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A Region- and Gender-Specific Study

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ISSN 2191-5504 ISSN 2191-5512 (electronic)
SpringerBriefs in Economics
ISBN 978-981-10-7142-3 ISBN 978-981-10-7143-0 (eBook)
https://doi.org/10.1007/978-981-10-7143-0

Library of Congress Control Number: 2017958568

Printed on acid-free paper

This Springer imprint is published by Springer Nature
The registered company is Springer Nature Singapore Pte Ltd.
The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

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Labour Market Participation in India: A Region- and Gender-Specific Study

Abstract This study in the Indian context focuses on the gender-specific labour force participation across regions and makes an attempt to identify the important determinants. Before turning to the Indian situation, the participation rates are examined for various countries in the Asia-Pacific region. In India like many other countries, the female participation rate is significantly lower than that among the males. The rural–urban differentials are more pronounced, and the interstate variations are sizable in the case of females than males. Even in the large cities the female labour market participation is lower than that in the rural areas despite higher levels of education. However, in terms of inter-spatial (rural/urban/city) variations, the impact of infrastructure, education, health and urbanization on labour force participation of both the gender is quite distinct. With improved infrastructure, the quantum of investment is expected to shoot up and the accessibility to growth centres offering better livelihood opportunities can perk up. While industrialization and growth in services show a positive effect on participation, economic growth unravels a positive impact on urban males only. Also, there is evidence on poverty-induced participation in agricultural activities, suggesting clearly the importance of rural diversification for creation of productive employment. Women's participation improves child health significantly. Access of mothers to resources enhances the health status of the children as their nutritional status and access to curative health care get better. On the whole, women participation in productive activities has a double effect: first, it raises the household income; second, it contributes to the well-being of the household. These findings are important from policy point of view because different infrastructure variables are seen to improve both participation and labour productivity. Infrastructure (social, physical and financial) can to certain extent break the social and cultural barriers and help women join the labour market, thus enabling them to make productive contribution to the growth process. Though the level of urbanization raises the urban participation rate in an inter-spatial sense, a similar pattern is not evident in the context of rural females (at least at the state level). How urbanization can be

This study was carried out during Arup Mitra's visit (November 2016–March 2017) at the Graduate School of International Development, Nagoya University, Nagoya, Japan

A. Mitra and A. Okada, *Labour Market Participation in India*, SpringerBriefs in Economics, https://doi.org/10.1007/978-981-10-7143-0_1

made more generative with positive spillover effects in the rural neighbourhood is an important policy concern because increased urbanization ushering in greater concentration of non-farm activities holds the potentiality to create employment prospects and at the same time result in productivity gains.

1 Analytical Frame

Labour force participation rate is an important indicator of development. With increased human capital formation, people are able to participate in productive activities which result in higher levels of value addition. Without human capital formation, a high level of labour market participation is also evident, but in that case, it is associated with low levels of labour productivity. How labour market participation can improve with rising labour productivity is, therefore, an important research and policy question. Particularly in societies experiencing rise in life expectancy, population must be engaged in productive activities so that for future years (for old age), they are able to save enough. India has witnessed considerable decline in fertility rate with an increase in the percentage of population in the working age brackets, which is seen to be the source of demographic dividend. But such benefits can materialize and enhance economic growth only when from supply point of view there is skilled and highly employable labour force and from demand side there are enough opportunities to absorb them productively. The new technology is skill intensive, and as the study by Okada (2004) reveals, the dynamic industrial transformations in the 1990s significantly changed the nature, content and extent of skill development as far as the domestic suppliers are concerned. However, in India, a large majority of young people still continue to have limited access to education and training because the dropout rates are high despite an expansion in the capacity of educational institutions and enrolments (Okada 2012). The skill mismatch index is huge, indicating poor employability of a large percentage of the available labour force (Mitra 2013a). Dreze and Gandhi-Kingdon present evidence to suggest that school participation, especially among girls, responds to a wide range of variables, including parental education and motivation, social background, dependency ratios, work opportunities, village development, teacher postings, teacher regularity, midday meals and also school quality.

One of the important drivers of socio-economic transformations is urbanization. There is an economic reason to justify this view. Large human settlements emerge from concentration of activities. Large volume of investments, indivisibilities in infrastructure and other assets and large expenditure incurred by the state naturally give rise to several external economies of scale attracting firms and business to concentrate. The agglomeration economies in other words motivate growth centres to expand which in turn attract labour from other areas as job search cost tends to decline sizably. Thus, population growth takes place and cities grow in size. The external economies of scale result in higher total factor productivity growth which gets translated in terms of higher real wages. Many development indicators such as

literacy and social capital formation are likely to improve significantly, as urbanization draws larger government resources for human capital formation. On the whole, it envisages upward mobility for all, both the migrants and the natives.

The received theory suggests that urbanization follows as a concomitant of industrialization and, at a later stage, it is related to growth in services. In other words, with urbanization, the decline in the share of agriculture or any other primary activity is strongly associated. Since productivity levels in the non-primary sectors, particularly in the industrial sector due to the agglomeration benefits, are higher, wage differentials also rise rapidly, which in turn raise the participation rate, particularly in the context of the developing countries. Higher levels of income per person may result in a higher dependency ratio, but the counterargument can also be put forth to suggest that at higher levels of development, each individual is conscious of his/her own identity; hence, urbanization, productivity growth and wage growth may all coincide with increased participation rate. From a different angle, if urbanization occurs in response to rapid outflow of rural population who are in economically active age brackets, then naturally the participation rate is expected to pick up.

Ideally speaking, urbanization is unlikely to pursue the traditional caste-based occupations which are more prevalent in the rural areas. It also envisages upward mobility for the socially backward classes. Quite opposite results may follow if the modern growth process involves the highly skilled labour force only. Since the low-caste population did not have access to higher levels of education, their absorption in the modern sector is less probable. Thus, dualism in development is not an unexpected outcome—the urban areas remain populated by the advantaged classes, while their disadvantaged counterparts remain engaged in petty and low-productivity jobs even after migrating to the urban areas in the face of a tight rural labour market. However, jobs in the informal sector also attract migrants and the rural job seekers respond positively (Banerjee 1984) instead of searching jobs exclusively in the large-scale industrial sector, as many of the theoretical models made us believe (Harris and Todaro 1970). The reservation system followed in the formal sector (particularly in the government sector) for the scheduled caste and scheduled tribe population encourages their migration to the urban areas, which is expected to result in an enhanced participation rate. The private job placement cells have been recruiting many tribal women from the rural areas and engaging them in home care and other related services (Mitra 2013b).

Among various supply- and demand-side factors which impinge on women labour force participation rate, economic growth is seen to have a nonlinear relationship (see Mathur 1994): initially, growth is found to have a negative impact on labour force participation rate, but at higher levels of growth, it tends to increase, thus giving rise to a U-shaped relationship. Cagatay and Ozler (1995) also suggest the possibility of a U-shaped relationship between long-term development and women's share of the labour force. Even the historical record of the developed countries indicates such a relationship between economic development and

women's labour force participation rate (Goldin 1994).[1] With urbanization and industrialization, female-dominated home-based production is expected to decline, as it would be largely replaced by male-dominated factory production (Boserup 1970). This falling part of the U-shaped curve corroborates Boserup's analysis of women's contribution. However, with further economic development, women's labour force participation rate is expected to increase as enhanced urbanization and industrialization, more education for women, commodification of domestic labour and falling fertility rates help women workers participate in the labour market more explicitly (Oppenheimer 1970; Boserup 1970). Also, as per the neoclassical approach with economic growth, gender inequalities in terms of access to employment opportunities, work conditions, nature of work and earnings tend to decline (Forsythe et al. 2000). This implies an increase in women's labour participation rate since discouraged dropouts tend to decline: with improved and equal status in the job market, women get encouraged to participate in the labour market (Mitra 2005).

Some of the recent evidence also supports that higher human development index (HDI), let alone growth, does not necessarily ensure gender equality measured in terms of gender development index (GDI): in the Asia-Pacific context, Japan and Korea have the highest HDI-GDI gap, while Thailand and China whose HDI and GDI are both lower in absolute terms than Japan and Korea demonstrate lower gender gaps (Murayama 2005). Gender norms and systems vary widely across cultures, but they shape people's lives and interactions in all societies (Hayase 2005). In general, as women's educational-level improves, gender inequality declines (UN 2001). In other words, with improved levels of education, labour market participation of women in high-income jobs is expected to rise (Murayama 2005; Pradhan et al. 2015), though in India many educated women remain outside the labour market, implying that the education level of women non-workers is more than that of women workers. Keeping in view a long-term perspective, the 'Gender Kuznets Curve' and the U-shaped relationship between women labour participation rate and development are mutually consistent.

A variety of other factors have been considered as determinants of female labour force participation rate. These include opportunities for informal employment which tend to decline with development (Bharadwaj 1989), technological and structural change (Sen 1981),[2] the conflict between housework (including child-care) and earning opportunities in the labour market, and spouse's income resulting in withdrawal from the labour market (rationalizing the backward sloping supply curve of female labour). While education of various types may become instrumental to labour market participation, income levels also matter. For example, activities with very low wages with a low elasticity with respect to labour productivity attract

[1]Goldin (1994) found this association for women aged 45–59 for cross section of countries using GDP per capita as an index of development.

[2]Sen (1981) in the case of Indian agriculture showed that women withdraw from the labour market as male income increases.

less labour. Many of the women workers are subjected to this phenomenon of 'discouraged dropouts' from the labour market. The neoclassical principle of marginal productivity-based pricing of the factor of production is not necessarily realistic as many women workers are seen to be engaged in intense work with meagre earnings because of their docility and poor bargaining power, inability to commute and limited access to diversified social network (Mitra 2005).

Among various socio-economic factors, fertility, cross-regional cultural norms, attitude towards manual work, the relative incidence of low caste and tribal population, the size of the agricultural sector, cultivation techniques, crop patterns, poverty and technology are some of the determinants of female work participation rate (see Agarwal 1988). Fertility and age and marriage are inter-woven, and they both influence the decision to participate in the labour market. Usually, a higher fertility rate and a lower age at marriage reduce women's labour market participation. However, in the rural context, some of the socially backward classes such as scheduled tribes exhibit a higher labour participation rate among females in spite of a higher fertility rate, as the matrilineal traits are more prevalent among them. Also, there can be a positive association between labour participation rate and the percentage of workers engaged in the tertiary sector as activities in this sector provide greater employment opportunities for women and teenage workers. However, low-productivity activities are mostly concentrated in the tertiary sector, and hence, as the share of the tertiary sector in total employment increases, dropouts from the labour market are also expected to be high, thus reducing the labour participation rate.

Rapid economic growth is definitely a determinant of employment though it is not a sufficient condition. Mechanization of agriculture, for example, may raise production without any impact on employment. The composition of agricultural production also impinges on participation, particularly in the case of women. In rice cultivation, for example, a number of activities are to be carried out by labour for which the domestic supplies involving women are tapped. Many of the folklores, particularly in rice-cultivating areas in India, are therefore pro-women, indicating clearly that even in a prevailing patriarchal milieu women's participation in the agricultural process has contributed to enhancing their status. In rice-cultivating areas, women have a major role to perform at every stage of the production process in so much so that with non-cooperation of women there can be a steady drop in agricultural produce (Mohanty 2008).

Similarly in the context of the non-farm sector, industrialization and faster growth in the services are likely to generate employment opportunities on a large scale which in turn could raise the labour force participation rate by augmenting labour demand. However, the adoption of capital- and skill-intensive technology is seen to reduce the pace of the industrialization of work force. With such technology, economic growth can be stepped up but with no dent on employment; rather, it may prompt a withdrawal from the labour market and/or lead to a residual absorption of labour in low-productivity informal sector activities. On the same vein, the high-productivity services which are capital and skill intensive can raise the economic growth but cannot generate large-scale employment for the unskilled

and semi-skilled variety of the work force except nominally through secondary effects. From the point of view of workers' preference, it is noted that women, particularly the urban-based educated ones, have a natural urge to work in the services sector (Nord 1989). This means that female labour force participation rate and growth in the services sector are expected to go hand in hand.

Relating to labour regulations, it is believed that they tend to reduce the pace of employment generation. Besley and Burgess (2004) showed that Indian states which amended the Industrial Disputes Act in a pro-worker direction experienced lowered output, employment, investment and productivity in the organized manufacturing. Bhattacharjea (2006) on the other hand criticized the widely used index of state-level labour regulation devised by Besley and Burgess (2004), and the econometric methodology they used to demonstrate the dampening effect of excessively pro-worker regulation on performance in Indian manufacturing. On the whole, while there may be a case for removing labour market rigidities by discouraging the political patronization of the unions and relaxing the strict labour laws that prohibit employment growth, attention also needs to be given to the labour welfare issues.

Notwithstanding these concerns expressed by ILO, the Indian labour market has been experiencing rapid contractualization. In order to keep the labour cost low, it is being followed both in the rural and in the urban labour markets. Both agriculture and other activities in the rural areas such as construction involve a great deal of contractual labour who migrated from other areas with the help of the labour-contracting firms. Similarly in the urban context, manufacturing and services both in the formal sector are hiring contract labour on a large scale in order to avoid the labour market regulations. Often, it is seen that the employers prefer female workers as they have a lesser bargaining strength and their wages are fixed at a level substantially lower than the male wage on a false belief that female workers are less productive. This has resulted in feminization in the labour market reflected in the rising female-to-male workers ratio in a number of activities (Banerjee 1997). In fact, like contractualization, feminization is an arrangement pursued to reduce labour cost sizably. The other new change which is perceived in the recent years is the practice of business subcontracting from the formal to the informal sector. Though it creates work opportunities in the informal sector, the business contractors follow the payment practice based on piece rate, holding the key to reduce the remuneration of the workers. As many of the home-based workers are women, they are the ones who are worst hit (Patrick 2001).

Poor health conditions hamper labour force participation rate, particularly in developing countries where many prime age adults are undernourished and are in poor health (Currie and Madrian 1999). In ageing societies, more individuals keep reaching age brackets where health has the greatest impact on labour market participation (Currie and Madrian 1999). In general, poor health reduces the capacity to work and productivity levels which in turn reduce wages. The cost of accommodating a worker in poor health is passed on in the form of lower wages. Low wages dampen participation. Both from supply and demand sides, poor health can reduce participation. Particularly in the case of women, those burdened with high

fertility rate and poor maternal and child health are unable to participate in the labour market. Even many educated women in India let alone their uneducated counterparts are outside the labour market partly because of the social norms, reinforcing the division of labour along the lines of gender and partly because of poor health conditions. A mere increase in literacy is not able to counter the cultural practices and the social outlook which perceives women participation in the labour market as a low-status phenomenon. Even among the educated lot this mindset is widely prevalent, forcing many of them, particularly if married, to withdraw from the job market (Jalan 2000; Schultz 1990). Household activities and domestic responsibilities involving children and the elderly are given higher priority over participation (Hirway 2010). As the IFC report observed globally, while women's education levels have increased and educated women earn more than their uneducated peers, gender gaps in labour market participation and wage levels persist. In the rural areas even among the poor households, the labour force participation rate remains modest possibly because of poor health conditions and healthcare facilities. Long and frequent absence from work can discourage employers to engage workers, while poor health reduces the supply of labour hours per individual. Workers in poor health are constantly discriminated against, as the efficiency wage hypothesis would posit.

Relating to physical and financial infrastructure, it has been noted extensively that the potential entrants to the labour market respond to these facilities positively. In particular, women are severely constrained by physical, financial and poor sanitation facilities. With slightest support, they are eager to explore earning opportunities which augment family income (Cook et al. 2005). The microcredit provision, for example, is seen to have provided earning possibilities across regions despite the serious limitations associated with this option (ICDF 2002). Many rural children with better connectivity and support for acquiring reading materials have shown greater enrolment ratio. The accessibility to road and sanitation has encouraged educational enrolment, particularly in the case of girl children. As Dreze and Khera (2015) write, the child development index fared better in the states of Kerala, Tamil Nadu and Himachal Pradesh. Part of this improvement was expansion in elementary education, while part of it is attributed to the constructive role of the state in providing a wide range of facilities ranging from health care and clean water to social security and basic infrastructure. All this has a future bearing on the labour market participation as childhood conditions (heath and education) have profound effects on future outcomes (Grossman 1975; Wadsworth 1986).

The rural employment guarantee act (MGNREGA) in order to enhance the livelihood security of the rural population offers hundred days of employment in a year to every household whose adult members volunteer to do unskilled jobs (Dreze and Khera 2009). In response to this programme, it has been observed that women participation has gone up extensively. Males being the primary bread earners possibly look for jobs with longer duration and, hence, they may not be seeking

work under MGNREGA, while women, who are mainly homemakers and/or seasonal workers in the agriculture sector or pursue economic activities as subsidiary status workers, may take the opportunity of participating in MGNREGA as it enables them to access cash income. Also, as the male members migrate out from the rural areas in search of better jobs, women from the rural households remain as the primary job seekers under MGNREGA. However, the number of days of work per household being only one hundred it is unlikely to raise the women labour force participation rate as per the usual principal status which considers one hundred and eighty days as the benchmark.

Keeping in view this perspective, the present study proposes to examine the labour force participation rates across regions (rural and urban) and sexes in India. It is largely a cross-sectional study as the time dimensionality is highly limited. Hence, the main task is to examine the long-term changes in the participation rate and the factors which influence the participation rate in the long run with cross-sectional data. We may, therefore, propose to take the view that differences across regions can be considered as reflection of long-run changes as regions are unevenly developed and laggard regions would follow the path of more developed regions in labour market participation pattern.

The unit of analysis is both state and district. Further, we consider the participation rates at the level of cities in order to capture the impact of urbanism which can possibly be felt only in large cities. The database of the study is drawn from population census (2011) as well as the annual surveys of labour force conducted by the Ministry of Labour and Employment (Labour Bureau) for the years 2009–10, 2011–12, 2012–13, 2013–14 and 2014–15. Different correlates are taken from the population census data as well as other sources mentioned in the appendix. Since the population census does not report figures on labour force (working persons and unemployed), rather on working persons only, we consider the work participation rates. Further, we focus only on the main workers leaving out those who are working on subsidiary basis known as marginal workers. However, the Labour Bureau's estimates are wide which consider the main or principal status workers, the marginal or subsidiary status workers and also those who are not working but seeking or available for work—all adding up to labour force. The rest of the paper is organized as follows. The following section examines certain labour market indicators in the Asia-Pacific context. The country-specific figures are considered to delineate systematic patterns, if any. In Sect. 3, we turn to the Indian labour market situation, highlighting the regional variations and, more importantly, the gender differentials. It argues that the lower participation rates of women are instrumental to gender subjugation and suggests that empowerment can be attained through improvement in women participation rates. Section 4 based on the inter-spatial variations in gender- and region-specific participation rates makes an attempt to identify the determinants and their differential impact in rural and urban areas (and cities). Section 5 turns to issues related to productivity and women participation rate. Finally, Sect. 6 concludes with policy directives.

2 Asia-Pacific Perspective[3]

Before turning to the Indian situation, it may be desirable to examine the participation rates across countries, at least in the Asia-Pacific context. Most of these countries still belong to the developing world, and several have witnessed structural reforms and pursued industrialization and liberalization policies vigorously in the recent past. The Asia-Pacific region has made good progress in reducing gender discrimination, but appalling disparities remain (United Nations 2007). Besides, the diversity of the Asian experience is not limited to rates and patterns of economic growth only. Initial conditions, ongoing experience with government plans and policies, and governmental and non-governmental programmes, differences in the political environment, differences in commitment to poverty alleviation and gender equity within each country, traditional gender hierarchies and their impact on women's participation in work outside the home, the sexual division of labour, migration and control over income all tend to vary across countries and within a country, across regions. In response to globalization, some of these aspects are also undergoing changes and new patterns are emerging. It becomes necessary to assess whether participation rates tend to be similar if the level of economic development is the same or can they still be different because of the social factors.

The study by ILO (2000) on Asia-Pacific countries argued that women's labour force participation was universally lower than that of men's in 1996. Level of development did not appear to be an important determinant of women's labour force participation, while sociocultural context was. Further, it pointed out that the male–female differential in labour force participation was smallest in the transition economies and largest in South Asian and Pacific countries. The differential in the fast-growing economies of East and Southeast Asia and in the advanced industrialized countries was somewhere in between the two extremes, and among the advanced industrialized countries, it was largest in Japan. The share of females in total labour force ranged from 26 to 42% in South Asia, from 37 to 46% in East and Southeast Asia, from 41 to 44% in the advanced industrialized countries and from 45 to 53% in transition economies. At the same time, women predominated in those categories of the labour force that were not officially recorded in most countries, e.g. subsistence agriculture (ILO 2000). Our analysis based on the KILM data set of ILO shows that the female labour participation rate has considerable variations across countries (Mitra 2010). At two time points, for example 1980 and 2006, there are countries such as India, Pakistan and Sri Lanka that show a participation rate of less than 35%, while in countries such as Cambodia, China, Papua New Guinea, Thailand and Vietnam, the rate has been nearly 70% or more. These wide variations are reflected in the coefficient of variations pertaining to the female labour force participation rate. The role of factors such as education, attitude

[3]This part is drawn from Mitra (2013b).

towards female work and other socio-economic conditions which influence the female work participation rate cannot be ruled out in the context of these cross-country variations.

