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ICAE

29th | Milan Italy 2015

UNIVERSITÀ DEGLI STUDI DI MILANO AUGUST 8 - 14

AGRICULTURE IN AN INTERCONNECTED WORLD



Rural wages in Asia

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June 2015

Ver. 2-0, after peer review

Abbreviations

CPI	Consumer Price Index
FAOSTAT	Food and Agriculture Organisation statistical service
GDP	Gross Domestic Product
ILO	International Labour Organisation
IRRI	International Rice Research Institute
ISIC	International Standard Industrial Classification
LSMS	Living Standards Measurement Study
M	million
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act [India]
NSSO	National Sample Survey Organisation (India)
PPP	Purchasing Power Parity
RMG	Ready-made garment
UNDP	United Nations Development Programme
US\$	US Dollars

Acknowledgements and disclaimer

Our thanks to Dr Futoshi Yamauchi for sharing data on Indonesian wages, and to Professor Rick Barichello and three anonymous referees for reviewing earlier drafts .

This work was made possible by funding from the UK Department for International Development (DFID)

The interpretations and opinions expressed in the report are, however, not necessarily those of the above mentioned persons, nor of DFID or the Overseas Development Institute. The authors are solely responsible for any errors and omissions.

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Abstract

Rural wages in developing countries not only directly affect the welfare of many of the (very) poor, but they also affect the welfare of others through their impact on costs of food production and hence food prices. Since manufacturing in low income countries often recruits labour from the countryside, rural wages set the minimum level of factory wages

necessary to attract labour, and hence costs of production and thereby the growth of manufacturing.

Rural wages in much of Asia seem to have been rising notably over the last 25 years or longer, with signs in some countries of accelerating increases since the mid-2000s. This study compiles the evidence for this; then examines the influence of potential determinants, including changes in agricultural labour productivity, manufacturing, and rural working population, on rural wages. It concludes by discussing the possible implications of the results for rural poverty, food prices and the location of manufacturing

1. Introduction: aims of this study

1.1 Motivation for this study

Rural wages matter in developing countries ...

Rural wages in the developing world matter since many of the poorest people depend to some degree on them. It is still the case that the majority of the world's poor — perhaps as many as 75%, and especially those with incomes below extreme poverty levels of US\$1.25 a day, live in rural areas. For example, in India in 2009/10 39% of the rural workforce depended on casual labouring: up from 36% in 1993/94 (Alha & Yonzon 2011). This may understate the numbers who depend on casual work: there are also those who may be self-employed, but in occupations such as barbering or collecting firewood where the fee paid is tantamount to a wage. Levels of rural (unskilled) wages thus heavily affect poverty in rural areas.

Moreover, rural wage levels affect costs of agricultural production, above all those of growing food, and hence affect food prices. Not only do food prices matter for the welfare of those on low incomes, but also food prices affect wages offered in industry and services. Simply to be sure that workers are fed well enough to work, most factory owners will be reluctant to pay wages below the level at which staff can afford to eat.¹ The influence of rural wages on food prices is, however, moderated by the scope both to substitute machine operations for labour on fields, and to import food at lower cost than domestic supplies.

Lastly, if rural and urban labour markets are integrated to some degree, for low income countries rural wages mark the lowest levels of wages that may be offered in manufacturing and services, since in early stages of development many of those working in these occupations will be recruited from the rural work force. Hence rural wages influence costs of manufacturing and with that the prospects for growth of that sector.

... and in Asia they are rising

Reports — see Annex A for a review of recent work — indicate that rural wages in parts of Asia, in countries such as Bangladesh, China and India have been rising since the mid-2000s, and probably at a faster rate than before.

¹ This is the 'efficiency wage' hypothesis: paying more to workers on very low wages so that they can be better nourished leads to additional productivity that exceeds the cost of increased wages.

If this represents a trend, rather than an exceptional short-lived increase, and especially were the same to apply to other countries of the region, the implications for development in Asia and even beyond Asia would be little short of momentous. Hence this study aims to review change in rural wages in Asia during the 2000s, investigate causes of changes, and consider the implications.

The study here is restricted to Asia since this is the continent where over the last four or more decades economic growth has been strong in most countries, and where the transition from agrarian to industrial societies is most evident. Within Asia the particular focus is on East, South and Southeast Asia: experiences in Central and West Asia have less in common with the rest of continent.

1.2 Questions posed

This study addresses the following questions.

- ***What trends can be seen*** in rural wages in Asia during the 2000s? How much is there a common pattern across the region?
- ***What factors are driving the increases seen?*** Above all, does it stem from increased agricultural production and productivity, from changing demography, or from urbanisation and industrialisation? To what extent does it reflect public policy such as minimum wages and public employment schemes? What may be expected for trends in rural wages over the next five to ten years?
- If rural wages are rising, then ***what are the implications*** for rural development and poverty, for food prices and food security, and for economic growth both in Asia and in other parts of the developing world?

These are substantial questions, cast moreover across a large continent with diverse country experiences. To answer them fully would take far more time and funds than we had for this study. Hence this report is exploratory. As will be apparent, the evidence can be interpreted to give a compelling account, although quite wide margins of confidence apply to some findings. That means that while we can be reasonably confident of the trends and their drivers, we are less confident of the exact degree of the relations observed.

Restricting observations to one or two countries would have allowed more precision, but would have limited the generality of the findings, leaving doubts that the countries chosen were exceptional in some respects.

The rest of this report is arranged as follows. Section 2 reviews some existing literature on rural wages in Asia, to review changes and to identify factors that may explain them. Section 3 reports the approach taken, data used and analyses carried out in this study. Results, both descriptive and analytical, appear in Section 4. Finally Section 5 concludes, with consideration of potential implications for development both in Asia and further afield in the developing world.

2. Study approach, data and methods

2.1 Research questions

From the general questions posed, the following two were selected for detailed investigation, given the limits of secondary data available and time for study:

1. *What trends can be seen* in rural wages in Asia during the 2000s? In how many cases have increases in rural wages been more rapid in the second half of the decade compared to the first half?
2. *What factors are driving the increases seen?* What is the relative significance and weight of increases in agricultural productivity and manufacturing output that should raise demand for labour, or from changes in numbers of working age population in rural areas that affect the supply of labour?

2.2 Approach

The first question was answered by collecting data on rural wages in Asia during the 2000s, then comparing the rates of increase seen for the early and late part of the decade.

Data were collected for the most populous developing countries east of the Khyber Pass and south of central Asia. Thirteen countries in this region have more than 20 million inhabitants, in declining order of population: PR China, India, Indonesia, Pakistan, Bangladesh, Philippines, Vietnam, Thailand, Burma/Myanmar, Republic of Korea, Nepal, Malaysia and Sri Lanka. DPR Korea was omitted owing to its unusual characteristics and lack of data. Taiwan China was omitted for lack of readily available data on rural wages.²

Figure 2.1 shows the location of the countries, while Table 2.1 provides some background characteristics: population, proportion of residents classified as rural, and agriculture's contribution to their economies in 2000 compared to 2012.

Figure 2.1 Most populous Asian developing countries east of the **Table 2.1 Population, proportion rural, and agriculture's contribution to GDP**

² Given its level of industrialisation, rural wage rates in Taiwan probably rose substantially prior to the period of interest for this study in any case.

Khyber Pass & south of central Asia



	Population 2013	% Rural	Agriculture, value added, % of	Agriculture, value added, % of
China	1,417	46	15	10
India	1,252	68	23	18
Indonesia	250	48	16	14
Pakistan	182	63	26	24
Bangladesh	157	71	26	18
Philippines	98	51	14	12
Viet Nam	92	68	23	20
Thailand	67	65	9	12
Burma/ Myanmar	53	66	57	48*
Korea, Rep	49	16	5	3
Malaysia	30	26	9	10
Nepal	28	82	41	37
Sri Lanka	21	85	20	11

Sources: Map from Wikimedia commons. Population data from FAOSTAT. Agriculture (% of GDP) from World Bank WDI

Note: National classifications of the rural/urban divide may not be fully comparable as different countries have different thresholds for village/town size classified as 'urban' * Data for agriculture, value added as a proportion of GDP for Burma/Myanmar is for 2004 as later data is not available.

For **rural wages**, the aim was to find a series that represents trends in unskilled rural wages. There is, of course, no single national rural wage. Wages vary by location, by season, by the job carried out and usually also by sex with women typically being paid less than men. Given limitations of time and access to data, a fairly strong assumption had to be made in several cases: that the data series selected to represent rural wages in each country were consistent in trend with other potential data series for that country.

To look at potential drivers of changes in rural wages, a simple model was first adopted:

$$\Delta \text{ Rural wage} = f[\Delta \text{ agricultural labour productivity, } \Delta \text{ rural working age population, } \Delta \text{ manufacturing output, Dummy for first half of the 2000s}]$$

— where Δ indicates change in annual average rate.

This assumes that the main influences on rural wages will come from changes in demand from farming or alternatively from growth of manufacturing output, and from changes to supply of labour. Changes for two time periods, early and late 2000s, were modelled, with a

dummy to see whether there was any significant change in the relations seen between the two periods.

Several simplifying assumptions were made, including:

- a) Demand for agricultural labour will vary mainly according to the marginal productivity of labour. Increases in area tilled may also increase, but this was omitted on the grounds that increases in area cultivated have been limited in most of these countries during the 2000s;
- b) Growth of manufacturing was taken to represent growth of demand for labour in activities other than agriculture. Clearly services also require labour. Manufacturing was however thought to represent a source of jobs better-paid than agriculture, since services can include activities that are badly rewarded: informal, refuge activities undertaken by poor people who cannot afford unemployment; and,
- c) Growth of working age population represents the supply of labour. This variable should encompass both population growth in rural areas and net migration out of rural areas. It assumes that the rates at which different parts of the working age population participate do not change significantly. In practice it may be that this changes by age — with increasing incomes, adolescents may feel they can spend more time in school before seeking a job, while older workers may be able to retire earlier; and by sex — women may prefer to stay home as income rises, or alternatively as they spend longer in school may actively seek careers. Over a decade, however, we assumed that such changes would not affect the numbers seeking work as much as the demographic factors.

The first two assumptions may seem quite strong. However, given that the model operates by rates of change rather than levels, it is not necessary that the variables selected completely describe demand for rural labour, but rather that they represent the main forces of demand and that omitted variables would not show a different trend. To expand: in the case of agriculture, the assumption is not that increases in area do not raise demand for labour: of course they do. But the assumption is that such increases are not greater than those in agricultural labour productivity. Similarly, the omission of labour demand in services assumes that any increase in service jobs (better paid than in agriculture) is not greater than that of manufacturing.

Endogeneity

Some of the relations modelled may, however, be endogenous. One possibility is that the rural wage rate affects the growth of manufacturing, since the rural wage may represent the lowest wage that can be offered for unskilled labour. Hence if rural wages rise, then unskilled wages in manufacturing may also rise. This might then reduce potential profits to industry, deter investment and slow the growth of manufacturing. That assumes that the cost of low skilled labour is major factor in investment decisions.

A second possibility is that the growth of the rural working population is a function of rural ages, since as these rise out-migration from rural areas may lessen.

Both of these problems may be mitigated if instrumental variables that correlate with these variables but which are uncorrelated with rural wages can be found. A clear candidate for manufacturing growth is not apparent. For growth of the rural labour supply, changes in rural fertility levels is a potential instrument, taking changes seen 15 years before changes in rural wages.

2.3 Data sources

Recent rural wage data

Literature, databases³, and surveys (nationally representative or otherwise) were consulted to source data on rural wage trends in the 13 focus countries, looking for nationally representative *rural agricultural wage data spanning 2000 to 2014*.

Data beginning before 2000 was also considered in cases where available data would otherwise span too short a period. Sub-national data, that disaggregated by gender of worker, type of crop, season of production, state sector workers, and skilled agricultural worker wages were also collected where available: in some cases only such disaggregated data were available.⁴

³ Such as those from national statistical services or international organisations including the World Bank or ILO

⁴ There are no international databases that regularly report on daily wages for the sample of countries of interest that have consistently done so for the time period of interest. National surveys which collect this type of data are few and far between.

The wage data collected for the 13 countries over the last 15 or so years is presented in Table 2.2.⁵ While there are limits to the comparisons that can be made across countries given differences in wages covered, within countries comparisons through time should be valid.

Table 2.2 Description of data and sources on rural wages by country

Country	Type of data	Source
China	Peak and slack season daily wage data for agricultural labour in poor areas of Gansu province. 1998, 2003 and 2006	Zhang et al., 2010, using village surveys in poor counties in Gansu Province.
	Average male and female daily wages in five provinces: Jiangsu, Hebei, Shaanxi, Jilin, and Sichuan. 1998, 2004 and 2007.	Zhang et al., 2010, based on village surveys conducted by the Centre for Chinese Agricultural Policy (CCAP) in the 5 provinces.
India	Average male and female rural daily wages in India from 1998/99 to 2012/13.	India Labour Bureau, presented in Usami 2012, updated from the Labour Bureau site.
Indonesia	Average daily wages of animal husbandry workers from 2007 to 2013.	Bureau of Statistics Indonesia
	Village level agricultural worker daily wages in 98 villages across 7 provinces (selected for an agro-ecological zone spread) in 2007 and 2010.	Survey data from Dr. Futoshi Yamauchi
Pakistan	National monthly wages on average and for males and females involved in agriculture, forestry, hunting and fishing. For 2007/08 to 2010/11 and for 2012/13	Pakistan Bureau of Statistics, available in Labour Force Participation survey reports.
	Daily wages for crop workers in Pakistan 1999 to 2004	Occupational Wages around the World database
Bangladesh	Average daily wage rates for males and females in peak and lean seasons in 2000, 2005, and 2010	Zhang et al., 2013, using Household, Income, and Expenditure Surveys by Bangladesh Bureau of Statistics
Philippines	Average daily wage rates of farm workers involved in all crops, as well as for specific crops: rice, maize, coconut, and sugarcane. From 1991 to 2012.	Philippine Industry Yearbook of Labour Statistics 2013
	Wage rates in Central Luzon (the Rice Bowl of the Philippines), in 1998/99, 2003/04, 2007/08, and 2011/12	Calculated from surveys from IRRI Farm Household Survey Database, Central Luzon Loop surveys
Viet Nam	Monthly average income per employee in the state Agriculture, forestry and fishing sector in Vietnam, 2005 to 2012.	General Statistics Office of Vietnam, website

⁵ More detail on individual country data is presented in Annex B.

