Growth, Structural Change and Wage Rates in Rural India

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Examining the structural transformation in India and its developed states to know whether they have passed the Lewis turning point, this paper finds that there was slow structural change in labour markets at the national level. But states such as Kerala, Tamil Nadu, Himachal Pradesh, Punjab and Haryana are on the verge of the Lewis turning point with faster non-farm sector growth, high per capita income, urbanisation, higher agricultural labour productivity, and higher wage rates. On the other hand, states with rapid economic growth such as Gujarat, Andhra Pradesh, West Bengal and Maharashtra have lower wage rates and higher rural poverty. But they too have the potential to pass the Lewis turning point if structural change occurs soon.

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1 Introduction

Historically, faster economic growth and structural change in the economy moves labour away from the subsistence (agriculture/rural) sector to the modern (capitalist/non-agricultural/urban) sector, thereby increasing rural wage rates (Lewis 1954). As labour and other resources move from agriculture to modern economic activities, overall productivity rises and income expands. This kind of growth-enhancing structural change can be an important contributor to overall economic growth (McMillan and Rodrik 2011). In the last decade, India has seen rapid growth of its economy and agricultural productivity, and a rise in the share of the non-agricultural sector in income and employment. The result has been a rise in rural wage rates (Chand and Srivastava 2014; Gulati et al 2013). Some attribute the rise in wage rates to the largest employment guarantee programme, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) (Berg et al 2012; Imbert and Papp 2012), while others see it as a correction after a long stagnation (Dreze and Sen 2013). Some others argue about jobless growth and the positive relationship between output and employment becoming more blurred, which has resulted in an increase in the reserve army of labour and low wage rates (Patnaik 2014). The divergence of opinions and unsettled debate on the structural change of the economy and labour markets in relation to rural wage rates calls for an intensive study.

It is also important to recognise interstate differences at different stages of development (Datt and Ravallion 2002; Kotwal et al 2011). The economies of Punjab and Haryana picked up in the 1960s with the green revolution. Kerala, Tamil Nadu (TN) and Himachal Pradesh (HP) were also on the fast track before other states in human development. States such as West Bengal (WB), Gujarat, Maharashtra and Andhra Pradesh (AP) have experienced higher growth in the last decade. Very few studies highlight the important differences between the development paths of high-wage rate states (Kerala, TN, HP, Haryana, and Punjab) and low-wage rate states (AP, Gujarat, WB and Maharashtra) within the category of developed states. Our results show wage rates in Punjab, Haryana, HP, Kerala and TN are much higher than those in other developed states and the all-India rate is on the verge of the Lewis turning point (LTP). The driving forces for high wage rates appear to be a higher initial level and growth of urbanisation, a higher share of the non-agricultural sector in income and employment, higher per capita income, and fewer urban and

rural differences – as can be seen in incomes in TN, Kerala and HP. Higher per capita income, labour productivity in agriculture, and less of a rural-urban difference in income are seen in Punjab and Haryana. Given their high economic growth, AP, Gujarat, WB, and Maharashtra also have early potential to pass the LTP.

Section 2 of this paper provides a review of the conceptual framework, objectives, and methodology. Section 3 presents the structural transformation at the national level, which describes trends in Lewisian variables such as urbanisation, share of the non-agriculture sector in employment, labour productivity, per capita income, poverty, and wage rates. Section 4 provides a state-wise analysis, and Section 5 sums up the findings.

2 Conceptual Framework, Objectives, and Methodology

Historically, there was an oversupply of labour in the subsistence sector (agriculture) (Basu 2000). Therefore, the marginal product of labour was equal to the subsistence wage. In the capitalist (urban and rural non-agriculture) sector, however, employers had to pay a higher wage to cover higher costs of living and other transaction costs in urban centres (Lewis 1954). Here, more capital stock meant a higher marginal product of labour. If only surplus labour is transferred from the subsistence sector to the capitalist sector, it has no effect on subsistence-sector wage levels. However, after exhausting surplus labour, the marginal product of subsistence-sector labour begins exceeding the subsistence wage level. From then on, rural wages rise. Therefore, a sudden upward shift in the rural wage is likely to mean an exhaustion of surplus labour down the road.

The main objective of this paper to gauge the extent to which the phase of economic growth and structural change variables influence rural labour wage rates at the national level and among developed states. It follows the Lewisian framework to understand the process of structural change, and puts together variables such as interstate differences in urbanisation, non-farm employment, income growth, labour productivity growth, and real rural, agricultural wage rates (Cai and Wang 2008; Green 2008; World Bank 2008). The LTP basically states that labour moves from the subsistence to the capitalist sector as a country develops, and after a certain point, rural wages start rising. As data is not available for such categorisation, we have used the rural, agriculture sector as a proxy for the subsistence sector, and the non-agriculture, urban sector as a proxy for the capitalist sector. Hence, we have used urbanisation (the share of the urban population to the total population), shift in employment from agriculture to non-agriculture, migration rate, change in per capita net state domestic product (NSDP), farm mechanisation, poverty, and labour productivity to understand the change. We have used wage rates for unskilled and semi-skilled workers in rural areas as an indication of the LTP. Extending from the 1980s to 2012, the study has the following objectives – (i) to understand the changes and levels of structural variables in the last two decades at the national level and in selected developed states; and (ii) to examine the causes for increasing wage rates.

Most of the data was collected from the population census and the National Sample Survey Office's (NSSO) employment and unemployment surveys. The state-wise wage rates of rural male workers were collected from the Labour Bureau from 1999 to 2013, given the availability of continuous time series data (Himanshu 2005; Osami 2012; Chavan and Bedamatta 2006). The agricultural and non-agricultural wage rates were deflated by using the consumer price index for agricultural labourers and rural labour, respectively, with a base year of 1986-87. We have analysed agricultural (sowing and ploughing) and non-agricultural (unskilled workers, carpenter, and mason/construction) wage rates for selected developed states. For analytical purposes, the states were grouped into high-wage rate (Haryana, Punjab, HP, Kerala and TN) and low-wage rate (AP, WB, Maharashtra and Gujarat) ones based on the wage rates in the triennium ending (TE) 2012. Unlike Osami's study (2012), we have taken the average of the calendar year (from January to December) to impute annual wage rates. However, we have separately calculated slack (May) and peak (August) season wage rates. We have also examined trends in farm mechanisation, labour use per hectare, and labour productivity in agriculture from the data collected from a comprehensive government scheme for estimating the cost of cultivation. We have computed the annual compound growth rates (ACGR) of the variables by using a semi-log-linear function.

