The Stunted Structural Transformation of the Indian Economy

Agriculture, Manufacturing and the Rural Non-Farm Sector

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India's economy has accelerated sharply since the late 1980s, but agriculture has not. The rural population and labour force continue to rise, and rural-urban migration remains slow. Despite a rising labour productivity differential between non-agriculture and agriculture, limited rural-urban migration and slow agricultural growth, urban-rural consumption, income, and poverty differentials have not been rising. Urban-rural spillovers have become important drivers of the rapidly growing rural non-farm sector, which now generates the largest number of jobs in India. Rural non-farm self-employment is especially dynamic with farm households diversifying into the sector to increase income. The bottling up of labour in rural areas means that farm sizes will continue to decline, agriculture will continue its trend to feminisation, and part-time farming will become the dominant farm model.

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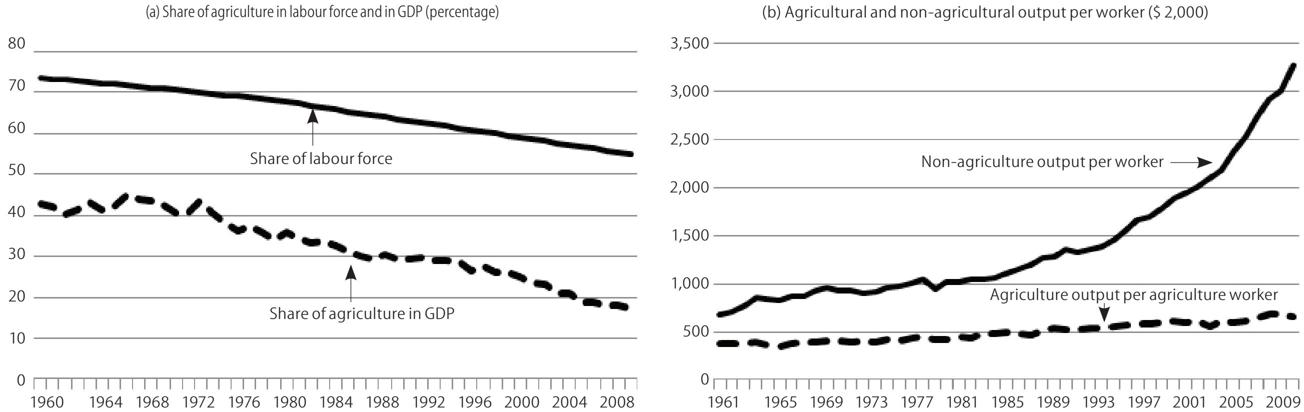
All across the industrialised world, prior to rapid economic growth and structural transformation, agriculture accounted for the bulk of the economic output and labour force. Because productivity in the non-agricultural sector was higher than in the agricultural sector, the share of agriculture in total gross domestic product (GDP) fell short of its share in the labour force. As industrial growth took off, industry became even more productive, and the productivity differential with agriculture increased. As a result of rapid growth, the share of agriculture in GDP fell much faster than the share of agricultural labour, and the inter-sectoral differential in labour productivity widened. Farm incomes fell behind incomes earned in the rest of the economy. "*This lag in real earnings from agriculture is the fundamental cause of the deep political tensions generated by the structural transformation*" (Timmer 2009: 6; emphasis in original).

During structural transformation, employment grows rapidly in the non-agricultural sector and labour is pulled out of agriculture at a speed that depends on the labour intensity of industry and services. Convergence is driven by rapid agricultural productivity growth that allows for a reduction of labour input per unit of output. A turning point is reached when the labour productivity differential between the sectors starts to diminish and the share of labour in agriculture starts to decline faster than its share in output.

This paper deals with the following topics. It first characterises the structural transformation in India and China. It then looks at the Indian case in greater detail, first its agricultural growth and productivity growth, and then at employment, unemployment, and wage trends. The next section asks why, in the presence of rapid growth of the differential in labour productivity between the non-agricultural and agricultural sectors, and in the presence of limited rural-urban migration, has there not been a rising divergence in rates of poverty, and in per capita incomes and consumptions. The section on the rural non-farm sector shows that this is explained by its rapid growth, especially rural non-farm enterprises of farmers, and associated employment growth. After summarising the findings on employment and poverty trends across sectors of the economy, the paper shows that the structural transformation in India is a stunted one, in which workers move primarily from the agricultural sector to the rural non-farm sector, rather than to more secure jobs with pension and health benefits in

Figure 1: Structural Transformation of the Indian Economy (1961-2010)



Source: Binswanger-Mkhize and d'Souza (2012).

the urban economy. The final section develops a vision for agriculture and rural poverty reduction for the coming decades that is based on the paper's findings.

Structural Transformation in India and China

Compared to international experience, India's structural transformation has been slow and atypical, mainly on account of a low share of manufacturing in the economy and of its disappointing growth and employment performance. At the same time, the share of the agricultural sector in GDP has declined and the remaining industrial sectors and services have shown growing GDP shares. Absorption of labour in the urban economy has been slow, and rural-urban migration has been far less than could have been expected in a rapidly growing economy. Therefore, the difference between the share of agriculture in the economy and its share in the labour force has widened significantly (Figure 1a). The accelerating growth of the economy since the 1980s did not lead to an acceleration of agricultural growth. As a consequence of high non-agricultural growth, low agricultural growth, and continued growth of the agricultural labour force, labour productivity in the non-agricultural sector and the agricultural sector has widened at an accelerating rate, and their ratio now stands at more than 4.2 (Figure 1b). Clearly, India is still far away from a turning point in its structural transformation.

In China, the inter-sectoral productivity differential has been rising even faster, reaching a ratio of nearly 6 to 1. The agricultural share in GDP has been declining faster too, but so has its share in employment. Therefore the absolute difference between the shares has started to decline.