	Average daily wage for agricultural labourers in 1993, 1998 and 2002	Nguyen, 2006, using Vietnam Living Standards Survey and Vietnam Household Living Standards Survey data.
	<i>Average income of wage workers in rural areas 2007, and 2009 to 2012 (included to compare between state sector wage and average rural incomes)</i>	<i>Vietnam General Statistics Office Reports on the 2011 and 2012 Vietnam Labour Force Surveys</i>
Thailand	Average monthly wage for skilled agriculture and fishery workers in Thailand, 2001 to 2013	Bank of Thailand for quarterly wages, averaged annually
Burma/ Myanmar	Daily wage rates for rice production labour in Ayeyarwardy: Transplanting, weeding, fertilising, carrying, harvesting, threshing, winnowing; and the average of these. For 1996 and 2004 .	Calculated from surveys from IRRI Farm Household Survey Database, 'Survey for assessing changes in agriculture and livelihood in Ayeyarwardy division, Myanmar'
Korea, Rep	National average monthly wage rates for agricultural crop workers from 2000 to 2006 , and for dairy product processors, 1996 to 2006	World Development Report 2013 Occupational Wages around the World database
Malaysia	Annual national average agricultural sector monthly wages from 2010 to 2012	Malaysian Government statistics, Salaries and Wages Survey Report 2012
Nepal	Mean daily wage in Agriculture nationally, in 1995/96, 2003/04, and 2010/11	Nepal Living Standards Surveys - in Nepal LSMS Report 2011
Sri Lanka	Agricultural daily wages in Sri Lanka nationally: 2007 to 2012	Department of Census and Statistics Sri Lanka Labour Force Survey Annual Reports

Adjustments to wage data

Where wages were not presented as day rates, these were imputed from monthly wages using the convention applied in the ILO's *Occupational Wages around the World* dataset of 25 working days per month.

Wages in nominal local currency units were deflated by national Consumer Price Indices (CPI) re-based to 2010. To allow comparison across countries they were then converted to US dollars using the 2010 exchange rate — market exchange rate, so not corrected for purchasing power. Both CPIs and exchange rates were taken from the World Bank's Development Indicators database. Burma/Myanmar is an exception, where wages were deflated to 2012 levels and converted to 2012 US dollars: the official exchange rate grossly overvalued the Burmese kyat prior to 2012, so that a 2010 conversion would make daily wage rates implausibly high.

For analysis, rural wage data were selected to be as representative as possible. Where nationally representative average wages were not available, the largest available aggregates were used (geographically or in terms of crops). When wages were only available divided by sex, men's wages were taken; when wages were only given seasonally, then peak season wages were used. Wage data were separated into two time periods, early 2000s to mid-2000s, and mid-2000s to early 2010s⁶, to compare average annual changes in rural wages — dependent variable — to average annual changes across the same time period in three independent variables: agricultural productivity, manufacturing, and the rural working population.

Burma/Myanmar was excluded as data on independent variables were lacking. Malaysia was excluded as wage data were only readily available for 2010 to 2012.

The dataset ended up comprising eleven countries, six of which covered both time periods, giving 17 observations in all. Table 2.3 shows the countries and years of observations: yellow to orange representing the first period, and orange to red the second period.

Table 2.3 Time spans covered by data

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
China																			
India																			
Indonesia																			
Pakistan																			
Bangladesh																			
Philippines																			
Vietnam																			
Thailand																			
Korea, Rep																			
Nepal																			
Sri Lanka																			

Potential factors affecting rural wages

National data representing *agricultural labour productivity*, *the value of manufacturing*, and the size of the *rural working population* were compiled, as detailed in Table 3.4.

Table 2.4 Data on key variables influencing rural wages and sources

⁶ These time periods vary slightly depending on availability of data

Variable	Description of data	Source
Agricultural labour productivity	Agricultural productivity per worker was constructed by taking gross production value of all agriculture in constant 2004/06 US\$, divided by the estimated total economically active population in agriculture . Data are not available for Burma/Myanmar	FAOSTAT
Value of manufacturing	Manufacturing, value added in constant 2005 US\$. Manufacturing refers to industries belonging to ISIC divisions 15-37. [https://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=2] Data not available for Burma/Myanmar	World Bank Development Indicators
Rural working population	Constructed from data for rural population and the proportion of the total population between the ages of 15 and 64 . Applying the fraction of the total population aged 15 to 64 to the rural population gives an estimate of the rural working population. Ideally the fraction of the <i>rural</i> population aged 15 to 64 would be used, but these data were not readily available.	World Bank Development Indicators

3. Results

3.1 Description of key variables

Rural wages

Table 3.1 summarises the wage data found over three periods where available: a) early 2000s, b) mid-2000s, and c) late-2000s to early 2010s. Wages are presented in constant 2010 US\$, with percentage changes between the periods shown in the right-hand columns.

Table 3.1 Real rural wages and changes for 13 Asian countries, 1995/96 to 2013

Average daily wages	US\$ real daily wages (constant 2010 ^a)			Change in wages (%)		
	Early 2000s	Mid-2000s	2010s	Early 2000s to mid-2000s	Mid-2000s to 2010s	Early 2000s to 2010s
China	1998	2003	2006	1998-03	2003-06	1998-06
Gansu province, poor areas, farm labour, harvest season	2.32	2.89	4.50	25	56	94
Gansu province, poor areas, farm labour, slack season	1.73	2.17	3.21	25	48	85
Agricultural labour, male, 5	1998	2003	2007	1998-03	2003-07	1998-07

Average daily wages	US\$ real daily wages (constant 2010 ^a)			Change in wages (%)		
	Early 2000s	Mid-2000s	2010s	Early 2000s to mid-2000s	Mid-2000s to 2010s	Early2000s to 2010s
province average	3.02	3.73	7.18	23	92	137
<i>Jiangsu</i>	3.26	4.30	7.11	32	65	118
<i>Sichuan</i>	2.35	3.29	6.60	40	101	181
<i>Shaanxi</i>	2.20	2.79	7.02	27	152	219
<i>Jilin</i>	4.67	4.64	8.37	-1	80	79
<i>Hebei</i>	2.55	3.60	6.72	41	87	163
Agricultural labour, female, 5 province average	2.30	2.76	5.51	20	100	139
<i>Jiangsu</i>	2.49	3.33	5.76	34	73	132
<i>Sichuan</i>	1.92	2.39	4.99	25	109	161
<i>Shaanxi</i>	1.71	2.08	5.29	22	154	209
<i>Jilin</i>	3.58	3.53	6.52	-1	85	82
<i>Hebei</i>	1.71	2.37	4.92	38	108	187
India	2000/01	2005/06	2012/13	2000 to 05	2005 to 12	2000 to 12
National, agricultural labour, male	2.13	2.15	2.91	1	35	36
National, agricultural labour, female	1.59	1.61	2.21	1	37	38
Indonesia	n/a	2007	2010	n/a	07 to 10	n/a
98 villages, survey data, 7 provinces, median		2.92	3.64		25	
<i>Lampung</i>		2.55	3.58		40	
<i>Central Java</i>		2.27	2.67		18	
<i>East Java</i>		2.36	2.84		20	
<i>West Nusa Tenggara</i>		3.00	3.05		2	
<i>South Kalimantan</i>		3.29	4.76		44	
<i>North Sulawesi</i>		5.08	9.00		77	
<i>South Sulawesi</i>		3.05	3.44		13	
National average, Animal husbandry workers	n/a	2007	2013^b	n/a	07 to 13	n/a
		3.25	4.05		25	
Pakistan	n/a	2007	2012	n/a	2007 to 12	n/a
National, agricultural workers		2.77	2.35		-15	
<i>Male</i>		3.36	2.97		-12	
<i>Female</i>		1.68	1.46		-13	
Average daily wage, crop workers	2000	2004	n/a	2000-04	n/a	n/a
	2.33	2.63		13		
Bangladesh	2000	2005	2010	2000-05	2005-10	2000-10
National, peak season, male	1.92	1.92	2.78	0	45	44
National, lean season, male	1.53	1.52	2.21	-1	46	45
National, peak season, female	1.32	1.22	2.02	-8	66	53
National, lean season, female	1.10	1.02	1.62	-7	58	48
Philippines	2000	2005	2012	2000-05	2005-12	2000-12
National, farm labour all crops	4.61	4.47	4.54	-3	2	-2
<i>Rice</i>	4.77	4.58	5.09	-4	11	7
<i>Corn</i>	4.21	4.03	3.91	-4	-3	-7
<i>Coconut</i>	4.37	4.56	4.32	4	-5	-1
<i>Sugarcane</i>	5.39	4.95	4.38	-8	-11	-19
Central Luzon (rice bowl) rice labour	1998/99	2007/08	2011/12	98/99 - 07/08	07/08-11/12	98/99-11/12

Average daily wages	US\$ real daily wages (constant 2010 ^a)			Change in wages (%)		
	Early 2000s	Mid-2000s	2010s	Early 2000s to mid-2000s	Mid-2000s to 2010s	Early2000s to 2010s
	8.83	9.00	8.20	2	-9	-7
Vietnam		2005,2009	2012		2005-2009, 2009-2012	2005-12
National, Agriculture, forestry and fishing work, state sector		4.05, 6.29	8.63		55,37	113
Daily wage agricultural labourer 1993 = 1.45; 1998 = 2.13	2002					
	2.16					
Average income of wage worker in rural areas ^c		2007, 2010	2012		2007 – 2010, 2010-2012	2007-2012
		3.92,4.69	5.26		20, 12	34
Thailand	2001	2007	2013	2001-2007	2007-2013	2001-2013
National, skilled agriculture and fishing workers	4.02	5.36	6.81	33	27	69
Myanmar	1998	2004		1998 to 04		
Ayeyarwardy, rice labour	1.55	2.26		45		
South Korea	2000	2006		2000-2006		
National, field crop worker	41.21	56.20		36		
National, dairy product processor	1996	2001	2006	1996-2001	2001-2006	1996-2006
	39.12	44.52	51.03	14	15	30
Malaysia		2010	2012		2010-2012	
National, agricultural sector		10.82	11.75		9	
Nepal	1995/96	2003/04	2010/11	95/96-03/04	03/04-10/11	95/96-10/11
National, agriculture sector	1.39	1.73	2.22	24	29	60
Sri Lanka		2007	2012		2007-2012	
National, agriculture daily work		2.24	3.08		38	

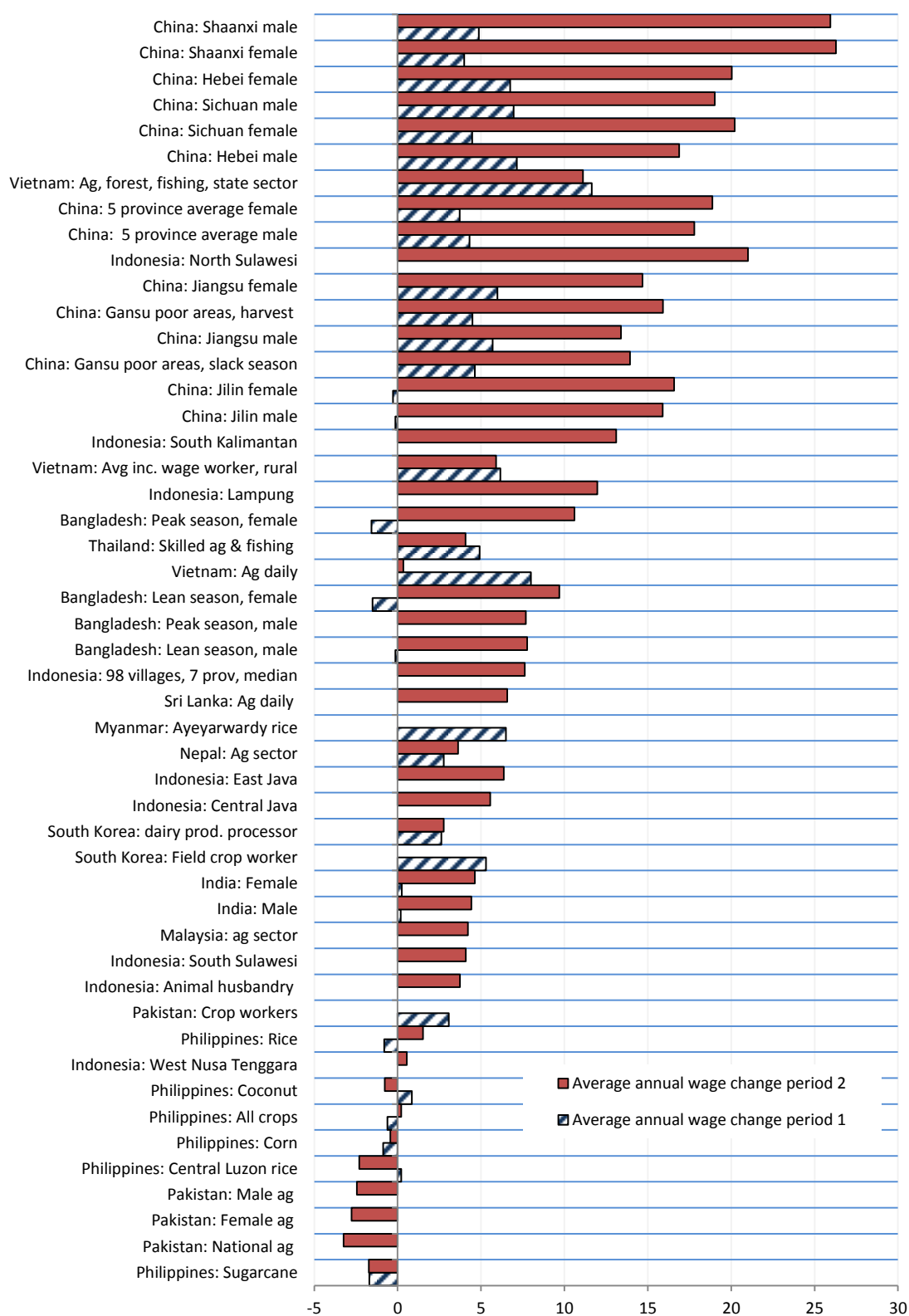
Source: Data from various sources as described in Table 2.2.

Notes: a) Values all in constant 2010 values except for Myanmar which is in constant 2012 values owing to currency valuation. b) 2013 data for Indonesian animal husbandry workers goes to June. c) Data on average income of wage workers in rural areas, although not a wage is included to show the contrast between state sector wages and average worker incomes.