However, what is interesting to note is that over time these variations are declining, indicating that some of the countries are experiencing a rise while some others experience a decline with an overall decline in the cross-country differences (Table A.1 in the Appendix). Though at this stage it is incorrect to suggest that there can be a unique participation rate around which many countries may tend to converge, the decline in the cross-country variations is a matter that needs further investigation. As regards variation within a sub-region, we note that countries within show wide variations with respect to female labour force participation rate. For example, within Northeast Asia, the Democratic People's Republic of Korea reported a figure of only 48%, while Cambodia peaked as high as 75%. These variations are expected to result in variations in other socio-economic profiles of women including human capital formation.

In contrast to female labour force participation rate, the male LFPR shows less variation across countries (Table A.2 in the Appendix). The ratio of female-to-male participation rate also shows wide variations: while the female–male differences are extremely high in the case of India, Pakistan and Sri Lanka, countries such as Vietnam, Vanuatu and Papua New Guinea, Macau, China (SAR), and Thailand show minimal differences between the sexes. The variations in the ratio of female-to male participation seem to have declined over time. Since the variation in male labour force participation rate is not high and since the magnitude has not undergone any major change over time, the variations and the change in the variations in the female–male differences (measured in terms of the ratio of female-to-male participation rate) are largely caused by the variations and the change in the variations in the female labour force participation rates, respectively.

The differences between the female and male participation rates captured in terms of the ratio of female LFPR to male LFPR varies within a wide range (Table A.3 in the Appendix)—from 0.45 to 0.92—implying that in some of the countries the women labour participation rate is less than half of its male counterpart, while in certain others it is as high as that of males. In fact, the extent of correlation between the female and male labour force participation is very low (0.18 for 2005), though positive. Secondly higher is the male labour force participation rate lower is the female to male participation ratio and also higher is the female labour force participation rate lower is the female to male participation ratio though the degree of association is extremely weak (−0.17 and −0.20, respectively, for 2005). This would again tend to suggest that female and male participation rates have a positive association between them possibly, indicating that as opportunities grow both male and female labour supplies respond positively. In other words, the substitutability hypothesis between male and female labour does not seem to be consistently valid. However, the complementary relation is not too strong as the co-movement takes place only marginally. Hence, policy interventions will be required for women's strategic needs to be met instead of leaving it to the market forces and waiting for demand to grow and bridge the gender gap. The other point

relates to the change in the labour participation rate of women over time. Countries which experienced a decline in the female labour force participation rate between 1980 and 1990 to the extent of around three percentage points include Timor-Leste, Fiji, Maldives and the Philippines. Countries that experienced a decline in the labour force participation rate between 1990 and 2006 are Bangladesh, Sri Lanka, Thailand, China, the Democratic People's Republic of Korea and Cambodia.

On the other hand, countries such as the Solomon Islands, French Polynesia, the Republic of Korea, Macau, China (SAR), Singapore, Sri Lanka, Guam, Indonesia and Brunei Darussalam experienced more than three percentage points increase in the labour force participation rates between 1980 and 1990. And, the following countries registered an increase of more than three percentage point in the female labour force participation rate between 1990 and 2006: the Republic of Korea, Pakistan, Timor-Leste, Hong Kong, China (SAR), Tonga, the Philippines, Bhutan, Macau, China (SAR) and Maldives.

Why these countries have shown such large changes in women labour participation rates over time is an important issue. Whether the countries that recorded an increase in the female labour participation rate also witnessed improvements in human capital and whether a drop in the female labour participation rate in certain other countries was largely due to shrinkage in job opportunities leading to discouraged dropouts are some of the interesting angles for further exploration. Like labour force participation rate, work force participation rate also seems to have large cross-sectional variations in the case of females compared to the males. The other interesting point related to the female work participation rate is the extent of the recent rise (2000–2006), which is greater than that during the period 1995–2000 (Table A.4 in the Appendix). The youth and adult illiteracy rate among females is high though it does not appear to be abnormally high in comparison with males (Table A.5 in the Appendix). In some of the countries for which information is available for two time points, the rate seems to have declined considerably.

The school enrolment ratio is not impressive in many countries particularly at the primary level, but it has improved over time (Table A.6 in the Appendix). Table A.6 shows that expenditure per student particularly at the tertiary level is quite high and there is a strong possibility that after women complete higher levels of education, they tend to participate in the job market. All this would presumably support the view that education has played a crucial role in enhancing the work force participation rate of females, which in turn is contributing to human capital formation among the younger girl children. In the process of growth, the women work participation rate may decline as women may not be required to participate in the job market. However, Behrman and Zhang (1995) noted that in Asia, the labour force participation rate of females aged 15–64 did not show a U-shaped relationship with respect to per capita income, which Goldin (1994) posited in the process of development. They noted that in some of the Asian countries, it increased over time (Pakistan, Malaysia and Singapore), but in others, it remained basically stable (Hong Kong, China (SAR) and Japan) or fallen (Sri Lanka, Thailand and Turkey). Above the regression line, they found countries such as Bangladesh, China and Thailand, thus arguing that these countries utilized their adult females in a much

better way, in contrast to and most other countries in Asia. The plot of female work force participation rate (2006) against GDP per capita (2005, US$ adjusted for purchasing power parity) does not suggest any specific pattern. The regression of the ratio of female-to-male work participation rate on per capita GDP does not show any significant relationship, suggesting that growth alone cannot result in a reduction in inequality in the labour market by generating human capital formation for the disadvantaged sex. Explicit policy interventions would be required to curb inequality in the labour market and make growth more equitable and pro-women.

Employment Elasticity

The next issue relates to the employment sensitivity of economic growth or the employment generating capacity of economic growth. Since most of the developing countries (and even some of the developed countries like Japan where sluggish employment growth has become a serious issue) are not merely interested in the magnitude of economic growth, but rather the employable capacity of growth, particularly keeping in view the issue of productive absorption of the unskilled and semi-skilled work force, this paper focuses on the summary measure of employment elasticity. However, most of the studies have looked at this index in aggregative terms and not gender wise. We, therefore, in this paper pose the question how employment and gender-sensitive economic growth has been in countries in the Asia-Pacific region. In doing this, it has not however been possible to decompose value added in terms of contribution made by female and male workers separately. We merely define it as the ratio of employment growth of female (male) workers to aggregate GDP growth.

1993–97

Female employment elasticity defined as the ratio of female employment growth to aggregate value-added growth appears to be quite low in South and West Asia with a few exceptions such as Maldives and Nepal (Table A.7 in the Appendix). In Southeast Asia, with the exception of Brunei and the Philippines, the elasticity is again on the low side. In Northeast Asia, Hong Kong, China (SAR), is an exception with female employment elasticity of 0.7, while in China, it is pitiably low at 0.12 —in fact, lowest among all the 29 countries in the Asia-Pacific region. All three Pacific countries on the other hand seem to have a relatively higher estimate of elasticity of female employment.

1997–01

While most of the South and West Asian countries in Table A.7 experienced a rise in the elasticity of female employment during 1997–2001 in comparison with that in 1992–97, Nepal observed a major decline from 0.82 to 0.39 over the same period. In Southeast Asia, Indonesia reported a negative figure during this period, while in other countries, the magnitude improved relative to the preceding period. (Though Brunei witnessed a mild decline, it still persisted at a very high level.) The bright picture of the Pacific as observed between 1992 and 1997 seems to have undergone

deterioration: the elasticity declined in Fiji became negative in Solomon, and only in Papua New Guinea, it improved further. In countries in the Northeast region, the elasticity by and large improved though the magnitude of the rise in China was only nominal (from 0.09 to 0.12).

2001–05

The Northeast Asian countries, however, experienced a decline in the female employment elasticity, and some of them, in fact, became worse relative to the estimates for 1993–97. All three Pacific countries witnessed improvement relative to the preceding period, and two, relative to the first sub-period as well. Although in four of the six countries in Southeast Asia the elasticity declined, the estimates are quite diverse in this region. Interestingly, in South and West Asia, four of the seven countries show an estimate of unity or more than that, while Bangladesh, India and Sri Lanka have lagged behind—in fact a marked deterioration in the case of Bangladesh and India while Sri Lanka has been dwindling at a low level. Too high an employment growth rate (or employment elasticity going beyond unity) may imply sluggish labour productivity growth. Therefore, the interpretations drawn on the basis of employment elasticity need to be viewed carefully. Since employment elasticity is a ratio, we need to examine separately the employment growth rates. In spite of a high employment growth rate, employment elasticity can turn out to be low if the value-added growth rate exceeds the employment growth rate substantially. On the other hand, the employment elasticity may turn out to be high, despite the fact that both employment growth and value-added growth are unimpressive if the former exceeds the latter. In fact, Papua New Guinea in the Pacific sub-region is a good example of this situation; that is, with a sluggish female employment growth rate (less than two per cent per annum), it could record high female employment elasticity between 1993–97 and 1997–01. Other countries that recorded a sluggish female employment growth rate (irrespective of the magnitude of employment elasticity) between 1993 and 1997 are China, Fiji, Thailand, Bangladesh, Bhutan, India, Pakistan and Sri Lanka. Between 1997 and 2001 while only India and Nepal from South and West Asia registered sluggish female employment growth rate, a considerable number of countries from other sub-regions joined this set: China, Hong Kong, China (SAR), the Republic of Korea, Mongolia, Fiji, Papua New Guinea, Brunei, Indonesia, Malaysia, Singapore and Thailand. Between 2001 and 2005, again several countries continued to experience sluggish female employment growth: China, Republic of Korea, Fiji, Brunei, Indonesia, Singapore, Bangladesh, India and Sri Lanka. Besides, it may be noted that in many countries, the female employment elasticity has been lower than its male counterpart, implying that the female employment has been growing at a slower pace than the male employment even when both the growth rates are quite low (e.g. China). All this can be taken to conclude that while globalization has affected employment adversely in many countries, the female workers are possibly the worst sufferers. The growth process and technological progress seem to have become increasingly more capital and skill intensive, implying that employment opportunities for unskilled and semi-skilled

workers are pitiably meagre. Given the relatively low skill base of a large number of women workers, they seem to be deprived more than males from accessing the benefits of productive employment opportunities. And this is obviously indicative of sluggish human capital formation among women relative to males, which aggravates gender inequality, thus reinforcing the need for policy interventions to meet women's strategic needs.

Unemployment Rate

One indicator of deprivation is the unemployment rate. However, the open unemployment rate, i.e. those remaining without work and searching for a job for a long time as a percentage of labour force, is not expected to be very high in the developing countries (for, not too many can afford open unemployment for long). But some of the countries such as Indonesia, Marshall Islands, Mongolia, Myanmar, Pakistan, the Philippines and Sri Lanka reported a very high open unemployment rate (either in double digit or close to that) among the females. The other striking pattern is that some of the countries experienced a decline in the female unemployment rate over time, but later in the recent past the unemployment rate again seems to have shot up. An increase in the female unemployment rate would mean shrinkage in the overall employment opportunities because recessionary tendencies are expected to have dampened the labour demand of which women are usually the victims in the first go.

As evident from Table A.8 in the Appendix, there are several countries that recorded a higher female unemployment rate than males. Though a sub-region generalization may not be appropriate, Southeast and partly South Asia are indicative of higher female unemployment rates. Since women have to engage themselves in the labour market while simultaneously pursuing the domestic work, their choice of jobs becomes highly limited. Besides, preoccupation in domestic work results in poor human capital formation not allowing them to enhance their capabilities and accept the available job opportunities. This results in a higher incidence of unemployment rate among the females. The rural–urban differences in the unemployment rates are also quite substantial. Though we do not have this information for very many countries, in general urban unemployment rates are higher than the rural rates because urban females are relatively more educated and skilled than their rural counterparts and they can afford a higher search cost.

In reality, it is difficult to compare the unemployment rates across countries due to the differences in the concepts, and therefore, information based on country-specific studies is used extensively. In Bangladesh, the unemployment rates among the population aged 15 and above rose over the period 1990–91 to 1999–2000 in each region and for both the sexes except for a slight decrease in the rate for urban females in 1995–96. This slight decrease was mainly due to growth in ready-made garments industries. On an average about 3.3% people of aged over 15 in Bangladesh were unemployed in 1999–2000. Taking unpaid family works into account according to the extended definition used by the labour force survey (LFS), it was 2.5% in 1995–96, which increased from 1.5% in 1990–91. Moreover,

estimates show that there has been a significant rural–urban variation in the unemployment rate over the period with a concentration of unemployment in the urban areas. This is mainly because of the transfer of rural poverty to the urban areas through migration. On the other hand, unemployment among females is still higher than their male counterparts across regions, particularly in the urban areas. However, the incidence of underemployment remains very high as people struggle to survive by engaging themselves in many informal activities, though underemployment is not always well captured by the conventional employment-unemployment surveys. Rahaman (1998) pointed out that the demand for wage employment is not sufficient to absorb the entire supply; employment expansion could progress without causing an upturn in the wage trend.

In Bhutan, poverty exists in the rural areas among subsistence farmers relying largely on crops, large families with a higher proportion of children and elderly, households with limited livestock, off-farm income including remittances and limited schooling. In the urban areas, the poverty is more prevalent among migrants, households with higher dependency ratio, petty traders and casual labourers who do not have regular wage employment. Acharya (1998) brings out interlinks between the labour market situation in India, as well as Nepal since its economy is integrated with some of the provincial towns of India. A depressed Indian labour market is likely to depress the labour market in Nepal as well, and a blooming labour market in India would have a salutary effect on the labour market in Nepal. In India, the open unemployment rates are not high, but the relative size of unorganized or informal sector employment in both rural and urban areas is dominant (Mitra 1994). Ghayur (1998) points to the declining ability of the labour market in Pakistan to absorb work force productively. Unemployment rates are high among females, in general, children and senior citizens. Following the structural adjustment in Sri Lanka, a distinct bias is evident in the generation of employment outlets in favour of females (Rodrigo 1998).

In East Asia, the diffusion of primary education was possibly the single most important factor accounting for the reduction in poverty and income inequality. The East Asian countries in general allocated a much larger proportion of their public investment for agriculture and rural development than most other developing countries at comparable stages of their development. This together with universal primary education made growth broad based and labour intensive with skill intensity, resulting in higher growth and improved income distribution (Hashim 1998). Investment in physical and human capital with special emphasis on developing human resources and effective participation in international markets leading to expanding employment at higher productivity contributed to both the reduction in poverty and enhancement of growth.

Employment Structure and Employment Status

As the study by ILO (2000) pointed out, the share of women employment in agriculture is high in countries with low per capita income. The percentage of the female work force engaged in agriculture has been larger than its male counterpart

in Bangladesh, Cambodia, the Republic of Korea, Malaysia, Pakistan, Sri Lanka and for some of the years in Thailand (Table A.9). It is possible that in these countries, as males look for better employment opportunities in activities other than agriculture, women engage in agriculture in an attempt to pursue the activity in the family farms. This reason seems to be a strong possibility, particularly in Bangladesh, Cambodia, Pakistan, Sri Lanka and Thailand where the proportion of female agricultural workers to total female workers has been sizeable Hong Kong, China (SAR), Macau, China (SAR), Maldives and Sri Lanka (two years) are countries where the female work force engaged in manufacturing has been larger than its male counterpart. In Hong Kong, China (SAR) and Macau, China (SAR), this may be explained in terms of rapid industrialization, which has generated demand for female labour. On the other hand, in several countries and for a number of years, the share of services in the female work force has been larger than that of males (see Table A.9 for positive differences between the female and male percentage of workers engaged in services; Fig. 3 gives the differences in all three activities for nine countries in 2005). This is possibly because of the fact that females have a strong preference to work in the services sector, and hence, the structural transformation away from agriculture to services in the case of females is much faster than in the case of males. With low human capital endowment, entry into the services sector is relatively easy compared to manufacturing as far as non-agricultural activities are concerned. Also, many of these countries are experiencing rapid tertiarization, and hence, absorption of female workers in services has possibly been more spontaneous. In Bangladesh, Indonesia, Lao People's Democratic Republic, Mongolia, Pakistan and the Philippines, where the pace of industrialization even in terms of male work force has been quite sluggish, it is understandable that the percentage of female workers engaged in manufacturing is also low. Though information on India has not been supplied by the KILM data of the ILO, we have noted from the NSS data that the discrepancy between the structural change in terms of value added and that in terms of work force is sizeable (Mitra 2008). This is usually explained in terms of technological reasons and factor price distortions leading to sluggish demand for labour in the industrial sector. Manufacturing activity is more skill intensive compared to agriculture and other tertiary sector activities such as community, social and personal services and retail trade. Women labour, as a result of possessing low human capital, is demanded usually after the available supplies of male labour are exhausted, and this would explain why the percentage of manufacturing in the female employment structure has been perceptibly low.

On the whole, limited spread of industry, technological reasons and factor price distortions leading to limited demand for labour in the industrial sector are some of the reasons for sluggish labour absorption in the manufacturing sector. On the other hand, many countries are experiencing rapid tertiarization, and hence, absorption of female workers in services has possibly been more spontaneous though the question whether this pattern of transition will be able to contribute to growth in a sustainable fashion is left unresolved.

Women's employment in the services sector has been vulnerable to and disadvantaged by the increased competition. With the rapid spread of the IT sector, both male and female job seekers seem to have benefited, but most of the benefits have reached only those who are in the higher echelons of the socio-economic ladder with higher levels of human capital endowments.

Employment status is given in terms of wage and salaried jobs and self-employment (Table A.10). Wage and salaried jobs include not only regular wage employment but also contractual and casual employment. The proportion of wage/salary employment among the male workers is higher than that among the females. Secondly, the proportion of wage/salary employment varies considerably across countries. Similarly, the relative size of self-employment also varies widely corresponding to both male and female workers. Usually, one expects the share of wage/salary employment to increase in the process of development, particularly in an inter-temporal sense. For many countries, inter-temporal data are not available, and hence, they could not be examined carefully. However, in the case of Maldives and Pakistan, a downward tendency is indicative. Sri Lanka also registered a slight decline, yet in Singapore where the relative size of wage employment has been on the high side, the decline is not taken seriously. Bangladesh, Cambodia, Lao People's Democratic Republic and Vietnam are some of the countries where the relative size of the wage/salaried employment has been quite small. The evidence on India (though not available from the same source) also points to the same direction if only the regular wage/salaried employment is considered, excluding the casual and contractual employment (Mitra 2008). On the whole, the low-income countries seem to be experiencing sluggish labour absorption in wage/salaried jobs, which may explain why South Asia is characterized by a relatively small proportion of its work force engaged in this category. In the face of sluggishly growing demand for hired labour, inadequate human capital endowment of female labour compels them to engage themselves as self-employed workers, which further accentuates gender inequality in the labour market. Also, as male workers look for better-paying opportunities in the job market, women workers in pursuance of their practical needs continue to work as home-based workers in order to augment family earnings.

In Table A.10, the relative size of the category of employment outside self-employment and wage/salaried employment is quite large in some of the countries. This category possibly includes 'employment not adequately defined'. However, in a country like Bangladesh, it is difficult to believe that around 80% of the female employment and 35% of the male employment was not 'adequately defined'. Possibly there is a mix-up of the categories. Usually in countries like India, national surveys report three categories of employment: regular wage/salaried employment, self-employment and casual employment. For these countries, if regular wage/salaried employment is compared with wage/salaried employment for countries, which define duality in terms of wage employment and self-employment, then naturally this kind of discrepancy is expected to occur.

Given these broad patterns relating to the labour market in the Asia-Pacific countries, we turn to the Indian situation in the next section.

