this spirit that we present the poverty analysis below.

Pass – thru in Poverty Estimation

When survey data not available, recourse to NA data to fill in the gaps for mean consumption

Historically, pass-thru close to unity

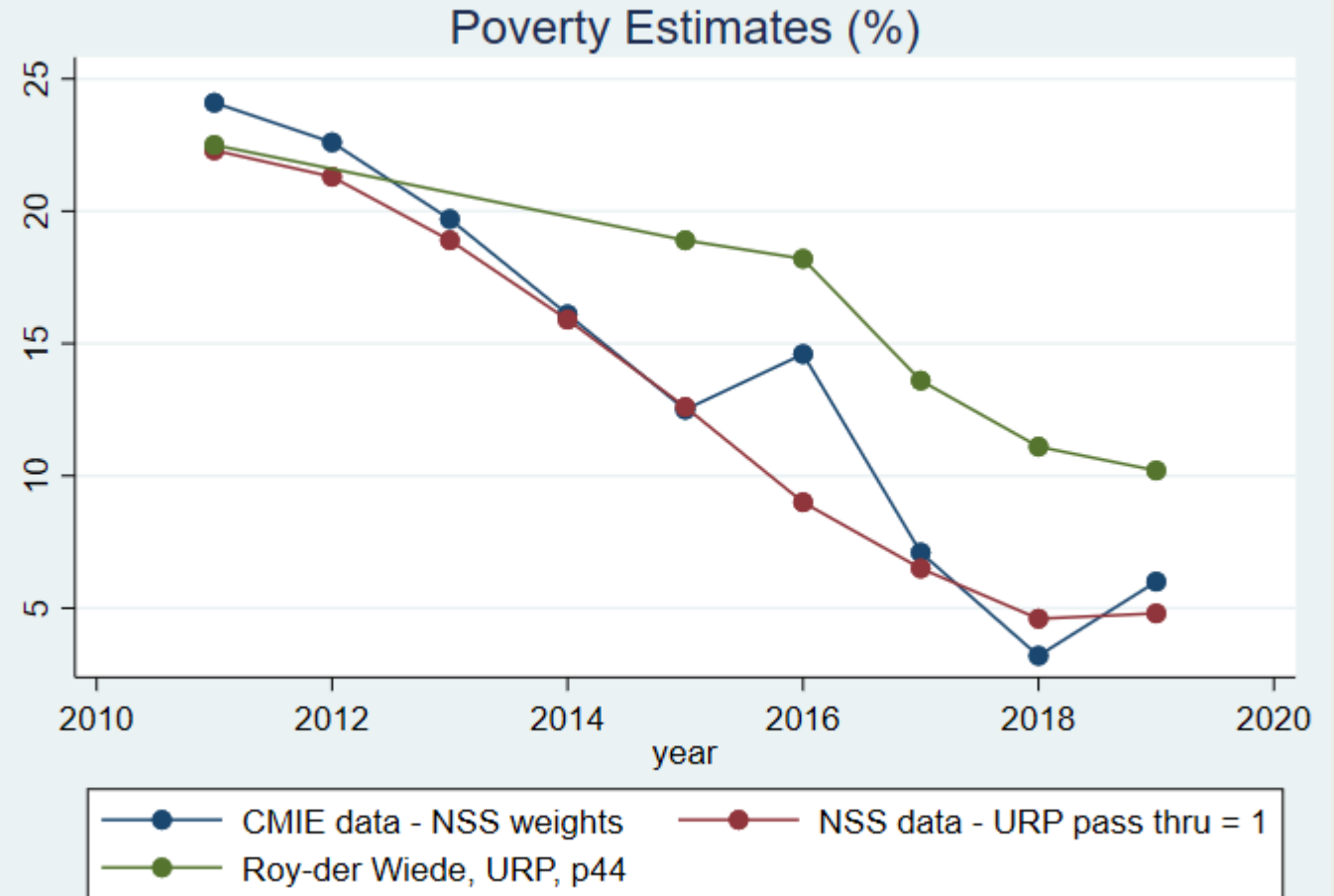
CPHS data pass-thru above unity

Table 6: Pass - thru Consumption Surveys – India(1973-2019)