3 Structural Transformation at National Level

The paper first examines the structural change in the Indian economy. An important indicator of structural change was the growth in gross domestic product (GDP) and the share of non-agriculture income and employment. Slower growth in the agriculture sector saw its share in GDP fall from 41.1% in 1972-73 to 14.1% in 2011-12. The consequent rise in the share of the non-agricultural sector in GDP saw it increase from 58.9% in 1972-73 to 85.9% in 2011-12 (Table 1). The share of labour dependent on agriculture decreased from 73.9% in 1972-73 to 48.9% in 2011-12 and the share of labour dependent on

Table 1: Structural Transformation of Indian Economy

	1972-73	1983-84	1993-94	2011-12
Share in gross domestic product				
Agricultural and allied activities	41.1	35.5	28.4	14.1
Non-agriculture	58.9	64.5	71.6	85.9
Total	100	100	100	100
Share of employment				
Agricultural and allied activities	73.9	68.6	64.8	48.9
Non-agriculture	26.1	31.4	35.2	51.1
Total	100	100	100	100
Labour productivity (Rs/annum)*				
Agricultural and allied activities	5,323	6,076	6,653	10,968
Non-agriculture	21,599	24,120	30,880	63,941
Total	9,571	11,742	15,181	38,037
Ratio of non-agriculture to agriculture productivity	4.06	3.97	4.64	5.83

* Computed from the per capita net national product (NNP) at factor cost (2004-05 prices).
Source: Modified from Reddy (2014).

non-agriculture increased from 26.1% to 51.1% in the same period. Given that the non-agriculture sector is heterogeneous, with a high degree of variation in skill requirements and productivity, it is important to understand the structural changes in employment within it (Reddy and Kumar 2006; Roy 2009). There was a significant increase in the share of employment in construction, trade, hotels and restaurants, transport, storage, and communication. It is generally perceived that construction was the starting point of the shift from agriculture to non-agriculture for semi-skilled and unskilled labourers. Higher growth in construction during this period was a positive factor for the easy shift of labour. But the dismal performance of manufacturing was an obstacle for the faster transfer of labour from agriculture to non-agriculture. Labour productivity in agriculture reported a twofold increase from Rs 5,323 per annum to Rs 10,968 per annum, while non-agriculture labour productivity increased three times from Rs 21,599 to Rs 63,941 per annum between 1972-73 and 2011-12. The ratio of non-agriculture to agriculture productivity increased from 4.06 to 5.83 in the same period. Given that the huge gap between non-agriculture and agriculture productivity at the national level misrepresents the productivity gap in rural areas, the next section examines the structural transformation in the rural economy.

India is characterised by a dual economy, with the rural sector more like a subsistence sector and the urban sector having capitalist tendencies. In rural areas, non-agriculture now contributes almost 65% of the net national product (NNP), in which the share of trade and hotels, construction, services, and manufacturing is high. Since 1981, the share of non-agriculture in the NNP increased by 29.4%, of which much was because of the huge growth in trade and hotels and construction (Table 2), while manufacturing contributed only 11.9%. The share of non-agriculture in rural employment remained low at 32%, with only a 13% increase since 1981. The share of construction was high, followed by manufacturing, and hotels and trade. Since 1981, there was a significant 7.6% increase in employment in construction, followed by 2.8% in trade and hotels, and 2.7% in manufacturing. All other sectors showed a meagre increase in employment. The index of per worker productivity relative to the national average (national = 100) in rural areas was only 51 in agriculture, whereas it was 203 in the non-agriculture sector. The index declined in the agriculture sector from 79 to 51 between 1980-81 and 2009-10, and increased in the non-agriculture sector from 188 to 203 in the same period. The highest relative productivity was 281 in trade and hotels, 258 in services, 162 in construction, and just 150 in manufacturing. The largest increase in relative productivity was in trade and hotels from 185 to 281 and transport and communications from 177 to 243, followed by manufacturing from 130 to 150. Although construction and manufacturing had low productivity in the non-agriculture sector, they had significantly higher productivity than agriculture. Any transfer of labour from agriculture to these sectors increased overall labour productivity in rural areas.

Table 2: Structural Change in the Rural Economy

		1980-81	1993-94	2009-10
Share of rural net domestic product (NDP)				
I	Agriculture	64.4	57.0	35.0
II	Non-agriculture	35.6	43.0	65.0
	Manufacturing	9.2	8.2	11.9
	Construction	4.1	4.6	15.0
	Trade/hotels, etc	6.7	7.8	18.0
	Transport/storage	1.3	3.4	7.0
	Community, social and personal services	14.4	19.1	13.2
	Total	100	100	100
Employment (usual principal + subsidiary status)				
I	Agriculture	81.0	78.0	68.0
II	Non-agriculture	19.0	22.0	32.0
	Manufacturing	7.0	7.3	7.9
	Construction	1.7	2.7	9.3
	Trade/hotels, etc	3.6	4.4	6.4
	Transport/communication, etc	1.7	1.9	2.9
	Community, social and personal services	4.9	5.5	5.1
	Total	100	100	100
Index of per worker productivity relative to national average (Total = 100) in rural areas*				
I	Agriculture	79	73	51
II	Non-agriculture	188	196	203
	Manufacturing	130	112	150
	Construction	237	171	162
	Trade/hotels, etc	185	177	281
	Transport/communication, etc	177	179	243
	Community, social and personal services	292	347	258
	Total	100	100	100

* Computed from the per capita net national product (NNP) at factor cost (2004-05 prices).
Source: Modified from Reddy (2014).

One of the important development phases is urbanisation. Table 3 depicts changes in the population in rural and urban areas since 1961. In rural areas, the population increased from that in the previous census between 1961 and 2001, but declined between 2001 and 2011. Between 2001 and 2011, the increase in the urban population surpassed the increase in the rural population in absolute numbers. In addition to population growth, significant permanent migration from rural to urban areas was an important reason for increasing the urban population (Kundu and Gupta 1996).

Table 3: Rural and Urban Population (1961-2011, million)

	Rural		Urban	
Year	Population	Increase from Previous Census	Population	Increase from Previous Census
1961	360		79	
1971	439	79	109	30
1981	524	85	160	51
1991	629	105	218	58
2001	743	114	286	68
2011	833	90	377	91

Source: Census of India, 2011.

Even though migration at the national level was 5% to 8% for males and 35% to 48% for females according to official statistics (Table 4, p 59), there was large-scale, unreported, short-term migration from rural to urban areas for work in the non-farm sector. Generally, these short-term migrants report agriculture as their main source of employment, but they get a significant income from non-agriculture sources.