The three dates over which the data is presented vary by country depending on availability; hence the subheadings which list the actual dates. Where male or female not specified, wages are not disaggregated by gender.

Rural wages rose in most countries and over both periods, see Figure 3.1. The exceptions are few: Pakistan in the second period; the Philippines for most crops in the early period, and all crops except rice in the later period; and Bangladesh in the first period. China, Vietnam, and some provinces of Indonesia saw the most pronounced increases, while at the other end of the spectrum, Pakistan and the Philippines saw stagnant or falling wages.

Figure 3.1 Agricultural wage changes, 13 Asian countries, early and late 2000s, average annual rates



Source: Constructed from data in Table 4.1

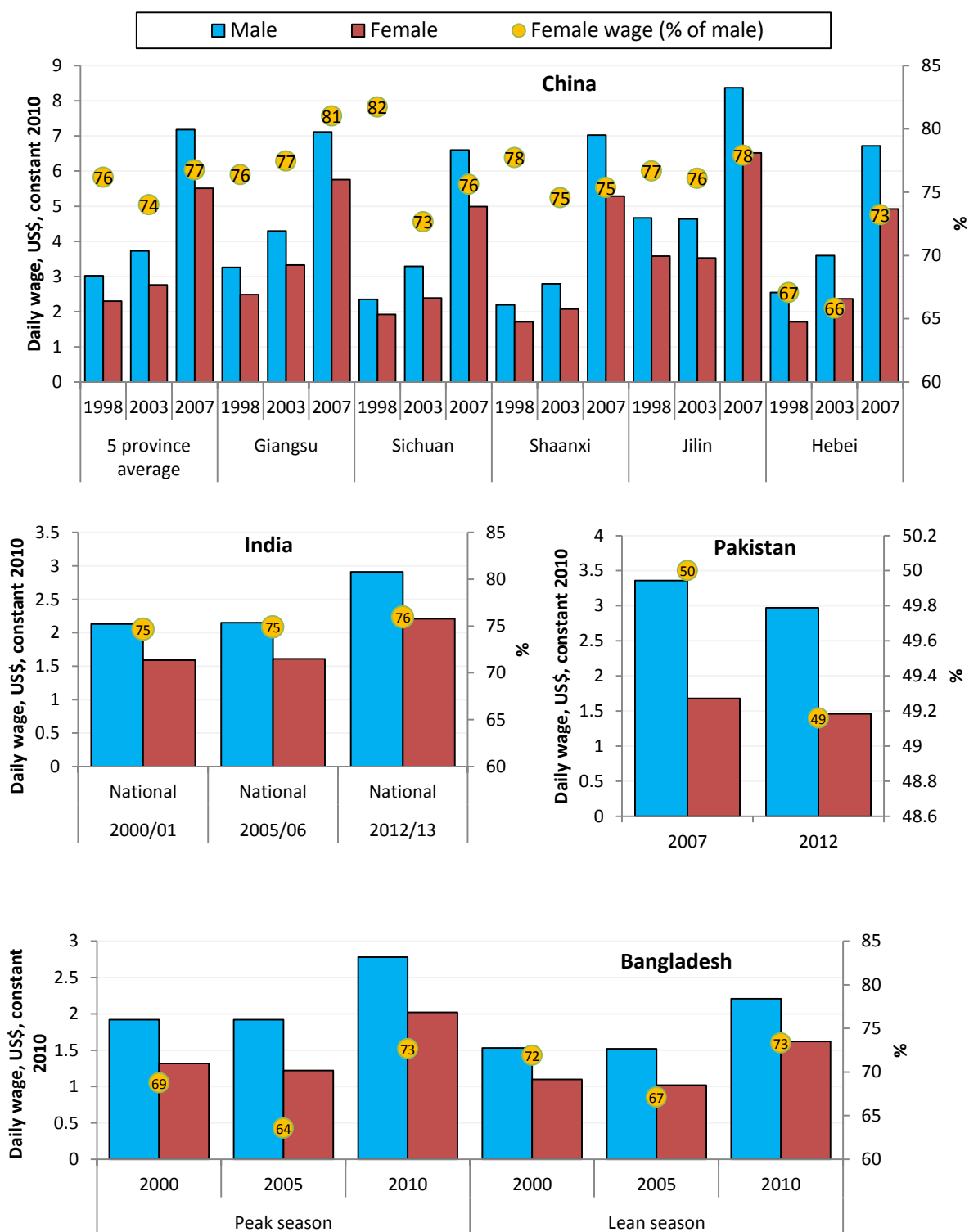
Rural wages increases accelerated in the 2000s for the majority of countries where the two periods could be compared. Acceleration was clear for all series from Bangladesh, China,

India, Nepal and South Korea. Wage increases had slowed in Thailand and Vietnam, while the results were mixed for the Philippines.

Even with increases in the 2000s, *levels of wages in rural areas in the early 2010s remained low*, with few exceptions. Only two observations exceeded US\$10 a day: farm workers in Malaysia and dairy process workers in South Korea. Indeed, many observations were below US\$5 a day. Consider what that means for households that have to depend on such earnings. If a worker were employed for six days a week, year round — a strong assumption when so much rural work is seasonal — then annual wage earnings would be US\$1,560. Assuming one dependant for every worker, then the average per caput incomes would come to just US\$2.14 a day. This may just clear the poverty line, but not by much. Two qualifications apply, however. One is that some rural households could have earnings from non-farm enterprises with higher returns to labour; the other is that the conversion to US dollars has been done at market, rather than purchasing power parity (PPP) rates — see Annex B for PPP conversions that show many more cases where wages exceed US\$10 a day.

For four of the countries, China, India, Pakistan and Bangladesh available *wage data are differentiated by gender*. Rural wages for women are in most cases between a quarter and one third less than those paid to men. Comparing the difference through time, the wage gap appears to be narrowing, with relative increases in female wages slightly outstripping increases in the wages of their male counterparts, see Figure 3.2. Female wages as a proportion of male wages grew in most of the five provinces in China, in India slightly, and in Bangladesh over the last period in particular. No progress is apparent in Pakistan where the wage gap is the worst of the sample, with female agricultural labour wages less than half of male wages in 2012.

Figure 3.2 Changes in the gender wage gap in 4 Asian countries

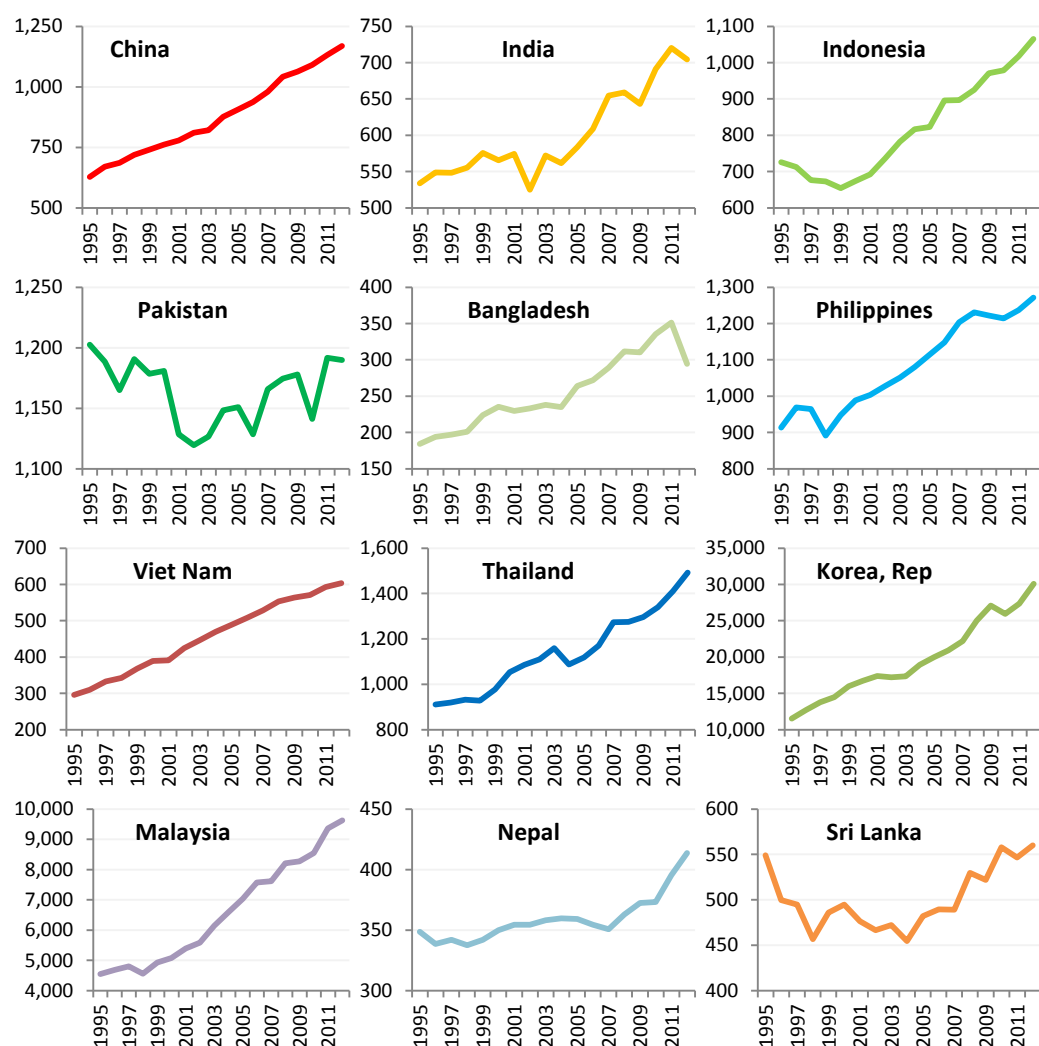


Source: Constructed from data in Table 4.1

Agricultural labour productivity

From 1995 to 2012, agricultural labour productivity improved in all of the sample countries, the exception being Pakistan, see Figure 3.3.

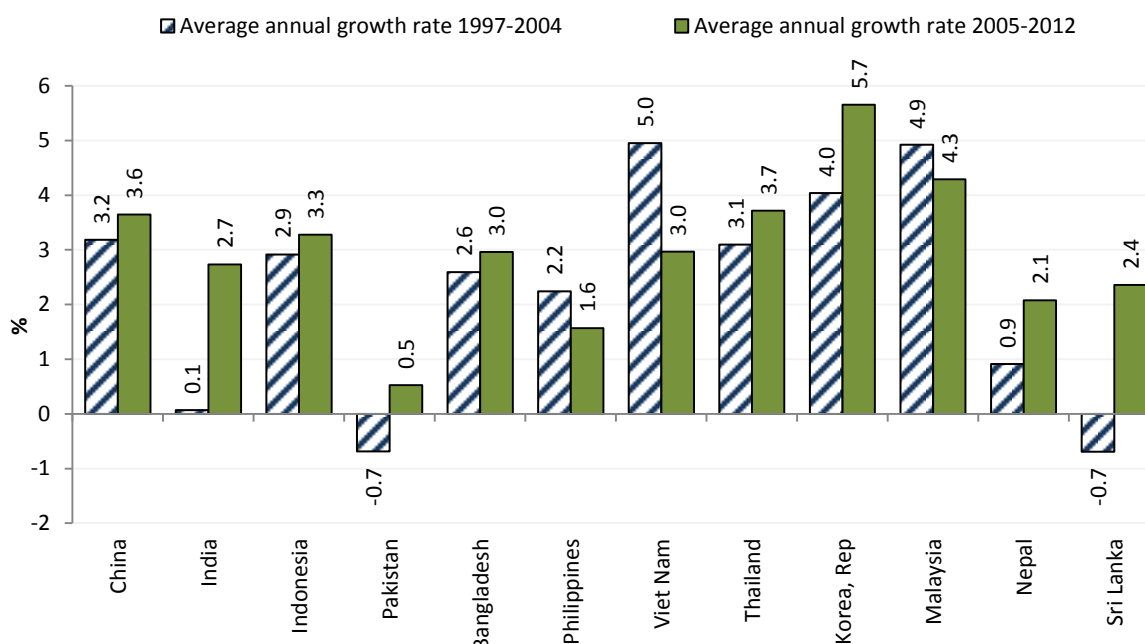
Figure 3.3 Changing agricultural labour productivity, 12 Asian countries, 1995–2012, gross value production per worker, constant US\$ 2004/06



Source: Data from FAOSTAT

Increases from 2005 to 2012 can be compared to those seen for the preceding seven years, 1997 to 2004, see Figure 3.4. Most countries show an acceleration in the average rate of growth: China, India (from almost no growth to almost 3% a year), Indonesia, Pakistan (from negative to positive), Bangladesh, Thailand, South Korea, Nepal, and Sri Lanka (also from negative to positive). In contrast, the Philippines, Vietnam, and Malaysia saw average annual rates of growth shrink from the first to second period, although the rate remained relatively high in the cases of Vietnam and Malaysia.