The slow decline in the agricultural labour force in India is a consequence of the still high rate of population growth, 1.6% in the past decade, and the relatively slow rate of urban rural migration.[1] Conversely, in China, the population growth rate has now declined to almost zero, and rural-urban migration has involved around 220 million workers in the past two decades. The relatively slow rural-urban migration rate in India is a consequence of the low share of manufacturing in the economy, which has hovered around 16% of GDP since 1980. China's share of manufacturing has stayed at around 33% since 1991. Similarly, the share of industry (that includes manufacturing) has grown slowly in India from around 25% in 1989 to around 28% today, while it has been around 46% in China since 1993. The GDP share of services has grown to well over 50% in India, more than 20% above the industry share, while in China it remains below the industry share at around 43% (Binswanger and d'Souza 2011). In India, the poor development of labour-intensive manufacturing in particular has led to adverse urban employment consequences.

Agricultural Growth and Productivity Growth

The 1980s were the golden years of Indian agriculture when the growth of agriculture (3.3%), labour productivity (2.3%), and total factor productivity (TFP) growth (2.0%) were at their peak (Table 1, p 7). Much of this growth can be attributed to the spreading of the green revolution across most regions of India.[2] Table 1 also shows that since 1980 the TFP growth rate of agriculture in China has been persistently higher than in India, close to or exceeding 3% in all three decades since. As shown by the calculations of TFP growth of Fuglie (2012), no other country in the world has ever shown such a prolonged period of high TFP growth in agriculture. This is one reason for the faster structural transformation in China.

Employment, Unemployment and Wage Trends

Rapid movement towards a structural transformation should show up in the Indian data by a tightening of the rural labour market and an increase in opportunities for rural-urban migration. This section shows that this is not happening, and the following section shows that rural households are instead diversifying into the rural non-farm sector.

Table 1 shows that India's population growth rate slowed down from a peak of 2.3% in the 1970s to 1.6% in the 2000s, and it is expected to slow to about 1% in the current decade. The growth of the labour force has accelerated in urban areas to 3.1% in the last decade, and to 1.2% in rural areas, for a total labour force growth rate of 2.8%. This is significantly larger

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than the population growth rate on account of the "demographic dividend" associated with a slowdown in the population growth rate. Hazell et al (2011) cite UN population projections that suggest that the rural population will peak at 900 million in 2022, and that the rural labour force may continue to grow until 2045. Clearly, the Indian economy as a whole is facing an enormous employment generation challenge in both urban and rural areas for more than the next 30 years.

Chowdhury (2011) shows that since 1993-94 rural and urban males have always had similar labour participation rates while the rates for rural females have been much lower, and even lower for urban females. There has been little trend or fluctuations in rural male labour participation. However, female rural and urban participation rates fluctuated from 1977-78 to 2004-05. During the early years of the century, there were significant increases in participation rates, especially for females, in both rural and urban areas. Since then, labour participation rates have gone down for rural females to their lowest level over the entire period. The employment data also reveal a trend towards the feminisation of agriculture. Among rural workers, females have always been more likely to be engaged in the primary sectors, most of which is agriculture, than men, and, correspondingly, less in the secondary sectors. For example, in 1977-78, 88.1% of female workers were engaged in primary sectors compared to 80.6% of males (Himanshu et al 2011). By 2009-10, these percentages had gone down for both males and females. However, for males, engagement in the primary sector had gone down to 62.8%, or by 25%, while for females it had gone down to 79.3%, or by only about 10%. There are still more men who work in agriculture than women, but the trend towards the feminisation of the agriculture labour force is clear.

Table 1: Growth of Agriculture, Agricultural Productivity and Labour Force

Indicator	Growth Rates for Decades in Percentage or Three-Year Average Centred on Last Year Shown					Average Growth Rate of
	1960-70	1971-80	1981-90	1991-2000	2001-09	2006-09
Agricultural GDP growth	3.8	1.5	3.3	2.7	2.8	3.1
Growth of agricultural output/worker *	0.6	0.4	2.3	1.2	1.1	1.5
Total factor productivity (TFP) growth**	0	0.8	2.0	1.5	1.9**	
TFP growth in China	0	0	2.8	4.2	2.7**	
Total population growth	2.1	2.3	2.2	2.0	1.6	Na
Agricultural labour force growth	1.4	1.7	1.6	1.4	1.2	1.1
Non-agricultural labour force growth	2.7	3.2	3.7	3.2	3.1	3.0

* Constant $ of 2000, ** Fuglie (2012), to 2007 only.
Source: Binswanger-Mkhize et al (2011a).

As shown by the Government of India (2008: Table 4.7), employment in the country is very much concentrated in the informal sector. Between 1999-2000 and 2004-05, the proportion of workers in the formal sector declined from 8.8% to 7.5%. Within the organised (formal) sector, the proportion of employees with informal contracts rose from 37.8% to 46.7%. The Indian labour market has created only a small proportion of high-quality jobs with secure contracts and pension and health benefits for urban workers and for migrants from rural areas. Informality in the rural non-farm sector is even more pronounced (World Bank 2010).

Urban employment growth, particularly in the manufacturing sector, has been inadequate to provide enough employment opportunities for workers from rural areas. The great informality of employment in the Indian economy and in the organised sector, and the deepening of urban poverty discussed in the next section sharply reduce the attractiveness of urban areas for rural migrants, especially for unskilled and semi-skilled ones. Urban areas remain poles that attract highly skilled workers. The poor employment prospects for low-skilled workers in urban areas mean that male and especially female workers are stuck in rural areas.

Agricultural Employment, Unemployment and Wages

Employment growth in Indian agriculture slowed down from the early 1990s to 2004-05 (World Bank 2010). As discussed in Chowdhury (2011), in 2009-10, the current daily status unemployment rates were the lowest for urban males at 5.5%, followed by rural males at 6.2%, 8% for rural females, and slightly over 9% for urban females. Unemployment rates were higher for 2004-05, with the growth of labour participation in the period before that year partly or fully driven by distress (World Bank 2010; Himanshu et al 2011). Urban unemployment rates, but not rural ones, today are also lower than in the 1990s.