<i>Period</i>	<i>Ratio</i>	<i>Log Growth rates</i>			<i>Pass-thru</i>	
		<i>S/NA</i>	<i>PFCE</i>	<i>Survey All - URP</i>	<i>CPHS- WB</i>	<i>CPHS- orig</i>
1973-2019	54.1	9.9	9.7	1.02		
1973-1999	68.5	9.8	8.9	0.92		
1973-2011	61.3	10.4	9.4	0.89		
2016-2019	39.8	8.5	10.5	1.29	1.39	1.21

Poverty Trends 2011-2019

Three different estimates of trend in absolute (\$1.9) poverty in India

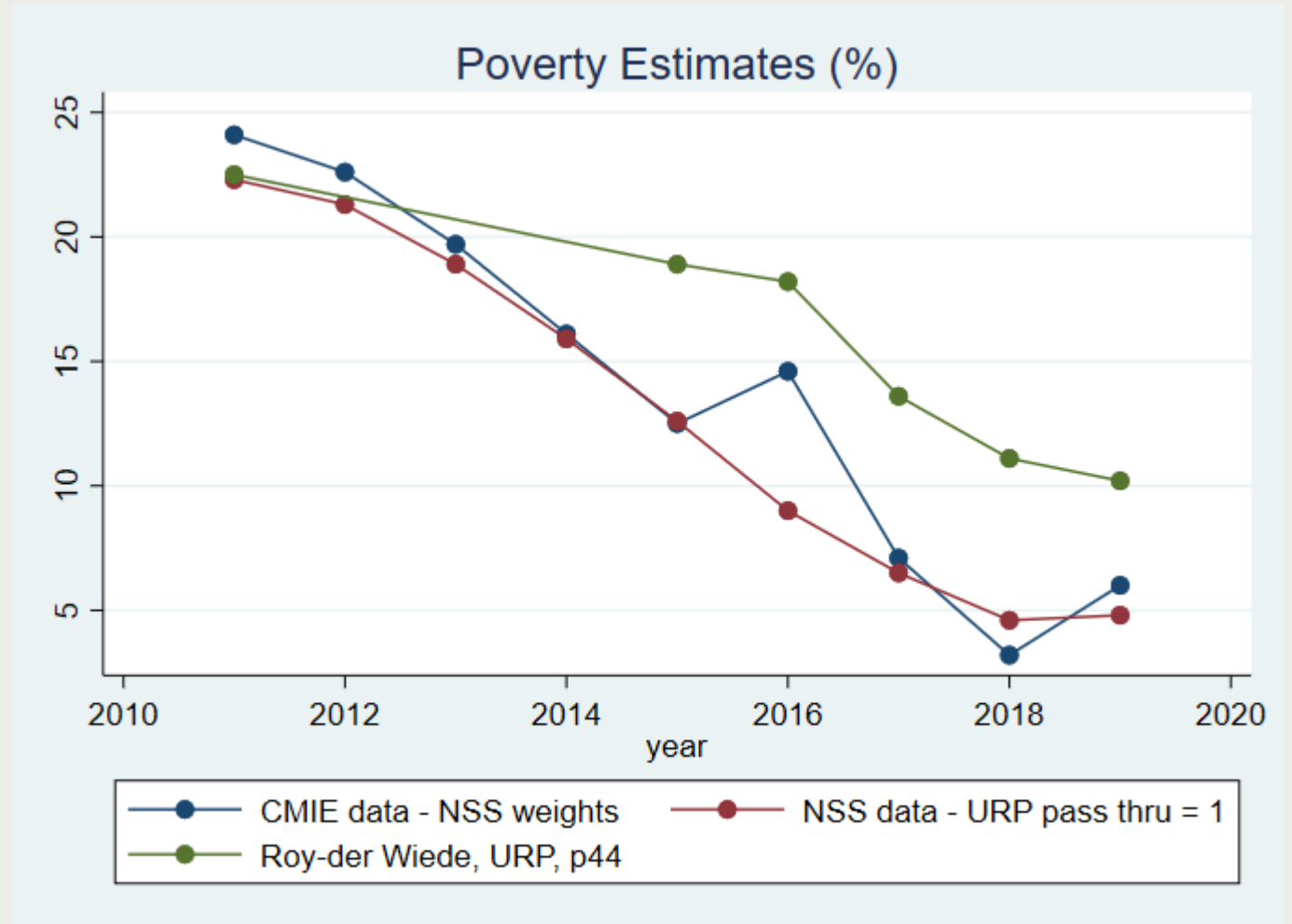


Poverty Trends 2011-2019

(i) **Red line** - 2011 only exists for NSS data URP; post 2011, extrapolations based on pass-thru equal to 1