Figure 3.4 Average annual growth rate of agricultural labour productivity, 12 Asian countries, 1997–2004 and 2005–2012

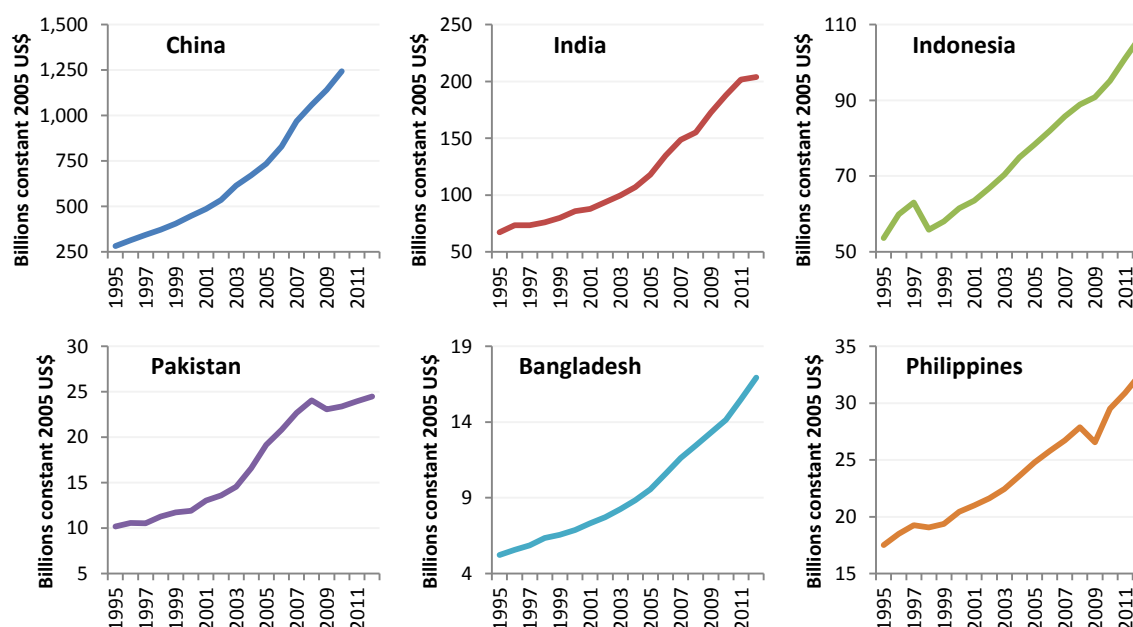


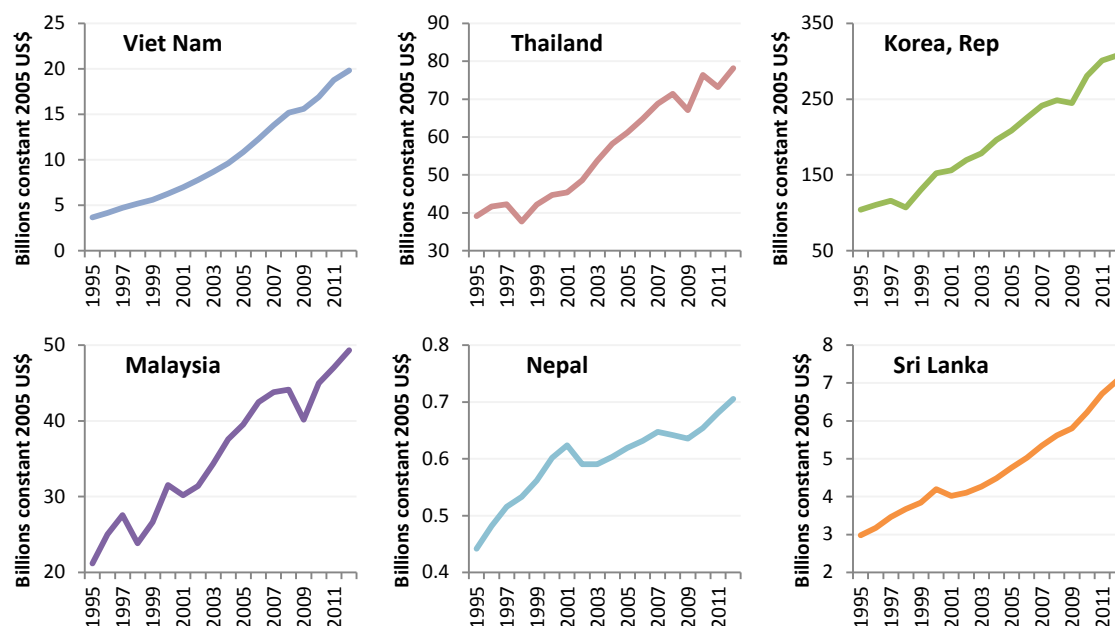
Source: Data from FAOSTAT, simple linear growth rates computed

Value of manufacturing output

From 1995 to 2012, the value of manufacturing output grew across all countries, see Figure 3.5, albeit at considerably different rates.

Figure 3.5 Changes in value of manufacturing across 12 Asian countries, 1995–2012



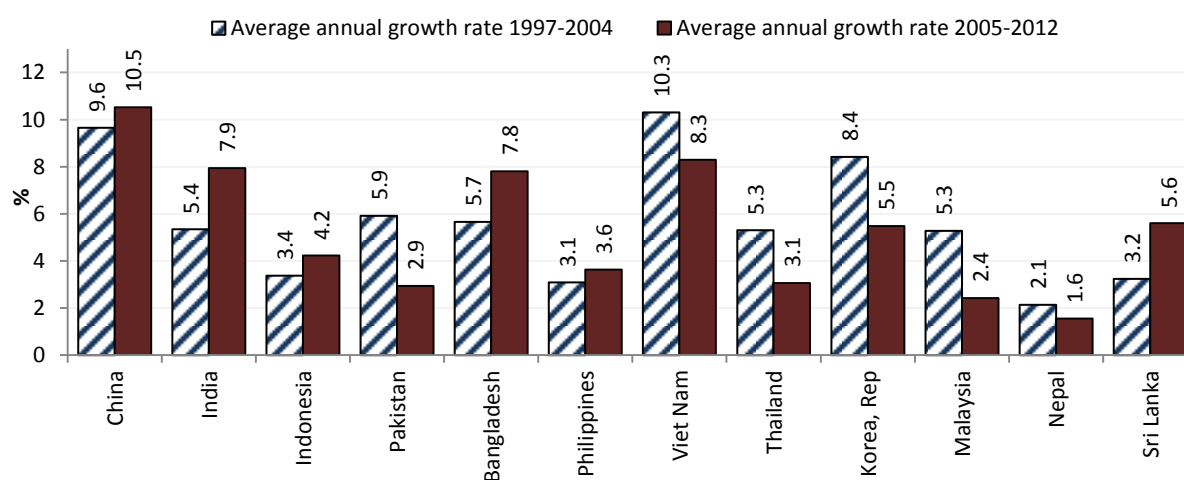


Source: Data from World Bank

Note: Data for China stops at 2010

Comparing manufacturing growth in 1997–2004 to that for 2005–12, see Figure 3.6, shows it accelerated for China, India, Indonesia, Bangladesh, the Philippines and Sri Lanka. In five cases growth slowed, although for Korea and Vietnam the rates still remained high.

Figure 3.6 Average annual growth rate of manufacturing in 12 Asian countries, 1997–2004 and 2005–12

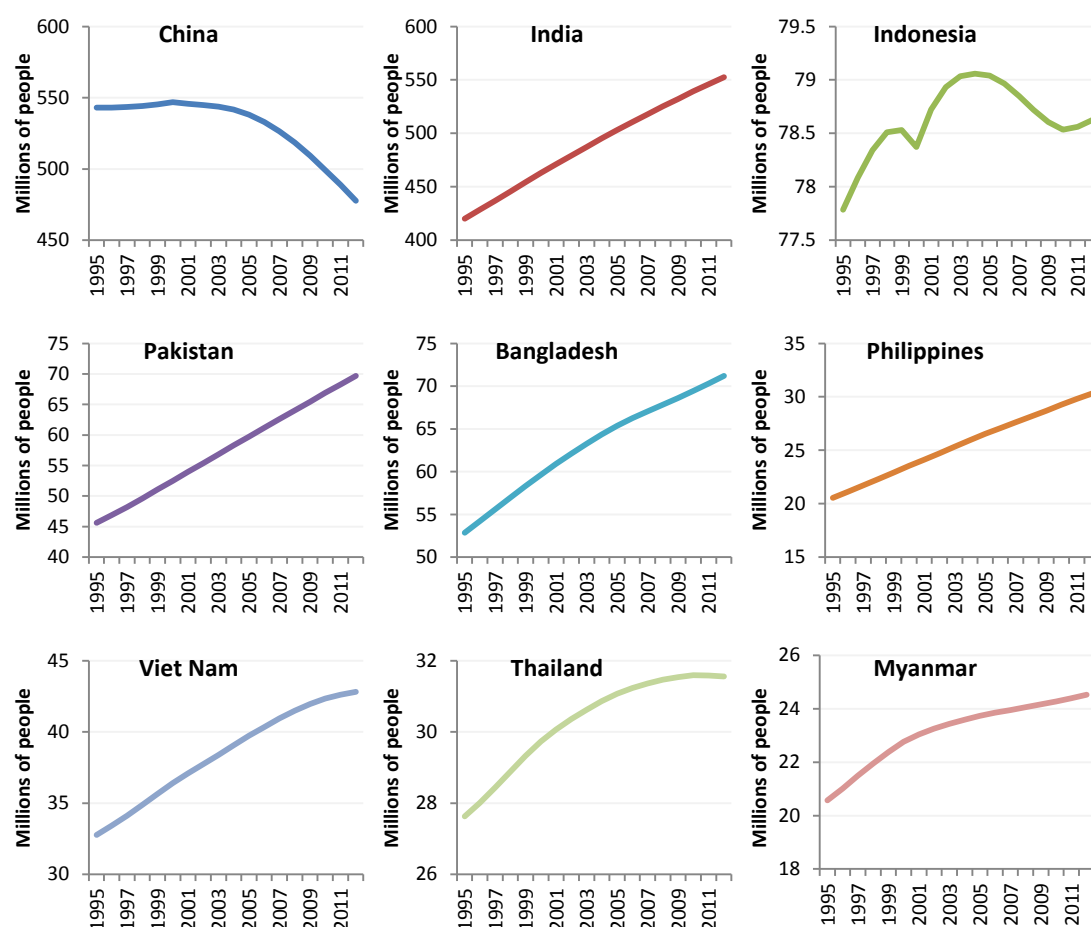


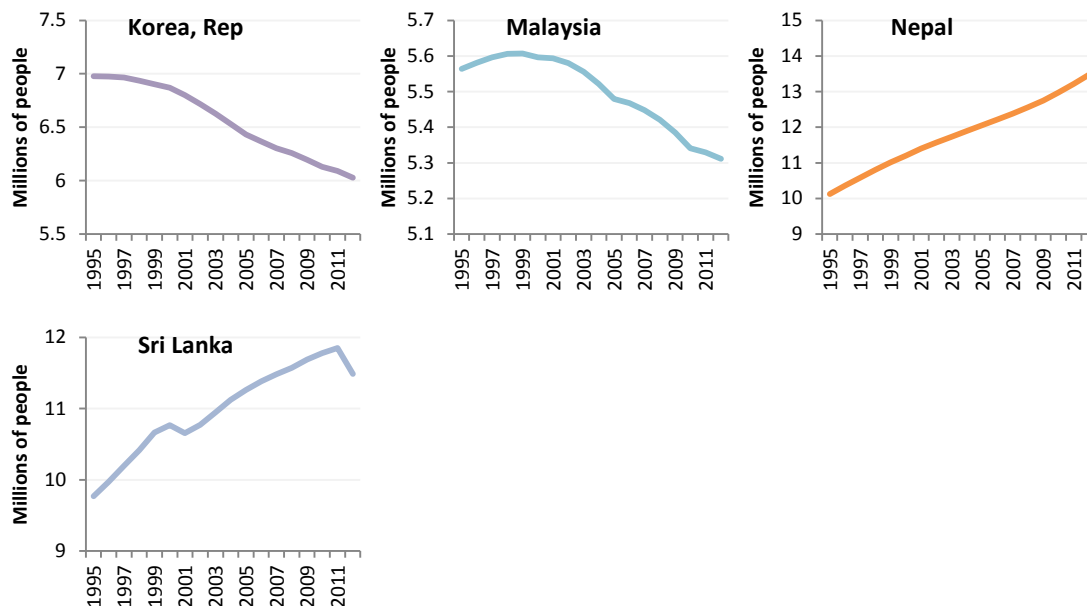
Source: Data from World Bank, simple linear growth rates computed

Rural working population

In the mid-1990s rural working populations were rising in all cases other than Korea. By 2012 the numbers were falling in China, Malaysia, Thailand and Sri Lanka —with Indonesia rising slightly after several years of falls. In these cases a turning point has been passed. In contrast, another group has had rural working population rising throughout the period: — Burma/Myanmar, Philippines, Vietnam and South Asia.

Figure 3.7 Changing rural working population, 12 Asian countries, 1995-2012

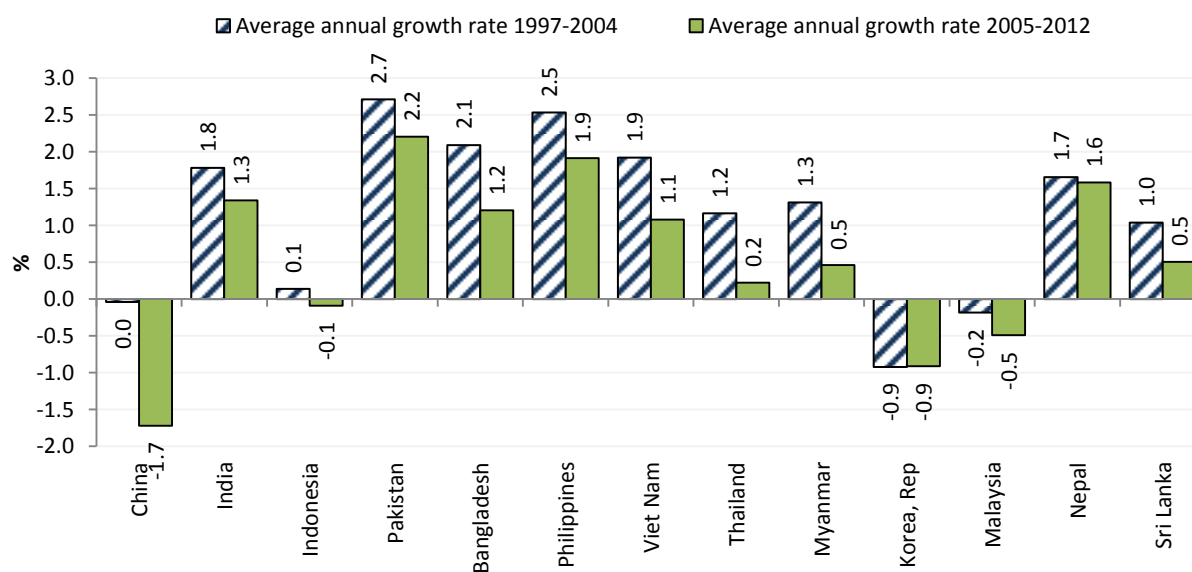




Source: Data from World Bank

All countries saw rates of growth fall from 1997–2004 to 2005–12, except for South Korea which experienced a constant rate of decline, see Figure 3.8. The most dramatic change occurred in China, where the rural working population changed little in the earlier period, but shrank on average by 1.7% a year in the latter. In Indonesia, the growth rate became negative in the second period, while in Thailand, Myanmar, and Sri Lanka it declined to half a percent per year or less.