Most of these migrants earn more cash income even though they work for short periods in urban centres because of higher wages and piece rates, which encourage overtime work. About 80% of male and 55% of female short-term migrant workers were engaged in the non-agriculture sector, mostly in construction and manufacturing. As construction and manufacturing absorb semi-skilled and medium-educated workers, they are an important avenue for increasing income in rural areas – by supplementing incomes and increasing the reservation wage.

Figure 1: Differences in Rural Wage Rates Over the All-India Average TE 2012 (%, male)

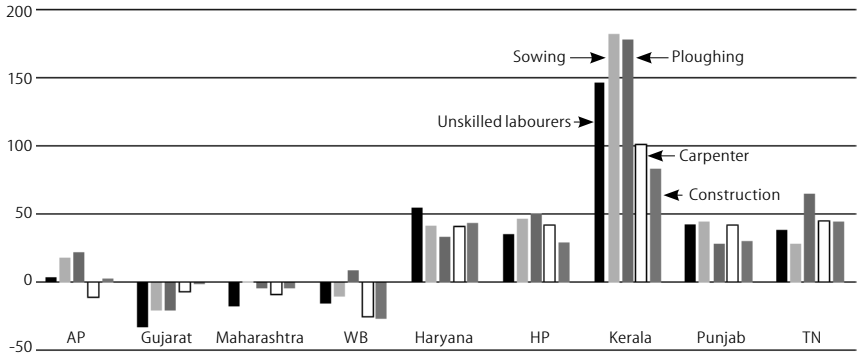

Table 4: Major Sectors of Employment for Short-term Migrants (2007-08, %)

Broad Industry Division of Work	Rural Male	Rural Female	Rural Person
Agriculture	20.0	45.3	23.6
Non-agriculture	79.9	54.7	76.6
Mining and quarrying	1.3	0.8	1.3
Manufacturing	17.2	13.9	16.8
Electricity, water, and gas	0.1	0.3	0.2
Construction	42.9	33.6	41.6
Trade, hotel and restaurant	8.3	1.0	7.3
Transport	6.6	0.5	5.7
Other services	3.5	4.6	3.7
All	100	100	100

Short-term migrants have been defined as those who stayed away from their village/town for one month or more but less than six months in the last 365 days for employment or in search of employment; figures for "All" have been rounded off to 100.
Source: NSS 64th Round, Report No 533, "Migration in India: July 2007-June 2008".

Trends in wage rates show relative labour demand and supply conditions. Any spurt in the wage rate suggests some sort of LTP in the absence of market interventions in rural labour markets. Table 5 depicts the real wage rates of selected work types in rural India from 1999 to 2012. At the all-India level, there was an upward movement in wage rates from 2006 onwards. The wage rates for construction workers and carpenters were much above agricultural wage rates. Among agricultural activities, ploughing had the highest wage, followed by sowing. The lowest wages were among unskilled labourers. It is interesting to see that from 1999 to 2006 there was almost no trend (or a slight negative) in wage rates among all work types. This is in line with other studies (Lanjouw and Murgai 2009; Himanshu 2005; Dreze and Sen 2013; Osmani 2012).

Table 5: Trends in Wage Rates at 1986-87 Prices (Rural/Male)

	Wage Rates (Rs/day)		Annual Compound Growth Rates (%)		
	TE 2001	TE 2012	1999-2005	2006-12	Overall (1999-2012)
Unskilled	17.8	21.9	-0.47	5.96	1.58
Sowing	19.6	22.6	-0.40	4.75	0.97
Ploughing	21.9	25.7	-0.65	5.04	1.14
Carpenter	32.3	34.4	-0.03	2.84	0.28
Construction/mason	34.7	37.8	0.40	3.02	0.48

Overall, the growth in rural wage rates between 1999 and 2012 ranged between 0.28% per annum for construction workers and 1.58% for unskilled workers, far below the growth rate in agricultural GDP (2.08% between 1999 and 2005, and 3.4% between 2006 and 2012). There was a negative growth rate in wages from 1999 to 2005 for both agricultural and non-agricultural activities, barring construction. The growth rate of wages for both agriculture and non-agriculture was much higher from 2006 to 2012, ranging from 3.02% for construction workers to 5.96% for unskilled labourers. However, these trends at the all-India level often conceal more than they reveal, and interstate differences are examined in the next section.

4 State-wise Analysis

Wage Rates

There were vast differences in wage rates among developed states in terms of the drivers of change and their effect on wage rates. This section analyses state-wise trends in wage rates and other related structural variables from a Lewisian perspective. Figure 1 depicts the difference in rural wage rates over the national average for the developed states in 2012. Kerala, TN, HP, Haryana and Punjab had high wage rates, both in the agriculture and non-agriculture sectors. In AP, wage rates for agricultural workers were higher. Wage rates in Gujarat, Maharashtra and WB were lower than the national average. Among the developed states, the differences between high-wage rate states (Haryana, Punjab, HP, Kerala and TN) and low-wage rate states (AP, Gujarat, Maharashtra and WB) were significant.

Figure 2 (p 60) shows trends in wage rates among the states from 1999 to 2012. Both agriculture and non-agriculture wage rates were higher in Haryana, Punjab, HP, Kerala and TN. Wage rates were stagnant between 1999 and 2006 before increasing in all the states. In general, agriculture wage rates were lower than non-agriculture wage rates. Unskilled wage rates moved in line with agriculture wage rates. In TN, the wage increase was much higher in the non-agriculture sector. The higher share of non-agriculture NSDP, urbanisation, and high literacy rates may be causes for the higher growth in rural non-agriculture wage rates in TN. In Kerala, Punjab and Haryana, initial wage rates were already at a higher level in both the agriculture and non-agriculture sectors, and the wide gap narrowed in the 2000s – there was no gap between agriculture and non-agriculture wage rates in Kerala. Among low-wage rate states, even though wage

rates picked up after 2006, they were still not significantly higher than the national average.

At the national level, there was a slight negative growth in wage rates except in construction from 1999 to 2005 (Table 6). Among the states, only HP recorded a reasonable growth in wage rates. Here, the growth in wage rates were mainly due to the robust growth of agriculture and rural non-farm employment. The growth rates in wages were mostly below 2% per annum between 1999 and 2005 in most of the states, but it was more than 4% in both the agriculture and non-agriculture sectors from 2006 to 2012. Kerala, TN, Punjab and Haryana had more than 4% growth among the high-wage rate states between 2006 and 2012. Lower growth in HP may have been due to the higher growth in the earlier period. Only AP and Maharashtra recorded more than 4% among the low-wage rate states between 2006 and 2012. The high growth in high-wage rate states after 2006 may be attributed to higher non-farm employment growth, high labour productivity in agriculture, and steep increases in MGNREGA wage rates.