3 Broad Patterns Relating to Participation in India

The male work participation rates pertaining to all age groups are relatively high and are nearly 50% both in the rural and in the urban areas if we consider the main or usual principal status workers (Table 1 for all-India and for states Figs. 1 and 2). Secondly, the interstate variations measured in terms of coefficient of variation are limited (17.5 and 15.5% in the rural and urban areas, respectively). On the other hand, the female participation rates are significantly lower than their male counterparts (Table 1 for all-India and for states Figs. 1 and 2), and more so in the urban areas, implying that the rural–urban differentials in the case of women are more pronounced than in the case of males (Table 1 and Figs. 3 and 4). Besides, the interstate variations are sizable in the case of females, reflecting the influence of economic, social and cultural factors (coefficient of variation being 53.2 and 36.0% in the rural and urban areas, respectively). The participation rates in the north-eastern and the southern regions, for example, are considerably higher than the northern states. A relatively lower magnitude of variation in the urban areas may be taken to signify the possibility of convergence (to a limited extent though), while the dominance of the social factors in the rural areas can be said to be more prominent. But the interpretation can be quite erroneous: the female work participation rates being by and large lower in the urban areas than in the rural areas indicate the limited impact of education on participation in the face of social factors. In fact, why the participation rate of Indian urban women is still so low, given that the per capita income and the educational attainment levels are higher than their rural counterparts, is an important research question. The plot of participation rates

Table 1 Work force participation rate (WFPR) and labour force participation rate (LFPR)

Category	WFPR (%) Population Census (2011)	LFPR (%) Labour Bureau (2011–12)
Rural male	41.6 (17.5)	79.4 (6.4)
Rural female	16.7 (53.2)	33.9 (48.0)
Urban male	48.7 (15.5)	73.7 (7.6)
Urban female	11.9 (36.0)	19.1 (46.9)
Persons rural	29.5	57.9
Persons urban	30.9	48.0
All males	43.8	77.9
All females	15.2	30.0
All persons all areas	29.9	55.4

Note (1) Though the Labour Bureau (LB) estimates refer to the year 2011–12—close to the population census year, 2011—they are not comparable with each other because the population census estimates are work participation rates for all age groups covering only the main (equivalent to the usual principal status) workers whereas the LB estimates are for age groups 15 and above and they cover all workers (usual principal and subsidiary status) and those who are unemployed. (2) Figures in parentheses are coefficient of variation based on the state-level data
Source Population Census, 2011 and Labour Bureau, 2011–12

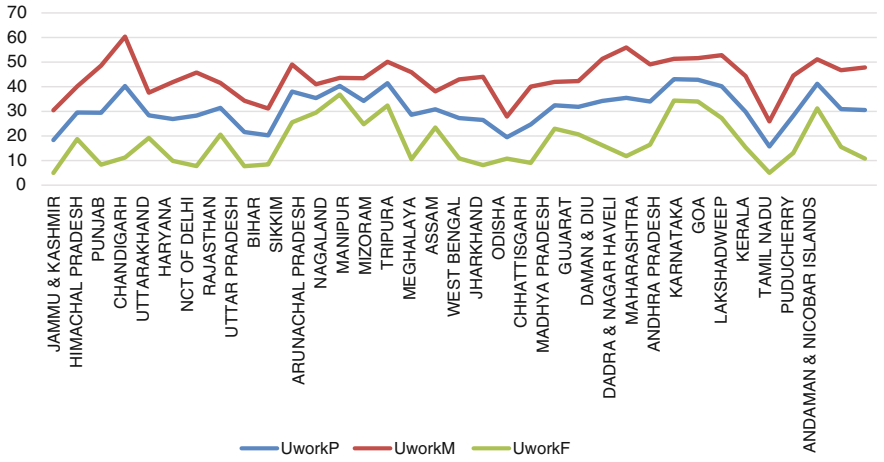

Fig. 1 Work force participation rate in rural areas of states and union territories: 2011. *Notes* (1) F for female, M for male and P for person. (2) Only main workers are being considered. *Source* Population Census, 2011

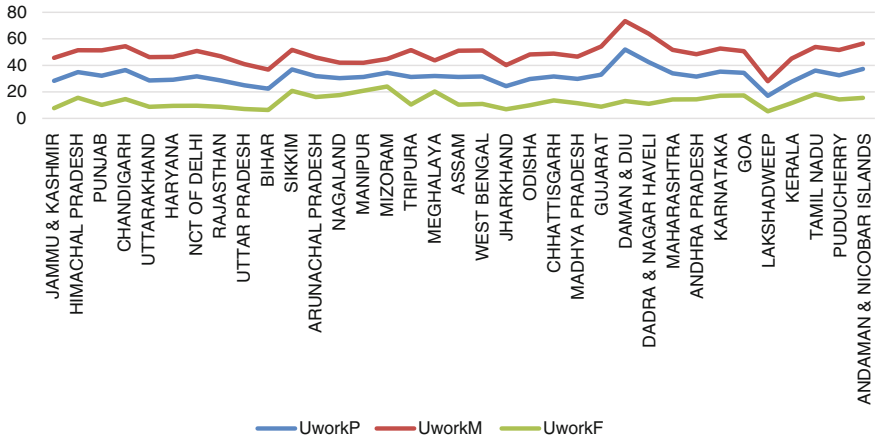

Fig. 2 Work force participation rate in urban areas of states and union territories: 2011. *Note* See notes to Fig. 1. *Source* Same as Fig. 1

against per capita income (Fig. 5) is not suggestive of any significant positive relationship in the case of females though among males such a pattern can be somewhat deciphered (Fig. 6). In relation to females, only a subset of the observations at the most may conform to this pattern.

Labour Bureau has been collecting information since 2009–10 on yearly basis (except 2010–11). Based on the estimates of labour force participation rate for the year 2011–12, corresponding to the age groups 15 and above, again similar

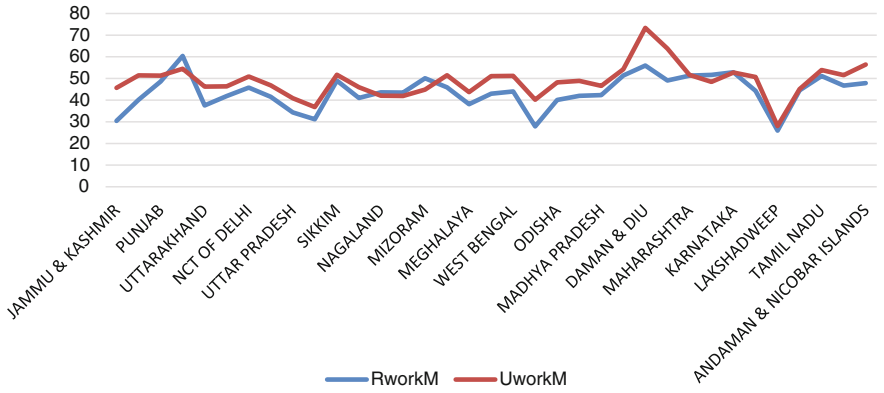

Fig. 3 Difference in rural and urban work participation rate of males: 2011. *Source* Same as Fig. 1

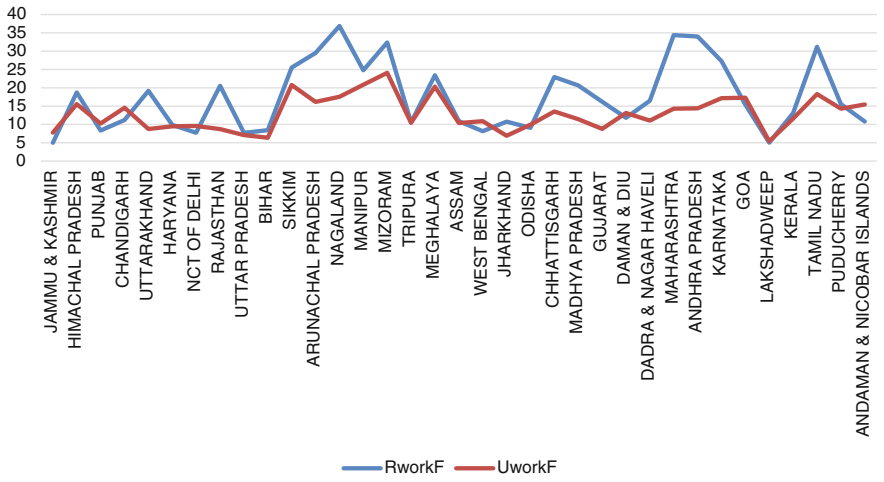

Fig. 4 Difference in rural and urban work participation rate of females: 2011. *Source* Same as Fig. 1

differences across gender are evident (Figs. 7 and 8). The coefficient of variation is much higher among the rural and urban females than among the males, indicating wide inter-spatial differences (Table 1).

Figures 9 and 10 provide Labour Bureau's estimates of gender-specific labour participation rate based on panel data, i.e. for each of the years since 2009–10 (except 2010–11) in the rural and the urban areas of the states and union territories. The estimates for a given category seem to have been consistent over time, and the gender differences in the estimates are pertinent for each of the years. The interstate variations in the rate of a given category and the rural–urban differences in the female rate particularly (Fig. 11) also seem to have remained stable over time, thus confirming the time invariance in the female participation rate which not only

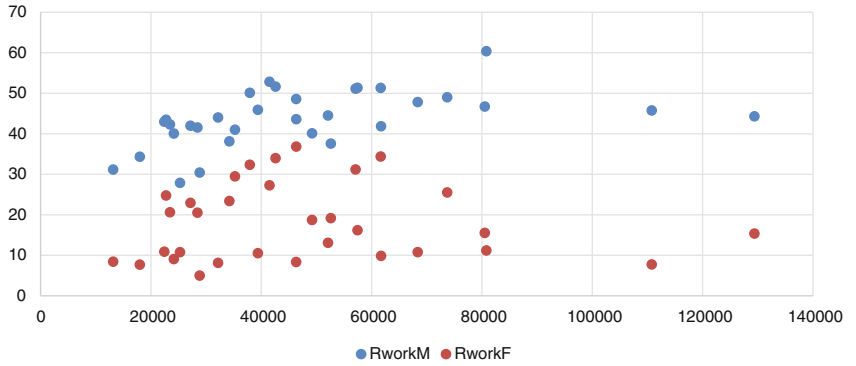

Fig. 5 Per capita income (2011–12) and rural work participation rate (2011). *Source* Data book for Planning Commission, Government of India and Population Census, 2011

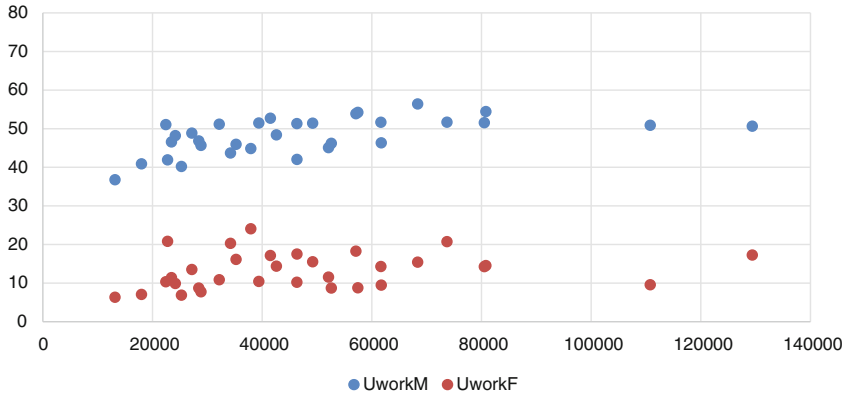

Fig. 6 Per capita income (2011–12) and Urban Work Participation rate (2011). *Source* Same as Fig. 5

hovers around a low magnitude but also varies widely across space. Though the time frame is too short to expect any significant change in the participation rate, the complete invariance in the female participation rate suggests that the gender concerns need to be addressed more seriously.

The Platform for Action adopted at the United Nations Fourth World Conference on Women (Beijing 1995) highlighted the concept of bringing gender issues into the mainstream of society. It is a necessity to ensure gender equality in all areas of social and economic development. Suggestions were made to make the concerns and experiences of women as well as of men an integral part of the design, implementation, monitoring and evaluation of policies and programmes in all

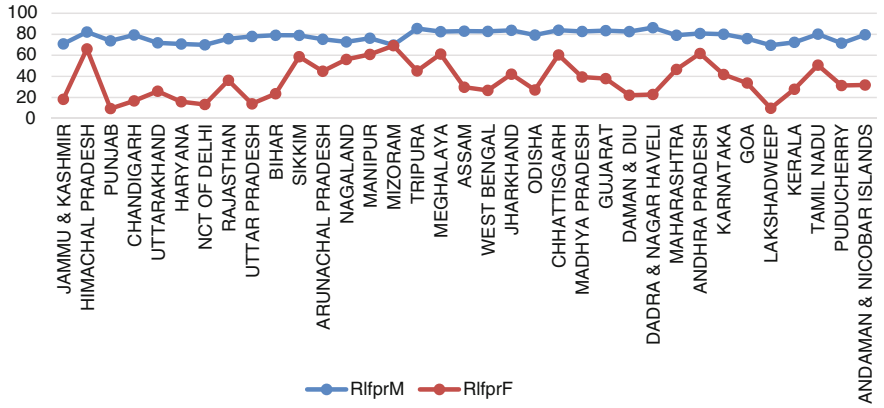

Fig. 7 Labour force participation rate in rural areas 2011. *Note* All workers based on usual principal-cum-subsidiary status. *Source* Labour Bureau, 2011–12, Ministry of Labour and Employment, Government of India

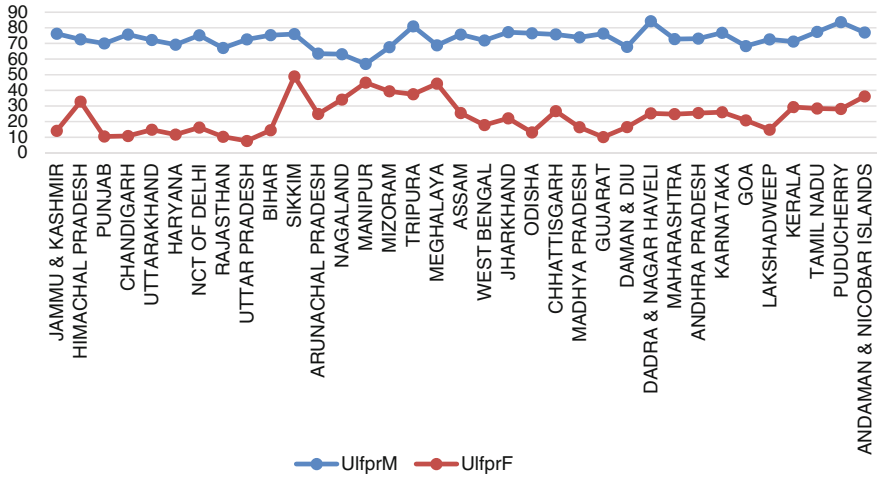

Fig. 8 Labour force participation rate in urban areas 2011–12. *Note and Source* Same as Fig. 7

political, economic and societal spheres, so that women and men benefit equally, and inequality is not perpetuated.[4]

One of the major suggestions in the gender studies literature is that women can be engaged directly in the development process and the benefits of growth can be

[4]International Labour Organization (ILO). Gender Equality Tool. Definition of Gender Mainstreaming. http://www.ilo.org/public/english/bureau/gender/newsite2002/about/defin.htm. Accessed Dec 2, 2016.

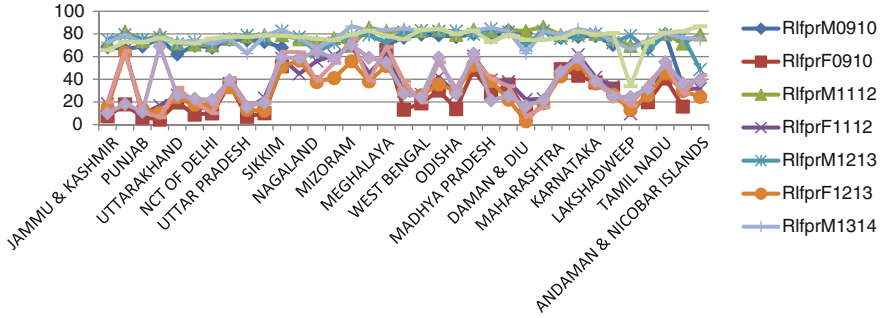

Fig. 9 Rural labour force participation rate: panel data. *Note and Source* Same as Fig. 7

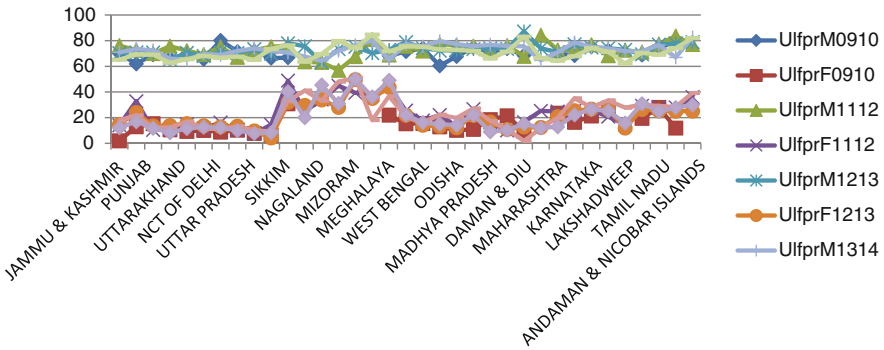

Fig. 10 Urban labour force participation rate: panel data. *Note and Source* Same as Fig. 7

distributed equitably by generating increasingly productive employment opportunities for women (Behrman and Zhang 1995). This can raise the degree of women's empowerment, as with increased resources they will be able to participate in the decision-making process, both within the household and outside the household. In other words, labour market participation would have positive spillover effects on various other aspects of well-being such as health, education and the overall attitude towards female sexuality. Employment aspect plays a pivotal role in relation to other capabilities of women such as health care and nutrition, self-respect and autonomy and full political functioning (Nussbaum and Glover 1995). Biases against girls/women lead to their inaccessibility to education and health which results in poor human capital formation and a low labour force participation rate. This in turn adversely affects the future human capital formation, female labour productivity, individual welfare, health and participation in the decision-making process and also the overall economic growth (United Nations 2007). However, other than skill differences between females and males, biases of employers against women employees also restrict their accessibility to high-income jobs. Patriarchy's

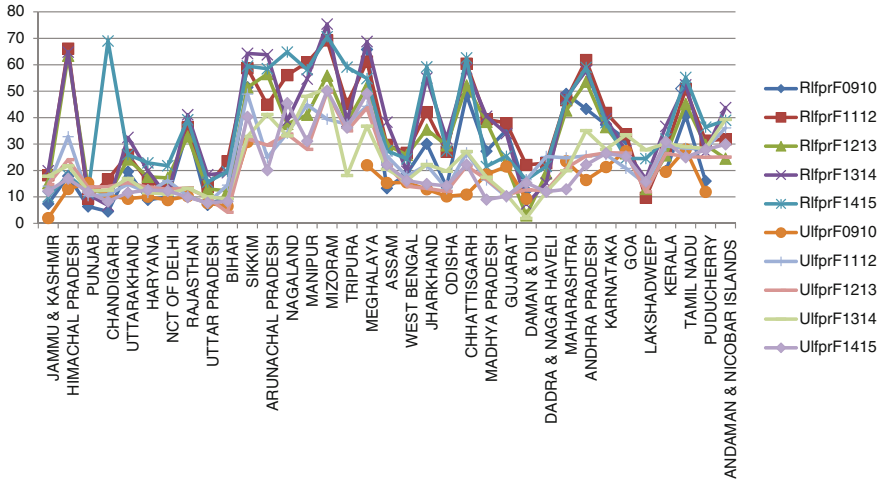

Fig. 11 Rural–urban differences in the female participation rate: panel data. *Note and Source* Same as Fig. 7

gendered division of labour often does not allow women to participate in the labour market on full-time basis, which in turn adversely affects their job market experience and bargaining power (Mitra 2005). As an outcome of a wide range of constraints impacting both from demand and supply sides on female labour market participation, the rates are indeed low and the gender differences are glaring irrespective of which source of data we use.

There are other alternative ways of empowering women instead of taking the labour market participation route. But the model of human capital formation and productive employment enhances the individual capabilities and, more importantly, empowers women to take part in the decision-making process. In the context of women employment, extensive citation has been made of the fact that arises in work accessibility of women improves the accessibility of children, particularly that of the girl children, to education and nutritious diet. Critics may find fault with the employment approach being a basic means of human development and generating pro-poor growth if women are largely employed in low-productivity activities in the informal sector. Therefore, while pursuing the labour market participation approach we explicitly highlight the concept of productive employment, which can contribute to human development and curb inequalities not only in economic terms but also in other respects. The participation rates which we are analysing are, however, too aggregative in nature and cannot throw much light on the quality of employment. Only as a rough measure of engagement in the growth process, these rates are examined in order to initiate the work.

