

Augmenting Demographic Dividend Opportunities for India: The Role of Female Work Participation

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Broad Objectives

- This paper is an attempt to contribute to the ongoing debate on the demographic dividend in India
- It scrutinizes empirically some of the concerns expressed in realising demographic dividend in the country
- The female work participation is used as an important facilitator of demographic dividend and this connection is empirically tested and possible conclusions are drawn

Background

- India is experiencing rapid demographic changes over the last few decades
- The fertility level in 2012 is around 2.4 close to the replacement level of 2.1
- India is expected to reach the replacement level by middle of the century
- More than half of the major states in India have fertility level below replacement
- Demographic patterns are now viewed more optimistically than a decade or two back

Demographic Change

- ❑ As a result demographic changes, the age structure of the population has undergone rapid alterations
 - ❑ According to the 2011 census, 61 per cent of the India's population are in the 15-59 age group up from 57 per cent in 2001 and 31 per cent are less than 15 years of age down from 35 per cent in 2001
 - ❑ Adult population will further go up to over 65 per cent in the next one decade
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Demographic Change and Dividend

- Such rapid demographic changes have wide implications for the economy and society
 - Each age structure creates its own unique ripples on the economy
 - The impact of demographic changes on the economic performance of a country is now well recognized
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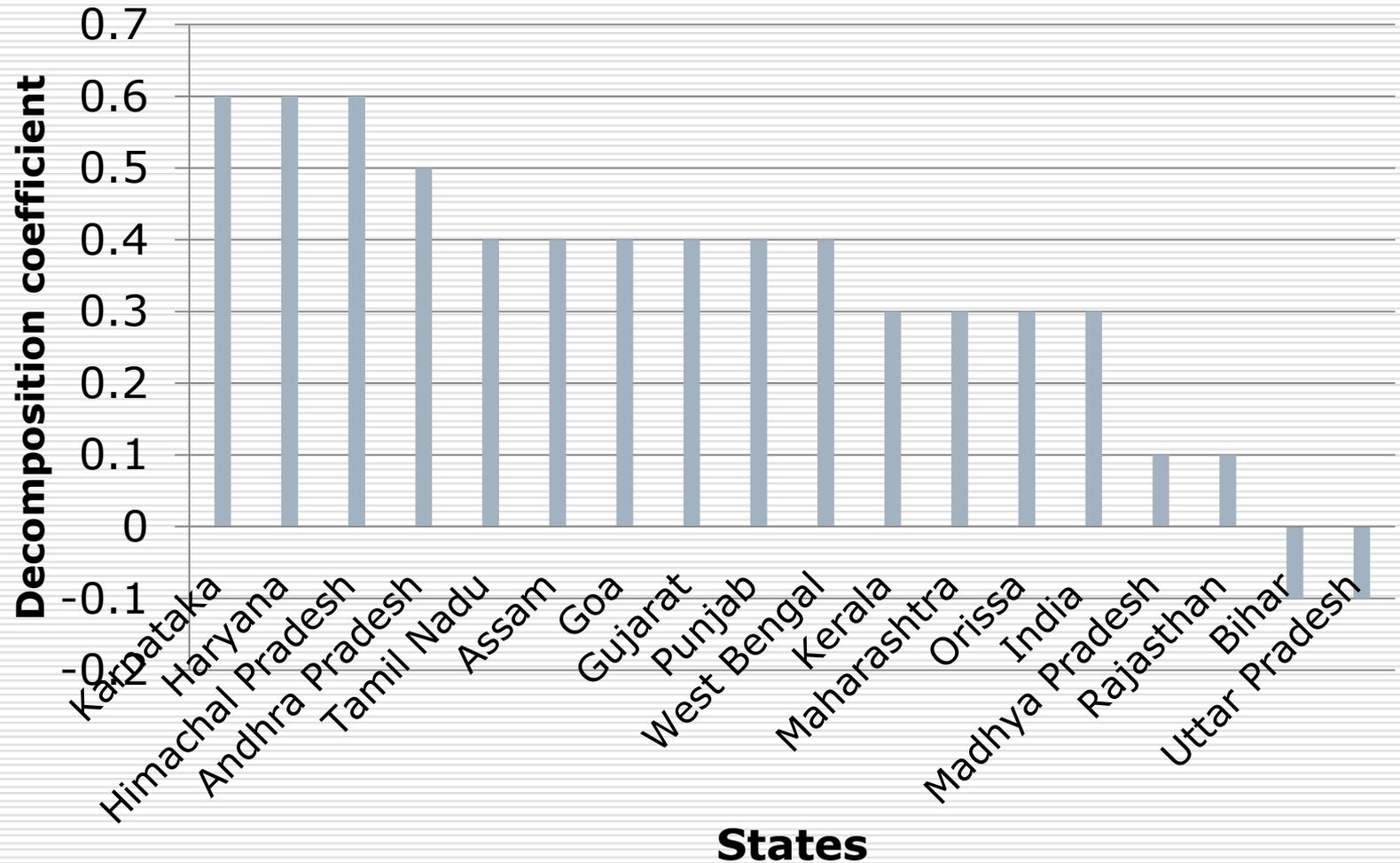
The Optimists of Demographic Dividend

