Asia's Rural-urban Disparity in the Context of Growing Inequality*
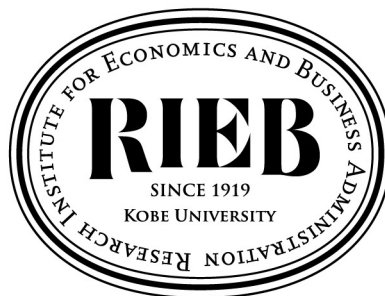
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Abstract

This study offers empirical evidence on the rural-urban gap in the context of growing inequality in Asia. First, China and India explain the trends of regional inequality given their large population, signifying their importance as major contributors. Overall, China's income inequality is characterised by rural-urban disparity, but the inequality within-rural and/or within urban areas has worsened, although it experienced very high economic growth. India is mainly characterised by high inequality within urban areas despite a sharp reduction in urban poverty. Rural-urban income gap has narrowed in recent years. We also find that the rural and urban income gap has narrowed in many countries, such as, India, Vietnam and Thailand. Second, our econometric results on the agricultural and non-agricultural income gap suggest that higher non-agricultural growth rate tends to widen the urban-rural gap over time, while agricultural growth is unrelated to the rural-urban gap. Third, the rural-urban human resources gaps in terms of educational attainment have increased in both India and China. Fourth, remittances are likely to reduce poverty in many countries. Policies which would promote agricultural growth and rural education are deemed important not only for reducing rural poverty, but also for narrowing the rural-urban gap of human resources.

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1

Asia's Rural-Urban disparity in the context of growing inequality

1.   Introduction

Structural transformation of the rural economy involves (i) urbanization, (ii) growth of the rural non-farm economy, (iii) dietary diversification, (iv) a revolution in supply chains and retailing; and (v) transformation of the agricultural sector (Reardon and Timmer, 2014; Imai, Gaiha, and Bresciani, 2016). As the country experiences structural transformation, rural and urban disparity tends to increase. If, for example, labour productivity in rural areas rises at a slower rate than in urban areas, the disparity between rural and urban areas will widen even if the rural and urban population shares remains constant. If this comes with an increase in the share of population or labour force in urban areas, overall inequality tends to increase much faster. Other aspects of structural transformation may be associated with inequality and rural-urban disparity in more complex way. Growth of the rural-nonfarm economy tends to promote the growth of rural economy and reduce poverty significantly, as shown by Imai, Gaiha and Thapa (2015) for Vietnam and India. However, whether this reduces rural-urban disparity is unclear as growth of rural non-farm sector may be associated with an interaction between farm and non-farm sectors, industrialisation and/or the growth of service and retail sectors at the national level.[1] [2]

The focus of this paper is on whether disparity between rural and urban areas has increased and the underlying reasons for the change. Of particular importance are farm and

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[1]Imai, Gaiha and Cheng (2015) found that agricultural value added per capita – specified as an endogenous variable in the model – significantly reduced poverty headcount ratio, poverty gap and poverty gap squared defined at the international poverty thresholds, US$1.25 and US$2.00, as well as the Gini coefficient calculated by LSMS household datasets.

[2] Dietary diversification - which is associated with nutritional improvement - may take place much faster in urban than in rural areas and may expand the rural-urban disparity in nutritional conditions. Nutritional disparity is more complex than income disparity as higher intakes of calories and fats lead to obesity (Gaiha et al. 2014, You, Imai and Gaiha, 2016). While the rural-urban disparity in non-income aspects of welfare, such as nutrition, is important, the focus of this paper is restricted to income disparity between urban and rural areas.

non-farm linkages and whether higher rural incomes are in part due to more diversified livelihoods and emergence of high value chains and the extent to which these have reduced rural-urban disparities and dampened migration. Apart from easier access to credit in order to strengthen farm and non-farm linkages as well as participation of smallholders in high value chains, other major policy concerns relate to whether remittances could be allocated to more productive uses in rural areas, through higher risk-weighted returns-specifically, whether returns could be enhanced in agriculture and rural non-farm sector while risks are reduced. This study will also discuss the policy implications of growing farm and nonfarm disparities. Given the objectives of this study, it carries out analyses of cross-country panel data and household data.

The rest of this study is organised as follows. The next section reviews the statistics to discuss the shifts in Asia's and sub-regional income distributions with a focus on whether India and China are largely responsible for these shifts. Section 3 further analyses the cross-country data to see whether rural and urban income gaps have narrowed; what sort of factors are associated with the narrowing gap; whether dispersion of earnings within rural non-farm activities has narrowed or widened. Section 4 identifies factors associated with narrowing the income gaps and migration. Section 5 reviews the human resource gaps between urban and rural areas using descriptive statistics. Patterns in demographic transitions, urbanization, labour force growth, and demographic dividend are reviewed and summarised in Section 6. Section 7 analyses impacts of remittances on poverty, inequality and growth at the national level, and sectoral growth rates. The final section offers concluding observations with policy implications.