The growth rate of real agricultural wages declined from 1980 to the middle of the last decade, but has started to increase recently.[3] As shown by Chowdhury 2011, since then real wages in the entire economy have risen at a fairly rapid pace. The fastest real wage growth is observed for urban female salaried workers at 7.8%, followed by rural female casual workers at 6.2% and by urban male salaried workers. Since female participation rates fell, their faster rising wages are consistent with a voluntary withdrawal of females from labour markets, either as a consequence of growing family income and/or greater participation in education (Himanshu et al 2011; Chowdhury 2011). Wages of casual male workers rose at 4.5% in rural areas and at 4.2% in urban ones, which in each case means a compound wage growth of close to 25% over the past five years. There is no recent trend in divergence of unskilled wages between rural and urban areas.

Urban-Rural Differences in Poverty, Inequality, Incomes and Consumption

The analysis presented so far raises a major puzzle. For the past decades, economic growth has accelerated sharply to more than 8%. The inter-sectoral labour productivity differential has risen rapidly; agriculture grew slowly in the period between 1990 and 2005; agricultural productivity growth also slumped in the same period; urban employment opportunities have grown slowly, especially for lower skilled workers and for women; and migration has been slow. With these trends one would expect a rising differential between urban and rural per capita incomes

Table 2: Changes in Rural and Urban Poverty Rates

Percentage of People Below Poverty Line	Rural	Urban	Difference
1993-94	50.1	31.8	18.3 = 45%[1]
2004-05	41.8	25.7	16.1 = 48%[1]

[1] Calculated with respect to the mean percentage.
Source: Tendulkar report (Planning Commission 2009).

and consumptions, and a rising differential between urban and rural poverty rates. However, this has not been the case.

As seen in Table 2 (p 7), the rural poverty rate (using the old poverty line) declined from 50.1% in 1993-94 to 31.8% in 2004-05, or by 8.3 percentage points, while urban poverty declined from 41.8% to 25.7%, or by 6.1 percentage points.[4] In absolute terms, the decline in rural areas was larger than in urban areas, but in relative terms, the rate of poverty decline in urban areas was slightly faster than in rural areas. By 2004-05, in urban areas, both the poverty gap and the squared poverty gap had become deeper, indicating a progressive urbanisation of poverty (World Bank 2010). These trends are inconsistent with a growing divergence of rural and urban poverty.

The ratio of urban to rural per capita income declined from 2.45 in 1970-71 to 2.30 during the 1980s and early 1990s. On the other hand, the data on consumption shown in Table 3 suggest that the ratio of urban consumption to rural consumption

Table 3: Consumption Inequality in India

	1983	1987-88	1993-94	2004-05	2009-10
Gini Coefficient of distribution of consumption					
Rural	0.30	0.30	0.28	0.30	0.28
Urban	0.30	0.35	0.34	0.37	0.37
Urban-rural ratio of mean consumption (constant prices)*	1.54	1.44	1.64	1.72	1.69

* Original shows urban-rural ratio.
Source: Ahluwahlia (2011: Table 6).

increased from 1.54 in 1983 to around 1.70 in 2004-05 and 2009-10. Whether rural-urban disparities have increased is therefore dependent on the data used and the period considered. But neither data series suggest a sharp change in urban-rural disparities over the past 30 years. Given the significant increases in the non-agricultural to agricultural productivity differential and the agricultural trends discussed above, and given the slow rural-urban migration, it is surprising that the urban-rural gaps in poverty, per capita income, and consumption have not increased sharply.

Drivers of Rural Poverty Reduction

Ravallion and Datt (1996) show, in line with the international experience, prior to 1991 rural growth was the most important driver of poverty reduction and reduced rural poverty, national poverty, and even urban poverty. But urban growth only reduced urban poverty and had no impact on rural poverty or national poverty. In 2009, Datt and Ravallion updated their earlier work to 2004-05. They showed that rural growth remains significant for reducing rural poverty and national poverty. But since 1991, when economic growth started to accelerate, urban growth has become the major driver not only of urban poverty reduction, but also national and rural poverty reduction. Datt and Ravallion's new findings suggest that a spillover has emerged from more rapid urban growth to rural growth.

Since agricultural growth had slowed down during the period 2004-05, the spillover must have been felt primarily in the non-farm sector. In the past, the rural non-farm sector was viewed as driven primarily by agriculture (Hazell and Hagbladde 1993), so to add an urban driver is a novelty. But there is more direct evidence of such a driver. Himanshu et al (2011) show via a multiple regression using the within estimator in panel data of regions in India that higher non-farm employment of rural adults also significantly reduces rural poverty.

These results do not imply that agriculture has lost its impact on the rural non-farm sector, and more broadly on rural poverty. In Datt and Ravallion's 2009 update, agricultural growth remains an important determinant of rural poverty reduction. This conclusion is reinforced by the regression analysis of Himanshu et al (2011) that showed higher yields are associated with declining rural poverty, suggesting the impact of agricultural productivity growth on poverty remains high. In the same regression they also show a strong and negative impact of higher agricultural wage growth on rural poverty. This strong impact is not surprising as agricultural workers constitute about half of India's overall poverty population.

In conclusion, neither poverty nor per capita income and consumption show signs of rapid divergence between rural and urban areas as a consequence of the rising disparity of labour productivity between the agricultural and non-agricultural sectors. Consumption inequality has recently increased in urban areas, but stayed fairly constant in rural areas. While rural growth and agriculture were the main drivers of poverty reduction before 1991, since then urban growth has become a quantitatively more important driver of poverty reduction overall, even in rural areas. Nevertheless, growth in agriculture, in agricultural productivity (as measured by yields), and in agricultural wages remain important drivers of rural poverty reduction.