- There is general consensus on demographic opportunity existing in India and its potential to take the country forward on economic terms
 - One of the important arguments in recent times has been the large potential existing in India due to demographic shifts which many other countries lack and India has the potential to become a superpower
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Major Empirical Studies

Studies	Method	Indicator	Result
Bloom et al (2006)	India-China time series	Growth of working age population	Positive
James (2008)	State level panel data	Growth of working age population	Positive
Kumar (2010)	State level panel data	Percentage of working age population	Positive
Aiyer and Mody (2011)	State level panel data	Percentage of working age population	Positive

Demographic Bonus derived from the Growth of Working Age group Population in Different States, 1991-2001



The Pessimists of Demographic Dividend

- ❑ The popular perception, on demographic dividend has been more pessimistic
 - ❑ It is argued that India's demographic dividend turns out to be more of a nightmare (Mitra and Nagrajan 2005; Chandrasekhar et al 2006; Desai 2010; Basu 2011; Mitra 2011, Upadhyay 2012)
 - ❑ Such writings have filled the pages of many leading newspapers in the last few years
 - ❑ This is because of the lack of sufficient progress/performance in the facilitating factors of demographic dividend
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Facilitating Factors of Demographic Dividend

- Five distinct forces facilitating demographic dividend (Bloom and Canning, 2011)
 - These forces can be divided into two broad groups, (a) accounting and (b) behavioural
 - But more important benefits accrue through the behavioural mechanism
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Facilitating Factors of Demographic Dividend

Accounting	Behavioural
The swelling of adult population	Increase in women's work participation resulting from fertility decline
Age group associated with prime years of saving	Incentive to save for a longer period with the expansion of life expectancy
	Reallocation of resources from investing in children to investing in physical capital

Female Labour Force Participation

- ❑ Of these, female labour force participation has attracted wide attention in India
 - ❑ Lower number of children enables women to spend more time in labour market away from child bearing and rearing responsibilities
 - ❑ Therefore it is expected that female work participation increases with demographic shifts
 - ❑ At the same time, this relationship is confounded by several other economic, social and cultural forces
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Pessimists on Female Work Participation

- It has been argued that India will not be able to benefit demographic dividend due to very low work participation of females (Sonlade Desai, 2010; Klasen and Pieters, 2012)
 - The work participation has, in fact, worsened during demographic changes (Alka Basu, 2011)
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Empirical Evidence Elsewhere

- ❑ The empirical evidences available from different countries show a positive impact of age structure change on female labour force participation (Bloom et al, 2009)
- ❑ Moreover, female work participation has been considered as one of the key reasons for rapid economic changes across countries
- ❑ However, such a detailed examination of the impact of demographic change on work participation is not available for India