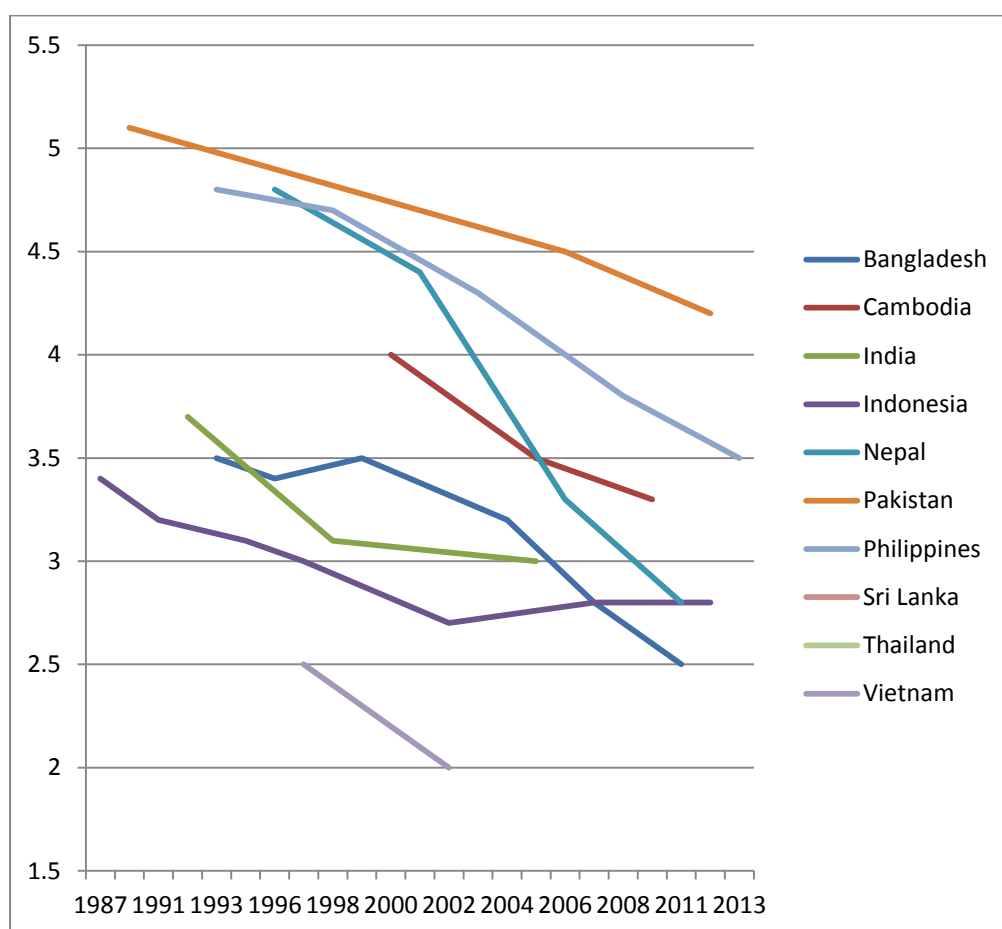
Figure 3.8 Average annual growth rate of rural working population in 13 Asian countries, 1997–2004 and 2005–12



Rural fertility rates

At the time of writing, June 2015, a complete data set for rural fertility rates has not been compiled. From Demographic and Health Surveys, the following statistics can be found, but with insufficient data for China, Korea, Sri Lanka and Thailand (Figure 3.9).

Figure 3.9 Changes in rural fertility rates, 1987 to 2013



Source: ICF International, 2012. The DHS Program STATcompiler, <http://www.statcompiler.com>, June 15 2015.

For the countries for which data exist, changes to rural fertility correlates significantly with changes in rural working populations. But this needs to be checked when a full data set has been compiled.

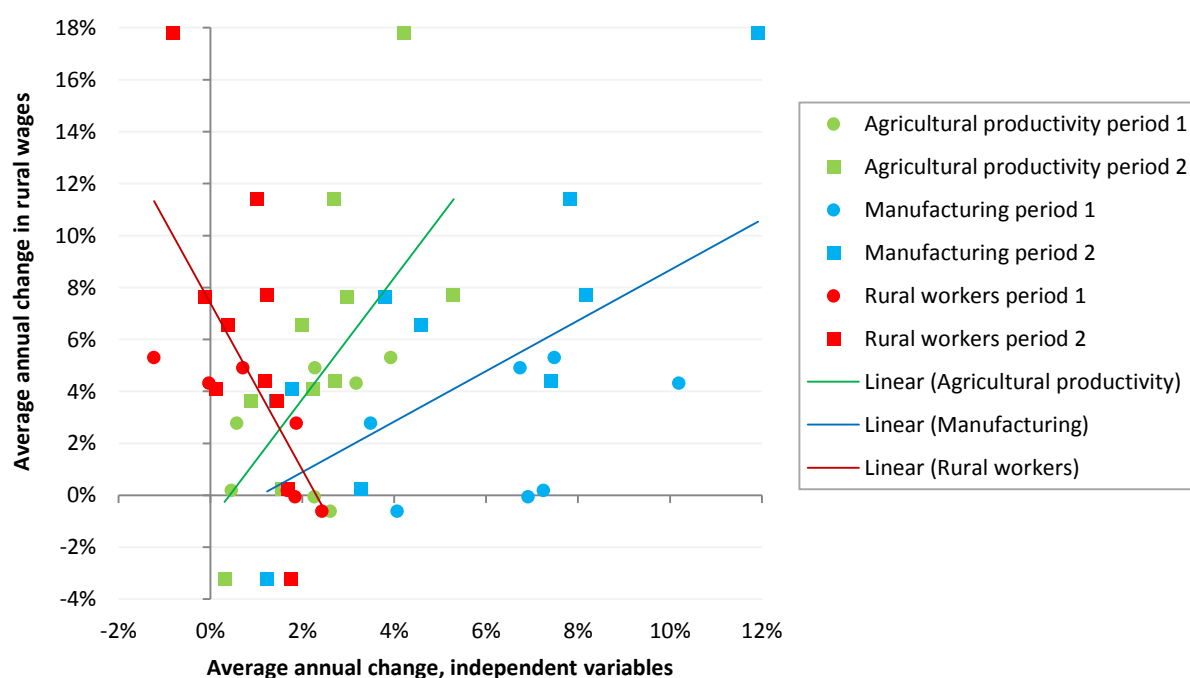
3.2 Causes of changes in rural wages

Examining the data

A multivariate simple linear regression was conducted, with data from a panel, unbalanced owing to data availability for some countries. Average annual change in rural wages was the dependent variable, while independent variables were the average annual changes in agricultural productivity, the value of manufacturing, and number of rural workers, as well as a dummy variable to differentiate between the early (1) and late 2000s (0).

Scatterplots show relations between the dependent and independent variables, see Figure 3.10. Visually it seems the expected relations apply: increases in agricultural labour productivity and manufacturing output correspond to increases in rural wages, while increased numbers of rural workers correspond to slower growth of rural wages.

Figure 3.10 Changes in rural wages compared to those for agricultural labour productivity, manufacturing and rural workers over two periods



Source: Constructed from various sources, see Tables 3.2 and 3.3 for details

A correlation matrix of the variables, see Table 3.2, shows that changes in rural wages do indeed correlate quite strongly with the independent variables, with coefficients in the range 0.60 to 0.66. The matrix, however, also shows that the independent variables also correlate quite strongly. That changes to rural workforce should correlate inversely with agricultural labour productivity does not surprise: if there are fewer rural workers, one

might expect that mechanisation and other investments on the land might compensate. Similarly the inverse correlation between rural workforce and growth of manufacturing output might be expected since some of the workers in manufacturing may come from rural areas. Neither of these relations, however, are automatic: the result of people leaving rural areas can be abandoned fields rather than higher labour productivity; while for manufacturing labour may come from urban rather than rural areas.

The correspondence between agricultural labour productivity and manufacturing output, however, was unexpected since it is hard to see a direct causal relation. Presumably factors that drive growth of manufacturing also encourage higher productivity of labour on farms — such as availability of capital, spread of technical knowledge, expertise and skills.

The correlation matrix hints at some positive development processes in Asia, in which vigorous growth of manufacturing draws labour from rural areas, while farmers then use machinery and intensify use of other inputs to compensate for lost labour and hence raise output per agricultural worker.

Table 3.2 Correlation matrix between variables

	Agricultural labour productivity	Manufacturing	Rural workers
Rural Wage	0.64	0.60	-0.66
Agricultural labour productivity	1.00	0.65	-0.56
Manufacturing		1.00	-0.44
Rural workers			1.00

Regression to explain changes in rural wages

Results of the regression proved highly significant (Anova F test 99% significant), see Table 3.3, with a high adjusted R-square, indicating the independent variables could explain almost two-thirds of the variation in changes in rural wages. Given the lack of degrees of freedom for the regression this is a pleasing result.

The coefficients on the explanatory variables also carry the expected signs. That on *agricultural labour productivity* is positive, but not significant in the presence of other variables. The *value of manufacturing* in contrast has a large and significant positive

coefficient. The coefficient on *rural workers* is strongly negative and significant, while the coefficient on the *time dummy* is a small negative, and also significant.

Table 3.3 Multivariate regression of changes in rural wages

Dependent: change in Rural Wages	Coef.	Std. Err.	T stat.	P> t	95% Conf. Interval	
Agricultural output per Worker	.194	.844	0.23	0.822	-1.65	2.03
Value Manufacturing	.808	.363	2.23	0.046	.017	1.599
Rural population 15 to 64	-1.745	.909	-1.92	0.079	-3.72	.235
Dummy for period	-.045	.017	-2.68	0.020	-.081	-.008
Constant	.028	.025	1.15	0.271	-.025	.082

$F(4,12) = 7.95$, Prob > F = 0.0023; R-squared = 0.7260, Adj R-squared = 0.6347

Source: Regression analysis in STATA

Note: this analysis will be repeated with changes to rural fertility as an instrument for changes to rural working population, when the data have been compiled.

The strongest driver of changes to rural wages turns out to be the number of rural workers, a function both of population growth in rural areas less net migration from rural to urban areas. This is an intriguing result since it begs the question of whether the variations in growth of the rural workforce results primarily from the demography of rural fertility and life expectancy, or whether out-migration from rural areas plays a significant role. For lack of readily available data, we cannot address this question now.⁷ Change in rural workers seems to be the variable that most sharply differentiates the sample countries.

Growth of manufacturing output is the next strongest driver of rural wages. The most likely causal link is that higher wages in manufacturing draws workers from farms to factories and thereby drive up rural wages.

Changes to agricultural labour productivity would be the next strongest influence, but the result is insignificant. This could be because there are too few observations to confirm the

⁷ Data might be found by looking at individual country census data, and if necessary constructing demographic models. A preliminary look at fertility rates, shows some striking reductions in fertility since 1970: all countries have seen large reductions, although some started the reductions earlier than others — East and Southeast Asia tending to be earlier than South Asia.

expected relation, or it may be that after accounting for the effects of the two previous variables, it adds little to explain changes in rural wages.

Lastly, the dummy for the first half of the 2000s is both significant and negative, although the value of the coefficient is small. Presumably it picks out the influence of some omitted variable, or else the influences modelled on rural wages have intensified since the mid-2000s. Given how small the coefficient is compared to those on the other explanatories, whatever the dummy represents is not that important.

Overall, it seems the model supports initial hypotheses about the factors explaining changes in rural wages. The main qualification is that the pull of manufacturing out-performs that of higher agricultural productivity, and by some considerable margin.

4. Conclusions and implications

4.1 Discussion of findings

The results from this study broadly confirm insights from the literature and hence our expectations. In sum,

- In most countries of Asia, rural wages have been rising during the 2000s. Even so, typical rural wages remain low, at levels that would barely allow households that depend on labouring for incomes to escape (US\$2 a day) poverty;
- In some countries, including Bangladesh, China and India, increases in rural wages have accelerated in the second half of the decade. Wage increases had only slowed for Thailand and Vietnam, and for some, although not all, wage series for the Philippines; and,
- It seems that changes in rural wages are associated inversely with changes in rural working population, and directly with growth of manufacturing. Changes in agricultural labour productivity may be associated with higher wages, but the estimate proved insignificant and low in the presence of these two main drivers. A small, but significant time shifter suggests that wages have been growing faster in the second half of the 2000s, independently of change in other variables.

Changes in rural working population may be the single most powerful driver, but since migration is incorporated within the variable, it is not a purely exogenous driver. As manufacturing grows, it is expected that some factory workers will be recruited from the countryside so that the migration component is linked to manufacturing. It is not surprising

then that growth of manufacturing appears as the next most powerful influence on agricultural wages.

Hence the analysis supports ideas about the pull of manufacturing on rural wages, but also suggests that demography plays a significant role. Indeed, when the explanatory variables considered here are examined — see section 4.1 — the largest differences across countries arise in the rural working population, with a sharp distinction between those countries where the rural workforce is now shrinking and those where it continues to increase. Countries of East Asia belong to the former group, those of South Asia to the latter, with countries in Southeast Asia falling in either.

This broadly supports the literature that reports the same pull of manufacturing as driving up rural wages. Demography features less in the literature, except for China where the effects of the one child policy have aroused keen interest.

4.2 Implications

Will rural wages in Asia continue to increase in the future?

Demography clearly matters. Fertility rates have fallen dramatically across Asia since the early 1960s. In 1960 rates were high, with country rates packed in a band between 5.5 and just over 7 children on average to women in their reproductive life. By 2012 the band ran from 1.2 to 3.3, with several countries including China below the rate of 2.1 needed to sustain population in the long term. Most of the transition in fertility rates took place between the early 1970s and late 1990s. For those countries that made the transition later, it is to be expected that the effect of those falling fertility rates will work their way through in the second half of the 2010s, since the impact on the working age population will be felt 15 years or more after the reduction in fertility. It is thus highly likely that even for countries that still have growing rural workforces, growth rates will slow and sooner or later turn negative.

The rate of future growth of manufacturing may be more difficult to foresee, although it is hard to imagine that manufacturing will cease to grow in the near future. Any slow-down in growth of manufacturing may be compensated by increases in services in urban areas.

If the two main drivers of rising rural wages are likely to continue their recent trends, it seems that rural wages can be expected to rise in the future. The implications of recent

increases and those likely to come will have profound implications for poverty, for agriculture and food prices and for manufacturing.