4 Quantitative Analysis for India

Cross-sectional Results: Based on State-Level Data

In this section, we turn to the determinants of work and labour force participation (WFPR and LFPR) in the backdrop of the analytical frame presented in Sect. 1. The variables which are chosen are as follows: household size (HHSZ), literacy rate (LIT), child-to-woman ratio (CHILD), female-to-male ratio in the population (F/M), urbanization level (URBN), percentage of scheduled caste (SC) and scheduled tribe population (ST), per capita net state domestic product (PCNSDP), percentage of agriculture, industry and services in total gross state domestic product (AG, IND and SER), state-wise road length (in km) in relation to 100,000 population (ROAD), per capita consumption of electricity (ELEC), credit-to-deposit ratio of scheduled commercial banks (CRE-DEP), percentage of households with access to safe drinking water (WATER), infant mortality rate (IMR), fertility rate (FR) and gross enrolment rate in classes 1–8 (ENROL). As these variables have been gathered from various sources, they do not refer to one specific year. The appendix table gives the years for which the variables are available along with their sources. Secondly, while some of the variables are available for rural and urban areas and males and females separately, some other like infrastructure, growth and composition of growth and urbanization are aggregative in nature. IMR and enrolment are reported among girls and boys separately without any reference to area, while accessibility to safe drinking water is given for rural and urban areas.

Since the analysis is carried out at the state, district and city levels, we first discuss the results in detail with a view to highlighting the commonality at a later stage.

Some of these variables are self-explanatory. But some others need elaboration. For example, the female-to-male ratio is taken to represent visibility of women: with larger number of women in a region, the participation rate is likely to increase as solidarity and bargaining power of women may rise. A balanced sex ratio may mean less violence against women, which may motivate and provide a conductive environment to participate in the labour market. IMR is taken to represent the overall health condition of the population and so is the case with the access to safe drinking water. TFR or child-to-woman ratio (a broad indicator of fertility) covers the demographic pressure and the dependency on women. The overall household size is another indicator of dependency, keeping in view that in India the joint family system is still prevalent in many regions. ROAD and ELECT represent physical infrastructure, while CRE-DEP is an indicator of financial infrastructure.

The factor analysis has been carried out for males and females and for rural and urban areas separately. In relation to work participation rate among rural females (Table 2), four factors are seen to be statistically significant. Corresponding to the most important factor, i.e. Factor 1, women work participation rate does not have a significant factor loading. In Factor 2, however, it enters with a factor loading of 0.74. It has a strong positive relationship with the incidence of scheduled tribe women population, confirming the view that among the scheduled tribe population

Table 2 Factor analysis: rural female work participation rate

Variables	Factor 1	Factor 2	Factor 3	Factor 4
HHSZ(R)	0.2939	−0.0283	0.6949	0.0121
CHILD(R)	0.1180	0.1025	0.8878	0.1790
WPR(F,R)	0.0471	0.7419	−0.2058	0.1516
LIT(F,R)	−0.4945	0.1145	−0.5993	−0.4374
SC(F,R)	0.1186	−0.5926	−0.1541	−0.0253
ST(F,R)	0.0944	0.8396	0.2463	0.1134
F/M(R)	0.2869	0.1144	−0.5349	0.2783
URBAN	−0.8406	−0.0632	−0.0043	−0.2637
MPCE(R)	−0.5091	−0.0018	−0.1649	−0.7339
POV(R)	0.2633	0.2332	0.1563	0.7146
ELEC	−0.3281	−0.2369	−0.1902	−0.1206
ROAD	0.1431	0.7807	−0.1776	−0.0959
CR-DP	−0.2545	−0.2080	−0.0626	−0.0743
WATER(R)	−0.0572	−0.3597	−0.0518	−0.1071
IMR(F)	0.5907	−0.1382	0.4447	0.3198
% AGDP	0.7818	0.2717	0.2601	0.1715
Eigen value	5.39	3.04	1.62	1.12
% Explained	0.42	0.24	0.13	0.09

Note No. of observations (N) = 32, R within parenthesis represents rural and F female
Source Authors' calculation

women are earners in addition to their household responsibilities. On the other hand, the incidence of scheduled caste population reduces the women work participation rate. In the rural situation where caste system is more prevalent, it is possibly more difficult for scheduled caste women to find jobs. Poverty-induced participation is evident, and women being engaged largely in agriculture sector are also noticeable. What is most striking is the effect of physical infrastructure on women work participation. Other studies confirmed increased female enrolment in schools in response to improved infrastructure (Dreze and Gandhi-Kingdon 1999), and here, we notice the positive influence of road network on female work participation. Literacy is also seen to have a mild positive association with work participation, while infant mortality rate shows a negative one. The positive relationship between female-to-male ratio and participation is distinct, more so in Factor 3. Urbanization level is, however, not seen to raise women work participation rate in the rural areas. In other words, states with higher levels of urbanization though expected to have positive spillover effects in the rural areas are somehow not seen to have experienced so, at least in terms of women work participation rate. Large household size and child-to-women ratio affect women work participation adversely, as observed in Factor 3.

Instead of work if we consider the labour force participation rate, in Factor 1 itself some of these findings are discernible (Table 3). Scheduled caste incidence reduces the labour participation, while among the tribes, women join the labour

Table 3 Factor analysis: rural female labour participation rate

Variables	Factor 1	Factor 2	Factor 3
HHSZ(R)	−0.0174	0.2898	0.7006
CHILD(R)	0.1650	0.1133	0.8865
LFPR(F,R)	0.6955	0.1650	−0.2695
LIT(F,R)	0.1521	−0.4966	−0.6012
SC (F,R)	−0.6691	0.1162	−0.1428
ST(F,R)	0.9021	0.1001	0.2282
F/M(R)	0.1208	0.2895	−0.5208
URBAN	−0.1004	−0.8603	−0.0109
MPCE(R)	−0.0377	−0.5262	−0.1740
POV(R)	0.2463	0.2733	0.1571
ELEC	−0.2930	−0.3237	−0.1929
ROAD	0.7616	0.1448	−0.1999
CR-DP	−0.3097	−0.2702	−0.0690
WATER(R)	−0.4586	−0.0466	−0.0550
IMR(F)	−0.1171	0.5873	0.4615
% AGDP	0.2824	0.7781	0.2583
Eigen value	5.49	3.09	1.65
% Explained	0.43	0.25	0.13

Note No. of observations (N) = 32, and the rest same as Table 2
Source Authors' calculation

market extensively. Poverty-induced participation, requirement of female labour more in the agriculture sector, the positive effect of health and education, a strong impact of physical infrastructure on labour market participation and the lack of urbanization's spill effect on rural women labour participation are also evident. That the demographic pressure reduces labour market participation is brought out by Factor 3. The positive association between the increased presence of women, measured in terms of female–male population, and the labour market participation is also verifiable across all the three statistically significant factors (Table 3).

Turning to rural male work participation, it has the highest factor loading in Factor 4 compared to the other three (Table 4). The overall growth in the rural areas measured in terms of rural consumption expenditure per capita, the financial infrastructure (credit-to-deposit ratio) and the overall urbanization in the state are seen to raise the male participation. Rural diversification has a positive effect as the percentage of agriculture in gross state domestic product is negatively associated with participation. From Factor 2 in which the male work participation takes a moderate factor loading, the positive impact of literacy and the adverse effect of demographic variables are noticed evidently. Many of these findings are, however, not confirmed as we shift to labour force participation (Table 5). There is rather evidence on poverty-induced participation in agricultural activities, i.e. Factor 3. Besides, large household size tends to raise the male labour market participation which could be because of economic compulsions. Urbanization reduces the rural

Table 4 Factor analysis: rural male work participation rate

Variables	Factor 1	Factor 2	Factor 3	Factor 4
HHSZ(R)	0.0330	0.6608	−0.1955	−0.4429
CHILD(R)	0.1667	0.8944	−0.0210	−0.1266
WPR(M,R)	0.1223	−0.3631	0.2436	0.7715
LIT(M,R)	−0.0167	−0.7136	0.4474	0.0453
SC(M,R)	−0.7406	−0.1154	−0.1616	0.1574
ST(M,R)	0.8717	0.2447	−0.1139	−0.0359
URBAN	−0.0779	−0.0618	0.7492	0.4175
MPCE(R)	0.0157	−0.2332	0.3917	0.1548
POV(R)	0.2492	0.1958	−0.1864	−0.1303
ELEC	−0.3349	−0.2067	0.3194	0.1085
ROAD	0.8194	−0.1957	−0.2352	−0.0641
CR-DP	−0.4352	−0.0159	0.1661	0.7797
WATER(R)	−0.5049	−0.0691	0.0348	0.1278
IMR(M)	−0.1916	0.5284	−0.4633	−0.0723
% AGDP	0.2765	0.3100	−0.7619	−0.1629
Eigen value	5.86358	2.6534	1.14647	1.0349
% Explained	0.4983	0.2255	0.0974	0.0880

Note No. of Observations (*N*) = 32, R within parenthesis represents rural and M male
Source Authors' calculation

Table 5 Factor analysis: rural male labour participation rate

Variables	Factor 1	Factor 2	Factor 3
HHSZ(R)	−0.0090	0.6996	0.2745
CHILD(R)	−0.1940	0.8925	0.0336
LFPR(M,R)	0.0708	−0.0471	0.2205
LIT(M,R)	0.0343	−0.7322	−0.4432
SC(M,R)	0.7560	−0.1205	0.1340
ST(M,R)	−0.8766	0.2387	0.1291
URBAN	0.0793	−0.1316	−0.8239
MPCE(R)	−0.0136	−0.2923	−0.4591
POV(R)	−0.2530	0.2236	0.2695
ELEC	0.3627	−0.2141	−0.3339
ROAD	−0.7887	−0.2147	0.2669
CR-DP	0.4184	−0.0781	−0.3324
WATER(R)	0.5668	−0.0701	−0.0593
IMR(M)	0.1827	0.5730	0.4718
% AGDP	−0.2644	0.3210	0.8005
Eigen value	5.52720	2.62514	1.38563
% Explained	0.4885	0.2320	0.1225

Note No. of observations (*N*) = 32, R within parenthesis represents rural and M male
Source Authors' calculation

Table 6 Factor analysis: urban female work participation rate

Variables	Factor 1	Factor 2	Factor 3
HHSZ(U)	0.9053	−0.0611	−0.0909
CHILD(U)	0.9209	0.1570	−0.0126
WPR(F,U)	−0.4124	0.7570	0.0628
LIT(F,U)	−0.7754	0.3486	0.2176
SC(F,U)	−0.0728	−0.6424	0.0407
ST(F,U)	0.1053	0.9281	−0.0677
F/M(U)	−0.4064	0.2027	−0.0116
URBAN	−0.1199	0.0129	0.8717
ELEC	−0.1466	−0.2226	0.1497
ROAD	−0.2336	0.5771	−0.1607
CR-DP	−0.0858	−0.2531	0.4220
WATER(U)	−0.0058	−0.2040	0.0362
IMR(F)	0.4215	−0.0980	−0.4984
% SERDP	−0.0491	−0.0869	0.9008
Eigen value	3.71607	3.37977	1.50656
% Explained	0.3547	0.3226	0.1438

Note No. of observations (N) = 32, U within parenthesis represents urban and F female
Source Authors' calculation

male participation possibly because the economically active ones migrate out from the rural areas.

In the urban context, the female work participation with the highest factor loading in Factor 2 among all the three factors unravels the positive effect of literacy and road infrastructure (Table 6). The female-to-male ratio is also positively associated with participation. Again, the positive relationship with the incidence of scheduled tribe population and a negative one with scheduled caste population come out sharply. High demographic pressure and poor health reduce participation. Urbanization, industrialization and growth in services show positive effect on participation, very mildly though (Factors 1 and 4 in Table 7).

In relation to the labour force participation rate by and large, similar findings are obtained if we consider the most important factor and the one in which the female labour force participation takes the highest factor loading: Factor 1 and Factor 3, respectively (Table 8a, b). In Factor 1 (Table 8b) in fact, all the infrastructure variables are positively associated with urban female labour force participation. Financial infrastructure possibly allows women to set up small businesses which enable them to earn.

Among males in the urban areas, the demographic pressure is seen to reduce participation quite contrary to the belief that large family size or a large number of children forces men to participate in the labour market (Table 9). In low-income households, large family size and participation in petty activities coexist. But the male respondents often do not consider those activities as proper jobs, and hence,

Table 7 Factor analysis: urban female work participation rate with some different variables

Variables	Factor 1	Factor 2	Factor 3	Factor 4
HHSZ(U)	−0.9030	−0.0450	0.0396	−0.1403
CHILD(U)	−0.9166	0.1641	0.0786	−0.0510
WPR(F,U)	0.4143	0.7508	−0.0647	0.1126
LIT(F,U)	0.7927	0.3489	0.1367	0.1034
SC(F,U)	0.0701	−0.6593	0.0525	0.0218
ST(F,U)	−0.0992	0.9309	0.0122	−0.1092
F/M(U)	0.4107	0.2090	−0.0233	−0.0431
URBAN	0.1508	0.0068	0.4923	0.7884
ELEC	0.1349	−0.2506	−0.2774	0.6585
ROAD	0.2288	0.5634	−0.0108	−0.2043
CR-DP	0.0984	−0.2541	0.2756	0.3193
WATER(U)	0.0003	−0.2113	−0.0891	0.1901
IMR(F)	−0.4346	−0.0866	−0.2023	−0.5051
% SERDP	0.1070	−0.0676	0.9061	0.3427
% INDP	0.1464	−0.0255	−0.9301	0.1194
Eigen value	3.72865	3.42559	2.17373	1.07259
% Explained	0.3186	0.2927	0.1858	0.0917

Note No. of observations (N) = 32, U within parenthesis represents urban and F female
Source Authors' calculation

they claim to be outside the work force. Growth shows a positive impact on participation. At very high levels of income, participation is expected to decline, but India being one of the low-income countries, it is unrealistic to expect a negative association between them. Similarly, literacy and better health conditions tend to improve participation, irrespective of whether we use work or labour force participation rate (Table 10). Usually, literacy or enrolment is expected to cause withdrawal from the labour market, but our findings based on the cross-sectional data suggest that though in certain age groups it occurs in the short run, in the long run regions with better human capital formation reveal higher participation rates.

Cross-sectional Results: Based on District-Level Data

At the district level, a couple of new variables have been introduced such as sex ratio among children (CHILDSR), shares of agricultural labour (AGLAB), cultivators (CUL), household manufacturing (MFGHH) and other activities (OTHER) in total work force. The child sex ratio may represent the extent of gender discrimination at young age brackets. Districts with low levels of child sex ratio would mean high degree of gender discrimination. The employment composition is taken to assess how dynamic an area is.

The negative effect of fertility and household size on rural female work participation comes out sharply from Factor 1 (Table 11). Greater domestic burdens in large households do not allow women to participate in the work force. Literacy raises participation (Factor 1) though there are other districts forming a separate

Table 8 (a) Factor analysis: urban female labour participation rate. (b) Factor analysis: urban female labour participation rate with some different variables

Variables	Factor 1	Factor 2	Factor 3	Factor 4
(a)				
HHSZ(U)	0.2164	0.1944	−0.8739	−0.1184
CHILD(U)	−0.6172	0.2057	−0.5705	−0.1398
LFP(F,U)	0.2368	0.3743	0.5380	−0.0800
LIT(F,U)	0.2453	0.3402	0.7402	0.2769
SC(F,U)	0.1708	−0.6624	0.0005	−0.0894
ST(F,U)	0.0754	0.9108	−0.0294	0.0369
F/M(U)	0.8898	0.0960	0.1297	−0.0209
URBAN	−0.2073	0.0443	0.0732	0.8383
ELEC	−0.8908	−0.0374	0.1646	0.1847
ROAD	0.2092	0.4625	0.2989	−0.1619
CR-DP	0.1267	−0.4581	0.0349	0.2096
WATER(U)	−0.3161	−0.4819	0.0653	−0.0968
IMR(F)	−0.0475	−0.0135	−0.3521	−0.7285
Eigen value	3.32991	2.37299	2.15265	1.10843
% Explained	0.3544	0.2526	0.2291	0.1180
(b)				
HHSZ(U)	−0.9059	−0.0010	0.0139	−0.1253
CHILD(U)	−0.9050	0.0547	0.2164	−0.0524
LFPR(F,U)	0.5110	−0.1942	0.5526	−0.3422
LIT(F,U)	0.8061	0.1602	0.3405	0.0230
SC(F,U)	0.0511	0.0606	−0.6668	0.0751
ST(F,U)	−0.0565	−0.0116	0.9413	−0.1072
F/M(U)	0.4237	−0.0304	0.1849	−0.1366
URBAN	0.1462	0.6537	−0.0173	0.5601
ELEC	0.1214	−0.1157	−0.2612	0.8142
ROAD	0.2401	−0.0697	0.5684	−0.2188
CR-DP	0.0893	0.3629	−0.3486	0.2801
WATER(U)	−0.0079	−0.0430	−0.2161	0.2637
IMR(F)	−0.4234	−0.2888	−0.0458	−0.2299
% SERDP	0.0934	0.9616	−0.0833	0.1045
% INDP	0.1579	−0.8785	−0.0244	0.2866
Eigen value	3.83221	3.44993	2.18838	1.00253
% Explained	0.3238	0.2915	0.1849	0.0847

Note No. of observations (N) = 32, U within parenthesis represents urban and F female
Source Authors' calculation

Table 9 Factor analysis: urban male work participation rate

Variables	Factor 1	Factor 2	Factor 3	Factor 4
HHSZ(U)	−0.9019	−0.1639	0.0154	0.0408
CHILD(U)	−0.8910	−0.0729	−0.1879	0.0751
WPR(M,U)	0.7119	0.2945	0.2085	0.0227
LIT(M,U)	0.8691	0.2175	−0.2488	0.0201
SC(M,U)	0.0658	−0.0781	0.6973	0.0814
ST(M,U)	−0.0958	−0.0844	−0.8909	0.0174
URBAN	0.1422	0.7768	0.0559	0.4533
ELEC	0.1055	0.6646	0.3121	−0.3174
ROAD	0.2629	−0.1446	−0.6956	0.0019
CR-DP	0.1232	0.2019	0.3758	0.2758
WATER(U)	−0.0181	0.2178	0.2496	−0.0934
IMR(M)	−0.4138	−0.5361	0.0999	−0.1980
PCNSDP	0.3378	0.8770	0.0116	0.0968
% INDP	0.1434	0.0878	0.0641	−0.9468
% SERDP	0.0838	0.3889	0.1023	0.8801
Eigen value	4.70756	2.82700	2.29885	1.23276
% Explained	0.3892	0.2337	0.1900	0.1019

Note No. of observations (N) = 32, U within parenthesis represents urban and M male
Source Authors' calculation

Table 10 Factor analysis: urban male labour participation rate

Variables	Factor 1	Factor 2	Factor 3	Factor 4
HHSZ(U)	0.9059	−0.1819	−0.0097	0.0372
CHILD(U)	0.8851	−0.0891	−0.2157	0.0744
LFPR(M,U)	−0.2125	0.0616	0.5107	−0.0454
LIT(M,U)	−0.8651	0.2163	−0.2280	0.0211
SC(M,U)	−0.0456	−0.0695	0.6811	0.0827
ST(M,U)	0.0636	−0.0964	−0.8884	0.0163
URBAN	−0.1305	0.7738	0.0579	0.4674
ELEC	−0.0627	0.6900	0.3074	−0.3173
ROAD	−0.3030	−0.1534	−0.6958	−0.0015
CR-DP	−0.0825	0.2208	0.3746	0.2822
WATER(U)	0.0634	0.2759	0.2890	−0.1088
IMR(M)	0.4398	−0.5322	0.0889	−0.2089
PCNSDP	−0.3209	0.8867	0.0222	0.1019
% INDP	−0.1388	0.1007	0.0727	−0.9432
% SERDP	−0.0744	0.3851	0.0997	0.8840
Eigen value	4.18816	2.93519	2.31019	1.22377
% Explained	0.3653	0.2560	0.2015	0.1067

Note No. of observations (N) = 32, U within parenthesis represents urban and M male
Source Authors' calculation

Table 11 Factor analysis: rural female work participation rate at the district level

Variables	Factor 1	Factor 2	Factor 3	Factor 4
HHSZ(R)	−0.6820	−0.0478	0.2315	−0.1173
CHILD(R)	−0.8783	0.1008	0.0717	0.1659
WPR(F,R)	0.4626	0.5607	−0.0051	0.2973
LIT(F,R)	0.7067	−0.3227	0.1442	−0.0066
SC(F,R)	0.1048	−0.0205	−0.2099	−0.7008
ST(F,R)	−0.0695	0.2442	0.2478	0.7081
F/M(R)	0.4101	0.1304	−0.0642	0.1631
URBAN	0.3592	−0.2852	−0.0290	0.0236
AGLAB(F,R)	0.0185	0.2679	−0.9526	−0.1024
CUL(F,R)	−0.1301	0.6514	0.6790	0.1662
MFGHH(F,R)	−0.0726	−0.1470	0.0037	−0.0821
OTHER(F,R)	0.1467	−0.9531	0.2402	−0.0518
CHILDSR(R)	0.0967	0.1167	−0.1530	0.4789
Eigen value	2.91318	2.49798	1.78244	1.05884
% Explained	0.3283	0.2815	0.2009	0.1193

Note No. of observations (*N*) = 631, R within parenthesis represents rural and F female
Source Authors' calculation

group in which literacy reduces participation (Factor 2) possibly because enrolment of girls leads to labour market withdrawal. The positive association between tribal population and participation and the negative effect of low caste population on participation are evident.