Focus of the Presentation

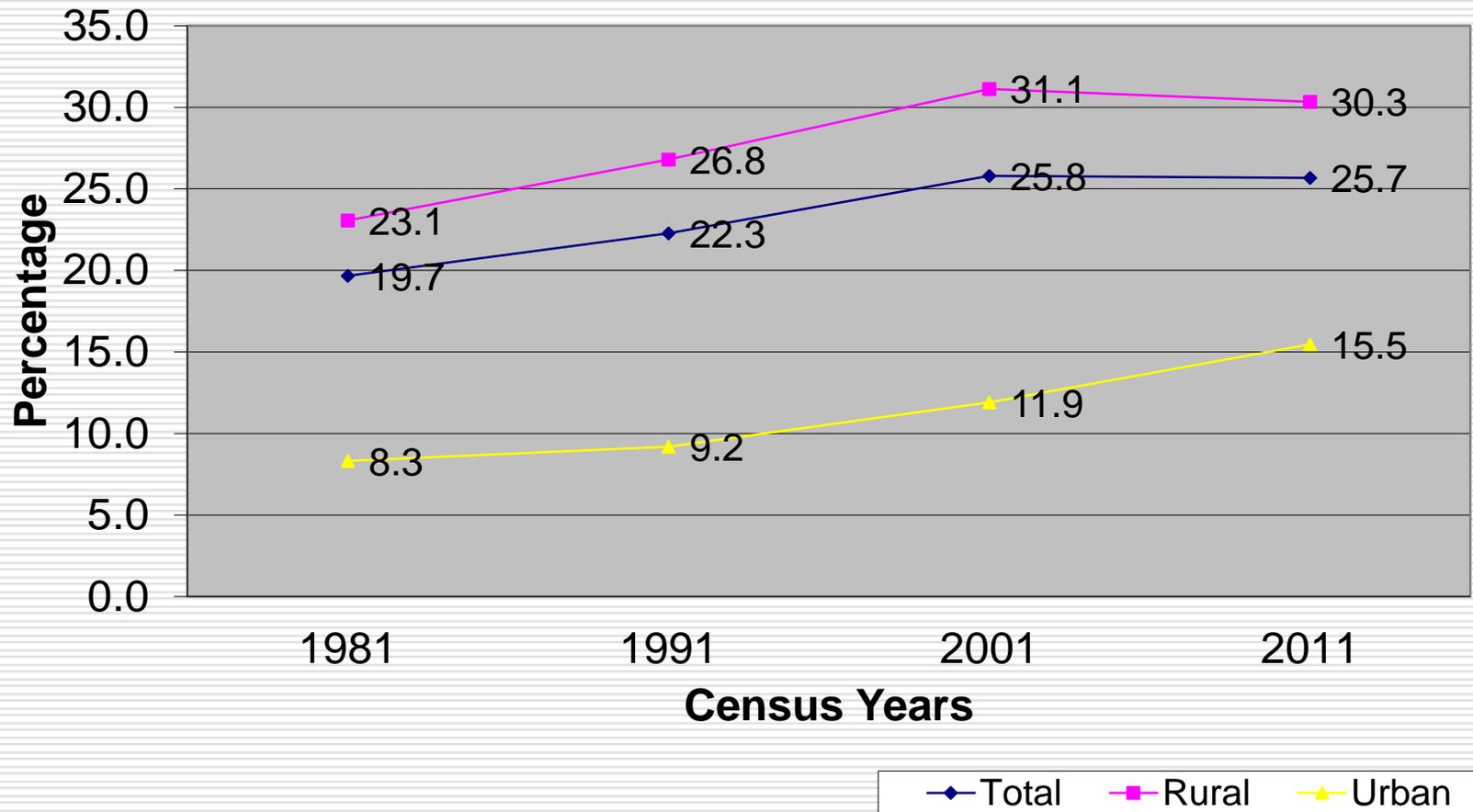
- First, the presentation looks into the changes in female work participation in India and the major explanations for such patterns
 - Second it considers the relationship between demographic changes and female work participation
 - Lastly, it looks into the impact of female work participation on the on India's economy based on the relationship observed above
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Female Work Participation