Rising Importance of Rural Non-Farm Sector

If urban areas are inhospitable to migrants from rural areas, where has the growing rural labour force found employment and opportunities for increasing their incomes? If there had been no such opportunities, rural poverty would not have improved as fast as urban poverty and rural-urban income and consumption parities would have declined. However, the rural non-farm sector has become much more dynamic than the farming sector, both in terms of GDP growth and employment generation. Between 1983 and 2004, rural non-farm GDP has grown at a rate of 7.1%, more than a percentage point faster than non-farm GDP, and 4.5 percentage points faster than agricultural GDP (Table 4). This faster growth of the non-farm sector started in the decade from 1983 to 1993. In the period 1993-2004, non-agricultural employment growth in rural areas accelerated from 3.5% to 4.8%.[5] In the 1980s, four out of 10 rural jobs were in the non-farm sector, now it is six out of 10. Given the large size of the rural labour force, these numbers mean that the rural non-farm sector has emerged as the largest source of new jobs in the Indian economy.

Table 4: Trends in Non-Farm Employment and in National, Rural Non-Farm, and Agricultural GDP (Annualised rates of growth, %)

Year	Non-Farm Employment	GDPN	Rural Non-Farm GDP	Agriculture GDP
1983-2004	3.3	5.8	7.1	2.6
1983-1993	3.5	5.2	6.4	2.9
1993-2004	4.8	6.0	7.2	1.8

GDP at factor cost at 1993-94 prices. GDPN is non-farm GDP in the country, agriculture GDP is GDP originating in agriculture, forestry, and fishing, and non-farm GDP is defined as a residual.
Source: Himanshu et al (2011: Table 3).

Until 2004, the growth in non-farm jobs had come primarily from increases in services, transport, and construction.[6] In 1983, close to 40% of rural non-farm jobs were in manufacturing. Despite continued growth of rural manufacturing, this share declined to just a little above 30% in 2004-05. In 1983, social services and trade, transport, and communication both generated about 26% of non-farm jobs. Social services have since declined to about 18% of the jobs, while trade, transport, and communications have grown rapidly to about 33%. In 1983, construction was by far the smallest sector, with a share of only 10%. Since then, it has grown the fastest and now generates close to 19% of rural non-farm jobs. The high level of rural construction has visually transformed villages all over India, with much better village infrastructure and housing.

Datt and Ravallion's 2009 analysis suggests that since 1992 urban growth has also fuelled the rural non-farm sector. More direct evidence of spillovers comes from the World Bank (2010: 66) – "During the two periods of analysis, 1983 to 1993-94 and 1993-94 to 2004-05, regression estimates suggest that non-farm employment increased more in regions where urban incomes also grew faster". Additional drivers of recent rural non-farm growth can be inferred from a close look at the composition of employment growth (Box 1).

Who benefits from non-farm wage employment? It is primarily males in the age group of 18-26 years old who have some education that are moving out of agriculture into non-farm jobs (Eswaran et al 2009). Women are barely transitioning into the non-farm wage employment sector. In growth terms, the number of rural men working off-farm doubled between 1983 and 2004-05, while for women the increase was 73%. Individuals from scheduled castes and tribes are markedly more likely to be employed as agricultural labourers than in non-farm activities, even controlling for education and land. Finally, those in the non-farm sector own more land on average than agricultural labourers, except for those in casual non-farm employment (World Bank 2010).

The Rural Economic and Demographic Surveys (REDS) data of the National Council of Applied Economic Research for 2007 show a significant differential between average farm and rural non-farm wages of 47%, and the premium has been stable since 1999 (Binswanger-Mkhize et al 2011b).[7] Eswaran et al (2009) use National Sample Survey (NSS) data to show that wage premiums associated with education were growing over time to 2004-05, namely, to Rs 86 for literate workers over illiterate ones, Rs 197 per day for those who had attended middle school, and Rs 696 for graduates. Until 2004-05, employment growth in the non-farm wage sector had accelerated while the growth in average earnings had decreased. These two trends have cancelled each other out, and for the last two decades, growth in total non-farm wage earnings has been constant (World Bank 2010). In spite of the preponderance of non-farm jobs in rural employment generation, Eswaran et al (2008) estimate that the rural non-farm sector contributed only about 22% of the total growth to rural wage growth, thereby confirming the importance of agricultural growth and productivity growth to rural wage growth.

As discussed in Box 1, the growth in self-employment in the non-farm sector has been dynamic. Is such rapid growth a consequence of economic distress or of rising self-employment income opportunities? To answer this question, data on income earned by rural non-farm self-employment is required, which is not available in the standard NSS consumption, poverty, and employment surveys. Binswanger-Mkhize et al (2011a) analysed data from the 1999 and 2007 rounds of REDS to fill this gap. Because of population growth and household subdivision, the REDS panel of households grew from 4,690 in 1999 to 5,759 households. Households have become smaller in size, contain a lower proportion of farm households, and on average own less land. The decline in average owned and operational holding sizes, a consequence of rural population and labour force growth, has been a long-term trend in India since 1962 (Basole and Basu 2011). Despite these trends, per capita earned income (in 1999 rupees) grew from Rs 9,503 in 1999 to Rs 12,881 in 2007, or by 35.6% at an annual rate of 5.08%. These data also show rising real rural wages, but a more than doubling of the prices of agricultural land between the two periods. Since the wealth of farmers is primarily in the form of land, they have experienced a significant increase in their real wealth.