The visibility of women and urbanization level seems to be enhancing women participation in the rural areas. With increased level of urbanization, the rural–urban dis-continuum tends to decline which brings in work opportunities even for rural women who do not migrate out. There is a cluster of districts which is indicative of women workers being engaged primarily as agricultural labour or cultivators (Factor 2) though there are some other districts which tend to show increased participation with improvement in activities other than agriculture and household manufacturing. The non-household manufacturing and the services sector offer possibilities of better earnings, encouraging women, particularly the literate ones, to join the work force. Also, some of the jobs in health sector, for example, are meant specifically for literate women. Unfortunately, rural diversification has been very sluggish in the Indian context with its limited impact on women work participation rate which can be seen from the low magnitude of the factor loading for the share of workers in non-household manufacturing and services in Factor 1. Gender discrimination at early ages is reflective of its continuation even in the later years: an improvement in the gender ratio among children improves the work participation to a very limited extent.

Among the rural males, the positive effect of urbanization on participation is evident (Table 12). Literacy raises the work participation rate, while demographic pressure reduces it. Large families with large number of children are not able to

Table 12 Factor analysis: rural male work participation rate at the district level

Variables	Factor 1	Factor 2	Factor 3
HHSZ(R)	−0.7141	−0.1482	0.1723
CHILD(R)	−0.8742	−0.2242	−0.0524
WPR(M,R)	0.6612	−0.0179	−0.0679
LIT(M,R)	0.5956	0.2986	0.2413
SC(M,R)	0.1588	−0.0013	−0.2127
ST(M,R)	−0.0818	−0.2575	0.1938
URBAN	0.2565	0.3895	0.1347
AGLAB(M,R)	0.0228	0.0286	−0.9928
CUL(M,R)	−0.1644	−0.9483	0.2152
MFGHH(M,R)	−0.0853	0.1331	−0.0280
OTHER(M,R)	0.1338	0.8054	0.5778
CHILDSR(R)	0.1189	−0.0092	−0.1499
Eigen value	3.19995	1.97325	1.73938
% Explained	0.3785	0.2334	0.2057

Note No. of observations (*N*) = 631, R within parenthesis represents rural and M male
Source Authors' calculation

generate better human capital formation which in turn reduces the possibility of being absorbed in high-productivity activities. Activities other than household manufacturing and agriculture have a positive effect on participation, suggesting the importance of rural diversification.

Among the urban females, the findings are again quite similar to those for rural females except in relation to gender ratio which does not have a positive effect on participation in the urban areas (Table 13). This is mainly because many educated women living in the urban areas remain confined to the domestic activities. Even when the gender ratio rises due to migration of women after marriage—the biggest reason of female migration in India (Mitra and Murayama 2009)—women do not necessarily participate in the labour market. Besides, women who accompany their husbands while migrating from the rural to the urban areas are not able to find employment in the urban labour market. At times, there is skill mismatch and at times the labour demand for women is limited and transient. For example, in the construction sector, demand for women labour is highly sporadic and, when there is a decline in labour demand, the women workers are the first ones to be retrenched. So the discrimination issue is much wide and deep-rooted, and it can exist even when at the time of birth it is not prevalent in the form of gender-selective feticide. As Table 13 shows, the child sex ratio has a positive association with work participation, but the overall gender ratio has a much stronger negative relationship with female work participation rate. With accessibility of women to job opportunities, female feticide seems to have declined, but rise in the women to men ratio has not resulted in enhanced participation due to cultural barriers.

Among the males, the findings are again not different from what we noted in the rural context. However, the association between the share of activities comprising

Table 13 Factor analysis: urban female work participation rate at the district level

Variables	Factor 1	Factor 2	Factor 3	Factor 4
HHSZ(U)	−0.7893	−0.0272	0.0657	0.0318
CHILD(U)	−0.8262	0.1174	0.2322	0.1146
WPR(F,U)	0.6137	0.1048	0.2320	0.4184
LIT(F,U)	0.7600	−0.2329	−0.0343	0.1495
SC(F,U)	0.1254	0.0876	−0.1199	−0.6222
ST(F,U)	0.0176	−0.0951	0.4184	0.7240
F/M(U)	−0.8262	0.1174	0.2322	0.1146
URBAN	0.3041	−0.1769	−0.1508	−0.0241
AGLAB(F,U)	−0.0445	0.9978	0.0138	−0.0404
CUL(F,U)	−0.0879	0.0914	0.9793	0.1661
MFGHH(F,U)	−0.1243	0.0239	−0.0724	−0.0562
OTHER(F,U)	0.1470	−0.6715	−0.4819	−0.0296
CHILDSR(U)	0.2846	0.1268	0.0424	0.5288
Eigen value	3.14689	2.37446	1.73720	1.01386
% Explained	0.3584	0.2705	0.1979	0.1155

Note No. of observations (*N*) = 637, U within parenthesis represents urban and F female
Source Authors' calculation

Table 14 Factor analysis: urban male work participation rate at the district level

Variables	Factor 1	Factor 2	Factor 3
HHSZ(U)	−0.7569	0.0513	0.1070
CHILD(U)	−0.8366	0.1671	0.2077
WPR(M,U)	0.6008	−0.1819	−0.2105
LIT(M,U)	0.7096	−0.3451	−0.0913
SC(M,U)	0.1605	0.0831	−0.0248
ST(M,U)	−0.0642	−0.1414	0.2994
URBAN	0.2488	−0.1746	−0.1904
AGLAB(M,U)	−0.1520	0.9731	0.1671
CUL(M,U)	−0.1462	0.1956	0.9631
MFGHH(M,U)	−0.1539	0.0851	0.0186
OTHER(M,U)	0.2178	−0.6645	−0.6270
CHILDSR(M,U)	0.2600	0.1206	0.0630
Eigen value	3.94216	1.67724	1.27130
% Explained	0.4961	0.2111	0.1600

Note No. of observations (*N*) = 637, U within parenthesis represents urban and M male
Source Authors' calculation

non-household manufacturing and services and the work participation rate is highly significant. Higher levels of urbanization are seen to raise the participation confirming the agglomeration effects. With greater concentration of infrastructure and activities, labour demand seems to have raised the participation rate (Table 14).

Cross-sectional Results: Based on City-Level Data

Since cities are considered to be the dynamic centres of growth compared to other medium-sized and small-sized towns, we have undertaken the analysis separately for the class 1 cities each with a population of 100,000 and above. As mentioned above, these cities comprise more than 60% of the urban population. The association between the overall gender ratio and the female work participation is positive and quite strong unlike at the level of all urban areas which means that women in relatively large cities are better off as far as the labour market outcome is concerned (Table 15). With their greater presence, women are able to participate in the labour market as the social restrictions are relatively less in large cities, whereas in smaller urban locations, the effect of larger presence gets neutralized by the cultural barriers. The demonstration effect of relatively advanced households on the rest is a strong possibility in large cities which comprise more heterogeneous households compared to the homogeneous habitation of the small towns. Also, large cities because of scale effects are able to conduct greater economic activities, generating larger demand for labour, while many of the activities in the services sector prefer women workers, specifically. Besides, women from low-income households in large cities are often forced to participate because of higher cost of living.

The findings for males in cities (Table 16) are not different from what was observed at the state or district level. The effect of city size on both male and female participation is noteworthy, suggesting that even within the set of large cities the participation of males and females both tend to improve as the city size increases. Very large cities naturally offer better prospects for employment; and the social restrictions which are more prevalent in the case of women tend to get dissipated.

Table 15 Factor analysis: urban female work participation rate at the city level

Variables	Factor 1	Factor 2
HHSZ(C)	−0.8032	0.1592
CHILD(C)	−0.8085	0.1752
WPR(F,C)	0.6377	0.3242
LIT(F,C)	0.6840	−0.3685
SC(F,C)	0.0849	0.0099
ST(F,C)	0.0781	−0.1276
F/M(C)	0.4687	0.1003
CTYSZ	0.1482	−0.1181
MFGHH(F,C)	−0.0507	0.8753
OTHER(F,C)	0.1828	−0.8652
CHILDSR(C)	0.3361	0.1900
Eigen value	3.24645	2.01018
% Explained	0.5628	0.3485

Note No. of observations (N) = 467, C within parenthesis represents city and F female
Source Authors' calculation

Table 16 Factor analysis: urban male work participation rate at the city level

Variables	Factor 1	Factor 2
HHSZ(C)	−0.8671	−0.2156
CHILD(C)	−0.6653	−0.1376
WPR(M,C)	0.7959	0.1823
LIT(M,C)	0.4724	0.3683
SC(M,C)	0.0222	0.0062
ST(M,C)	0.0438	0.1237
CTYSZ	0.1404	0.1180
MFGHH(M,C)	−0.1258	−0.8155
OTHER(M,C)	0.2558	0.8420
CHILDSR(M,C)	0.4167	−0.1573
Eigen value	3.28815	1.08844
% Explained	0.7008	0.2320

Note No. of observations (N) = 467, C within parenthesis represents city and M male
Source Authors' calculation

Panel Data Analysis

Since Labour Bureau has supplied data for five time points corresponding to each of the states and union territories, we have tried to carry out the panel data analysis as well. But in this exercise, only a limited number of variables such as per capita income, the sectoral shares in gross state domestic product and the infant mortality rate could be included.

The results from Table 17 indicate that the female participation rate in the rural areas is influenced by industrialization. The rural diversification possibly creates more opportunities in which women workers can step into. The services sector on the other hand reduces participation refuting some of the popular views which suggest about women's preference to work in this sector. The residual activities carried out in this sector with meagre earnings can discourage women from participating in the labour market ('discouraged dropouts'). However, the female health condition measured in terms of infant mortality rate is a strong determinant of their participation both in the rural and in the urban areas (Table 17).

For rural males, none of the variables turns out to be significant though in the fixed effect model (FE) the overall growth index is statistically significant (Table 18). The positive effect of industry and services is evident in the case of urban males, across all the three models (classical OLS, fixed effect and random effect).

Keeping in view the literature, suggesting the beneficial effect of women's access to income and its positive effect on nutrition, education and health of the children, we have turned the causality from participation to IMR after controlling for growth. Both female participation and economic growth are seen to reduce infant mortality rate among girls as well as boys. And this beneficial effect of female participation is evident across both rural and urban areas as can be seen from all the

Table 17 Regression results for labour force participation rate: panel data analysis (OLS results)

Variables	Dep var: LFPR(F,R) (OLS)	Dep var: LFPR(M,R) (OLS)	Dep var: LFPR(F,U) (OLS)	Dep var: LFPR(M,U) (OLS)	Dep var: LFPR(F,R) (OLS)	Dep var: LFPR(F,U) (OLS)
PCNSDP	−0.00002 (−0.28)	−0.0001 (−1.84)	0.0001 (2.22)*	−0.00005 (−1.70)	−0.0002 (−1.81)	−0.00002 (−0.39)
% INDP	0.5 (3.54)*	0.069 (1.29)	−0.29 (−1.39)	0.24 (2.62)*	0.69 (4.73)*	−0.22 (−1.09)
% SERDP			0.40 (−1.97)*	0.19 (2.17)*		−0.41 (−2.07)*
% AGDP	0.25 (0.80)	−0.073 (−0.61)			0.35 (1.08)	
IMR among girls					−0.43 (−3.61)*	−0.42 (−5.96)*
Constant	17.93 (1.69)	78.78 (19.56)	45.67 (3.13)*	56.81 (8.95)*	34.40 (2.70)*	68.25 (4.66)*
Adj. R2	0.09	0.02	0.19	0.04	0.23	0.24
N	154	154	154	154	122	122

* 5 per cent level

Note R within parenthesis represents rural, U urban, F female and M male

three models (classical OLS, FE and RE; Tables 19 and 20). However, the participation definitely has a beneficial effect on children's health, particularly that of a girl child: with an increase in female labour force participation, the infant mortality rate among girls both in the rural and the urban areas tends to decline.

5 Productivity and Female Participation

In this section, we assess whether female labour participation raises labour productivity as well. However, there are certain practical difficulties in doing this. A highly capital intensive technology which reduces the pace of labour absorption without reducing value added would mean higher labour productivity. Hence, there is difficulty in assessing the impact of labour force participation rate on labour productivity as lower employment levels would always mean higher labour productivity. So this needs to be interpreted very carefully. Secondly, labour productivity is defined as value added per labour. But no information is available on how much of value added is contributed by the male and the female workers separately. Hence, it becomes difficult to assess the association between female labour force participation and female labour productivity. Again, the information on rural and urban labour productivity is missing because value-added figures are given sector wise. So what is doable is as follows. We can only investigate whether there is a positive relationship between female labour force participation and overall labour productivity.

Table 18 Regression results for labour force participation rate: panel data analysis (fixed effect and random effect models)

Variables	Dep var: LFPR(F,R) (FE)	Dep var: LFPR(F,R) (RE)	Dep var: LFPR(M,R) (FE)	Dep var: LFPR(M,R) (RE)	Dep var: LFPR(F,U) (FE)	Dep var: LFPR(F, U)	Dep var: LFPR(M,U) (FE)	Dep var: LFPR(M,U) (RE)
PCNSDP	−0.0001 (−0.95)	−0.0002 (−1.7)	0.0002 (3.32)*	−0.00001 (−0.22)	0.0001 (0.80)	5.98e−06 (0.07)	−00006 (−1.04)	−0.00005 (−1.54)
% INDP	0.37 (1.28)	0.57 (2.83)*	−0.47 (−1.15)	0.06 (0.81)	0.25 (0.49)	−0.26 (−0.93)	1.26 (4.16)*	0.34 (2.63)*
% SERDP					0.49 (0.92)	−0.32 (−1.18)	1.11 (3.72)*	0.28 (2.23)*
% AGDP	−0.24 (−0.35)	0.34 (0.83)	−0.11 (−0.63)	0.03 (0.20)				
IMR among girls	−0.69 (−4.51)*	−0.67 (−5.43)*			−0.18 (−1.51)	−0.35 (−3.98)*		
Constant	61.35 (3.47)*	48.21 (3.39)*	74.69 (6.58)*	74.74 (13.86)*	−9.18 (−0.21)	60.56 (2.90)*	−22.80 (−0.96)	49.70 (5.48)*
R2	0.06	0.19	0.03	0.03	0.01	0.07	0.02	0.04
N	122	122	154	154	122	122	154	154

* 5 per cent level

Note R within parenthesis represents rural, U urban, F female and M male

Table 19 Impact of female LFPR in rural areas on IMR (panel data results)

	IMR(Girls) OLS	IMR(Girls) FE	IMR(Girls) RE	IMR(Boys) OLS	IMR(Boys) FE	IMR(Boys) RE
PCNSDP	−0.0004 (−9.36)*	−0.0005 (−5.18)*	−0.0004 (−7.16)*	−0.0004 (−9.55)*	−0.0004 (−4.43)*	−0.0004 (−6.62)*
LFPR (F,R)	−0.18 (−2.86)*	−0.31 (−4.81)*	−0.28 (−5.07)*	−0.18 (−2.87)*	−0.27 (−4.28)*	−0.25 (−4.50)*
Constant	64.37 (19.47)*	70.16 (17.31)*	68.5 (17.89)*	61.43 (18.36)*	61.96 (15.59)*	62.11 (16.23)*
Adj. R2	0.42	0.42	0.41	0.44	0.42	0.43
N	122	122	122	122	122	122

* 5 per cent level

Note R within parenthesis represents rural and F female

Table 20 Impact of female LFPR in urban areas on IMR (panel data results)

	IMR(Girls) OLS	IMR(Girls) FE	IMR(Girls) RE	IMR(Boys) OLS	IMR(Boys) FE	IMR(Boys) RE
PCNSDP	−0.0004 (−9.27)*	−0.0005 (−5.07)*	−0.0004 (−6.72)*	−0.0004 (−9.49)*	−0.0004 (−4.49)*	−0.0004 (−6.44)*
LFPR (F,U)	−0.514 (−5.64)*	−0.20 (−2.10)*	−0.30 (−3.54)	−0.53 (−5.70)*	−0.13 (−1.44)*	−0.24 (−2.88)*
Constant	67.60 (24.75)*	65.6 (15.24)*	64.03 (18.04)*	64.76 (23.47)*	57.48 (13.74)*	58.27 (16.39)*
Adj. R2	0.51	0.46	0.49	0.52	0.46	0.49
N	122	122	122	122	122	122

* 5 per cent level

Note U within parenthesis represents and F female

On a priori basis, the relationship between the variables can go in either direction—positive or negative. In ageing societies as labour supply shrinks, the shortages can be mitigated by raising the female labour force participation. Also, given the fact that female labour is docile and sincere, labour productivity can actually rise with increased participation of women in the labour market. Besides, female wages being lower than the male wages, the substitution of female labour for male labour can reduce the wage share (or labour cost) in value added. In other words, wage-to-labour productivity ratio can decline which means increased efficiency of the unit from the point of view of the employer. This can then contribute to overall growth.

However, from another angle, particularly in a typical neoclassical frame, female wages are lower because female productivity is believed to be lower than the male productivity: the rationalization is derived from the proposition that each of the factors of production gets paid according to its marginal productivity under perfect competition. This postulation has led to the concern that increased participation of females in the labour market can actually reduce labour productivity and growth.

Further, as we say low productivity means low wages which in turn raise labour demand, there is the possibility of a causal relationship running from productivity to participation as well. Or to put in plainly, lower productivity would mean more manpower to complete the job. So the bidirectionality issue is quite important. In addition, productivity cannot be measured as a function of participation only. Other relevant variables representing technology, skill, production structure, to cite a few, need to be controlled for. However, given the paucity of information and the lack of possibility of carrying out a rigorous quantitative exercise, we simply take overall labour productivity as a function of certain variables on which information is readily available. This is pursued basically to address the importance of certain policy options. For example, economic necessity may compel women to participate in the labour market, and without adequate education and skill, they may pursue petty activities. This sort of a situation will lead to increased participation but with low levels of productivity. On the other hand, with higher levels education and skill when women participate in the labour market, their productivity can be much higher. But with higher levels of education, women not necessarily can participate in the labour market as the social factors may pose major hindrances. Hence, based on the observed association between productivity and participation, certain broad inferences can only be drawn regarding the quality of jobs that women get absorbed into and, accordingly, suggestions can be made in favour of strategies which can help attain the twin objectives of productivity growth and increased participation.

When we take labour productivity as a function of participation rate, the endogeneity problem arises because participation itself is an endogenous outcome which is determined in terms of certain variables. We have, therefore, presented two sets of results below (Table 21). One set gives the OLS results, while the other set corrects for endogeneity by considering an appropriate instrument for participation. The instrument is generated by estimating the participation equation first and then considering the predicted value. The results tend to indicate that the female participation rate is statistically insignificant in most of the equations with labour productivity as the dependent variable. It has a negative sign, but it can be primarily because many women workers are engaged in petty activities in the informal sector, both in the rural and in the urban areas.

What is striking from Table 21 is that given participation, women's education (captured through enrolment), urbanization and infrastructure availability are some of the most important determinants of productivity. Also, the social infrastructure covering health- and education-specific variables, and physical and financial infrastructure impact on women participation in the labour market significantly. Poor health conditions measured in terms of higher infant mortality rate reduce the participation. The panel data analysis also confirms that poor health reduces women participation. These findings are important from policy point of view because different infrastructure variables are seen to improve both women participation and labour productivity. Infrastructure (social, physical and financial) can to certain extent help break the social and cultural barriers and help women participate in the labour market and make productive contribution. For voicing the women's need, overcoming the social constraints and enhancing their bargaining power, their

Table 21 Effect of female participation on labour productivity

Variables	Dep var: Lab Prod (OLS)	Dep var: Lab Prod (OLS)	Dep var: WORK (F,R) (OLS)	Dep var: WORK (F,U) (OLS)	Dep var: LFPR (F,R) (OLS)	Dep var: LFPR (F,U) (OSLS)	Dep var: Lab Prod (2SLS)	Dep var: Lab Prod (2SLS)
WORK (F.R)	−9474.98 (−0.21)						−26709.8 (−0.26)	
WORK (F,U)	−185178.5 (−1.84)						−385561.6 (−1.35)	
LFPR (F,R)		−185115.6 (−0.57)						−103884.6 (−2.0)
LFPR (F,U)		−0.36783.7 (−0.76)						−190538.2 (−1.84)
SERDP	75500.8 (1.82)	80466.8 (1.71)					68489.8 (1.54)	64334.9 (1.55)
URBAN	78042.7 (3.43)*	62162.9 (2.52)*					100857 (3.14)*	92146.9 (3.59)*
ROAD		150.1 (0.16)	0.013 (3.99)*	0.005 (2.96)*	0.017 (2.71)*	0.009 (2.05)	1817.1 (1.23)	3335.0 (2.05)*
CR-DP			0.180 (3.95)*	0.05 (2.26)*	0.19 (2.13)*	−0.02 (−0.35)		
ENROL of girls	44694.7 (2.57)*	40649.1 (2.07)*	0.136 (2.30)*	0.107 (3.61)*	0.389 (3.46)*	0.26 (3.52)*	59537 (2.31)*	109144.9 (3.21)*
IMR(F)				−0.12 (−2.62)*		0.28 (−2.47)*		
F/M			32.33 (1.78)		77.59 (2.24)*			
Constant	−8386365 (−2.89)*	−8751124 (−2.65)*	−43.35 (−2.42)*	0.51 (0.13)	96.22 (−2.81)*	2.58 (0.27)	−8347673 (−2.69)*	−1.10+e07 (−3.56)*
Adj. R2	0.64	0.66	0.55	0.48	0.47	0.50	0.59	0.64
N	32	32	35	35	35	35	32	32

* 5 per cent level

Note R within parenthesis represents rural, U urban and F female

physical presence is essential as indicated by a positive association between female-to-male ratio and women participation, particularly in the rural areas where the social barriers are strong.