(ii) **Blue line** – CPHS data – reweighted by Roy-van der Weide using NSS-PLFS data – this data only exists post-2015;

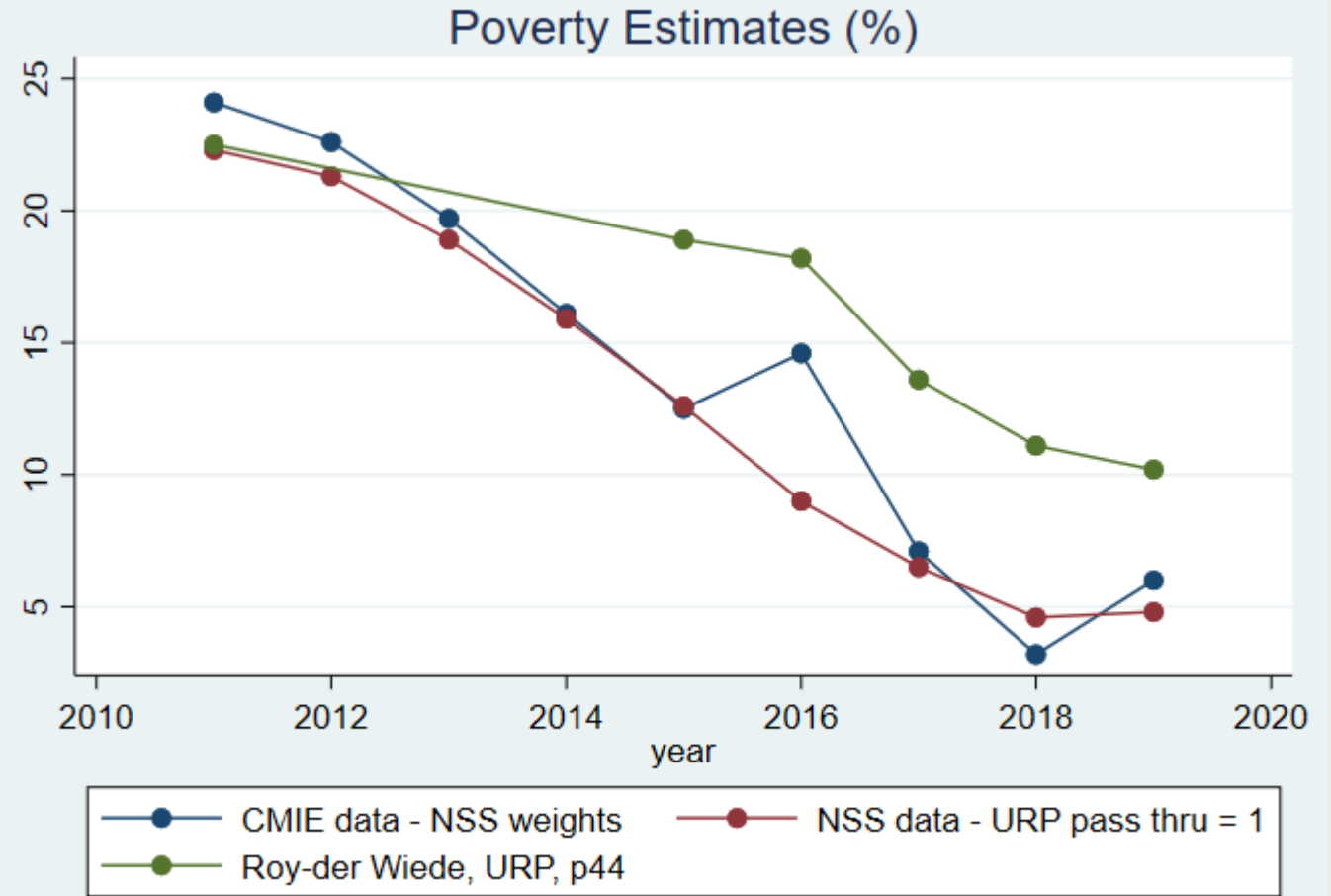
estimated by Bhalla-Das
(iii) **Green line** - Roy-van der Weide using NSS-PLFS data – as reported by Roy-van der Weide (2022, p. 44)



Poverty Trends 2011-2019

Theoretically, the Blue and Red lines should be identical post 2014.

Why the divergence?
Important for
understanding policy
and development.



Thank you

We would be happy to take any questions