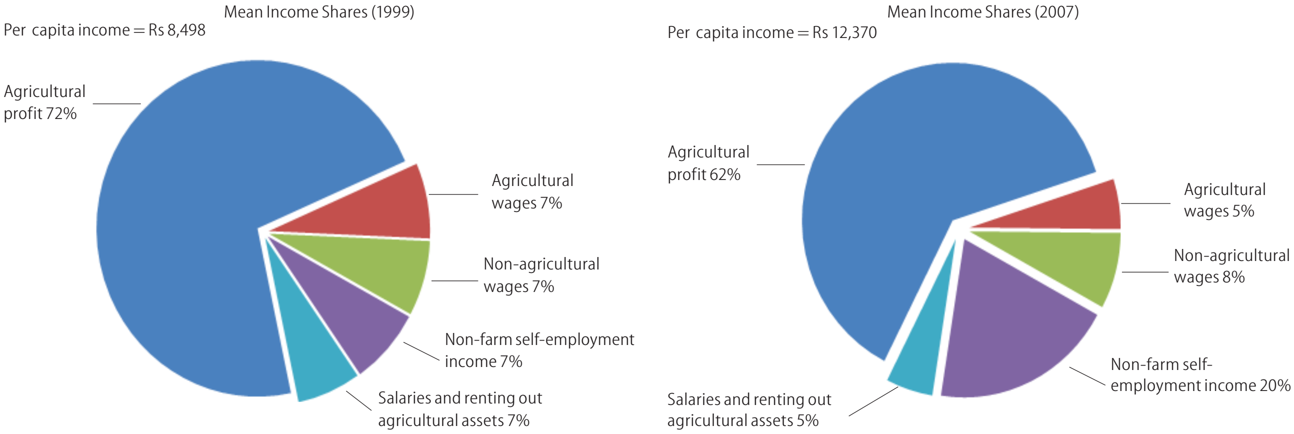
Between 1999 and 2007, the number of households engaged in non-farm self-employment more than doubled, from under 10% to nearly 20%. While agricultural profits and agricultural labour incomes grew in absolute terms, it was the rural non-farm self-employment income component that grew the fastest. For households engaged in rural non-farm self-employment, this component of income rose from Rs 36,767 to Rs 64,045, or by 74% in only eight years, and at a simple annual rate of 9.3%. Figure 2 (p 10) shows that for the sample as a whole, the shares of income shifted from agricultural profits and wages (–9.26% and –2.10%) towards non-farm self employment income (+12.19%). At the same time, the share of non-farm wage income stayed nearly constant at around 7.5%. In 2007, when the latest round of REDS data was collected, 86% of the first workers, who most likely dominated the enterprises, were men, and only 14% were women. Men provided 74% of the total family workers while women provided 26%. And men engaged in rural non-farm self-employment worked 2.1 times as many hours per year as women.

The income data on the rural non-farm self-employment sector suggest that while it may contain some distress employment,

Box 1: Recent Drivers of Rural Non-Farm Growth

Between 1999-2000 and 2004-05, rural non-farm employment increased by 16 million by principal status, of which 8 million (nearly 50%) was in the form of self-employment, 5 million as casual employment, and 3 million as regular employment (Himanshu et al 2011). By industry, 5 million was accounted for by construction (equivalent to almost the entire increase in casual employment), 4 million by trade and hotels, 3.5 million by manufacturing, and 1.8 million by transport and communication. Within the large rural self-employment component that has been shown to be partly driven by urban growth, three industries accounted for nearly 60% of the increase – 2.2 million in retail trade, 1.5 million in the manufacture of wearing apparel, and 1 million in land transport. Seven activities accounted for 25% of the increase, where the largest was in the form of STD/PCO booths, maintenance and repair of motor vehicles, and hotels and restaurants. The STD/BCP booths and the maintenance and repairs of motor vehicles are fuelled by technical changes in communication, motorisation of transport, and agricultural mechanisation. Increases in hotels and restaurants reflect income growth that is partially driven by urban spillovers.

Figure 2: Composition of Rural Incomes in India (1999-2007)



Source: Binswanger et al (2011a).

this is not the main driver of its expansion, and that instead it has become the most dynamic source of income growth of rural households, including farmers. What is observed among farms is not only diversification of agricultural production to higher valued products, but also to more remunerative self-employment in the non-farm sector. There is therefore a marked tendency of agriculture to move to a productive and modern model of part-time farming.

Summary of Employment and Poverty Trends

Urban and rural male labour participation has been around 55% for the past two decades. Meanwhile, female rural participation rates have fluctuated around 30% and female urban participation rates have been very low, fluctuating around 15%. Formal sector employment is a distressingly small component of employment in India, and even in the formal sector there is a trend towards informal employment contracts. Between 1990-91 and 2004-05, the growth rate of agricultural employment (both wage and self-employment) has slowed down, while that of the rural non-farm sector has accelerated significantly. The share of women within the agricultural sector has been rising steadily, indicating a trend towards the feminisation of agriculture.

Within the rural non-farm sector, self-employment accounts for as much of employment growth as wage employment, and diversification into rural non-farm self-employment is now a reality for around 20% of farmers. Non-farm self-employment is driven by rapidly rising incomes in these enterprises, and therefore such employment cannot be regarded as distress employment. Indeed, non-farm self-employment income has become the largest source of rural income growth. Unfortunately the participation of women in highly remunerative rural non-farm self-employment is far less than that of men.

Rural non-farm wage employment is accessed primarily by young males with some education, suggesting that females are at a disadvantage in obtaining such employment, perhaps because much of it requires mobility, or because of discrimination. Rural non-farm wages are significantly higher than agricultural wages, which means that lack of access to such employment is a significant disadvantage. Unfortunately, this implies a significant impediment to women, who have increasingly concentrated on agriculture, contributing to a progressive feminisation of agriculture, and on rural non-farm self-employment.

In spite of the wage differential, the farm and non-farm rural labour markets are highly integrated (Binswanger et al 2011a). Both are also integrated with the urban labour market, but to a lesser extent. Non-farm sector growth and employment growth have not only happened in favourable agro-climate zones, but also in less favoured areas, mitigating inter-regional income and poverty differentials. Poverty continues to be concentrated among agricultural workers.