We also noted in the previous section the beneficial effect of female labour force participation rate (from the panel data analysis) on infant mortality of girls as well as boys after controlling for growth indicator which also has a very strong effect on infant mortality rate. Access of mothers to resources through labour market participation improves the health status of the children as their nutritional status also improves. Also, greater volume of resources is required for enhancing the provision of heathcare facilities which can be met through higher levels of growth.

Elsewhere, it has been shown based on data from a number of Asia-Pacific countries that decline in gender inequality in labour market through improvement in female labour force participation reduces inequality in many other spheres, and eventually, it leads to greater participation of women in the decision-making process both within the households and at the macrolevel (Mitra 2010). Particularly when it comes to fertility decisions, the working women are able to voice their preference better compared to the housewives. Similarly, the working women could vouch for gender budgeting and participate in the political process as well. Refuting the view that increased participation of females in the labour market would reduce growth, the study also casted evidence in favour of economic growth responding positively to a rise in female participation. The poor levels of skill resulting from gender discrimination, limited scope to undergo on the job training, information asymmetry aggravated by the inadequate access of women to job market information, inability to pursue job search on full-time basis due to domestic responsibilities, unavailability of productive jobs with flexi hours and weak bargaining power result in lower wages for women workers than their male counterparts. And this wage discrepancy has sent a wrong message about women being less productive.

An important way of showing the relevance of skill in the job market is to calculate the returns to skill and the differences in the returns across various levels of skills. One of the convenient ways of conceptualizing the returns is to estimate an earning function with dummies representing different educational levels. The weekly wage function estimated on the basis of the NSS unit-level data from the 66th round (2009–10) shows that the male wages are substantially higher than their female counterparts (Table 22). Education dummies (the general and technical both) tend to enhance earnings. Those who have general education receive higher earnings in comparison with the illiterates (the comparison group). In fact, most of the education dummies have positive coefficients and are significant except Gedu2 which represents literates without formal schooling. Similarly, technical education dummies are statistically significant. But those who have acquired vocational training are not better off in comparison with those who do not have it. Scheduled castes receive a lower wage compared to the general-cum-OBCs. Large households are also worse off in terms of earnings, suggesting lower productivity levels and poor quality of labour. Though age, taken to be a proxy for job market experience, is not significant, age square is, and it has a positive coefficient. All this tends to

Table 22 Dependent variable: regression equation for weekly wage (in Rs. per person)

Variables	Coefficient	*t* ratio
Age	−1.98	−0.58
Agesq	0.39	8.98*
hhhold_size	−10.28	−4.57*
Gedu2	18.63	0.24
Gedu3	201.06	13.44*
Gedu4	831.28	46.45*
Gedu5	2028.29	95.56*
Tedu2	2756.52	47.92*
Tedu3	690.78	20.12*
Tedu4	903.45	19.08*
vtrn1	−766.49	−24.02*
vtrn2	−124.35	−3.89*
vtrn3	−77.98	−3.59*
mst1	−8.88	−0.29
mst2	193.45	7.68*
gender1	371.49	27.14*
reldum1	−184.97	−10.26*
reldum2	−155.69	−6.42*
Socdum1	26.93	1.56
Socdum2	−101.55	−7.4*
occ1	−700.31	−16.03*
occ3	−412.47	−9.3*
occ4	−586.32	−13.42*
occ5	−750.70	−16.42*
occ6	−323.05	−7.09*
occ7	101.45	2.34*
Secdum1	−258.73	−22.27*

* 5 per cent level

Note Number of obs = 75518, F(27, 75490) = 1914.54, Adj. R-square = 0.41

Variables Age: age of the earner, Agesq: age square, hhhold_size: household size, Gedu2: literate without formal schooling, Gedu3: primary and middle level, Gedu4: secondary and higher secondary, Gedu5: graduation and postgraduation, Tedu2: technical degree in agriculture/engineering/technology/medicine, etc., Tedu3: diploma or certificate (below graduate level) in: agriculture, engineering/technology, medicine, crafts, other subjects, Tedu4: diploma or certificate (graduate and above level) in: agriculture, engineering/technology, medicine, crafts, other subjects, vtrn1: receiving formal vocational training, vtrn2: received vocational training: formal, vtrn3: received non-formal: hereditary, self-learning, learning on the job and others, mst1: never married, mst2: currently married, gender1: gender dummy (1 for males and 0 for females), reldum1: Hindu, reldum2: Islam, Socdum1: schedule tribe, Socdum2: schedule caste, occ1: agriculture, hunting, forestry and fishing, occ3: manufacturing, electricity, gas and water supply, occ4: construction, occ5: wholesale and retail trade, hotel and restaurant, occ6: transport, storage and communication, occ7: other services including financing, secdum1: rural dummy (1 for rural and 0 for urban areas)

Source Based on NSS unit-level data (66th Round, 2009–10)

suggest that skill formation and experience do contribute to higher levels of earnings. The sector-specific dummies are mostly negative indicating lower earnings in most of the sectors in relation to the comparison group which is mining and quarrying. However, the occ7 which represents 'other services', including financing, has a positive coefficient, meaning higher earnings accruing to workers in this sector.

6 Conclusion and Policy Issues

This study on labour (and work) force participation rate has been pursued gender wise, at three spatial levels: state, district and city. Further, the state- and district-specific rates have been analysed at the rural and urban areas separately. Among the cities and towns, the relatively large ones, i.e. each with a population of 100,000 and above, have been considered in order to assess the effects of agglomeration economies and the cultural factors which are supposedly more advanced in the large cities.

Based on the population census data, the study noted that the female participation rates are significantly lower than those among the males. The interstate variations in the male-specific rates are rather limited. On the other hand, the rural–urban differentials are more pronounced and the interstate variations are sizable in the case of females, reflecting the influence of social, cultural and economic factors. Female rates in the urban areas are not necessarily higher than the rural rates despite higher levels of education and social advancement that urbanization is expected to usher in. Economic factors, particularly in the low-income households, dominate in the rural context, compelling more women to participate in the labour market. There does not seem to be any significant positive relationship between per capita income and participation rate in the case of females (except in a subset of sates) though among males such a pattern is somewhat distinguishable. This finding brings out the inadequacy of growth to usher in gender equality.

The Labour Bureau's panel estimates of gender-specific labour participation rate have been consistent over time, and the gender differences in the estimates are again pertinent for each of the years. Though the time frame (2009–10 through 2014–15) is too short to expect any significant change in the participation rate, the rigidity in the female participation rate does raise concerns to be addressed in a larger ambit covering social, economic, political and cultural arena. On the whole, the female participation is considerably low. Even in the urban areas and in the relatively large cities, the social factors and the practice of gender-based division of labour are prevalent as a result of which the female labour market participation is lower than its rural counterpart.

Based on the inter-spatial variations, the study made an attempt to capture the important determinants. It clearly brings out the importance of infrastructure, education and health and urbanization on labour force participation of both the gender. This in turn points to three types of factors which are instrumental in

resulting enhanced participation rate. The first set refers to creation of greater volume of jobs motivating participation, the second enhances the ability of the individuals to participate, and the third, the most important one, facilitates the accessibility of the capable ones to the locations where jobs are available. Hence, strategies for creating clusters with greater employment potentials (which in turn is cost-effective in making pro-poor growth happen), consecrated efforts for human capital formation and investments to remove barriers between jobs and their seekers need to be pursued aggressively.

The negative impact of fertility and household size on rural female work participation comes out sharply: greater domestic burdens in large households do not allow women to participate explicitly in the labour market. Though the urbanization level does not show a positive effect on rural women participation at the state level, the beneficial effects are evident at the district level for both the gender. On the other hand, in the urban context, the participation rates of both females and males vary positively with the level of urbanization. In other words, the urban areas in states and districts with higher levels of urbanization unravel higher levels of participation both for females and for males in comparison with the states or districts with lower levels of urbanization, revealing the agglomeration effects. With greater concentration of infrastructure and activities, labour demand tends to increase. Further evidence in this regard is brought out from the city-level data which confirm the positive effect of city size on both male and female participation. The urban-specific rates, particularly for females, may be lower than the rural rates, showing the persistence of cultural backwardness, but within the urban context, there is a positive impact of urban settlement; that is, the relatively large settlements are associated with better outcomes.

While industrialization and growth in services both show a positive effect on participation, though very mildly especially in the case of urban women, growth shows a rising impact only in the case of urban males. Also, there is evidence on poverty-induced participation in agricultural activities, suggesting clearly the importance of rural diversification for participation to pick up.

The positive relationship between the female-to-male ratio and the female participation is striking in both the rural and urban areas, at least at the state level. Greater presence of women in the society is a precondition to their participation in the labour market though there is evidence, particularly from the urban district-level data that it is not a sufficient condition. In fact, many educated women remain confined to domestic activities not being able to participate in the labour market. However, the association between the gender ratio and the female work participation rate is positive and quite strong in large cities compared to all urban areas which comprise medium-sized and small-sized towns. The social restrictions are likely to be less in large cities, enabling more women to participate in the labour market. The demonstration effect of relatively advanced households on the rest is also a possibility. Besides, large cities because of scale effects are able to conduct greater economic activities, generating larger demand for labour. Many of the activities in the services sector, especially, prefer to have women workers, motivating the potential entrants to join the job market. This, however, does not rule out

the possibility of women from low-incomes households being residually absorbed in low-productivity services because of high living costs.

Women's participation does not reduce productivity. On the contrary, it improves child health significantly as noted from the beneficial effect of female labour force participation rate (from the panel data analysis) on infant mortality of girls as well as boys after controlling for growth, which too has a strong effect on infant mortality. Access of mothers to resources through labour market participation improves the health status of the children as their nutritional status and access to curative health care get better.

Regarding the negative effect of female labour force participation on labour productivity and economic growth, the study clears up the misgivings, suggesting that the negative sign is statistically not significant; and secondly, it arises because of women's residual absorption in petty activities in the informal sector, both in the rural and the urban areas. Further, the female–male wage differences are due to skill differences and not because males are more productive than females in relation to a given task. The results suggest that given participation, women's education (captured through enrolment), urbanization and infrastructure availability are some of the most important determinants of productivity. Further, as mentioned above, the social infrastructure (covering health- and education-specific variables) and physical and financial infrastructure impact on women participation as well.

On the whole, based on these results, it may be inferred that women participation in productive activities has a double effect: first, it raises the household income, and second, it contributes to well-being of the household as the health status of the children improves. A mere increase in participation without ensuring productive absorption may not be beneficial as it would only raise the burden on the women members. Also, institutional support to discourage the practice of gender-based discriminatory wages is instrumental to women's participation in the labour market and the beneficial effects which are expected to crop up subsequently.

These findings are important from policy point of view because different infrastructure variables are seen to improve both participation and labour productivity. With improved infrastructure, the quantum of investment is expected to shoot up and the accessibility to growth centres offering better livelihood opportunities can ameliorate. Infrastructure (social, physical and financial) can to certain extent break the social and cultural barriers and help women participate in the labour market and make productive contribution to the growth process. Though the level of urbanization raises the urban participation rate in an inter-spatial sense, a similar pattern is not evident in the context of rural females (at least at the state level). How urbanization can be made more generative with positive spillover effects in the rural neighbourhood is, therefore, an important policy question. Increased urbanization, ushering in greater concentration of non-farm activities, holds the potentiality to create employment prospects and result in productivity gains.

Higher fertility rate harms maternal health, reducing women's ability to work in the labour market. For voicing the women's need, overcoming the social constraints and enhancing their bargaining power, their physical presence is essential as indicated by a positive association between the female-to-male ratio and the women

participation, particularly in the rural areas where the social barriers are strong. Ban on sex-selective termination of pregnancy requires greater enforceability. That despite higher levels of education women-specific participation rate in the urban areas is in general lower in comparison with the rural areas calls for introducing more effective strategies to make women more job-oriented. Rural women workers are mostly engaged in agriculture, and rural poverty forces many of them to pick up marginal activities outside agriculture. How productivity and earning of these workers can be enhanced is, therefore, another key policy concern.

The age structure shift in the Indian context, i.e. a relatively large percentage of population in working age brackets, can prove to be beneficial only when their accessibility to productive jobs develops. The improvement in the job market participation of both females and males and their absorption in productive activities would be possible when economic growth, human capital formation and social progress take place simultaneously. For all this to happen, strategic action is required. With enhanced equality between females and males in terms of work opportunities and labour market attributes, several positive outcomes in terms of economic, social, political, educational and health-related equality may take place in a significant way. All this would subsequently improve the overall social status of women and their participation in the decision-making process. Going a step ahead, one may argue that with specific interventions, enhanced labour market participation of women can result in higher productivity and growth as well, which will indeed be sustainable in the long run. Since women labour has remained unutilized in remunerative and economic activities to a large extent, higher participation of women, particularly in ageing societies, can mitigate the shortage of labour and contribute to pro-poor growth.

The government's effort to introduce the new manufacturing policy, urban policy with a thrust to create smart cities, 'skill India' programme to improve the employability of the labour force and 'make in India' programme to raise labour demand and production simultaneously are expected to have positive impact on both female and male labour force participation rates. Specifically for women, a series of measures which include maternity benefit, provision of childcare leave, equal remuneration for both male and female workers, prevention of domestic violence and workplace harassment are there which may encourage participation. A scheme on gender budgeting was introduced in 2007 to build capacity so that a gender perspective is retained at all levels of planning, budget formulation and implementation stages.[5] Shifting workers of both the gender from low- to

[5]Besides, there are literacy mission (Sakshar Bharat abhiyan), sanitation scheme, midday meal schemes in school and save the girl child (Beti Bachao, Beti Padhao: BBBP) programme. National rural Health Mission and National Urban Mission and High Level Expert Group on Universal Health Coverage aim at improving the access to health services for women, girls and other vulnerable genders, going beyond maternal and child health. The scheme relating to hostels for working women intends to promote mobility among women in the labour market by providing safe and cheap accommodation to those from the lower income households and living away from home. Provision and improvement of sanitation facilities in educational institutions is expected to

high-productivity activities has been a major challenge. On top of that if the participation rate has to improve, both demand- and supply-side factors, as our analysis highlights, will have to be considered.

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improve enrolment among girl children. There are other women development programmes too (Swyam Sidha programme, Swa-Shakti programme and Rashtriya Mahila Kosh programmes). The National Rural Employment Guarantee Programme (MNREGA), the Right to Free and Compulsory Education, National Rural Health Mission, National Rural Livelihood Mission and National Skill Development Mission aim at improving the ability to access better livelihood opportunities.

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Appendix

See Tables A.1 and A.2.

A. Mitra and A. Okada, *Labour Market Participation in India*, SpringerBriefs in Economics, https://doi.org/10.1007/978-981-10-7143-0

Table A.1 Labour force participation rate for females (age 15+)

Country	Region	LFPR 1980	LFPR 1985	LFPR 1990	LFPR 1995	LFPR 2000	LFPR 2005	LFPR 2006	Change: 1980–90	Change: 1990–06
Cambodia	Northeast	79	78.5	77.9	77.2	75.4	74.7	74.7	−1.1	−3.2
China	Northeast	71.1	71.8	73.2	72.8	71.3	68.9	68.5	2.1	−4.7
Hong Kong, China (SAR)	Northeast	45.5	48.8	47.2	47.4	49.6	53.2	53.8	1.7	6.6
Korea, Democratic People's Republic of	Northeast	52.9	52.7	52.2	50.1	49.2	48.3	48.2	−0.7	−4.0
Korea, Republic of	Northeast	43.6	42.8	47.1	48.5	48.6	50.2	50.3	3.5	3.2
Lao People's Democratic Republic	Northeast	51.5	54.5	53.3	54.2	53.8	54	54.1	1.8	0.8
Macao, China (SAR)	Northeast	39.4	41	44.8	48.7	55.2	60.7	61.8	5.4	17.0
Mongolia	Northeast	53.1	53.3	55.5	54.6	54.3	53.9	53.9	2.4	−1.6
Vietnam	Northeast	73.3	73.9	73.8	73.5	72.9	72.1	72	0.5	−1.8
Fiji	Pacific	54.7	52.6	48.8	48.9	49.9	51.3	51.6	−5.9	2.8
Papua New Guinea	Pacific	70.6	71	71.6	70.7	71.3	71.7	71.7	1.0	0.1
Samoa	Pacific	38.6	39.8	39.4	40.6	40.5	39.4	39.3	0.8	−0.1
Solomon Islands	Pacific	52.3	54.2	55.6	55.1	54.7	54.1	54.1	3.3	−1.5
Tonga	Pacific	38	36.4	36.8	45.7	44.7	44.9	44.9	−1.2	8.1
Vanuatu	Pacific	78.3	78.5	79.6	78.4	78.7	79.4	79.5	1.3	−0.1
Brunei Darussalam	Southeast	32.4	36.2	44.9	46.1	46.1	44	43.7	12.5	−1.2
Timor-Leste	Southeast	56.8	54.1	49.5	48.1	50.6	55.1	55.8	−7.3	6.3
Indonesia	Southeast	44	43.4	50.3	49.4	50.7	51	51.2	6.3	0.9
Malaysia	Southeast	42.2	42.1	44.1	43.8	45.5	46.5	46.9	1.9	2.8
Myanmar	Southeast	69.7	69.5	68.8	68.3	68.2	68.2	68.3	−0.9	−0.5
The Philippines	Southeast	50.2	48	47.4	49.1	48.5	54.7	55.7	−2.8	8.3
Singapore	Southeast	44.9	44.9	50.3	49.8	52.3	50.6	50.4	5.4	0.1

(continued)

Table A.1 (continued)

Country	Region	LFPR 1980	LFPR 1985	LFPR 1990	LFPR 1995	LFPR 2000	LFPR 2005	LFPR 2006	Change: 1980–90	Change: 1990–06
Thailand	Southeast	75.6	75.1	74.5	66.1	65.4	65.8	66	−1.1	−8.5
Afghanistan	South and west	37.5	37.4	37.4	37.1	37.5	38.9	39.5	−0.1	2.1
Bangladesh	South and west	64.8	65.9	63.4	56.6	54.8	52.6	52.4	−1.4	−11.0
Bhutan	South and west	36.6	36.1	35	33.1	37.3	46.9	49.4	−1.6	14.4
India	South and west	36.1	36.5	36.5	35.5	34.1	34	34	0.4	−2.5
Maldives	South and west	24.2	23.7	20.1	28	37.4	48	49.8	−4.1	29.7
Nepal	South and west	45.3	46.4	48.1	48.3	49.4	49.9	50.1	2.8	2.0
Pakistan	South and west	27	27.2	27.9	28.7	29.4	32.6	33.3	0.9	5.4
Sri Lanka	South and west	39.6	37.5	45.1	36.4	37.1	35.2	35	5.5	−10.1
French Polynesia	NA	45	45.6	48.5	49.1	47.8	46.9	46.9	3.5	−1.6
Guam	NA	45.8	50.4	52.1	52.5	52.1	51.8	51.9	6.3	−0.2
New Caledonia	NA	43.1	45.5	45.6	45.1	44.5	43.5	43.3	2.5	−2.3
Average		50.61	50.77	51.62	51.32	52.08	53.25	53.55		
Standard deviation		15.42	15.39	14.98	13.74	12.81	12.08	12.00		
Coefficient of variation		30.47	30.30	29.02	26.77	24.60	22.69	22.41		