Figure 2: Trends in Wage Rates (1986-87 prices, male, Rs)

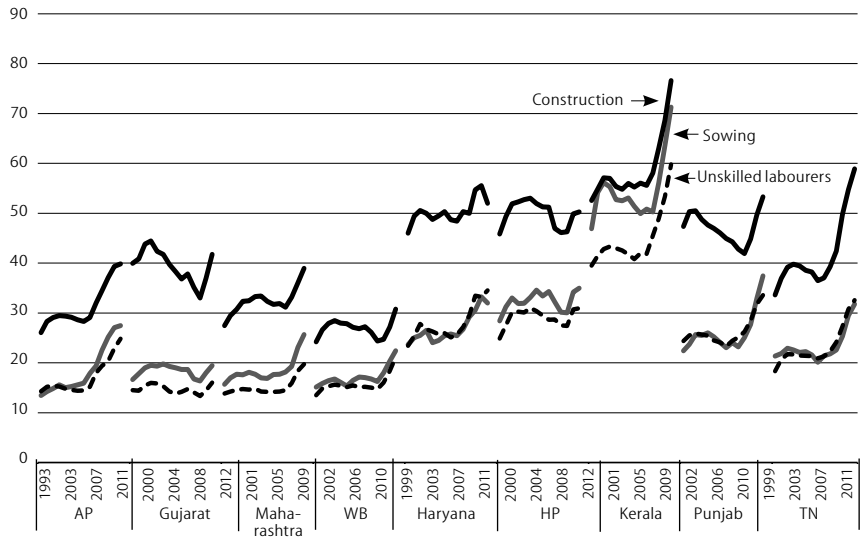

Figure 3: Ratio of Non-agriculture Wages to Agriculture Wages

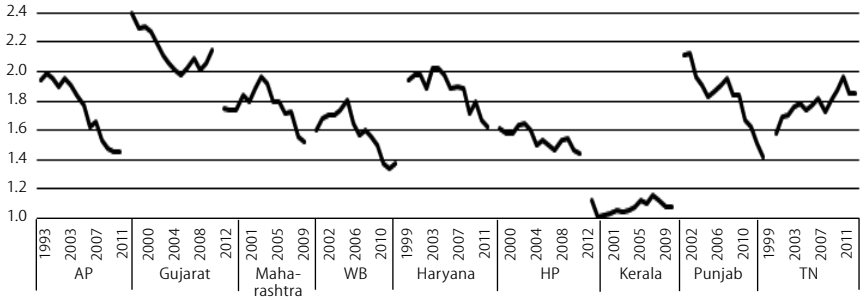

Table 6: Growth Rates of Wage Rates from 1999 to 2005
(annual compound growth rate, in %)

State	Unskilled	Sowing	Ploughing	Carpenter	Construction/ Mason	Average
Andhra Pradesh	-0.4 (9.2)	2.1 (9.7)	0.4 (10.6)	0.2 (6.8)	1.3 (6.4)	0.7 (8.5)
Gujarat	0.3 (1.4)	2.4 (-0.5)	3.0 (0.4)	0.7 (-1.4)	0.0 (0.5)	1.3 (0.1)
Maharashtra	0.6 (5.8)	1.2 (6.7)	0.3 (6.6)	1.9 (2.9)	3.2 (3.0)	1.4 (5.0)
West Bengal	1.6 (5.2)	0.6 (4.4)	2.0 (2.8)	1.0 (0.4)	1.6 (1.2)	1.4 (2.8)
Haryana	1.0 (6.0)	0.4 (4.7)	0.3 (6.5)	-1.0 (4.3)	0.8 (2.0)	0.3 (4.7)
Himachal Pradesh	3.0 (0.9)	2.4 (0.2)	3.7 (1.1)	2.0 (-1.1)	1.9 (-0.4)	2.6 (0.1)
Kerala	0.8 (6.4)	0.9 (5.6)	1.6 (4.6)	0.7 (4.9)	0.6 (5.4)	0.9 (5.4)
Punjab	-0.5 (6.2)	1.3 (8.1)	1.7 (6.6)	-0.9 (2.8)	-1.0(2.8)	0.1 (5.3)
Tamil Nadu	1.8 (8.1)	0.1 (7.7)	-0.7 (7.3)	1.8 (9.0)	1.7 (8.8)	0.9 (8.2)
All India	-0.5 (6.0)	-0.4 (4.7)	-0.7 (5.0)	0.0 (2.8)	0.4 (3.0)	-0.2 (4.3)

Figures in parentheses are from 2006 to 2012.

Table 7: Growth Rates of Rural Wage Rates from Various Activities 1999-2012 (annual compound growth rate, in %)

State	Unskilled	Sowing	Ploughing	Carpenter	Construction/ Mason	Average
All India	1.6	1.0	1.1	0.3	0.5	0.9
Andhra Pradesh	3.7	5.6	5.0	2.0	2.8	3.8
Maharashtra	1.7	2.3	2.3	0.9	1.5	1.7
Gujarat	-0.3	-0.1	0.6	-1.6	-1.3	-0.5
West Bengal	1.8	2.0	1.7	0.0	0.2	1.1
Haryana	2.3	2.2	2.5	0.7	0.8	1.7
Himachal Pradesh	0.4	0.6	2.3	-0.1	-0.3	0.6
Kerala	2.1	1.4	0.6	1.6	1.9	1.5
Punjab	1.6	2.2	2.8	-0.3	-0.3	1.2
Tamil Nadu	3.3	2.0	1.2	2.9	3.1	2.5

Overall, from 1999 to 2012, wage rates in India recorded a growth of 0.9% per annum (Table 7). AP recorded the highest growth in wage rates, but from a lower base. Only Gujarat recorded negative growth. Haryana, Punjab, Kerala and TN recorded more than 1% growth in wage rates, even from a higher base. The stagnating wage rates in both agriculture and non-agriculture in Gujarat in spite of higher GDP growth may be due to fast growth of the petroleum sector, which has few linkages to the rural economy (Nagaraj and Pandey 2013), and needs to be further explored. Slow growth in WB may be due to prolonged stagnation in per capita income and a slower rate of structural transformation (Sarkar 2006).