2. Changes of Income Distributions in Asia - Overview

The overall change in Asia's income distributions is intricately associated with those in sub-geographical categories, such as sub-regional (e.g. South Asia), national (e.g. India) and subnational levels (e.g. state level). In the context of developing countries, the income gap between rural and urban areas and its changes will influence income distributions at all these geographical levels.

A recent ODI report has suggested that rural wages have recently increased substantially in most Asian countries with some acceleration from the mid-2000s (e.g. Bangladesh, China and India) (Wiggins and Keats, 2014) This may have been partly due to a decrease in population - as a result of decline in fertility rates - and an increase in manufacturing growth rate, which has accelerated the rise in rural non-farm wage (ibid., 2014). Whether the rise in rural wages has decreased the rural-urban wage gap is an empirical question, but using the National Sample Survey Data for India, Hnatkovskay and Lahiriz (2014) found a significant decline in the wage differences between individuals in rural and urban India during the period 1983 to 2010. The increase in rural wages may not necessarily imply increase in rural output or income, as it will increase production costs in both agricultural and non-agricultural sectors. Increase in rural wages may also be linked with higher food price, which may limit the benefit for poor households.

Our main interest lies in the rural-urban gap of the overall income, not wage levels, and so this section provides evidence on the changes in Asia's income distribution. We first evaluate whether large countries (for instance, India and China) bear the main responsibility for the shifts in income distribution of Asia. We will review the trends in selected measures, such as the Gini coefficient, mean income, poverty headcount, and the poverty gap in selected Asian countries.
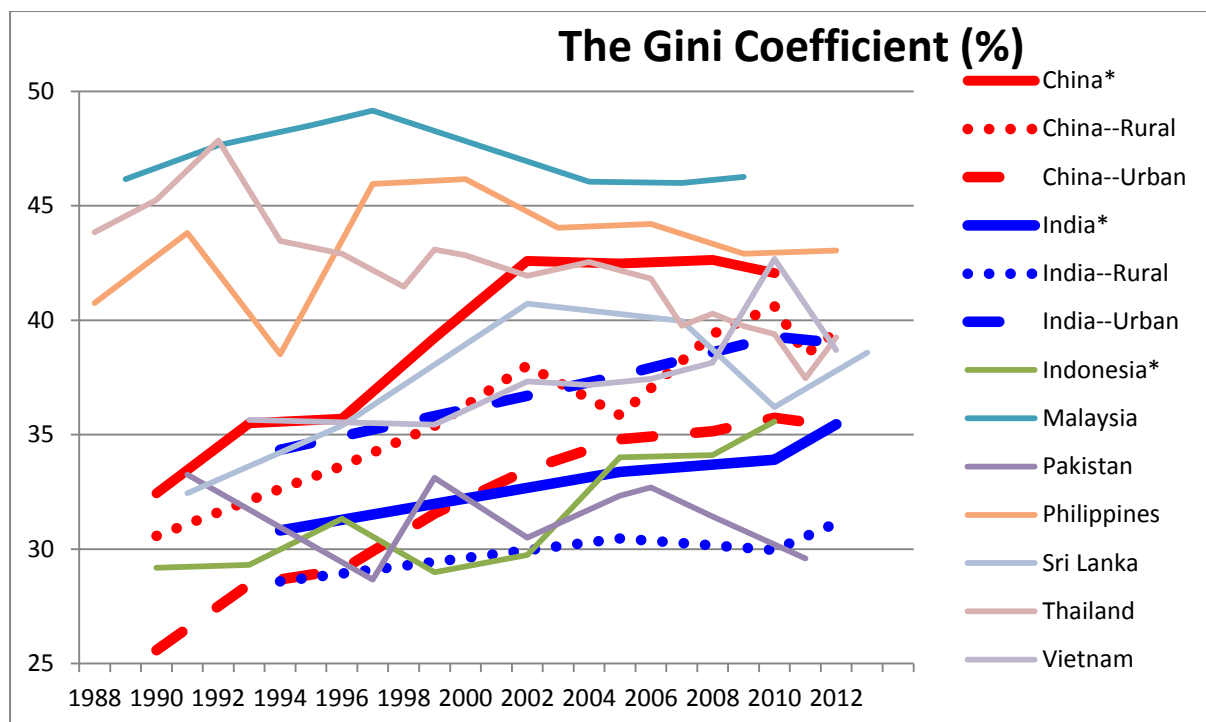
Figure 1 – The Gini Coefficient for different Asian Countries from 1988 to 2013, based on povcal data from World Bank (Authors' computations)

Figure 1 illustrates the time trends of the Gini coefficient during the last three decades across different Asian countries to see whether the trends of the Gini coefficient for India and China - disaggregated into rural and urban areas - are similar, or dissimilar to those of other countries.