Rising rural wages will put a floor to low rural incomes — at least for those able to work — and indeed, probably to incomes throughout the economy, since rural wages have tended to mark the lowest returns to labour on offer. Hence rising rural wages should greatly reduce poverty for most households that have working members. Most of the (very) poor will be then be those living in households that lack members earning, where there are only the old, infants, chronically sick and badly disabled.

Although rural wages have been rising in most countries throughout the 2000s and often probably for some time before that, levels remain low in most countries. It will take some time more before they reach a level — perhaps US\$10 a day⁸ — that lifts a typical working household comfortably out of poverty.

Rising rural wages will push up costs of production in agriculture — already increased by the effect of higher oil prices seen since 2007 — and spur on mechanisation for those tasks where machinery is cheaper than increased cost of manual operations. As machines replace labour the advantage of small-scale farms in labour supervision will weaken, so a consequence may be an increase in farm sizes (Otsuka et al. 2015, forthcoming).

But the larger effect will be on ***food prices***. Asian food prices will rise, limited to some extent by the possible lower cost of imports from the world market — although this in turn will be moderated by the willingness of governments to allow imports of cheap food that might threaten farmers' incomes. Rising food prices threaten access of those on low incomes to food. The question then is the extent to which higher rural wages more than offset this effect. Given that those on low incomes do not spend all their incomes on food — 70% at most — then the wages effect should outweigh that of higher food costs.

Perhaps the ***most intriguing implication is for manufacturing***. Until recently most manufacturers in Asia have been able to recruit unskilled labour from rural areas at low cost, given low rural wages. But as rural wages rise, so it is likely that manufacturing wages will have to increase to recruit new workers. This effect is already being seen strongly in

⁸ Assume one dependant for every worker. Assume that rural labour can get work for 250 days a year. Ten dollars a day in wages then equates to just over US\$3 a day income per person.

China, where both phenomena are linked to a national workforce that is now shrinking every year. Manufacturers have two options as this takes place: to mechanise and thereby economise on labour; or to relocate to regions and countries with lower labour costs. Given the scale of its manufacturing, China's decisions will be critical. If the most common answer is relocation, then it is likely that plants in coastal China will move not only inland to less prosperous areas with lower wages, but also relocate outside of China. Neighbouring countries in Asia with low wages may be the first to benefit from this, with Bangladesh, Burma/Myanmar, Cambodia and Vietnam clear candidates.

There is, however, a further prospect: that of companies moving to Africa in search of lower wages. The World Bank reports Ethiopian factory wages for unskilled labour as one quarter those of Chinese wages. Logistics costs are higher, but overall costs are lower. Outside Addis Ababa, the first pioneer wave of relocated Chinese plants can readily be seen. Now these have broken the ice, how many more will follow? Justin Lin (May 2014) speculated that that 85 million factory jobs could leave China in the coming years. If half of those went to Africa, it could transform a continent where a predominantly youthful population means a surge in numbers entering the labour market.

Africa's economic under-performance since the late 1960s has been far greater in manufacturing than in farming. Renewed growth of manufacturing in Africa promises prosperous urbanisation with vibrant markets for those farmers staying on the land. That would be welcome news all round, including for agriculture.

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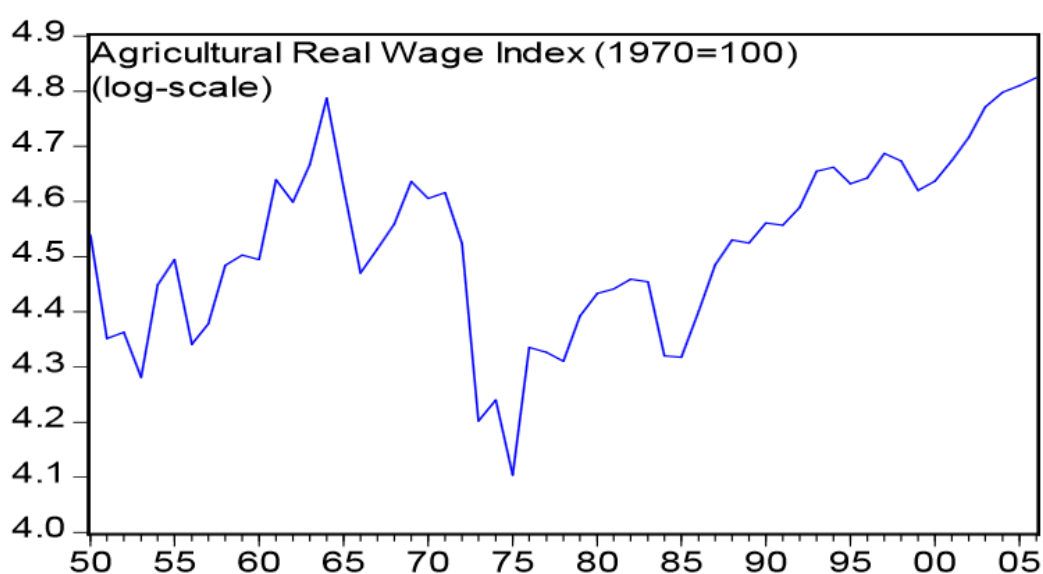
Annex A: Recent studies of changing wages in rural Asia

Bangladesh

Looking back over the longer term from the perspective of the late 1990s, Palmer-Jones & Parikh (1998) report that agricultural wages, deflated by the price of rice, fell from the late 1940s to the early 1970s, then rose through the 1980s and 1990s. They found this rise to be associated with increases in both real manufacturing wages and agricultural productivity.

More recently Hossain (2008) constructed an index of real agricultural wages from 1950 to 2006, see Figure 2.1. Farm wages initially rose, but declined sharply between the mid-1960s and mid-1970s: presumably on account of the political turmoil of those years leading up to and immediately following independence, but subsequently have been rising in most years. Increased agricultural productivity and the growth of the non-farm rural economy probably account for the increases.

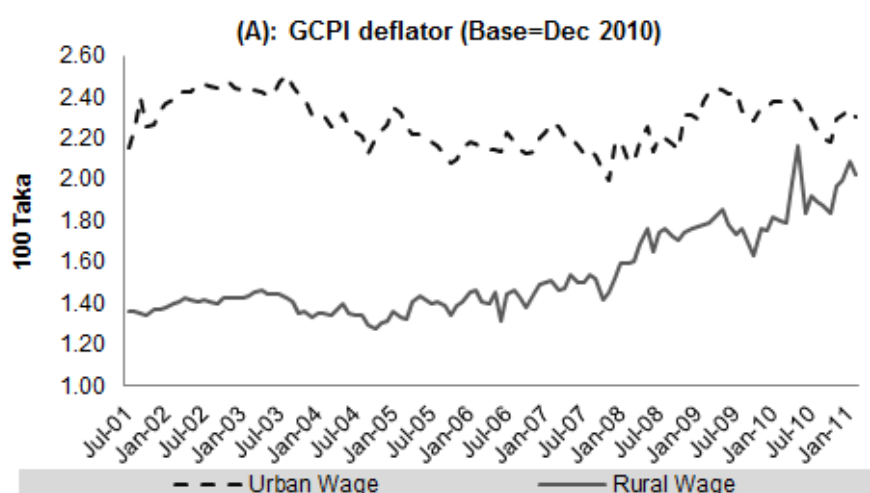
Figure 2.1 Bangladesh, agricultural wages, real, 1950 to 2006



Source: Hossain, 2008

This series has been further updated by Zhang et al. (2013) who find that rural wages have accelerated since 2005; so much so that the gap between urban and rural wages has narrowed, see Figure 2.2.

Figure 2.2 Bangladesh, urban and rural wages, deflated by the general consumer price index, 2001 to 2011



Source: Figure 3.1 in Zhang et al. 2013.

Note Urban wages are for the unskilled workers (such as, helpers in construction sites, carpenters, and other sectors). The base year is set to 2009/10.

Since the 1990s another driver of rising rural wages has been the growth of manufacturing, especially the garments industry that employs three million workers, mainly women, many recruited from villages. At first when labourers moved out of the agriculture sector there was only a small impact on rural wages because surplus labour existed; but over time the supply of labour has been drawn down, shifting advantage in the labour market in favour of workers.

Escalation of real wages has enhanced earnings of the poor and contributed to reduced poverty. Poverty incidence fell from 51% in 1995 to 49% in 2000 to 32% in 2010, so the pace of reduction of poverty accelerated in the 2000s. 'Rising real wages are likely major drivers behind this rapid poverty reduction.' (Zhang et al. 2013)

Other drivers of higher rural wages have been the growth of the rural non-farm economy, and male emigration to the Gulf and other countries, that have drawn men out of the farm labour force.

Hence farm labour is running short. Intriguingly, a 2014 report (Zahid) claims that women are now increasingly finding agricultural jobs more attractive compared to low-skilled jobs in the garment industry as wages in agriculture have risen.

According to the latest labour survey conducted by the Bangladesh Bureau of Statistics (BBS), in 2010, out of the estimated 25.6 million farm labourers in the country, 10.5 million were women, meaning that 6.7 million women joined the farm labour market over a period of ten years.

...

The [ready-made garment] RMG industry is losing its shine to the female workers, mainly because of the low wage. The farm sector has emerged as a very prospective alternative sector of employment for rural womenfolk. With more and more male farmhands migrating to urban centres to take up better paying jobs or rickshaw pulling, a void has been created in the rural farm labour market. The women have started to fill up the vacuum since the daily wage of a farm labourer is higher than the average daily wage of a RMG worker. (Zahid 2014)

Comparing wages in villages with high and low land productivity, Hossain et al. (2013) see agricultural wage rates rising on account of higher agricultural productivity. At the same time, new technology in rice growing — presumably labour-saving — has allowed labour to move out of agriculture into non-farm work:

... in villages with high land productivity, the proportion of household heads with farming as main occupation was 39% in 2008 compared with 47% observed in villages with low land productivity. In contrast, those who are engaged in trade were more prominent in high land productivity villages (17% as opposed to 10%). (Hossain et al. 2013)

International migration plays a role, not just because it reduces the supply of labour, but also remittances are spent locally on construction, amongst other things, creating extra demand for labour:

... wage growth tends to be higher in villages experiencing high growth in overseas remittances. Thus, high agricultural wage growth has been associated more with villages experiencing high remittance growth compared with villages experiencing low remittance growth. Overseas remittance indirectly supported the growth of construction sector in general and real estate sector in particular ... (Hossain et al. 2013)

China

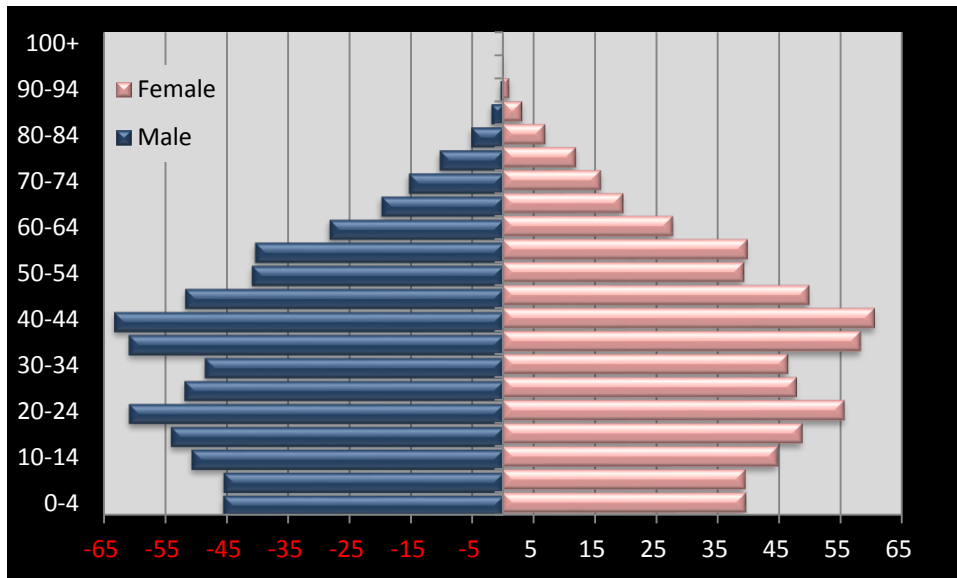
Recent Chinese studies focus on the ever-reducing numbers entering the workforce as China's demographic transition proceeds. This means that the fast-growing manufacturing plants need to recruit migrant labour from the countryside. Migration is mediated by urban registration of residents (hukou). The effect of minimum wages is in debate. Within rural China, increasing numbers work off the land, in non-farm activities.

Changing demography and workforce

China's population structure is striking: the age pyramid for 2010, see Figure 2.3, shows a pyramid for the elderly down to those in the 40–44 years old cohort, typical of fast population growth in the past. For younger cohorts the pyramid inverts, especially below age 20. This is the result of a rapid decline in fertility after the one-child policy was introduced in the late 1970s. Hence it will not be long before the numbers entering the workforce —conventionally those reaching 15 years — are fewer than those leaving —

conventionally, those reaching 65 years. Indeed, it is projected that in 2015 the number of Chinese aged 15 to 64 years will peak, after which the numbers will decline.

Figure 2.3 China's population by age and sex, 2010



Source: Compiled from data in Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2006 Revision and World Urbanization Prospects: The 2005 Revision*, <http://esa.un.org/unpp>, accessed, July 15 2007

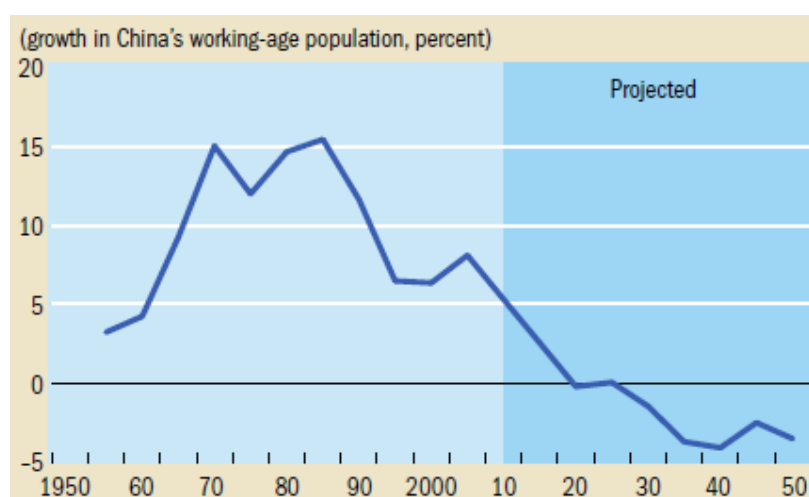
Some sources put this turning point earlier, in 2010, so that between 2010 and 2020 the numbers aged 15 to 59 would fall by more than 29 million (East Asia Forum 16 June 2014). In similar vein, Knight et al. (2013) estimate that the ...