Gap between Non-agriculture and Agriculture Wage Rates

The ratio of non-agriculture (construction/mason) wages to agriculture (sowing) wages were an approximation of the productivity gap between the non-agriculture and agriculture sectors in rural areas (Figure 3). The ratio between them decreased from 1.83 to 1.68 at the national level. The widest gap was in Gujarat (2.15), followed by TN (1.85). It was low in Kerala (1.07), followed by WB (1.37), and Punjab (1.42). In most of the states, the gap narrowed significantly. Overall, there was a convergence of wages in the non-agriculture and agriculture sectors as the ratios approached closer to one.

Seasonality in Surplus Labour and MGNREGA Work

In rural areas, many operations are seasonal. In May, there are no agricultural activities, which pick up by June/July and peak in August. Table 8 presents the total number of people who worked during the slack (May) season and peak (August) season under the MGNREGA. As expected, in most of the states, more people worked in the slack season, indicating that MGNREGA works absorb surplus labour. There was a steep reduction (60%) in the number of people who worked in the peak season at the national level (Table 8). Even though overall participation was low in HP, Haryana, Punjab and Kerala, there were more workers in the peak season than in the slack season. This may have been due to the higher MGNREGA wage rates in these states (Rs 192 in Haryana, Rs 164 in Kerala and Punjab). The average days of work per rural worker generated under the MGNREGA is an indicator of MGNREGA intensity in a state. This is calculated by dividing the average number of days of work under the MGNREGA per annum from 2006-07 to 2011-12 by the number of rural workers (from Census 2011). Invariably, in the summer months, there was surplus labour available in rural areas as there was no demand for labour in agriculture. It also varied with local governance and implementation. There was no significant difference in high-wage rate states and low-wage rate states in terms of the average number of days of work under the MGNREGA per rural worker. AP and TN had the highest days/rural worker of 8.94, HP (5.56), WB (4.66) and Kerala (4.43). The least was in Punjab (0.79), followed by Maharashtra (1.03), Haryana (1.06) and Gujarat (1.92). The high MGNREGA intensity in TN and HP was an indication of better local governance and implementation, with its managers better attuned to the labour demand and supply situation, especially in the slack season. However, the low number of MGNREGA workdays in Punjab and Haryana indicated a lack of surplus labour.

Table 8: Employment under MGNREGA (2013) **and Average Number of MGNREGA Work Days** (2006-07 to 2011-12)

	Persons Worked (million) in 2013			Average MGNREGA Wage (Rs/day) in 2012	Average Days (2006-07 to 2011-12) under MGNREGA/ Rural Worker Per Annum
	Slack Season (May	Peak Season (August)	% Change over Slack Season		
Andhra Pradesh	81.3	5.0	-94	108	8.94 (1)
Gujarat	3.9	0.5	-87	116	1.92 (6)
Maharashtra	9.9	1.9	-81	167	1.03 (7)
West Bengal	9.2	2.4	-74	139	4.66 (4)
Haryana	6	1.1	74	192	1.06 (8)
Himachal Pradesh	1.8	1.8	4	128	5.56 (3)
Kerala	2.0	7.6	273	164	4.43 (5)
Punjab	5	0.6	12	164	0.79 (9)
Tamil Nadu	52.8	31.7	-40	94	8.94 (2)
Total	265.8	105.9	-60	121	5.75

Figures in parentheses are state ranks.
Source: MGNREGA website, http://nrega.nic.in

Income, Urbanisation, and Non-farm Employment

Per capita income was the highest in Maharashtra, followed by Haryana, Gujarat, TN, Kerala, HP, Punjab and AP. It was the least in WB in TE 2012 (Table 9). The per capita income of Maharashtra and Haryana was almost double that of WB. The growth in per capita income was 5.1% per annum in India between 1992 and 2012. The growth rate was the highest in TN, followed by Gujarat, Kerala, AP, Maharashtra, HP, Haryana and WB. It was the least in Punjab. Growth rates were higher in states with high urbanisation and a high share of the non-agriculture sector, such as TN, Gujarat, Kerala, AP and Maharashtra. Even though growth rates were better in Gujarat and Maharashtra, it did not trickle down to rural areas, indicating the importance of the structure of growth in removing poverty and increasing wage rates (Nagaraj and Pandey 2013). Overall, growth was higher between 2006 and 2012 than between 1992 and 2006 in all the states.

Average household expenditure per capita was much higher in Kerala, HP, Punjab and Haryana in rural and urban areas (Table 10). However, there was a wide gap between rural and

Table 9: Changes in Per Capita Income

State	Per Capita NSDP at 2004-05 Prices			CAGR (%)	
	TE 1994	TE 2012	CAGR (%)	1992-2006	2006-2012
Andhra Pradesh	14,696 (8)	40,776 (8)	5.8 (4)	5.3	6.2
Gujarat	18,162 (5)	55,649 (3)	6.4 (2)	6.5	8.2
Maharashtra	22,695 (3)	60,747 (1)	5.6 (5)	4.6	6.1
West Bengal	12,957 (9)	32,266 (9)	5.2 (8)	4.1	5.4
Haryana	23,746 (2)	60,227 (2)	5.3 (7)	5.8	6.7
Himachal Pradesh	18,421 (4)	47,872 (6)	5.5 (6)	4.8	5.0
Kerala	17,555 (7)	51,634 (5)	6.2 (3)	5.8	7.1
Punjab	25,456 (1)	45,567 (7)	3.3 (9)	1.9	4.3
Tamil Nadu	17,598 (6)	55,319 (4)	6.6 (1)	4.2	7.5
All India	14,660	36,093	5.1	4.3	5.7

Figures in parenthesis are state rank.
Source: *Handbook of Statistics on Indian Economy*, RBI.