Note (1) French Polynesia, Guam and New Caledonia are not included in the TOR. However, they fall into the Asia-Pacific region as given in the KILM data set. Hence, they have been included in the analysis. However, the figures on average, standard deviation and the coefficient of variation do not include these countries. (2) All these countries in this table are termed as developing countries in ESCAP region; see ESCAP Report, 2007. The developed countries in the ESCAP region include Australia, Japan and New Zealand, which are not included in the analysis as the focus is primarily on the developing countries

Source KILM Data, Fifth Edition, ILO

Table A.2 Labour force participation rate for males (age 15+)

Country	Region	LFPR 1980	LFPR 1985	LFPR 1990	LFPR 1995	LFPR 2000	LFPR 2005	LFPR 2006
Cambodia	Northeast	86	85.6	85.2	85	81	80.2	80.2
China	Northeast	87.5	86	85.1	85.2	84.1	82.2	81.9
Hong Kong, China (SAR)	Northeast	81.5	80.6	79.5	76.3	73.4	70.8	70.2
Korea, Democratic People's Republic of	Northeast	81.7	81.5	82	81.5	79	78.5	78.2
Korea, Republic of	Northeast	75.2	72.3	73.4	75.2	73.1	73.9	73.7
Lao People's Democratic Republic	Northeast	79.1	79.4	79.5	80.1	80.4	80.3	80.3
Macao, China (SAR)	Northeast	71.4	72.4	72.3	72.8	75.4	75.3	75.2
Mongolia	Northeast	80.9	81	81.5	81.8	81.8	81.4	81.6
Vietnam	Northeast	81.7	81.9	81.1	80.2	79	78	77.9
Fiji	Pacific	81.8	81.5	79.7	79.6	80	80.3	80.3
Papua New Guinea	Pacific	73.9	74.3	75.1	72.9	73.7	74.8	74.9
Samoa	Pacific	81.4	82	76.9	78.7	78.8	77.4	77.1
Solomon Islands	Pacific	79.3	80.2	80.8	81.9	81.9	82.1	82.2
Tonga	Pacific	78.7	75.8	77.6	75.4	73.6	73.2	73
Vanuatu	Pacific	87.3	87.5	88.9	87.3	87.5	88.2	88.3
Brunei Darussalam	Southeast	83.1	82.9	82.6	81.6	80.8	79.2	78.8
Timor-Leste	Southeast	84.1	83.3	79.2	78.3	78.1	82.5	83.1
Indonesia	Southeast	82.9	80.7	81.4	82.2	84.8	85	85.1
Malaysia	Southeast	78.4	78.2	81.2	81.9	81.6	81.4	81.3
Myanmar	Southeast	89.2	88.7	87.5	86.6	86.4	86.2	86.2
The Philippines	Southeast	80.4	81.1	82.6	83.2	81.5	83.1	83
Singapore	Southeast	81.5	80.6	79.9	78.9	78.7	76.2	75.5

(continued)

Table A.2 (continued)

Country	Region	LFPR 1980	LFPR 1985	LFPR 1990	LFPR 1995	LFPR 2000	LFPR 2005	LFPR 2006
Thailand	Southeast	87.4	88	87.9	84.4	82.1	81.1	80.8
Afghanistan	South and west	87.2	87.3	87.6	87.9	87.9	87.8	87.8
Bangladesh	South and west	89.3	89.4	88.8	88.6	86.8	86.2	86.1
Bhutan	South and west	86.4	86	85.3	85.3	83	81.3	80.9
India	South and west	86.3	85.6	84.7	83.8	82.9	81.8	81.6
Maldives	South and west	74.5	78.5	77.6	74.2	72.4	71.7	71.8
Nepal	South and west	87	84.3	80.4	79.5	78.7	78.3	78.2
Pakistan	South and west	86.9	88.1	86.1	83.8	84.1	83.2	83.1
Sri Lanka	South and west	81.4	81.2	78.8	74.7	76.4	76.5	76.4
French Polynesia	Na	78.3	76.3	74.3	75.1	73.9	72.4	72.3
Guam	Na	73.3	77.2	80.4	80.4	80.3	79.7	79.4
New Caledonia	Na	67.5	70.8	72.8	72.6	71.9	70.5	70.3
Average		82.37	82.13	81.62	80.93	80.29	79.94	79.83
Standard deviation		4.58	4.49	4.28	4.37	4.29	4.42	4.51
Coefficient of variation		5.56	5.47	5.24	5.41	5.34	5.53	5.65

Notes The figures on average, standard deviation and the coefficient of variation do not include French Polynesia, Guam and New Caledonia

For other Notes and Source, see Table A.1.

See Table A.3.

Table A.3 Ratio of female-to-male LFPR

Country	F/M 1980	F/M 1985	F/M 1990	F/M 1995	F/M 2000	F/M 2005	F/M 2006
Afghanistan	0.43	0.43	0.43	0.42	0.43	0.44	0.45
Bangladesh	0.73	0.74	0.71	0.64	0.63	0.61	0.61
Bhutan	0.42	0.42	0.41	0.39	0.45	0.58	0.61
Brunei Darussalam	0.39	0.44	0.54	0.56	0.57	0.56	0.55
Cambodia	0.92	0.92	0.91	0.91	0.93	0.93	0.93
China	0.81	0.83	0.86	0.85	0.85	0.84	0.84
Timor-Leste	0.68	0.65	0.63	0.61	0.65	0.67	0.67
Fiji	0.67	0.65	0.61	0.61	0.62	0.64	0.64
French Polynesia	0.57	0.60	0.65	0.65	0.65	0.65	0.65
Guam	0.62	0.65	0.65	0.65	0.65	0.65	0.65
Hong Kong, China (SAR)	0.56	0.61	0.59	0.62	0.68	0.75	0.77
India	0.42	0.43	0.43	0.42	0.41	0.42	0.42
Indonesia	0.53	0.54	0.62	0.60	0.60	0.60	0.60
Korea, Democratic People's Republic of	0.65	0.65	0.64	0.61	0.62	0.62	0.62
Korea, Republic of	0.58	0.59	0.64	0.64	0.66	0.68	0.68
Lao People's Democratic Republic	0.65	0.69	0.67	0.68	0.67	0.67	0.67
Macao, China (SAR)	0.55	0.57	0.62	0.67	0.73	0.81	0.82
Malaysia	0.54	0.54	0.54	0.53	0.56	0.57	0.58
Maldives	0.32	0.30	0.26	0.38	0.52	0.67	0.69
Mongolia	0.66	0.66	0.68	0.67	0.66	0.66	0.66
Myanmar	0.78	0.78	0.79	0.79	0.79	0.79	0.79
Nepal	0.52	0.55	0.60	0.61	0.63	0.64	0.64
New Caledonia	0.64	0.64	0.63	0.62	0.62	0.62	0.62
Pakistan	0.31	0.31	0.32	0.34	0.35	0.39	0.40
Papua New Guinea	0.96	0.96	0.95	0.97	0.97	0.96	0.96
The Philippines	0.62	0.59	0.57	0.59	0.60	0.66	0.67
Samoa	0.47	0.49	0.51	0.52	0.51	0.51	0.51
Singapore	0.55	0.56	0.63	0.63	0.66	0.66	0.67
Solomon Islands	0.66	0.68	0.69	0.67	0.67	0.66	0.66
Sri Lanka	0.49	0.46	0.57	0.49	0.49	0.46	0.46
Thailand	0.86	0.85	0.85	0.78	0.80	0.81	0.82
Tonga	0.48	0.48	0.47	0.61	0.61	0.61	0.62
Vanuatu	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Vietnam	0.90	0.90	0.91	0.92	0.92	0.92	0.92
Average	0.61	0.62	0.63	0.63	0.65	0.67	0.67
Standard deviation	0.18	0.18	0.17	0.16	0.16	0.15	0.15
Coefficient of variation	29.13	28.67	27.48	25.76	23.99	22.33	22.09

Notes The figures on average, standard deviation and the coefficient of variation do not include French Polynesia, Guam and New Caledonia

For other Notes and Source, see Table A.1.

See Tables A.4, A.5, A.6, A.7, A.8, A.9 and A.10.

Table A.4 (a) Worker-to-population ratio of females and males aged 15 and above, (b) change in the worker-to-population ratio of females and males

(a)						
Country	Female			Male		
	1995	2000	2006	1995	2000	2006
Afghanistan	30	30.2	33.8	79.9	79.9	81.1
Bangladesh	55.2	53	50	85.9	83.9	82.6
Bhutan	27.8	31.5	43.4	78.9	76.7	75.4
Brunei Darussalam	43.8	43.8	41.6	78.1	77.2	75.5
Cambodia	74.2	73.3	73.2	82.1	79.2	78.8
China	71	69.4	66.8	81.8	80.6	78.9
Timor-Leste	46.3	48.7	53.4	75.6	75.4	79.7
Fiji	46.2	46.8	48.8	75.4	75.2	76
Hong Kong, China (SAR)	46	47.5	51.4	73.7	69.3	66.1
India	33.7	32.7	32.2	79.8	79.3	77.7
Indonesia	46.7	47.1	44.3	78.5	80.1	77.5
Korea, Democratic People's Republic of	49	47.2	46.2	79	74.6	73.8
Korea, Republic of	47.7	46.9	48.8	73.4	69.4	70.8
Lao People's Democratic Republic	53.1	52.9	53.5	77.8	78.6	79
Macao, China (SAR)	47.1	52.8	59.5	69.9	69.1	72
Malaysia	42.4	44.1	45.2	79.4	79.2	78.4
Maldives	27.6	36.4	48.6	73.7	71.2	70.6
Mongolia	46.4	45.2	46.9	69.8	67.1	71.3
Myanmar	65.7	66	66	83.4	83.5	83.2
Nepal	42.8	43.9	43.7	74.8	73.8	72.8
Pakistan	25.5	25.2	30.2	81.3	80	79
Papua New Guinea	68.2	69.3	69.8	70.4	71.6	72.9
The Philippines	44.4	43.6	51.6	76.8	73.3	76.9
Singapore	48.4	49.9	48	76.8	75	72.7
Solomon Islands	52.7	51.8	51.9	78.7	77.8	79
Sri Lanka	29.2	32.9	31.6	68.2	72.2	72.7
Taiwan, Province of China	43	43.3	46.5	70.2	65.5	62.3
Thailand	65.3	63.9	65.2	83.6	80.1	79.7
Vietnam	71.9	71.2	70.3	78.4	77.2	76.6
Average	47.97586	48.63793	50.42759	77.08	75.72	75.62
Standard deviation	13.69308	12.75381	11.63876	4.56	4.80	4.73
Coefficient of variation	28.5416	26.22193	23.08014	5.92	6.34	6.26

(b)

Country	Female		Male	
	Between 1995 and 2000	Between 2000 and 2006	Between 1995 and 2000	Between 2000 and 2006
Afghanistan	0.20	3.60	0	1.20
Bangladesh	−2.20	−3.00	−2	−1.3
Bhutan	3.70	11.90	−2.2	−1.3
Brunei Darussalam	0.00	−2.20	−0.9	−1.7
Cambodia	−0.90	−0.10	−2.9	−0.40
China	−1.60	−2.60	−1.2	−1.7
Timor-Leste	2.40	4.70	−0.2	4.30
Fiji	0.60	2.00	−0.2	0.80
Hong Kong, China (SAR)	1.50	3.90	−4.40	−3.2
India	−1.00	−0.50	−0.5	−1.60
Indonesia	0.40	−2.80	1.60	−2.6
Korea, Democratic People's Republic of	−1.80	−1.00	−4.4	−0.8
Korea, Republic of	−0.80	1.90	−4	1.40
Lao People's Democratic Republic	−0.20	0.60	0.80	0.40
Macao, China (SAR)	5.70	6.70	−0.8	2.90
Malaysia	1.70	1.10	−0.2	−0.8
Maldives	8.80	12.20	−2.5	−0.6
Mongolia	−1.20	1.70	−2.7	4.20
Myanmar	0.30	0.00	0.10	−0.3
Nepal	1.10	−0.20	−1	−1
Pakistan	−0.30	5.00	−1.3	−1
Papua New Guinea	1.10	0.50	1.20	1.30
The Philippines	−0.80	8.00	−3.5	3.60
Singapore	1.50	−1.90	−1.8	−2.3
Solomon Islands	−0.90	0.10	−0.90	1.20
Sri Lanka	3.70	−1.30	4	0.5
Taiwan, Province of China	0.30	3.20	−4.7	−3.2
Thailand	−1.40	1.30	−3.5	−0.4
Vietnam	−0.70	−0.90	−1.2	−0.6

Source See Table A.1

Table A.5 Illiteracy rate

Country	Year	Female		Male	
		Youth illiteracy rate (%)	Adult illiteracy rate (%)	Youth illiteracy rate (%)	Adult illiteracy rate (%)
Afghanistan	2000	81.6	87.4	49.2	56.9
China	1990	8.5	31.9	3	13
China	2000	1.5	13.5	0.8	4.9
Indonesia	1990	4.9	24.7	2.6	12
Lao People's Democratic Republic	1995	35.9	52.1	21.2	26.5
Malaysia	2000	2.7	14.6	2.8	8
Maldives	1985	3.8	7.6	5.1	7.9
Maldives	1990	1.7	3.9	1.9	4.1
Maldives	1995	1.7	3.6	2	3.8
Maldives	2000	1.7	3.6	2	3.8
Mongolia	2000	1.6	2.5	3	2
Myanmar	2000	6.6	13.6	4.3	6.1
Pakistan	2005	46.9	64.6	23.3	35.9
Papua New Guinea	2000	35.9	49.1	30.9	36.6
The Philippines	1990	3.1	6.8	3.7	6
The Philippines	2000	4.3	7.3	5.5	7.5
Singapore	1990	0.9	17	1.1	4.9
Thailand	2000	2.2	9.5	1.9	5.1

Table A.6 Enrolment and expenditure on education

Country	Year	Expenditure per student: primary (% of GDP per capita)	Expenditure per student: secondary (% of GDP per capita)	Expenditure per student: tertiary (% of GDP per capita)	Pupil-to-teacher ratio (primary, %)	School enrolment: primary (% gross)	School enrolment: secondary (% gross)	School enrolment: tertiary (% gross)
Afghanistan	2000				64	19.2		
Afghanistan	2005				83.4	86.5	16.2	
Bangladesh	2000	8.2	11.4	43.5	57.1	108.9	50.3	5.8
Bangladesh	2005	7.7	14.7	49.7				6.5
Bhutan	2000	14.4	103.2	574	41.1			
Bhutan	2005				31.1			
Brunei Darussalam	2000				13.5	109.7	85.5	12.6
Brunei Darussalam	2005				10.1	107.5	95.6	15
Cambodia	2000	5.9			50.1	106.3	17	2.2
Cambodia	2005				53.2	134.1		3.3
China	2000						62.9	7.6
China	2005				18.6	112.8	74.3	20.3
Cook Islands	2000	0.9	1		17.8	87.9	66.1	
Timor-Leste	2005				34.2	151.1	51.8	
Fiji	2000				28.1	109.1	80.8	
Fiji	2005				28.2	106	87.8	15.3
Hong Kong, China (SAR)	2000				21.3	106.2		

(continued)

Table A.6 (continued)

Country	Year	Expenditure per student: primary (% of GDP per capita)	Expenditure per student: secondary (% of GDP per capita)	Expenditure per student: tertiary (% of GDP per capita)	Pupil-to-teacher ratio (primary, %)	School enrolment: primary (% gross)	School enrolment: secondary (% gross)	School enrolment: tertiary (% gross)
Hong Kong, China (SAR)	2005	14.9	19.9	60.6	18.3	104.7	87.2	31.4
India	2000	14.5	24.3	90.5	40	98.8	47.9	10.2
India	2005					119.2	56.6	11.4
Indonesia	2000	3.7	7.3	21.3	22.4	110.9	54.9	
Indonesia	2005				20.4	117.3	63.1	17.1
Kiribati	2000	37.3			31.7	109.5	98.7	
Kiribati	2005				24.7	112.2	87.1	
Korea, Republic of	2000				32.2	98	97.6	72.6
Korea, Republic of	2005				29	104.8	92.9	89.9
Korea, Republic of	2006				27.9	104.5	95.7	91
Lao People's Democratic Republic	2000	3.9	5.6	69	30.1	115.3	35.6	2.8
Lao People's Democratic Republic	2005	9.7	4.9	26.8	31.5	115.8	46.7	7.9

(continued)

Table A.6 (continued)

Country	Year	Expenditure per student: primary (% of GDP per capita)	Expenditure per student: secondary (% of GDP per capita)	Expenditure per student: tertiary (% of GDP per capita)	Pupil-to-teacher ratio (primary, %)	School enrolment: primary (% gross)	School enrolment: secondary (% gross)	School enrolment: tertiary (% gross)
Macao, China (SAR)	2000	8.4	11.3	61	30	102.9	78.9	26.4
Macao, China (SAR)	2005				23.2	106.3	97.3	61.4
Malaysia	2000	12.8	22.3	83.3	19.6	97.1	69.3	26.3
Maldives	2000				22.7	127.3	55.6	
Maldives	2005	22			20.1	93.7		
Marshall Islands	2000					100.6		
Marshall Islands	2005					102.7	76.5	
Mongolia	2000				32.6	100	62.6	28.8
Mongolia	2005				34.2	93.3	91.8	43.2
Myanmar	2000				32.8	89.4	37.6	11.3
Myanmar	2005				30.9	99.6	40.3	
Nauru	2000				21.5	75.6	45.4	
Nepal	2000	10.3	11.6	141.7	42.6	116.5	35.3	4.1
Nepal	2005				39.7	113.3	45.7	
Nepal	2006				39.7	126	43.1	
Niue	2000				14.7	93.3	95.9	

(continued)

Table A.6 (continued)

Country	Year	Expenditure per student: primary (% of GDP per capita)	Expenditure per student: secondary (% of GDP per capita)	Expenditure per student: tertiary (% of GDP per capita)	Pupil-to-teacher ratio (primary, %)	School enrolment: primary (% gross)	School enrolment: secondary (% gross)	School enrolment: tertiary (% gross)
Niue	2005				11.9	86.4	99	
Pakistan	2000				33	71.2		
Pakistan	2005				38.3	87.3	26.9	4.6
Papua New Guinea	2000				35.9	78.9	22.8	
The Philippines	2000	12.5	10.7	15				
The Philippines	2005				35.1	112.5	85.2	28.1
Samoa	2000	8.2	9.6	137.5	24	99.2	77.9	7.4
Samoa	2005					99.8	80.3	
Solomon Islands	2000					85.6	19.2	
Solomon Islands	2005					96.5	29.5	
Thailand	2000	17.6		35.5	20.8	94.7		34.2
Thailand	2005			24.9		97.1	70.3	43
Thailand	2006				18.7	95.7	70.6	42.7
Tokelau	2000				9.9	101.2	94.7	
Tonga	2000				22.1	110.6	101.1	4.7
Tonga	2005				20.3	114.7		
Tuvalu	2000				19.7	108.7		

(continued)

Table A.6 (continued)

Country	Year	Expenditure per student: primary (% of GDP per capita)	Expenditure per student: secondary (% of GDP per capita)	Expenditure per student: tertiary (% of GDP per capita)	Pupil-to-teacher ratio (primary, %)	School enrolment: primary (% gross)	School enrolment: secondary (% gross)	School enrolment: tertiary (% gross)
Vanuatu	2000	15.3	70.6	167.9	22.5	112.9	33.8	4
Vanuatu	2005				20	118		
Vietnam	2000				29.5	106.6	64.6	9.5
Vietnam	2005				21.6	94.5	75.8	16

Note In some of the countries, expenditure as a percentage of GDP per capita exceeds 100% precisely because the per capita income is too low