The differences between urban and rural poverty rates, and urban-rural per capita income and consumption have not increased despite the slow migration and the very rapid rate of growth of the agricultural-non-agricultural productivity differential. This is clearly a consequence of the growth of employment and income in the rural non-farm sector, and especially in rural non-farm self-employment and income. Since the early 1990s, this rural non-farm self-employment sector has been increasingly fuelled by accelerating urban growth.

Structural Change in the Indian Economy Is Stunted

The new growing rural non-farm dynamic has to lead to a revision of the standard model of structural transformation that equates non-agriculture with urban areas. It now has to include the rural non-farm sector. Structural transformation in the form of a decline in agricultural employment and in favour of non-agricultural employment is happening in India. However, the new form of structural transformation is a stunted one because it primarily generates employment that is informal and/or insecure, without the benefits of health and unemployment insurance and pensions.[8]

The structural transformation trends are in sharp contrast to the trends in China. Near zero population growth rates and rapid growth of labour-intensive manufacturing and other urban sectors have led to a world record rural-urban migration that has left rural areas without young workers. Farms are increasingly operated by older farmers, many of whom are also women. Even in China, the rural non-farm sector has emerged as a dynamic sector, probably on account of spillovers from rapid urban growth to rural areas, as well as continued rapid agricultural growth. Urban and rural wages started to grow very rapidly at around the same time as Indian rural wages, but the pace of real wage growth is much faster. It appears that China is on the way towards a normal structural transformation.

In spite of rapid economic growth, India's structural transformation is constrained by the weakness of employment growth in the urban economy, especially in labour-intensive manufacturing. Most experts attribute the slow growth in manufacturing to restrictive labour legislation in India and to poor infrastructure for power, water and transport. The dream of a structural transformation to a service economy with good and secure urban jobs has not been realised and is unlikely to be in the future as well.

That there is nevertheless a structural transformation from agricultural production and employment towards non-agriculture appears to be a consequence of rising urban spillovers to rural non-farm self-employment, and this has prevented a greater divergence in poverty rates and per capita incomes and consumption. Continued high urban economic growth is therefore critical for rural income growth. However, agricultural growth and higher productivity continue to be powerful drivers of rural poverty reduction, rural non-farm sector growth, and agricultural and rural wages. An acceleration of agricultural growth and agricultural productivity growth to sustained higher levels than in the past two decades would therefore be highly beneficial for rural areas. As a consequence, agricultural and rural development policies, institutions, and programmes remain important determinants of rural welfare.

A Vision of Agriculture and Rural Poverty Reduction

Based on the results of this study, a vision for the future of the agricultural sector and for rural poverty reduction can be developed. The structural transformation in India and rural-urban migration will likely remain constrained by the slow growth of employment in urban areas, in industry, and especially in labour-intensive manufacturing. This is because it may be politically impossible to reform restrictive labour legislation, and because it will take a long time to overcome infrastructure bottlenecks. For most unskilled and semi-skilled workers, urban migration opportunities are likely to remain constrained, and limited to informal sector jobs. The rural labour force will therefore have to find a way to improve their incomes in rural areas.

Given the need to raise agricultural income and the economies of scale that mechanisation and credit constraints bring to agriculture (Foster and Rosenzweig 2003), it may appear paradoxical that farm sizes continue to decline. However, this tendency is in line with past trends in India, where farm sizes have grown modestly only in Punjab, and declined everywhere else. This decline is in line with continued rises in rural populations and labour forces, and with the limited labour absorption potential of urban areas.[9] The rapidly rising prices of agricultural land will continue to impart a portfolio motivation to hang on to land in households owning it. While land rental markets could lead to land consolidation, land renting has also continued to decline. To provide self-employment opportunities for family labour in agriculture, and especially for women, most households will be reluctant to rent out or sell land in the future. With men having better opportunities in the rural non-farm sector than women, agriculture will continue to feminise. With these trends, agriculture will be dominated by even smaller part-time farm households, with a few full-time farmers at the top.

Some of these trends are in contrast to China. There, absent or old owners of rural land rights are increasingly renting them out to relatives, to larger farmers, and to enterprises. Land rentals have risen from close to zero in the 1990s to around 20% of total agricultural land. As a consequence, average operational holdings have started to rise, while the ownership distribution of land rights remains unaffected. These trends are also likely to continue.

Part-time farm households in India will get more income from non-agriculture than from agriculture. All types of farmers will focus much more on horticulture, milk, poultry and eggs (Parikh et al 2011). Consumer demand will drive a trend towards traceability of agricultural output, quality control, and organic farming that will provide additional income opportunities. Farms will be much more capital-intensive, and use advanced biological and mechanical technology for crops, horticulture, livestock, and aquaculture. Water markets and other cooperative ways will be used to realise economies of scale. Depending on economy-wide growth, farmers will try to increase their agricultural incomes by adoption of modern technology, further diversification towards higher valued crops, use of more machinery, and increasing reliance on family labour. The rural non-farm sector will continue to grow faster than agriculture, provide more income opportunities than agriculture, and produce an increased range of services and products, using progressively more modern technology. Declining farm size trends and the diversification of households into the non-farm sector will undoubtedly continue. As a consequence, the emergence of a farm sector dominated by modern part-time farmers, many of them female, whose households will combine farming with non-farm employment of the men and/or self-employment in the non-farm sector is likely.

While these trends are likely to continue under both very rapid and more moderate economic growth, and regardless of agricultural policies and programmes, both an optimistic and a more pessimistic future are possible for agricultural and rural incomes, and for rural poverty reduction. The optimistic version is based on a combination of rapid economy-wide growth as well as rapid agricultural and rural non-farm growth, both partly driven by urban demand and technology spillovers. Agricultural growth can be driven by rapid technological change and productivity growth, improvements in water use efficiency and irrigation growth, and the diversification of agriculture (Parikh et al 2011). Both full-time and part-time farmers would have plenty of new technologies available and be able to adopt it, and many remunerative diversification opportunities exist in agriculture and non-agriculture. This will result in the emergence of a highly modern part-time farming sector and rapid agricultural income growth, which will also spill over into more rapid rural non-farm growth. At the same time, the demand and technology spillovers from the urban economy will further accelerate rural non-farm sector growth.