Table 10: Trends in Per Capita Expenditure in Rural/Urban, Urbanisation, and Non-farm Income

State	Average Household Expenditure Per Capita, 2009-10 (Rs/month)		Difference between Urban and Rural Per Capita Expenditure (%)	Urbanisation (2011,%)	Growth in Proportion of Urban Population in Total Population (1991-2011) (Percentage Point)	Proportion of Households with Non-farm as Major Source of Income (%)*	Change in Proportion between 1993-94 and 2009-10 (Percentage Points)
	Rural	Urban					
Andhra Pradesh	1,234 (5)	2,238 (5)	81	33.4 (7)	6.6	42.4 (7)	11.6
Gujarat	1,110 (8)	1,909 (9)	72	42.6 (4)	8.2	30.4 (9)	0.5
Maharashtra	1,153 (7)	2,437 (2)	111	45.2 (3)	6.5	33.6 (8)	6.5
West Bengal	952 (8)	1,965 (7)	106	31.9 (8)	4.5	43.2 (6)	3.0
Haryana	1,510 (4)	2,321 (4)	54	34.9 (6)	10.1	55.1 (3)	9.5
Himachal Pradesh	1,536 (3)	2,654 (1)	73	10.0 (9)	1.3	60.7 (2)	24.6
Kerala	1,835 (1)	2,413 (3)	31	47.7 (2)	21.3	71.7 (1)	22.9
Punjab	1,649 (2)	2,109 (6)	28	37.5 (5)	7.8	52.4 (4)	13.2
Tamil Nadu	1,160 (6)	1,948 (8)	68	48.4 (1)	14.2	46.5 (5)	9.0
India	1,054	1,984	88	31.2	5.5	42.5	10.6

Figures in parentheses are state ranks.
* non-farm households consist of "self-employed" in non-agriculture, "Other labour" (manual labour in non-agricultural occupations), and "Others" (jobs involving physical labour but also requiring a certain level of education); the major source of income was the one from which a household derived more than 50% of its income in the last 365 days.
Sources: Average household expenditure per capita 2009-10 taken from Dreze and Sen (2013); NSS: Employment and Unemployment Situation among Social Groups in India, Report No 425 (50th Round, 1993-94) and No 543 (66th Round, 2009-10).

urban per capita expenditure. The rural-urban differences in per capita expenditure were low in Kerala, Punjab, Haryana, TN, and HP, but high in Maharashtra and WB. Except for HP (due to topographical reasons), all other high-wage rate states had higher urbanisation. The growth in urbanisation was much higher in Kerala, TN, and Haryana after 1991. Urbanisation was the highest in TN. The proportion of households with non-farm as a major source of income in rural areas was much higher and increased in the past two decades in the high-wage rate states. This indicates that the level and increase in urbanisation and rural non-farm income sources, per capita income, and narrow differences in incomes between urban and rural areas contributed to sustained higher wage rates in TN, Kerala, HP, Punjab and Haryana.

Table 11: Changes in Share of Non-farm Income and Employment

State	Share of Total Value of Output of Non-agriculture in NSDP (%)			Share of Non-agriculture Employment (Rural %: PS and SS Together)		
	1999-2000	TE 2012-13	% Point Change	1993-94	2009-10	% Point Change
Andhra Pradesh	61.1	76.0 (8)	14.9	20.7	31.3 (7)	10.6
Gujarat	73.5	78.3 (4)	4.8	21.3	21.7 (8)	0.4
Maharashtra	73.5	78.2 (6)	4.7	17.4	20.6 (9)	3.2
West Bengal	60.2	76.3 (7)	16.1	36.7	43.7 (2)	7.0
Haryana	55.4	78.2 (5)	22.8	28.1	40.2 (3)	12.1
Himachal Pradesh	68.4	80.3 (3)	11.9	19.7	37.1 (5)	17.4
Kerala	65.2	85.5 (2)	20.3	43.6	64.3 (1)	20.7
Punjab	46.4	69.1 (9)	22.7	25.3	38.2 (4)	12.9
Tamil Nadu	76.0	86.9 (1)	10.9	29.5	36.3 (6)	6.8
All India	63.6	83.0	19.4	21.6	32.1	10.5

Figures in parentheses are state ranks.
Source: *Handbook of Statistics on Indian Economy*, RBI; NSS employment and unemployment statistics.

The share of total value of output of non-agriculture in NSDP was more than 80% in Kerala, TN, and HP in TE 2013. TN stood first, followed by Kerala, and HP. Even in agriculture-dominant Punjab and Haryana, there was a significant increase (more than 20%) between 2000 and 2013 (Table 11). The high-wage rate states had a higher share of rural non-agriculture employment and there was a significant increase between 1993 and 2009 compared to the national average. The share of non-agriculture employment increased by 20.7% in Kerala, 17.4% in HP, 12.9% in Punjab, and 12.1% in Haryana against an increase of only 10.5% in the national average between 1993 and 2009. The high-wage rate states went through employment-enhancing structural change with more inclusive participation of rural households.

Table 12: Sectoral Distribution of Rural Workers (Principal and Subsidiary), (2009-10, %)

States	Agriculture	Manufacturing	Construction	Trade, Hotels	Other Services	Total
Andhra Pradesh	68.7	8.7	6.7	6.7	9.3	100
Gujarat	78.3	5.8	4.4	4.0	7.6	100
Maharashtra	79.4	4.7	3.8	5.0	7.1	100
West Bengal	56.3	16.6	5.9	9.4	11.9	100
Haryana	59.8	9.3	10.9	6.9	13.1	100
Himachal Pradesh	62.9	3.6	15.3	4.9	13.5	100
Kerala	35.7	11.7	15.4	13.1	24.1	100
Punjab	61.8	7.4	13.0	5.7	11.8	100
Tamil Nadu	63.7	11.2	10.0	6.4	8.7	100
All India	67.9	7.2	9.4	6.4	9.1	100

Source: Employment and Unemployment Situation in India, Report No 537, NSS 66th round.

In the non-agriculture sector, construction had a major share, followed by other services in high-wage rate states (Table 12). Kerala and HP led in construction, while the share of manufacturing was higher in TN. The share of trade and hotels and services were higher in Kerala. Overall, it appears that construction played a major role in increasing the wage rates of unskilled labourers – the share of this sector was uniformly high in high-wage rate states. On the other hand, low-wage rate states had a lower share of construction employment. Even though the shares of manufacturing, trade, and other services were high in WB, wage rates were low. It indicates that the role of construction activities in increasing wage rates in rural India was high compared to manufacturing. Rural poverty levels in the high-wage rate states were much lower and poverty declined faster from 1994 to 2010 (Table 13). Rural poverty was only 1.6% in HP, 2.0% in Kerala, 3.2% in Punjab, 9.3% in Haryana, and 12.7% in TN against 21.9% for all India. A significant reduction in poverty occurred during the 1970s and 1980s in Punjab, Kerala and TN. The reduction in poverty was much faster among the self-employed in agriculture than agricultural labourers in all the states, indicating a faster growth of agricultural productivity than wage rates. The lower poverty in high-wage rate states is an indication that high wages contribute to a reduction in rural poverty.