Female Work Participation in India

- ❑ The work participation of females has been quite low generally in south Asian region
 - ❑ Female work participation is relatively very low in India and is showing an erratic trend
 - ❑ NSSO data in 2004-05 report considerable increase in the work participation of women compared to the previous round in 1999-00
 - ❑ But it has recorded sharp decline between 2004-05 and 2009-10 from 45.4 to 34.5 per cent for 15-49 age group women
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Crude Work Participation among Females, India, 1981-2011



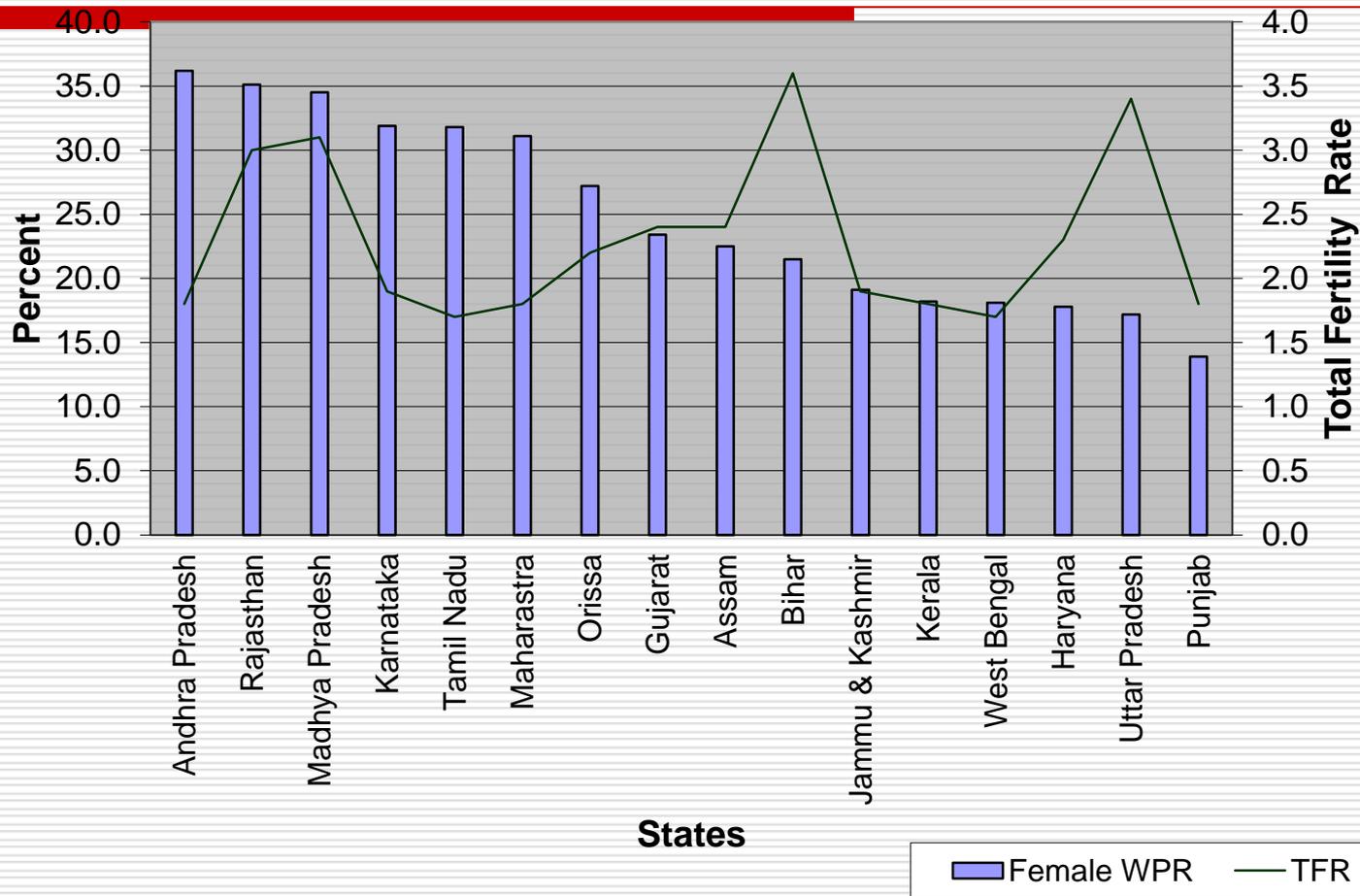
Female Work Participation (2011 Census)