'... urban-born labour force will fall by 6.4% over the 15 years between 2005 and 2020, with the fall starting in about 2010 and accelerating in the following years. The rural-born labour force will rise by only 2.6% over these 15 years, but the rise will be confined to the first five years and there will be a fall in the last five.'

Das & Ndiaye (2013) also see China as running out of labour, but it may be as much as a decade later, in the 2020s, before absolute numbers fall: see Figure 2.4. The numbers of underemployed ('excess supply') are falling, although the Lewis turning point when underemployed labour in rural China will finally have been absorbed into more productive work, may only be reached after 2020:

'... we estimate that China's excess supply of labor already peaked in 2010 and is on the verge of a sharp decline: from 151 million in 2010, to 57 million in 2015, to 33 million in 2020. China is expected to reach the Lewis Turning Point between 2020 and 2025 — that is, sometime in that five-year period, demand for Chinese labor will exceed supply. The rapid rate of decline in the excess supply of workers closely follows the projected path of the dependency ratio, which reached its historical trough in 2010 and is projected to rise rapidly hereafter.' (Das & Ndiaye (2013))

Figure 2.4 China's workforce, 1950 to 2050



Source: Das & Ndiaye (2013) from UN data

Migration from rural areas and hukou registration

It seems, see the Knight quote above, that increasingly new jobs in urban areas will have to be filled by migrants from rural areas. Liang (in Knight et al. 2013) reports record numbers of informal migrants in urban areas:

Second, the data from the 2010 Chinese population census show China's floating population (loosely defined as migrants who do not possess local household registration) reached 221 million in 2010, another new record. In fact, the two statistics are closely related: the rise of migration and China's floating population have overwhelmingly contributed to China's rising level of urbanisation and urban growth. These migrant workers also contributed enormously to China's economic miracle in the past three decades as they built China's skyscrapers and laboured in China's factories supplying goods across the globe. (Knight et al. 2013)

Migration to the cities is by now the most prevalent off-farm activity for rural Chinese, especially for those under 40 years old. Increasingly the farms are worked by those older who remain in the villages (Li et al. 2013). In general, farm households increasingly have other work off the land (Rozelle 2007).

Nevertheless, migration may not have reached its full potential, impeded by registration ('hukou') of people's residence in either rural or urban areas. Someone registered in a rural area who moves to a city cannot obtain education, health care and other benefits nor obtain a formal urban job without an urban permit. The result is that migrants suffer discrimination in wages: in 2009 migrant earnings, on average, were only 45% of the average urban hukou worker's hourly wage. This has, perhaps surprisingly, not improved in recent times, as the specific case of migrants to Shanghai illustrates. In 1995 migrant workers in Shanghai earned

50% of the hourly earnings of the urban hukou workers, while by 2009, migrants only earned 40% of the hourly earnings of their urban counterparts (Xin 2013).

Restrictions on movement, however, have been relaxed in recent years and are likely to become even more so, as urban job demand outstrips supply of labour (Bloomberg News Jan 20 2013).

Wages and minimum wage policy

In the second half of the 2000s, wages have been rising very rapidly indeed:

'In the period 2003 to 2008, the annual growth rate of monthly wages in real terms was 10.5 % in manufacturing, 9.8% in construction, and 10.2% for migrant workers. The real daily wages of paid agricultural workers in the same period rose even faster — 15.1% in grains, 21.4% in larger pig farms, and 11.7% in cotton.' (Fang 2011)

It is official policy to raise minimum wages: the '12th Five-Year Plan targets an annual increase in the minimum wage level of no less than 13%.' (Fang 2011) Moreover there are reports that local authorities in the Pearl River delta may be raising the minimum even higher in a bid to encourage higher technology industry.

'Localities are free to set their wages above the national level. In fact, provinces have increased minimum wages by an average of 16 per cent this year, after a 20% increase last year. Shenzhen in the Pearl River Delta tops the list in terms of minimum wage levels, with minimum monthly pay of 1,600 yuan (US\$258). This has forced more than half the companies in our survey to raise wages more than they had planned, particularly for the least skilled part of their workforce.' (Lau & Green 2013)

As manufacturing wages rise in China, it is expected that either firms will mechanise more, or shift factories from the higher wage coast to lower wage inland locations, or else move to countries with lower wages, with Bangladesh, Cambodia and Vietnam as likely places:

'Around 30% of the companies surveyed said they planned to move factories inland, while 10% said they planned to move out of China altogether. Both of these figures more than doubled from last year. Within China, many companies in the Pearl River Delta want to move westward to Guangxi province, where wages are 30% lower. Other popular destinations include Jiangsu, Hunan, Hubei and Jiangxi provinces. The favoured overseas destinations are Cambodia, Bangladesh and Vietnam.' (Lau & Green 2013)

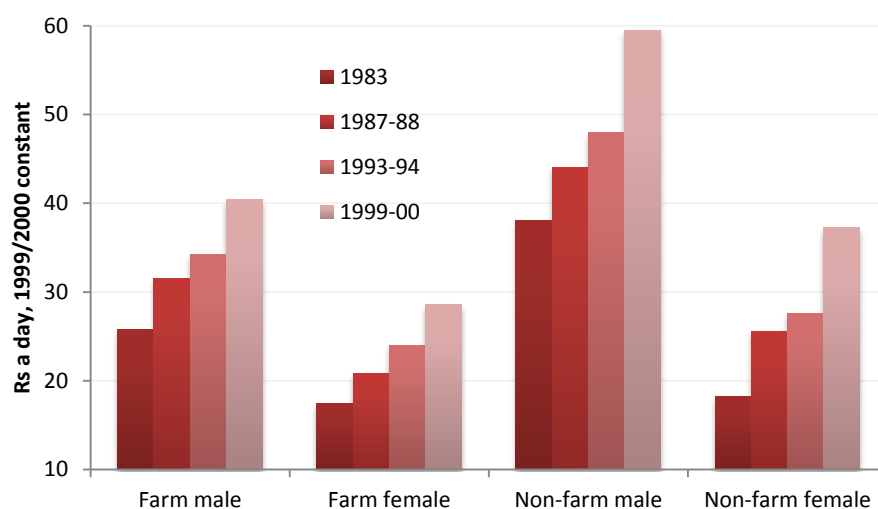
India

Rural wages in India have been rising since at least the late 1970s, see Figure 2.5. By the turn of the new century, 44% of workers in rural India depended on casual wages. Women

earn less than men, although the difference narrowed marginally between the early 1980s and 2000.

Earlier studies associate rising rural wages with increased yields on farms (Datt & Ravallion 1998); as well as with public investments in physical infrastructure of roads and irrigation and in human capital in the form of schools (Bhalla et al. 2004).

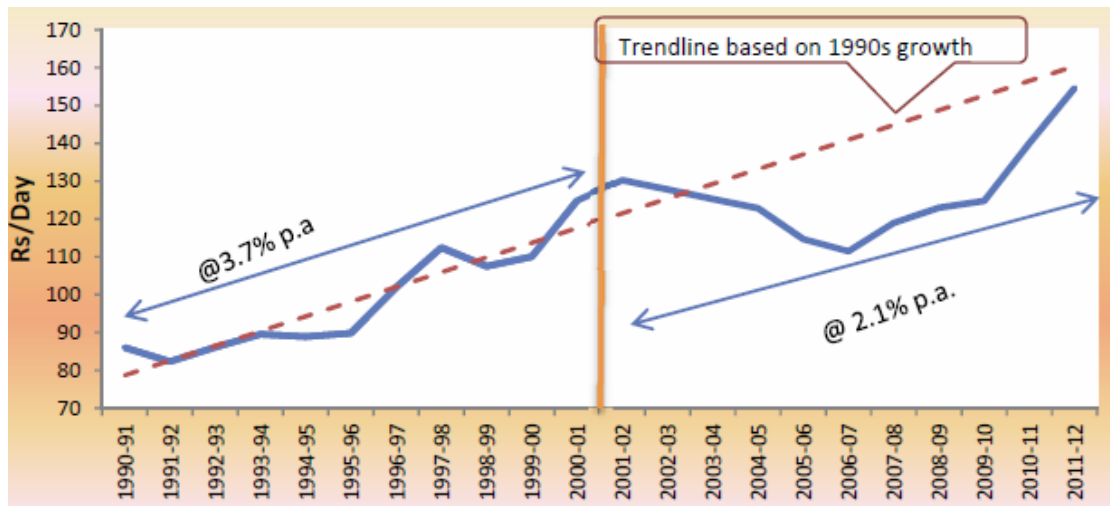
Figure 2.5 India, Real Wage Rates of Rural Casual Labourers in India: 1983, 1987/88, 1993/94 and 1999/2000 at 1999/2000 prices



Source: Bhalla et al. 2004, using data from Himanshu (2003)

During the 2000s wages on Indian farms that were growing steadily in the 1990s at 3.7% a year, fell back in the early 2000s at minus 1.8% a year, only to rise rapidly in the second half of the 2000s at 6.8% a year (Gulati et al. 2013), see Figure 2.6.

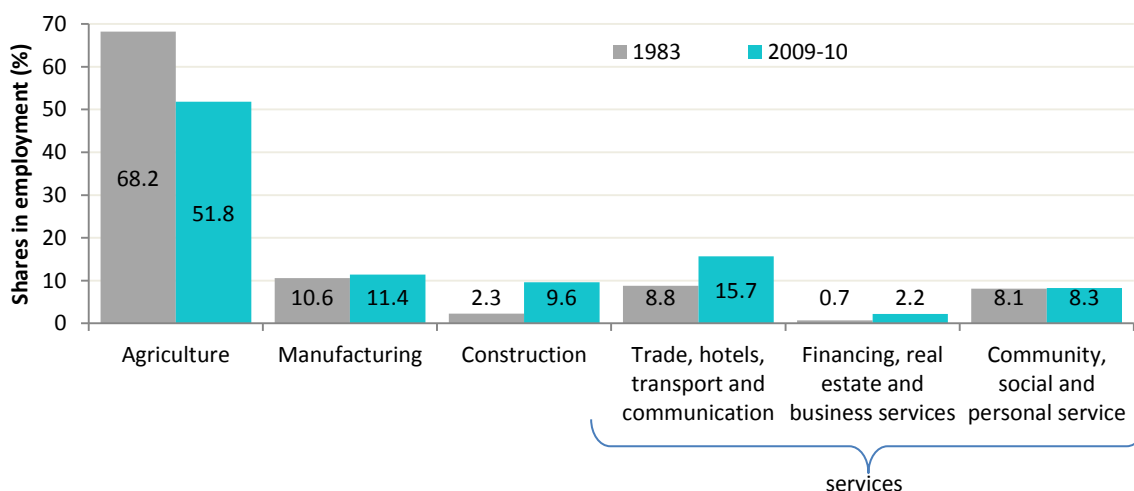
Figure 2.6 India, average farm wages, constant at 2011/12 prices, 1990/91 to 2011/12



Source: Gulati et al. 2013, based on data from the Indian Labour Bureau

Gulati et al. (2013) see some correspondence with economic growth, especially with increases in construction that tends to attract rural labour. About 43% of male rural migrants end up on building sites. Construction has boomed: a labour-intensive sector, its share of Indian employment has risen just as agriculture's share has fallen. Indeed, it seems that finally — studies of rural India have for long lamented how little change has been seen in the fraction of the workforce in agriculture — agriculture is relinquishing its share of employment in favour of other sectors, particularly construction and services, see Figure 2.7.

Figure 2.7 Sector-wise distribution of India's employment, 1983 to 2009-10



Source: Table 12 in Thomas, 2012

Public employment schemes

Parts of India have long used public employment as a way to alleviate rural poverty. The Employment Guarantee Scheme of Maharashtra, in operation since 1975/76, provides jobs for the poor on a large scale, half of the employment to women. Funded equally by a tax on professional and formal jobs and by general revenues, the scheme legally entitles people to work: whenever 50 jobseekers demand work, jobs must be provided.

Based on favourable evaluations of this, a national scheme was introduced in 2006, through the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). The scheme offers 100 days of work at a guaranteed wage, by 2011 at Rs120–179 a day, varying by state. Since its introduction considerable interest has been shown in its effects on rural labour markets, with the expectation that it would put a floor in the rural labour market, leading to higher casual unskilled wages. Gulati et al. (2013) summarise findings from studies on its effects:

Some recent research seems to support the idea of a rise in real casual labourer wages due to MGNREGA, with estimates ranging from 4% to 8% (Berg et al 2012, Azam 2012, Imbert and Papp 2012). NSSO data too indicate that the advent of MGNREGA has resulted in a significant structural break in rural wage increases. Between 1999 and 2005, pre-MGNREGA, nominal wages in the rural economy grew at an average annual rate of 2.7%. Post-MGNREGA, average wage increases almost quadrupled to 9.7% between 2006 and 2009-10.

There are, however, studies which argue that rise in casual wage rates cannot be wholly attributed to MGNREGA (Dutta et al, 2012). Mukherjee & Sinha (2011) have conceived a microeconomic model that establishes that the fact of a guarantee of employment at a given wage through the MGNREGA would introduce contestability in the rural labour market. In other words, in the presence of MGNREGA scheme the large land holders in rural areas may now need to raise wage of workers they hire in order to ensure the necessary supply of labour.

Alha & Yonzon (2011) see the scheme as especially important for female labour since males can more easily migrate to find work. In Thanjavur District, Tamil Nadu very large increases in rural wages, from Rs60 to Rs110 a day from 2006 to 2008/09 have been reported, as have complaints from large farmers of not being able to recruit labour for paddy planting or harvesting (Maheswari et al. 2011).