Table 13: Trends in Rural Poverty

	Rural Poverty 2009-10	Annual Change in Rural Poverty: Headcount Ratio (HCR) (%)		Annual Change in Rural Poverty HCR (%) between 1993 and 2009	
		1974-94	1994-2010	Agricultural Labour	Self-employed in Agriculture
Andhra Pradesh	17.1 (8)	-3.4 (1)	0.5 (9)	0.7 (8)	2.5 (8)
Gujarat	13.1 (6)	-2.6 (4)	-2.6 (8)	-2.9 (6)	-0.6 (7)
Maharashtra	17.7 (9)	-1.6 (7)	-3.5 (7)	-3.2 (5)	-2.7 (6)
West Bengal	15.9 (7)	-2.2 (5)	-3.8 (6)	-3.9 (3)	-4.4 (4)
Haryana	9.3 (4)	-0.9 (8)	-4.2 (4)	-1.9 (7)	-5.9 (1)
Himachal Pradesh	1.6 (1)		-5.9 (1)		
Kerala	2.0 (2)	-2.9 (3)	-5.8 (2)	-5.3 (1)	-4.8 (3)
Punjab	3.2 (3)	-3.0 (2)	-4.5 (3)	-4.1 (2)	-5.3 (2)
Tamil Nadu	12.7 (5)	-2.1 (6)	-3.8 (5)	-3.7 (4)	-4.3 (5)
India	21.9	-1.7	-3.8	-2.3	-2.8

Figures in parentheses are state ranks.
Source: Thorat and Dubey (2012).

Trends in Labour Productivity and Farm Mechanisation

With the development of the capitalist sector, farm labour gets replaced by farm machinery in agriculture. The high level and growth of farm mechanisation, and the use of less labour per hectare results in higher labour productivity in agriculture. Labour productivity increased faster than wage rates in all the states (Tables 14 and 15, p 63). There was a significant gap in farm mechanisation among high-wage rate and low-wage rate states. For example, in paddy cultivation, Punjab's farmers spent Rs 4,852/ha on hiring farm machinery compared to only Rs 1,894/ha in AP. In the case of wheat, Punjab's farmers spent Rs 5,507/ha compared to only Rs 2,952/ha in Gujarat. The growth rates of farm mechanisation were significantly high in all the states (Table 14). In the use of

Table 14: Farm Mechanisation and Labour Use (TE 2010)

	Machine Labour (Rs/ha) TE 2010			Human Labour (Days/ha) TE 2010		
State	Paddy	Wheat	Cotton	Paddy	Wheat	Cotton
Andhra Pradesh	1,894		1,838	65		90
	(-0.5)		(12.7)	(-6.7)		(-1.6)
Maharashtra			1,111			106
			(4.7)			(0.0)
Gujarat		2,952	1,993		54	144
		(3.0)	(2.5)		(-3.0)	(4.0)
West Bengal	1,279			154		
	(7.1)			(0.2)		
Haryana	3,824	5,284	2,404	79	38	98
	(4.0)	(4.1)	(7.5)	(0.6)	(-0.8)	(2.8)
Himachal Pradesh	1,771	2,580		52	26	
Kerala	5,946			72		
Punjab	4,852	5,507	4,525	53	23	93
	(2.0)	(4.6)	(3.0)	(-0.7)	(-5.3)	(1.0)
Tamil Nadu			3,126			140
			(7.4)			(-2.7)
Total	2,200	3,840	2,051	94	44	102
	(4.2)	(4.0)	(4.8)	(-1.1)	(-2.5)	(0.4)

Figures in parenthesis are ACGR (% per annum between 1997 and 2010); machine labour is measured in Rs/ha, which is a proxy for capital/land ratio; human labour is measured in days/ha, which is a proxy for labour/land ratio.
Source: Computed from the comprehensive scheme for cost of cultivation.

Table 15: Changes in Labour Productivity

	Labour Productivity (kg/Day)					
State	TE 1999 Paddy	TE 2010	TE 1999 Wheat	TE 2010	TE 1999 Cotton	TE 2010
Andhra Pradesh	35	33 (-0.5)			10	22 (7.4)
Maharashtra					7	12 (5.0)
Gujarat			43	59 (2.9)	10	13 (2.4)
West Bengal	24	25 (0.4)				
Haryana	55	59 (0.6)	94	113 (1.7)	12	20 (4.8)
Punjab	88	127 (3.4)	99	185 (5.8)	8	24 (10.5)
Tamil Nadu					6	12 (6.5)
Total	37	45 (1.8)	58	88 (3.9)	9	17 (6.0)

Figures in parenthesis are ACGR (% per annum) between 1999 and 2010.
Source: Computed from the comprehensive scheme for cost of cultivation.

human labour (days/ha), growth rates were negative for all the states for both paddy and wheat. But in the case of cotton, due to the adoption of Bt cotton varieties and tremendous increases in yield, the use of labour increased. In all states, agricultural labour productivity increased, but the gap between high-wage and low-wage rate states remained wide (for example, in paddy, labour productivity in Punjab was 127 kg/day compared to only 25 kg/day in WB and 33 kg/day in AP).

In high-wage rate states (Kerala, TN, HP, Punjab, and Haryana), faster structural transformation – an increased share of rural non-farm employment, urbanisation, a low income gap between rural and urban areas, increased agricultural labour productivity, and high literacy rates – increased rural wage rates and reduced the gap between agriculture and non-agriculture wage rates, thus reducing poverty and indicating that these states were on the verge of the LTP. On the other hand, in low-wage rate states, the growth of labour-saving and capital-intensive sectors – such as information technology (IT) and services (in AP and Maharashtra), petroleum (Gujarat), and other manufacturing (in WB) – with few linkages to the rural economy did not generate enough employment in the modern sector to speed up structural change in rural labour markets. Even with higher per capita income growth, the slow and non-inclusive structural change in employment resulted in low-wage rates in these states, indicating that they have not yet reached the LTP (Roy 2009). It was also true that some non-Lewisian factors such as the withdrawal of women from the labour force and rising enrolments in institutions of higher education reduced the labour force (Chowdhury 2011) without much effect on wage rates. Our results are in line with Datt and Ravallion (2002), who stated that while both the urban and rural poor gain from rural growth, the rural poor do not benefit from urban growth, especially in low-wage rate states. Rural to urban migration was not a major driver of poverty decline in India. Higher farm yields increased real agricultural wages and reduced rural poverty, especially in Punjab and Haryana. Rural non-farm output reduced rural poverty in HP and TN. The effect of these factors varied across states depending on initial conditions.