- First, the census estimate of work participation among women is comparable with the NSSO results and remains relatively low
 - Second, data do not provide evidence of a drastic decline work participation
 - Third, even with low fertility in urban India, the female work participation remains very low despite having increased in the last decade
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Growth of Crude Work Participation Rate of Females Across States, 1981-2011

States	1981-1991	1991-2001	2001-2011	1981-2011
Andhra Pradesh	0.24	0.23	0.31	0.26
Assam	1.29	-0.42	0.84	0.57
Bihar	0.92	3.41	0.38	1.56
Gujarat	2.36	0.71	-1.74	0.43
Haryana	0.19	9.68	-4.15	1.74
Himachal Pradesh	3.79	2.30	0.25	2.10
Karnataka	1.51	0.85	-0.03	0.78
Kerala	-0.49	-0.26	1.68	0.31
Madhya Pradesh	0.64	0.71	-0.14	0.40
Maharashtra	0.79	-0.72	0.10	0.05
Orissa	0.49	1.73	0.97	1.06
Punjab	-3.37	15.81	-3.13	2.73
Rajasthan	2.70	2.03	0.47	1.73
Tamil Nadu	1.21	0.52	0.09	0.61
Uttar Pradesh	4.27	3.35	0.06	2.54
West Bengal	3.29	5.03	-0.11	2.72

Crude Work Participation Rate among Females and Total Fertility Rate Across States, 2011



Reasons for the Decline –U shape Relationship

- The U shape relationship between economic changes and female labour force participation has been considered as one explanation (Neff et al, 2012)
 - There are disagreement to this argument and studies concluded that the U hypothesis has little relevance (Gaddis and Klasen (2011; Lahoti and Swaminathan (2013)
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Education at younger ages

- ❑ Increasing levels of education lead to a postponement of female work participation
 - ❑ Between 2004-05 and 2009-10, the percentage of women attending educational institutions in the age group 15-19 has increased from 38 per cent to 52 per cent and that of 20-24 age group has increased from 6.8 per cent to 12 per cent
 - ❑ Education could explain the decline only in rural areas but not in the case of urban area (Neff et al, 2012).
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Structural Problem of Indian Labour Market

- ❑ The lack of employment opportunities is considered another important reason for the poor work participation of females
 - ❑ “jobless growth” in the economy (Chowdhury, 2011; World Bank 2010)
 - ❑ A significant number of females work as marginal workers
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Statistical Analysis

Two Questions

- what is the relationship between demographic change and female labour force participation in India? In other words, whether fertility transition in India has led to simultaneous increase in the female work participation rate?
 - What is the contribution of female work participation on the demographic dividend in the country?
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Estimation Procedure

- A statistical analysis is confronted by the following difficulties
 - 1. Simultaneity Issue (fertility-female work & income) (Solution: 2SLS Model)
 - 2. Non-linearity Issue (U shape curve) (Solution: Non-linear specification)
 - 3. Age Effect- Education in early working ages (Solution: Age-specific participation)
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Indicators

- ❑ Bloom et al (2009) considered Female work participation at each ages as dependent variable and total fertility rate, per-capita state domestic product, infant mortality rate, percentage of urban population, male literacy rate, female literacy rate as independent variables
 - ❑ But this did not work due to strong multicollinearity
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Data and Variables