Non-farm opportunities will continue to be more accessible to young and educated males than to females, accelerating the feminisation of agriculture. Hopefully this would be associated with rising entrepreneurial opportunities for female farmers. The combination of rising agricultural and rural non-farm incomes will support rapid income growth in rural areas, including rapid rural wage growth. Rural-urban incomes and consumption ratios will improve, or at least not deteriorate, and rural poverty will decline rapidly, except in remote regions with poor agricultural endowments and poor prospects for rural non-agricultural development. Rising incomes from agriculture and the non-farm sector would be likely to reduce hunger as well, again except in some tribal areas. Malnutrition may, however, continue to persist, as it has in the developed world, and obesity problems may start to become more frequent.

Under a pessimistic vision, economy-wide growth will be slower, and this will reduce the urban spillovers to higher agricultural and non-agricultural demand, and technology spillovers in the non-farm sector. Slow agricultural growth could not only result from a reduced demand for food, but also if (a) technical change in agriculture remains slow; (b) services for part-time smallholders are not scaled up and improved; (c) technology adoption is limited more to the full-time farmers; and (d) female farmers have limited entrepreneurial opportunities. The combination of relatively slow agricultural growth would further reduce rural non-farm sector growth, which will also suffer from reduced urban spillovers. Rural income growth and wage growth will be lower. Rural-urban incomes and consumption ratios will deteriorate, and rural poverty will decline fairly slowly, even in better located and endowed rural areas.

The opportunities and challenges of achieving the optimistic vision cannot be managed by small adjustments in existing institutions, policies, and programmes in agriculture and rural areas. A full set of bold recommendations that would help bring about an optimistic vision for agriculture is spelled out in Centennial Group (2008).

NOTES

1 Urban populations grew at the rate of 2.76% in the inter-census period from 2001 to 2011. Of this, natural population growth accounted for 44%, while the remaining 56% was accounted for by reclassification of rural areas to urban areas and by rural-urban migration. A large share (not yet quantified) of this second component is accounted for by the reclassification, which proceeded at a rapid rate. Migration clearly is a fairly low contributor to urban population growth (Bhagat 2011).

2 All these growth rates declined in the 1990s and 2000s. The decadal averages hide a deeper slump in agricultural production and productivity growth from the mid-1990s to the first half of the 2000s. A good illustration is the behaviour of the annual TFP growth calculated by Fuglie (2012). While it hovered around 2% during the 1980s, it slowed to near zero in 2001, only to rebound to reach 3% and above in 2006 and 2007. Growth of agriculture also accelerated to slightly above 3% in the years since 2006, which explains the decadal growth of agriculture of 2.8% despite the poor performance during the early 2000s. However, the growth rate is still around 1% below the Government of India's target rate of 4%.

3 How can one explain the recent rise in rural wages? First, very recently the agricultural growth rate has accelerated again. Second, since the middle of the last decade, agricultural prices have increased significantly in real terms on account of rapid increases in procurement prices of major agricultural crops (Oxus 2011), and perhaps also because of rising and high world market prices since 2008. Third, rural non-farm sector employment growth has accelerated significantly over the past 20 years. Fourth, there has been a withdrawal of women from the rural labour force since 2004-05 with a shift of women to education. A fifth explanation is the growth in public expenditure in rural areas that has increased rural purchasing power. Even before the Eleventh Plan, public expenditures for the 13 flagship programmes for agriculture, rural development, and social development had been increasing rapidly, and now amounts to Rs 1,86,539 crore, or approximately $37 billion. Two-thirds of the expenditure is in programmes that are only operating in rural areas. The rural component of the social programmes will likely take the lion's share of the expenditure, and therefore reach or exceed 85% of the total, or about Rs 158,000 crore, which is nearly 17% of agricultural GDP. A highly visible component of the growing public rural expenditure has been the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). According to the Planning Commission (2011), in 2010-11, it provided employment to 54.5 million households, generating 2,536 million person-days of employment. The programme has been widely seen as the major cause of rural wage rate rises. However, it is only a relatively small share of total rural government expenditure and of rural employment. It is likely that the other five factors together have been a more important driver of the recent real rural wage rate rises, and that rural wages would have increased even in the absence of the MGNREGA.

4 The poverty data with the higher poverty line from the Tendulkar Committee report show similar convergence for the period 1993-94 to 2004-05. Preliminary estimates of the national poverty rate prepared by C Ravi and cited in Ahluwahlia (2011) suggest that the national poverty rate under the new Tendulkar Committee poverty line has declined further from 37.2% in 2004-05 to 32.2% in 2009-10, or at an accelerated rate of about 1% per year. The urban-rural poverty rates for 2009-10 have not yet become available.

5 Growth in rural non-farm sector employment has occurred all over India, but has been highly uneven. It is highest in Kerala, West Bengal and Tamil Nadu, and lowest in Chhattisgarh and Madhya Pradesh, followed by Uttarakhand, Karnataka, Gujarat and Maharashtra (World Bank 2010; Binswanger and d'Souza 2011b).

6 Foster and Rosenzweig (2003) show that non-farm enterprises producing tradable goods (the rural factory sector) locate in settings where reservation wages are lower. If the rural factory sector seeks out low-wage areas, factory growth will be largest in those areas that have not experienced local agricultural productivity growth. Thus, rural non-farm growth reduces spatial inequalities in economic opportunities and incomes. Nevertheless, the location of factories where wages are low has an equalising impact on income distribution in rural areas.