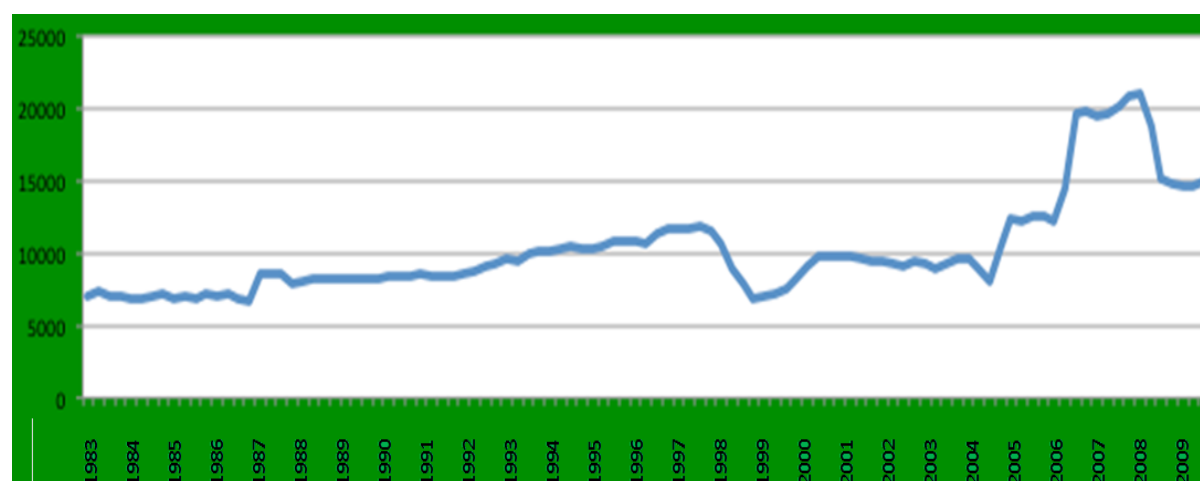
Even if the scheme only employs 10% of casuals, it seems to affect local wage rates that have grown most where the scheme is most active.

But how much has the MGNREG scheme pushed up rural wages compared to other drivers? A regression of average days of employment per household by the MGNREG scheme, productivity of foodgrains, and road density on rural wages show that all these have raised the growth rate of wages for both male and female farm labourers (Narayanamoorthy & Bhattarai 2013). Gulati et al. (2013) regress the incidence of the scheme and growth of economy on rural wages to find that economic growth is a much stronger driver than the employment scheme. They therefore argue that funds invested in the scheme might better be spent on measures to stimulate economic growth — although if the employment projects create useful physical infrastructure, the scheme might contribute towards this.

Indonesia

Rural wages in Indonesia⁹ rose gradually from the early 1980s, but sunk for five quarters in 1998/99 during the Asian financial crisis; after which they recovered slightly in the late 1990s. They changed very little in real terms for the first half of the 2000s, but grew in the second half, with a pronounced upwards shift beginning in the third quarter of 2005. Wages again rose dramatically around the 2007/08 period, but fell from peaks of over 20,000 rupiah/day after 2008. Nonetheless, in 2009 they were some 5,000 rupiah/day (50%) higher than their levels for most of the first half of the 2000s, see Figure 2.8.

Figure 2.8 Real agricultural wage rate in Java, 1983 to 2009, Rupiah a day



Source: Quarterly data from Harahap & Barichello, 2014. [Horizontal axis labels added]

Note: Wages have been deflated by the rural CPI to constant 2007 levels.

⁹ Here agricultural wages in Java are used to illustrate Indonesian wages. They are an average of the provincial average for West Java, Central Java and East Java, which together include some 70% of Indonesia's population.

Researchers looking at whether Indonesia's agricultural wage rate would be raised more by either increased industrial demand, or increased agricultural demand for labour, found that although both had a positive influence on raising wages, industrial demand played a far greater role (Harahap & Barichello, 2014).

Agricultural wages were modelled as a function of Java's rice price (a proxy for agricultural demand for labour), Indonesia's manufacturing wage (a proxy for the real urban wage), and quarterly manufacturing GDP (a proxy for urban sector demand for labour not captured by the manufacturing wage). Their results suggested the manufacturing wage rate was highly important in determining farm wages, with estimates of farm wage rates rising by 0.3% for a 1% rise in manufacturing wage. The effect of rises in the rice price was only one third as large, with farm wages rising only 0.1% for a 1% rise in the rice price. The growth in manufacturing GDP was also found to have a strong influence on farm wages, raising them by almost as much as the manufacturing wage rate changes.

Arias-Vazquez *et al.* (2013) compared impacts of growth in high productivity sectors — manufacturing, transport and communications, finance, electricity and utilities, or mining — and low productivity sectors — other services, agriculture, retail and wholesale trade, government and public administration, and construction — on annual changes in average wages across Indonesia using panel data from 1988 to 2007. This gave a large positive and significant coefficient on growth from high productivity sectors, but only a small positive, but insignificant coefficient on growth of low productivity sectors.

They also used a cross-province regression to determine how much annualised changes in wages (among other 'employment outcomes') were influenced by share-weighted growth in different sectors of the economy. This gave positive coefficients on other services, agriculture, manufacturing, and transport, though only manufacturing was significant. Mining was also significant, but with a negative and small coefficient.

Education, road quality, and rural wages

Other research has examined the impact of improving rural roads on rural wages in Indonesia. Using wage data over the 1995 to 2007 period, Yamauchi *et al.* (2011) showed improvements in road infrastructure (transportation speed) increased non-agricultural wages in rural Indonesia by connecting workers to employment opportunities outside

villages. More educated individuals were able to take advantage of the opportunities raised by better connectivity to gain higher-wage employment outside the agriculture sector.

More recently Yamauchi (May 2014) showed that better roads and faster transport positively influenced both agricultural and non-agricultural wages in Indonesia between 2007 and 2010. Moreover, better roads and schooling interacted to improve agricultural daily wages significantly.

A cross-country analysis (Winters et al., 2008) appears to corroborate these results, finding educational and infrastructure investment were critical for providing opportunities in the labour market that led to higher wages across a sample of 14 countries, including Indonesia¹⁰. They wrote:

'The key to participating in high value wage employment activities appears to be education. Generally, there is a positive relationship between education and participation in rural labour markets suggesting that education is linked to labour markets and that labour markets are used as a pathway out of poverty for the educated.'

And on agricultural wages specifically:

'While agriculture is not chosen as the sector to participate in by the educated, the educated workers that find the right opportunities do receive higher wages.' (Winters et al., 2008)

For Indonesia specifically, using data from a 2000 survey, they found that wage in rural labour markets responded strongly and positively to education and infrastructure, but with a large negative coefficient for female workers (see Table 3 in Winters et al., 2008). For agriculture alone, they found a stronger negative coefficient for females workers and a positive effect for education: infrastructure was not found significant (see Table 5 in Winters et al. 2008).

Other parts of Asia

In **Malaysia**, it has become increasingly difficult to recruit workers for oil palm estates. Indonesia used to be a source of migrant labour, filling 80% of such jobs. But that has dwindled owing to higher wages and rapid urbanisation in **Indonesia**. Applicants for jobs in Malaysia's palm oil sector plunged to 38,000 in 2013 from more than 120,000 in each of the previous two years, according to data from the Indonesian embassy in Kuala Lumpur (Raghu 2014).

¹⁰ Country surveys they used were: Ghana (1998), Malawi (2004), Nigeria (2004), Bangladesh (2000), Indonesia (2000), Nepal (2003), Vietnam (1998), Albania (2005), Bulgaria (2001), Tajikistan (2003), Ecuador (1995), Guatemala (2000), Nicaragua (2001), and Panama (2003).

Malaysia seems to be taking in migrants from other countries. As many as 250,000 Burmese may be working in Malaysia, often taking low-paid jobs, including at restaurants and construction sites, with help from recruitment agencies. About 110,000 Burma nationals in the country lack proper legal documentation, according to the Labour Ministry (Thai PBS 2014).

Bangladesh and Malaysia signed an agreement in November 2012 for migrant labour, with so far 4,000 Bangladeshis travelling to Malaysia to fill jobs under the deal (Ara 2014).

In *Burma*, farm labour shortages are reported as casual labourers leave the land for construction jobs in Rangoon (Htike 2014).

In *Thailand*, the shopping malls, factories and construction sites in Thailand's northeast are attracting labour, since the economy of the region is booming. In 2013 a national minimum wage of US\$10 a day was introduced, which translated to a 35% rise in the relatively poor northeast. This has apparently even led to some workers returning to their home region from Bangkok (Carsten & Temphairojana 2013).

Less positive reports come from economies that have not been growing as quickly, such as Pakistan (Dawn.com 2014 & Oman Tribune 2014) and the Philippines (Reyes and Tabuga 2011).

Annex B: Rural wages adjusted by Purchasing Power Parity

Table B1: Rural wages in constant 2010 US\$ purchasing power parity (PPP)

Wages of more than US\$10 a day, PPP, have been shaded in green.

	US\$ real daily wages (constant 2010 ^a)			US\$ real daily wages (constant 2010), PPP		
	Early 2000s	Mid-2000s	2010s	Early 2000s	Mid-2000s	2010s
Average daily wages	1998	2003	2006	1998	2003	2006
China						
Gansu province, poor areas, farm labour, harvest season	2.32	2.89	4.5	4.74	5.90	9.19
Gansu province, poor areas, farm labour, slack season	1.73	2.17	3.21	3.53	4.43	6.55
Agricultural labour, male, 5 province average	1998	2003	2007	1998	2003	2007
	3.02	3.73	7.18	6.17	7.62	14.66
<i>Jiangsu</i>	3.26	4.3	7.11	6.66	8.78	14.52
<i>Sichuan</i>	2.35	3.29	6.6	4.80	6.72	13.48
<i>Shaanxi</i>	2.2	2.79	7.02	4.49	5.70	14.33
<i>Jilin</i>	4.67	4.64	8.37	9.54	9.47	17.09

	US\$ real daily wages (constant 2010 ^a)			US\$ real daily wages (constant 2010), PPP		
Average daily wages	Early 2000s	Mid-2000s	2010s	Early 2000s	Mid-2000s	2010s
<i>Hebei</i>	2.55	3.6	6.72	5.21	7.35	13.72
Agricultural labour, female, 5 province average	2.3	2.76	5.51	4.70	5.64	11.25
<i>Jiangsu</i>	2.49	3.33	5.76	5.08	6.80	11.76
<i>Sichuan</i>	1.92	2.39	4.99	3.92	4.88	10.19
<i>Shaanxi</i>	1.71	2.08	5.29	3.49	4.25	10.80
<i>Jilin</i>	3.58	3.53	6.52	7.31	7.21	13.31
<i>Hebei</i>	1.71	2.37	4.92	3.49	4.84	10.05
India	2000/01	2005/06	2012/13	2000/01	2005/06	2012/13
National, agricultural labour, male	2.13	2.15	2.91	6.84	6.90	9.34
National, agricultural labour, female	1.59	1.61	2.21	5.10	5.17	7.09
Indonesia	n/a	2007	2010	n/a	2007	2010
98 villages, survey data, 7 provinces, median		2.92	3.64		7.80	9.73
<i>Lampung</i>		2.55	3.58		6.82	9.57
<i>Central Java</i>		2.27	2.67		6.07	7.14
<i>East Java</i>		2.36	2.84		6.31	7.59
<i>West Nusa Tenggara</i>		3	3.05		8.02	8.15
<i>South Kalimantan</i>		3.29	4.76		8.79	12.72
<i>North Sulawesi</i>		5.08	9		13.58	24.05
<i>South Sulawesi</i>		3.05	3.44		8.15	9.19
National average, Animal husbandry workers	n/a	2007	2013^b	n/a	2007	2013^b
		3.25	4.05		8.69	10.82
Pakistan	n/a	2007	2012	n/a	2007	2012
National, agricultural workers		2.77	2.35		11.19	9.49
<i>Male</i>		3.36	2.97		13.57	12.00
<i>Female</i>		1.68	1.46		6.79	5.90
Average daily wage, crop workers	2000	2004	n/a	2000	2004	n/a
	2.33	2.63		9.41	10.62	
Bangladesh	2000	2005	2010	2000	2005	2010
National, peak season, male	1.92	1.92	2.78	6.05	6.05	8.76
National, lean season, male	1.53	1.52	2.21	4.82	4.79	6.97
National, peak season, female	1.32	1.22	2.02	4.16	3.85	6.37
National, lean season, female	1.1	1.02	1.62	3.47	3.22	5.11
Philippines	2000	2005	2012	2000	2005	2012
National, farm labour all crops	4.61	4.47	4.54	11.88	11.52	11.70
<i>Rice</i>	4.77	4.58	5.09	12.30	11.81	13.12
<i>Corn</i>	4.21	4.03	3.91	10.85	10.39	10.08
<i>Coconut</i>	4.37	4.56	4.32	11.26	11.75	11.14
<i>Sugarcane</i>	5.39	4.95	4.38	13.89	12.76	11.29
Central Luzon (rice bowl) rice labour	1998/99	2007/08	2011/12	1998/99	2007/08	2011/12
	8.83	9	8.2	22.76	23.20	21.14
Vietnam		2005, 2009	2012	2005	2009	2012
National, Agriculture, forestry and fishing work, state sector		4.05, 6.29	8.63	13.36	20.75	28.47
Daily wage agricultural labourer	2002			1993	1998	2002
	2.16			4.78	7.03	7.13
Average income of wage worker in rural areas ^c	2007	2010	2012	2007	2010	2012
	3.92	4.69	5.26	12.93	15.47	17.35
Thailand	2001	2007	2013	2001	2007	2013
National, skilled agriculture and fishing workers	4.02	5.36	6.81	10.53	14.03	17.83
Myanmar	1998	2004	n/a	1998	2004	n/a
Ayeyarwardy, rice labour	1.55	2.26		4.52	6.59	
South Korea	2000	2006	n/a	2000	2006	n/a

Average daily wages	US\$ real daily wages (constant 2010 ^a)			US\$ real daily wages (constant 2010), PPP		
	Early 2000s	Mid-2000s	2010s	Early 2000s	Mid-2000s	2010s
National, field crop worker	41.21	56.2		56.60	77.19	
National, dairy product processor	1996	2001	2006	1996	2001	2006
	39.12	44.52	51.03	53.73	61.14	70.09
Malaysia	n/a	2010	2012	n/a	2010	2012
National, agricultural sector		10.82	11.75		24.72	26.84
Nepal	1995/96	2003/04	2010/11	1995/96	2003/04	2010/11
National, agriculture sector	1.39	1.73	2.22	4.60	5.72	7.34
Sri Lanka	n/a	2007	2012	n/a	2007	2012
National, agriculture daily work		2.24	3.08		6.93	9.53

Source: See sources above. PPP conversion from World Bank data.

Note: PPP conversion rate was not available for Myanmar, hence an average of Thai and Indian rates was used.