- Data from different census year from 1981 to 2011 for major 16 states
 - Dependent variable Y_1 = Crude Female work participation rate
 - Independent variables are total fertility rate, the development dummy computed using female literacy level and infant mortality rate and the instrumented per-capita state domestic product derived from the second equation in the model
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Data and Variables

- In the second Equation
 - Dependent variable, Y_2 = per capita state domestic product
 - Independent variables are percent urban population, total fertility rate and development dummy
 - The same equation is applied in the case of age specific work participation rate but using data up to 2001 census.
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Models Used

Random Effect Model

$$Y_{it} = \alpha + \sum \beta_k X_{kit} + \mu_i + \varepsilon_{it}$$

Panel Data (2SLS) Model for crude and age-specific work participation

$$Y_1 = \alpha_1 + \sum_j \beta_j x_j + \delta_1 Y_2 + e_1$$

Where Y2 estimated as

$$Y_2 = \alpha_2 + \sum_j \lambda_j z_j + e_2$$

Results

Determinants of Female Work Participation Rate Estimation, Random Effect Model, 1981-2011.

Variables	Co-efficients
Total Fertility rate	-1.7883 (-2.2)*
Per capita SDP	0.0014 (2.71)*
square Per capita SDP	-0.0000000361 (-2.43)*
Per capita SDP* dev states Dum	-0.0006 (-1.96)*
square Per capita SDP * dev states dum	0.0000000227 (1.67)**
Development dummy	6.73 (0.95)
Constant	20.66 (3.54)*
Likelihood-ratio test of sigma_u=0: chibar2(01)= 66.46 Prob>=chibar2 = 0.000	

Results from Random Effect Model

- Fertility appears to have a large –ve and significant effect on the participation rate of females
 - U shape relationship between development and work participation of women is true only for the developed states.
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2SLS estimates

Variables	Co-efficients
Age-specific fertility rate	-1.648* (0.954)
Instrumented log per-capita state domestic product	3.782* (2.104)
Development dummy	-5.123 (14.19)
Constant	-3.948 (25.22)
Wald Chi-sq	49.36
Prob > Chi-sq	0.000

Determinants of Age specific Work Participation Rate of Women:

Variables	Ages 20-24	Ages 25-29	Ages 30-34
Age-specific fertility rate	-0.049 (0.053)	-0.177** (0.082)	-0.183** (0.088)
Instrumented log per-capita state domestic product	10.792* (4.29)	2.799 (7.611)	3.787 (7.583)
Development dummy	-6.260 (6.68)	-8.340 (6.497)	-7.860 (6.599)
Constant	-51.128 (61.25)	+29.715 (75.72)	+21.752 (75.42)
Wald Chi-sq	14.04	23.74	27.51
Prob > Chi-sq	0.000	0.000	0.000

Results from Age-specific Analysis

- Impact of fertility on FLFP is strong in the age groups 25-29 and 30-34.
 - Per capita income however had a significant impact only in the age group 20-24.
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Conclusions

- ❑ The paper critically looks at the many popular perceptions on demographic dividend in India
 - ❑ It also attempts an empirical examination of demographic dividend in India
 - ❑ The focus was on the effect of demographic change on the female work participation and consequent demographic dividend
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Conclusion

- Unlike the notion that fertility transition in India is not leading to simultaneous increase in female labour force participation, the study observed significant impact of fertility transition on enhancing work participation among women
 - It indicates that demographic change would likely to increase female work participation in the country in future
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Conclusion

- Moreover, the available data also showed a positive outcome of female work participation on economic changes
 - The relationship between economic change and female labour force participation is not linear
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Conclusion

- ❑ Demographic changes may not immediately lead to higher work participation among women
 - ❑ But it appears that gradually, the changes are visible both in terms of increased work participation of women as well as providing a positive demographic dividend outcome
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THANK YOU