7 REDS is a nationally representative panel of rural households that were originally selected in 1971 to study the green revolution with a slight tilt towards better agricultural areas.

8 This is the case in both the rural and the urban economy.

9 It is also consistent with trends in advanced economies that are dominated by small family farms, such as Japan, Taiwan, Korea, or European countries such as Italy, Spain, Switzerland, and Norway. However, in many of these countries, heavy subsidies for agriculture and constraints imposed on agricultural land markets have limited land consolidation via sales and rental markets.

REFERENCES

Ahluwahlia, Montek (2011): "Prospects and Policy Challenges in the Twelfth Plan", *Economic & Political Weekly*, 46 (21), pp 88-105.

Basole, Amit and Deepankar Basu (2011): "Relations of Production and Modes of Surplus Extraction in India, Part I: Agriculture", *Economic & Political Weekly*, 46 (42), pp 41-58.

Bhagat, R B (2011): "Emerging Pattern of Urbanisation", *Economic & Political Weekly*, 46 (34), pp 10-12.

Binswanger-Mkhize, Hans P (2012): "India 1960-2010: Structural Change, the Rural Non-farm sector, and the Prospects for Agriculture", Stanford Symposium Series on Global Food Policy and Food Security in the 21st Century, Center for Food Security and the Environment, Stanford University, Stanford.

Binswanger-Mkhize, Hans P and Alwin d'Souza (2011): "India, 1980-2008, Structural Change at the State Level", Background paper to Centennial Group, Washington DC.

– (2012): "Structural Transformation of the Indian Economy and of its Agriculture" in K O Fuglie, S L Wang and E Ball (ed.), *Productivity Growth in Agriculture: An International Perspective*, CABI, Wallingford, UK.

Binswanger-Mkhize, Hans P, K Pradhan and Sudhir Singh (2011a): "Impact of Changing Prices and Rising Wages of Indian Agriculture, 1999-2007", Background paper to Centennial Group, Washington DC.

Binswanger-Mkhize, Hans P, K Pradhan, Hari Nagarajan, Sudhir Singh and J P Singh (2011b): "India 1999-2007: Structural Change of Indian Agriculture at the Village and Household Level", Background paper to Centennial Group, Washington DC.

Centennial Group (2012): *India 2039: Transforming Agriculture*, Centennial Group, Washington DC.

Chowdhury, Subhanil (2011): "Employment in India: What Does the Latest Data Show?", *Economic & Political Weekly*, 46 (32), pp 23-26.

Datt, Gaurav and Martin Ravallion (2009): "Has India's Economic Growth Become More Pro-poor in the Wake of Economic Reforms?", Policy Research Working Paper 5103, World Bank, Washington DC.

Eswaran, M, A Kotwal, B Ramaswami and W Wadhwa (2008): "How Does Poverty Decline: Suggestive Evidence from India, 1983-1999", Bread Policy Paper No 14, available at http://ipl.econ.duke.edu/bread/papers/policy/p014.pdf

– (2009): "Sectoral Labour Flows and Agricultural Wages in India, 1983-2004: Has Growth Trickled Down?", *Economic & Political Weekly*, 44 (2), pp 46-55.

Foster, Andrew D and Mark R Rosenzweig (2003): *Agricultural Development, Industrialization and Rural Inequality*, mimeo, Brown University, Providence, RI.

Government of India (2008): *Eleventh Five-Year Plan (2007–2012): Inclusive Growth*, Planning Commission, New Delhi.

– (2011): "Faster, Sustainable and More Inclusive Growth: An Approach Paper to the Twelfth Five-Year Plan", Planning Commission, New Delhi.

Fuglie, Keith O (2012): "Total Factor Productivity in the Global Agricultural Economy: Evidence from FAO Data" in Julian Alston, Bruce Babcock and Philip Pardey (ed.), *The Shifting Patterns of Agricultural Production and Productivity Worldwide*, Midwest Agribusiness Trade and Research Information Center (MATRIC), Iowa State University.

Hazell, P and S Hagbladde (1993): "Farm-Nonfarm Growth Linkages and the Welfare of the Poor" in M Lipton and J van der Gaag (ed.), *Including the Poor*, World Bank, Washington DC, pp 190-204.

Hazell, Peter B, Derek Headey, Alejandro Nin Pratt and Derek Byerlee (2011): "Structural Imbalances and Farm and Nonfarm Employment Prospects in Rural South Asia", Report for the World Bank, Washington DC.

Himanshu, Peter Lanjouw, Abhiroop Mukhopadhyay and Rinku Murgai (2011): "Non-farm Diversification and Rural Poverty Decline: A Perspective from Indian Sample Survey and Village Study", Working Paper 44, Asia Research Centre, London School of Economics and Political Science.

Oxus (2011): "Indian Inflation: Populism, Politics, and Procurement Prices", *Developing Trends*, 1 (2), Oxus Research Report, New Delhi.

Parikh, Kirit, Hans P Binswanger-Mkhize, Probal Ghosh and Alwin d'Souza (2011): "Double Digit Inclusive Growth: Not Without Robust Agricultural Growth", Background paper to Centennial Group, Washington DC.

Planning Commission (2009): Report of the Expert Group on Methodology for Estimation of Poverty (Tendulkar committee report), Planning Commission, New Delhi.

Ravallion, Martin and Gaurav Datt (1996): "How Important to India's Poor is the Sectoral Composition of Economic Growth?", *World Bank Economic Review*, 10, pp 1-26.

Timmer, C Peter (2009): *A World Without Agriculture: The Structural Transformation in Historical Perspective*, American Enterprise Institute, Washington DC.

Timmer, C Peter and Selvin Akkus (2008): "The Structural Transformation as a Pathway Out of Poverty: Analytics, Empirics, and Politics", Working Paper 15, Center for Global Development, Washington DC.

World Bank (2010): *Perspectives on Poverty in India: Stylized Facts from Survey Data*, March, World Bank, Washington DC.