Source See Table A.1

Table A.7 Female employment elasticity

Country	Region	Female employment elasticity			Female employment growth			Difference between female and male employment elasticity		
		93-97 F elasticity	97-01 F elasticity	01-05 F elasticity	93-97 Fempgr	97-01 Fempgr	01-05 Fempgr	93-97 elasf-m	97-01 elasf-m	01-05 elasf-m
Cambodia	Northeast	0.36	0.43	0.31	2.41	3.61	2.95	−0.08	0	−0.04
China	Northeast	0.09	0.12	0.1	0.97	0.97	0.98	0	−0.02	−0.03
Hong Kong, China (SAR)	Northeast	0.86	0.71	0.53	4.04	1.56	2.76	0.76	0.64	0.37
Korea, Republic of	Northeast	0.43	0.4	0.34	3.14	1.40	1.60	0.16	0.19	0.02
Lao People's Democratic Republic	Northeast	0.37	0.45	0.5	2.70	2.61	3.15	0.01	−0.02	0.04
Mongolia	Northeast	0.34	0.71	0.46	2.89	1.56	2.99	−0.04	0.12	−0.03
Vietnam	Northeast	0.31	0.38	0.35	2.76	2.32	2.66	0.05	−0.06	0.01
Fiji	Pacific	0.63	0.48	0.78	1.64	1.20	1.87	0.08	0.07	0.33
Papua New Guinea	Pacific	0.87	0.95	1.3	1.22	0.57	2.47	0.19	0.13	0.04
Solomon Islands	Pacific	0.73	−0.35	0.58	2.63	2.03	2.55	−0.06	0.02	−0.04
Brunei Darussalam	Southeast	1.41	0.93	0.86	3.38	1.02	1.89	0.32	0.04	−0.03
Indonesia	Southeast	0.3	−0.16	0.2	2.13	0.21	1.00	−0.09	−0.08	−0.1
Malaysia	Southeast	0.34	0.93	0.56	3.09	1.67	3.02	−0.05	0.37	0.14
The Philippines	Southeast	0.81	0.97	0.85	4.05	2.52	4.34	0.17	0.4	0.28
Singapore	Southeast	0.37	0.5	0.31	3.29	1.65	1.67	0.06	0.06	0.09
Thailand	Southeast	0.35	0.35	0.35	1.92	0.00	2.06	0.17	0.08	0.21
Bangladesh	South and west	0.17	0.44	0.21	0.80	2.33	1.15	−0.38	0.04	−0.2
Bhutan	South and west	0.26	1.05	1.28	1.43	7.03	9.47	0.4	0.39	0.49
India	South and west	0.24	0.33	0.25	1.63	1.82	1.85	−0.06	−0.03	0

(continued)

Table A.7 (continued)

Country	Region	Female employment elasticity			Female employment growth			Difference between female and male employment elasticity		
		93-97 F elasticity	97-01 F elasticity	01-05 F elasticity	93-97 Fempgr	97-01 Fempgr	01-05 Fempgr	93-97 elasf-m	97-01 elasf-m	01-05 elasf-m
Maldives	South and west	1.23	1.37	1.46	10.21	8.49	6.86	0.88	0.93	0.92
Nepal	South and west	0.82	0.39	0.99	4.59	1.87	2.28	0.27	0.03	−0.03
Pakistan	South and west	0.48	1.15	1.08	1.73	3.56	6.05	−0.17	0.26	0.55
Sri Lanka	South and west	0.11	0.7	0.11	0.57	2.38	0.57	−0.25	0.28	−0.09

Source See Table A.1

Table A.8 Unemployment rate

Country	Year	Female unemployment rate (%)	Male unemployment rate (%)	Female–male diff.
Afghanistan	2005	9.5	7.6	1.9
Bangladesh	1985	5.6	1.4	4.2
Bangladesh	2000	3.3	3.2	0.1
Cambodia	2000	2.8	2.2	0.6
Guam	1980	12.1	8.4	3.7
Guam	1985	8.8	5.6	3.2
Hong Kong, China (SAR)	1980	4	4.5	−0.5
Hong Kong, China (SAR)	1985	2.6	3.5	−0.9
Hong Kong, China (SAR)	1990	1.3	1.3	0
Hong Kong, China (SAR)	1995	2.9	3.4	−0.5
Hong Kong, China (SAR)	2000	4	5.6	−1.6
Hong Kong, China (SAR)	2005	4.4	6.5	−2.1
India	2000	4.1	4.4	−0.3
Indonesia	1985	2.1	2.2	−0.1
Indonesia	2005	13.6	8.3	5.3
Korea, Republic of	1980	3.5	6.2	−2.7
Korea, Republic of	1985	2.4	5	−2.6
Korea, Republic of	1990	1.8	2.9	−1.1
Korea, Republic of	1995	1.7	2.3	−0.6
Korea, Republic of	2000	3.6	5	−1.4
Korea, Republic of	2005	3.4	4	−0.6
Lao People's Democratic Republic	1995	2.6	2.6	0
Lao People's Democratic Republic	2005	1.4	1.3	0.1
Macao, China (SAR)	1990	4	2.5	1.5
Macao, China (SAR)	1995	3	4.1	−1.1
Macao, China (SAR)	2000	4.4	8.6	−4.2
Macao, China (SAR)	2005	3.8	4.4	−0.6
Malaysia	1995	3.8	2.8	1
Malaysia	2000	3.1	2.9	0.2
Maldives	1995	1.3	0.6	0.7
Maldives	2000	2.7	1.6	1.1
Marshall Islands	1980	11.3	9	2.3
Marshall Islands	2005	24.3	26.4	−2.1
Mongolia	2000	16.6	18.2	−1.6
Myanmar	1990	8.8	4.7	4.1

(continued)

Table A.8 (continued)

Country	Year	Female unemployment rate (%)	Male unemployment rate (%)	Female–male diff.
Pakistan	1980	14	2.9	11.1
Pakistan	1985	1.4	3.8	−2.4
Pakistan	1990	0.7	2.8	−2.1
Pakistan	1995	14	3.7	10.3
Pakistan	2000	15.8	5.5	10.3
Pakistan	2005	12.8	6.6	6.2
Papua New Guinea	1990	5.9	9	−3.1
Papua New Guinea	2000	1.3	4.3	−3
The Philippines	1980	7.5	3.2	4.3
The Philippines	1985	8.2	4.8	3.4
The Philippines	1990	9.8	7.1	2.7
The Philippines	1995	9.4	7.7	1.7
The Philippines	2000	9.9	10.3	−0.4
The Philippines	2005	7.3	7.4	−0.1
Singapore	1980	3.4	2.9	0.5
Singapore	1985	4.4	4.5	−0.1
Singapore	1990	1.4	1.9	−0.5
Singapore	1995	2.8	2.6	0.2
Singapore	2005	5	3.7	1.3
Sri Lanka	1985	20.3	9.8	10.5
Sri Lanka	1990	23.5	9.1	14.4
Sri Lanka	1995	19.9	8.7	11.2
Sri Lanka	2000	11.1	5.4	5.7
Sri Lanka	2005	11.9	5.5	6.4
Taiwan, Province of China	1980	1.5	1.1	0.4
Taiwan, Province of China	1985	2.9	2.9	0
Taiwan, Province of China	1990	1.7	1.7	0
Taiwan, Province of China	1995	1.8	1.8	0
Taiwan, Province of China	2000	2.4	3.4	−1
Thailand	1980	0.8	1	−0.2
Thailand	1985	4.4	3.2	1.2
Thailand	1990	2.4	2	0.4
Thailand	1995	1.4	0.9	0.5
Thailand	2000	2.3	2.4	−0.1
Thailand	2005	1.2	1.5	−0.3
Vietnam	2000	2.1	2.4	−0.3

Source See Table A.1

Table A.9 Employment structure

Country	Year	Female			Male			Female–male difference		
		Agriculture (%)	Industry (%)	Services (%)	Agri (%)	Industry (%)	Services (%)	Ag.	Ind.	Ser.
Bangladesh	1990	84.9	8.8	2.1	54.4	15.7	25.3	30.5	−6.9	−23.2
Bangladesh	2000	76.9	9	12.1	53.3	11	30.3	23.6	−2	−18.2
Cambodia	2000	74.9	9.6	15.4	72.4	7.1	20.2	2.5	2.5	−4.8
Hong Kong, China (SAR)	1980	1.2	56.2	42.6	1.5	46.9	51.5	−0.3	9.30	−8.9
Hong Kong, China (SAR)	1985	1.5	47	51.4	1.7	42.8	55.5	−0.2	4.20	−4.1
Hong Kong, China (SAR)	1990	0.7	33	66.2	1	38.9	60.2	−0.3	−5.9	6.00
Hong Kong, China (SAR)	1995	0.4	18.7	80.9	0.7	32.2	67.1	−0.3	−13.5	13.8
Hong Kong, China (SAR)	2000	0.2	10.4	89.3	0.3	27.6	72.1	−0.1	−17.2	17.2
Hong Kong, China (SAR)	2005	0.2	6.6	93.2	0.4	22.3	77.3	−0.2	−15.7	15.90
Indonesia	1980	54.2	13.1	32.7	57.5	13.1	29.4	−3.3	0	3.30
Indonesia	1985	53.6	12.2	34	55.3	14.1	30.6	−1.7	−1.9	3.4
Indonesia	1990	56.3	12.4	31.1	55.6	14.6	29.7	0.70	−2.2	1.4
Indonesia	1995	43.8	16	40.1	44.1	19.7	36.2	−0.3	−3.7	3.90
Indonesia	2000	46.6	14.9	38.5	44.2	19.1	36.6	2.40	−4.2	1.90
Indonesia	2005	45.2	14.7	40.1	43.4	19.8	36.8	1.80	−5.1	3.30
Korea, Republic of	1980	39	23.8	37.2	31	32.2	36.9	8	−8.4	0.30
Korea, Republic of	1985	27.8	24.4	47.8	23.1	34.9	42	4.70	−10.5	5.80
Korea, Republic of	1990	20.3	30.2	49.6	16.3	39	44.7	4	−8.8	4.90
Korea, Republic of	1995	14.6	23.7	61.6	10.9	39.8	49.2	3.70	−16.1	12.4
Korea, Republic of	2000	12.2	19.2	68.6	9.5	34.5	55.9	2.7	−15.3	12.7
Korea, Republic of	2005	8.9	16.6	74.4	7.2	34.1	58.5	1.7	−17.5	15.9

(continued)

Table A.9 (continued)

Country	Year	Female			Male			Female–male difference		
		Agriculture (%)	Industry (%)	Services (%)	Agri (%)	Industry (%)	Services (%)	Ag.	Ind.	Ser.
Lao People's Democratic Republic	1995	89.3	2.7	7.9	81.2	4.4	14.4	8.10	−1.7	−6.5
Macao, China (SAR)	1990	0.1	50.4	49	0.2	36.7	62.8	−0.1	13.7	−13.8
Macao, China (SAR)	1995	0.1	34.4	65.1	0.3	30.1	69.5	−0.2	4.30	−4.4
Macao, China (SAR)	2000	0.1	30.2	69.6	0.2	26.5	73.3	−0.1	3.70	−3.7
Macao, China (SAR)	2005	0.2	23.1	76.6	0.2	27.1	72.7	0	−4	3.90
Malaysia	1980	43.8	20	36.3	33.9	25.6	39.9	9.90	−5.6	−3.6
Malaysia	1985	33.8	20.5	45.7	28.6	25.6	45.9	5.20	−5.1	−0.2
Malaysia	1990	25.3	28	46.8	26.4	27.3	46.3	−1.1	0.70	0.5
Malaysia	1995	16.9	31.4	51.8	21.6	32.8	45.6	−4.7	−1.4	6.20
Malaysia	2000	14	28.9	57	20.7	33.9	45.4	−6.7	−5	11.6
Maldives	1995	9	42.9	44.2	27	16.9	52.7	−18	26	−8.5
Maldives	2000	5.4	24.1	39	17.9	16.4	55.8	−12.5	7.70	−16.8
Mongolia	1995	45	16.1	38.9	47.1	19.6	33.3	−2.1	−3.5	5.60
Mongolia	2000	46.5	11.3	42.2	50.6	16.8	32.6	−4.1	−5.5	9.60
Mongolia	2005	36.8	14.8	48.4	43	18.9	38.1	−6.2	−4.1	10.3
Pakistan	1985	75.1	11.8	13.1	47.9	21	30.4	27.2	−9.2	−17.3
Pakistan	1990	72.2	14.1	13.5	48.4	20.6	30.9	23.8	−6.5	−17.4
Pakistan	1995	67.4	10.7	21.9	43.9	19.6	36.4	23.5	−8.9	−14.5
Pakistan	2000	72.9	9	18.1	44.4	19.5	36.1	28.5	−10.5	−18
Pakistan	2005	67.3	15	17.6	38.1	21.4	40.5	29.2	−6.4	−22.9
The Philippines	1980	37.3	14.9	47.8	59.8	15.6	24.6	−22.5	−0.7	23.2

(continued)

Table A.9 (continued)

Country	Year	Female			Male			Female–male difference		
		Agriculture (%)	Industry (%)	Services (%)	Agri (%)	Industry (%)	Services (%)	Ag.	Ind.	Ser.
The Philippines	1985	35	12.8	52.2	58.3	14.5	27.3	−23.3	−1.7	24.9
The Philippines	1990	31.3	12.8	55.8	53.1	16.3	30.5	−21.8	−3.5	25.3
The Philippines	1995	31.1	13.2	55.6	51.7	17	31.2	−20.6	−3.8	24.4
The Philippines	2000	24.5	13.2	62.3	45.3	17.7	37	−20.8	−4.5	25.3
The Philippines	2005	24.8	11.7	63.5	44.7	16.9	38.5	−19.9	−5.2	25
Singapore	1980	0.9	40.3	58.8	1.5	33.3	64.6	−0.6	7	−5.8
Singapore	1985	0.4	33.4	66	0.8	36.3	62.4	−0.4	−2.9	3.60
Singapore	1995	0.1	25	74.5	0.3	34.7	63.8	−0.2	−9.7	10.7
Singapore	2000	0	20.9	78.8	0	42.2	56.9	0	−21.3	21.9
Singapore	2005	0	20.5	79.1	0	36	62.9	0	−15.5	16.2
Sri Lanka	1985	54.2	19.9	24.4	47.2	18.3	29.4	7	1.6	−5
Sri Lanka	1995	41.5	28.7	27.6	35.5	21	36.3	6	7.70	−8.7
Thailand	1980	74.1	7.8	18.1	67.8	12.6	19.6	6.30	−4.8	−1.5
Thailand	1985	64.1	10.7	25.2	67.2	12.6	20.2	−3.1	−1.9	5
Thailand	1990	65	12.3	22.7	63.1	15.5	21.3	1.90	−3.2	1.40
Thailand	1995	53.4	17.1	29.4	50.8	22	27.3	2.60	−4.9	2.1
Thailand	2000	47.5	17.3	35.2	49.8	20.4	29.7	−2.3	−3.1	5.5
Thailand	2005	40.7	18.7	40.5	44.2	21.6	34.1	−3.5	−2.9	6.40
Vietnam	2000	66.3	10.1	23.6	64.2	14.7	21	2.10	−4.6	2.6

Source See Table A.1

Table A.10 Status of employment

Country	Year	Female: wage and salaried workers (employees) (%)	Female: total self-employed workers (%)	Female: the rest	Male: wage and salaried workers (employees) (%)	Male: total self-employed workers (%)	Male: the rest
Bangladesh	2000	8.3	11	80.7	15.2	49.8	35
Cambodia	2000	12.1	28.9	59	18.6	54.6	26.8
Hong Kong, China (SAR)	1995	94.8	3.8	1.40	85.7	14.2	0.10
Hong Kong, China (SAR)	2000	95	3.8	1.2	85.5	14.4	0.1
Hong Kong, China (SAR)	2006	93.5	5.3	1.2	83	16.9	0.1
Indonesia	2006	33.8	29.2	37	40.1	51.7	8.20
Korea, Republic of	1980	39.2	23.3	37.5	52.2	40.6	7.20
Korea, Republic of	1985	48.2	21.3	30.5	58	37.6	4.40
Korea, Republic of	1990	56.8	18.7	24.5	63.1	34.4	2.5
Korea, Republic of	1995	59.1	19.6	21.3	64.9	33.5	1.60
Korea, Republic of	2000	61.5	19.2	19.3	64.3	33.8	1.90
Korea, Republic of	2006	67.7	18.8	13.5	66.8	32	1.20
Lao People's Democratic Republic	1995	5.4	57.1	37.5	14.3	56.6	29.1
Macao, China (SAR)	2000	92	5.1	2.9	84.8	14.9	0.30

(continued)

Table A.10 (continued)

Country	Year	Female: wage and salaried workers (employees) (%)	Female: total self-employed workers (%)	Female: the rest	Male: wage and salaried workers (employees) (%)	Male: total self-employed workers (%)	Male: the rest
Macao, China (SAR)	2006	93.8	4.5	1.70	88.1	11.7	0.20
Malaysia	1995	72.9	13.9	13.2	72.5	24.2	3.30
Malaysia	2000	77.9	12.7	9.40	71.7	23.8	4.50
Maldives	1995	43.9	38.6	17.5	33.9	57.5	8.60
Maldives	2000	28.8	37.4	33.8	21.3	69.4	9.30
Mongolia	2000	43.6	17.6	38.8	39.3	46.1	14.6
Pakistan	1995	24.8	13.5	61.7	35.4	47.4	17.2
Pakistan	2000	33.1	16.8	50.1	36	47.3	16.7
Pakistan	2006	25.7	15.1	59.2	40	40.8	19.2
The Philippines	2006	49.7	31.1	19.2	51	39.8	9.20
Singapore	1995	93.5	4.7	1.8	85.3	14	0.70
Singapore	2000	94.2	5.1	0.70	86.5	13.3	0.2
Singapore	2006	89.9	9	1.10	81.3	18.4	0.30
Sri Lanka	2000	55.5	18	26.5	56.6	36.9	6.5
Sri Lanka	2006	54.5	23.9	21.6	56	39.6	4.40
Thailand	1990	25.6	18.3	56.1	31	42	27
Thailand	1995	32.4	21	46.6	38.3	43.2	18.5
Thailand	2000	38.8	21.4	39.8	40.2	43.3	16.5
Thailand	2006	42.9	26.6	30.5	44.3	41.8	13.9
Vietnam	2000	15.1	30.3	54.6	21.7	56	22.3

Source See Table A.1

Data for India: Variables, Year of Availability and Source:

WPR: Work force participation rate among females and males in rural and urban areas: Population Census, 2011
LFPR: Labour force participation rate among females and males in rural and urban areas, 2011–12 in cross-sectional study and from 2009–10 through 2014–15 except 2010–11 in the panel data analysis, Labour Bureau, Ministry of Labour and Employment, Government of India
AGDP: Share of agriculture in gross state domestic product, 2011–12
INDP: Share of industry in gross state domestic product, 2011–12
SERDP: Share of services in total gross state domestic product, 2011–12
URBAN: % of population residing in urban areas, 2011
ROAD: State-wise road length in relation to population, 2011, Ministry of Road Transport and Highways
ELEC: State-wise annual per capita consumption of electricity in kWh, 2012–13, Ministry of Power
CR-DP: Credit-to-deposit ratio, 2010, Data Book for Planning Commission, 2014
ENROL: Gross enrolment in classes I–VIII, 2010–11; Data Book for Planning Commission, 2014
LIT: Literacy rate among females and males in rural and urban areas, Population Census, 2011
IMR: Infant mortality rate, boys and girls: for cross-sectional study 2011 and for panel 2006, 2010, 2011 and 2012 Sample Registration System 46, 47 and 48, Office of Registrar General, Ministry of Home Affairs
WATER: % of households with access to safe drinking water, rural and urban, 2011; Data Book for Planning Commission, 2014
F/M: Female per thousand male, Population Census, 2011
PCNSDP: Per capita net state domestic product in Rs. 2011–12; for panel data analysis, 2008–09, 2009–10, 2010–11, 2011–12 and 2012–13 are taken in 2004–05 prices, Data Book for Planning Commission, 2014
AGDP: Share of agriculture in gross state domestic product, 2011–12; for panel data analysis, 2008–09, 2009–10, 2010–11, 2011–12 and 2012–13 are taken in 2004–05 prices, Data Book for Planning Commission, 2014
INDP: Share of industry in gross state domestic product, 2011–12; for panel data analysis, 2008–09, 2009–10, 2010–11, 2011–12 and 2012–13 are taken in 2004–05 prices; Data Book for Planning Commission, 2014
SERDP: Share of services in total gross state domestic product, 2011–12; for panel data analysis, 2008–09, 2009–10, 2010–11, 2011–12 and 2012–13 are taken in 2004–05 prices; Data Book for Planning Commission, 2014
Lab Prod: Labour productivity in Rs. 2011–12 calculated by the author from state domestic product and workers reported by population census
SC: Percentage of scheduled castes among females and males in rural and urban areas, Population Census, 2011
ST: Percentage of scheduled tribes among females and males in rural and urban areas, Population Census, 2011
CTYSZ: City size in log terms, Population Census, 2011
AGLAB: Share of agriculture labour in total work force, male and female, Population Census, 2011

(continued)

(continued)

CUL: Share of cultivators in total work force, male and female, Population Census, 2011
MFGHH: Share of household manufacturing in total work force, females and males in rural and urban areas, Population Census, 2011
OTHER: Share of non-household manufacturing and services in total work force, female and male and rural and urban areas, Population Census, 2011
CHILDSR: Child sex ratio (age bracket: up to 4 years): Population Census, 2011
CHILD: Children (up to 4 years) to women ratio, Population Census, 2011
HHSZ: Average household size, Population Census, 2011
TFR: Total fertility rate for 2009 (since 2010 figures are not available for a number of states); Data Book for Planning Commission, 2014
MPCE: Monthly mean per capita consumption expenditure in Rs, in rural and urban areas, 2011–12, Data Book for Planning Commission, 2014
POV: Incidence of poverty in rural and urban areas, 2011–12, Data Book for Planning Commission, 2014