Association between Growth in Wages and Other Lewisian Factors

The correlation coefficient between various Lewisian factors such as the growth and level of wage rates, share in non-agricultural SNDP and employment, urbanisation, migration rate, per capita income, and growth in per capita income were calculated from 2001 to 2012 for high-wage rate, low-wage rate, and other states, including less-developed states such as Bihar, Odisha, and Madhya Pradesh (MP) (Table 16, p 64). In high-wage rate states, the share of the non-agriculture sector in SNDP on growth and level of wage rates is positive, while it is slightly negative in low-wage rate states. The share of non-agriculture SNDP and employment have a positive association in high-wage rate states and a negative association in low-wage rate states. This indicates, to some extent, that there was jobless growth in low-wage rate states. Per capita income in the base year had a positive association with the share of non-agriculture SNDP, urbanisation, and migration in both high-wage rate and low-wage rate states, but it had a positive association with the growth of wage rates only in high-wage rate states. This indicates that structural change was not contributing enough to increase wage rates in low-wage rate states. Urbanisation had a strong negative association with the share of

Table 16: Correlation Matrix among Changes in Structural Variables in High-Wage Rate States

Variable	Growth in Wage Rates from 2000 to 2012	Wage Rate in 2012	Share of Non-agriculture GDP	Share of Non-agriculture Employment	Urbanisation (%) in 2001	Migration Rate (%) in 2007-08 (Male)	Per Capita Income in 2000	Δ Per Capita Income between 2000 and 2013 (%)	Agricultural Labour Productivity (Rs/day)
Growth in wage rates from 2000 to 2012	1								
Wage rate in 2012	-0.52 (0.50)	1							
Share of non-agriculture GDP	0.24 (-0.35)	0.45 (-0.50)	1						
Share of non-agriculture employment	-0.08 (0.04)	0.83 (0.21)	0.46 (-0.74)	1					
Urbanisation (%) in 2001	0.87 (-0.40)	-0.44 (-0.41)	0.30 (0.87)	0.02 (-0.75)	1				
Migration rate (%) (2007-08) (male)	0.55(-0.35)	-0.82(0.48)	-0.32 (0.30)	-0.42 (-0.32)	0.53 (0.45)	1			
Per capita income in 2000	0.55 (-0.44)	-0.86 (-0.23)	-0.63 (0.92)	-0.51 (-0.67)	0.50 (0.97)	0.86 (0.63)	1		
Δ in per capita income between 2000 and 2013	-0.29 (0.74)	0.65 (0.74)	0.83 (0.01)	0.49 (-0.38)	-0.22 (0.03)	-0.45 (0.35)	-0.83 (0.09)	1	
Agricultural labour productivity (Rs/day)	0.07 (-0.07)	0.25 (0.07)	-0.41 (-0.78)	0.53 (0.97)	0.10 (-0.79)	-0.03 (-0.41)	0.26 (-0.74)	-0.47 (-0.52)	1

Figures in parentheses are for low-wage rate states.

non-agriculture employment in low-wage rate states, indicating higher backwash effects in them than the spread effects of urbanisation. This was particularly so in states such as Maharashtra, where Mumbai had little positive effect on rural Maharashtra, and also in Gujarat (Nagaraj and Pandey 2013). Growth in per capita income was positively associated with wage rates, the share of non-agriculture in SNDP, and employment in high-wage rate states, while it was only associated with growth of wage rates and wage rates in low-wage rate states. Indicating that structural change towards the non-agriculture sector was accompanied by an increase in per capita income in high-wage rate states, structural change was lower in low-wage rate states, although income increased. In the low-wage rate and underdeveloped states, including Bihar, Uttar Pradesh (UP), MP, and Odisha, the labour force dependent on agriculture is so large that to raise wages and reduce poverty, rural non-farm employment will have to grow substantially faster. Although in states such as UP, Bihar, MP, and Odisha wage rates increased from a lower base, they will take much longer to pass the LTP, given their low labour productivity in agriculture and a large chunk of rural workers still dependent on the monsoon for farming. Hence, agricultural

productivity was an important factor in raising wage rates in the short to medium run (Kotwal et al 2011). Our results are in line with Palmer-Jones and Sen (2003) and Dreze and Sen (2013) in that the process of structural change and rise in wage rates was slow in states with initially low levels of farm productivity, low rural living standards relative to urban areas, and poor basic education. In line with Foster and Rosenzweig (2004), our findings point out that both agricultural productivity and non-agriculture sector growth had positive effects on rural wages, but that the magnitude of the effect of the non-farm sector was larger in high-wage rate states. In underdeveloped states, agricultural productivity plays a larger role in increasing wage rates (results not presented here).

5 Conclusions

The paper examined growth, structural change, and wage rates in India and among the country's developed states with the objective of understanding stages of development from a Lewisian perspective. At the all-India level, from 1995 to 2006, growth of wage rates was negligible, but from 2006 to 2012, growth rates were positive and much higher than 5% for both the agriculture and non-agriculture sectors. However, the aggregate picture conceals more than it reveals. It is hard to believe that backward states such as Odisha, MP, Chhattisgarh, and Bihar have crossed the LTP given their low-wage rates. Some developed states such as Haryana, Punjab, TN, and Kerala are on a par with developed countries in many development indicators (Dreze and Sen 2013). In this context, this paper tried to assess the stages of development of five high-wage rate states (Kerala, TN, HP, Haryana, and Punjab) and four low-wage rate states (AP, Gujarat, Maharashtra, and WB) from the perspective of the LTP.

Punjab, Haryana, HP, Kerala, and TN reported consistently higher wage rates along with characteristics of structural change such as high urbanisation; a non-agriculture sector; low rural-urban and agriculture-non-agriculture income gaps; an increase in per capita income; and low poverty – all pointing to the LTP. Labour scarcity was visible, as indicated by the negative growth in labour use per hectare and the positive growth in farm mechanisation and agricultural labour productivity in these states (Rosenzweig 1978; Foster and Rosenzweig 2004). Even though economic growth rates were high in AP, WB, Maharashtra, and Gujarat, rural wage rates were low and there was slow structural transformation and high rural poverty, indicating more time has to pass to reach the LTP.

The paper concludes that among developed states, Kerala, TN, HP, Haryana, and Punjab are on the verge of the LTP with high structural change, low poverty, and high wage rates. AP, Maharashtra, Gujarat, and WB with their rapid economic growth have the potential to reach the LTP but their non-inclusive development with low development of the rural non-farm sector have resulted in low wage rates and high rural poverty. States such as Odisha, MP, UP, and Bihar will take a much longer time to reach the LTP although wage rates and the non-farm sector show increasing trends.

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