We observe that the national Gini coefficient of China increased sharply from 33% to 42% during 1998-2001 and remained at a high level, around 42-43%, with a small decline in 2008-2012. It is striking to find that the national Gini remained higher than the rural Gini and the urban Gini, implying that rural-urban disparity remained high in China.[3] It is noted that inequality was much higher in rural than urban areas. The rural income Gini coefficient in

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[3] More rigorously, the Theil indices should be used for the national household data to decompose them into sub-national components, as in Kang and Imai (2012). Decomposing the Gini coefficient is feasible, but it is not a simple procedure since the functional form of inequality indices is not additively separable in incomes (Araar, 2006). Under some assumptions, Yang (1999) decomposed the Gini coefficient of household income in two provinces in China (Sichuan and Jiangsu) and found that the rural-urban inequality dominates within-rural or within-urban inequality components.

China increased from 31% to 41% from 1989 to 2009 with some fluctuations, but it recorded a significant decrease in 2009-2011. This is important as rural poverty has constantly declined over time in China (Imai and You, 2014). It is inferred that economic growth has resulted in reduction of rural poverty over the years, but the growth was not pro-poor in rural China. On the other hand, the urban Gini coefficient, although lower than the rural Gini, constantly and significantly increased from 25-26% in 1989 to 35-36% in 2011. Overall, China's inequality is characterised by rural-urban disparity, and inequality within-rural or within urban areas has constantly worsened, while the country experienced very high economic growth.

India's Gini coefficient of expenditure at the national level has also increased steadily from 31% to 36% from 1993 to 2011, but the annual average increase in the Gini coefficient (0.28%) is smaller than that of China (0.39%, where the national Gini of expenditure increased from 35.5% to 42.5% in the same period). Indian inequality is characterised by the high Gini coefficient in urban area, rather than the rural-urban disparity because the urban Gini is higher than the national Gini, which is higher than the rural Gini with the order of the three unchanged over time. The urban Gini coefficient in India increased from 34% to 39%, while the rural Gini marginally increased 28% to 31% in 1993-2011. This is in sharp contrast to poverty trends in India in the same period 1993-2001 in which national poverty head count declined from 45.3% to 29.8% (-15.5%), urban poverty headcount from 31.8% to 20.9% (-10.9%), and rural poverty from 50.1% to 33.8% (-16.3%) with broadly similar trends observed for poverty gap and poverty gap squared (Himanshu, and Sen, 2014). Overall, India is characterised by high inequality within urban areas despite a sharp reduction in urban poverty. Indian economic growth reduced urban poverty, but the urban rich benefited more in relative terms.

6

Given the huge populations of India and China, the steady increase in income inequality of these countries is likely to be a leading cause of the overall shift in income distribution in Asia, while the rural-urban disparity - as well as the high and increasing inequality in rural China and the high and increasing inequality in urban India characterise overall inequality at national levels.

This does not discount altogether the roles played by Malaysia, Philippines, Thailand, and Vietnam showing comparatively higher levels of inequality with overall increasing trends during the period between 1990 and 2010. For instance, Malaysia's national Gini remained very high in the range from 46 to 48%. The urban Gini coefficient reduced from 44.0% to 43.9% and the rural Gini rose from 40.9% to 42.6% in 2004-2009, implying that 'within urban' and 'within rural' inequality explain the high national Gini coefficient.[4] Thailand has experienced an overall decreasing trend in the national Gini coefficient (44% to 39%) with some fluctuations. As in Malaysia, both the urban Gini and the rural Gini remained high in Thailand with the former at slightly higher levels than the latter (urban: 40.5% to 38.0%; rural 35.8% to 36.2% in 1999-2012). The Philippines also recorded a relatively high Gini coefficient (39%-46%) with fluctuations in 1990-2010, with a similar pattern in the disaggregated Gini coefficients (urban 44.4% to 41.1%; rural 36.9% to 39.1% in 2000-2011). The national Gini of Sri Lanka increased from 33% to 38% with the urban rising from 38.4% to 39.9% and the rural Gini from 33.1% to 37.4% in 1996-2013. Indonesia has seen an increase in the national Gini coefficient from 29% to 35%, with both the urban and the rural Gini increasing between 1987-2011 (urban 32.8% to 42.5%; rural 27.7% to 34.2%), and with a broadly similar pattern to India's. The Gini in Pakistan was relatively low in the range

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[4] Disaggregated results of the countries other than China and India are not shown in Figure 1 to avoid cluttering it.

between 29% and 33% with a much higher inequality in urban areas (urban 32.0% to 34.0%;
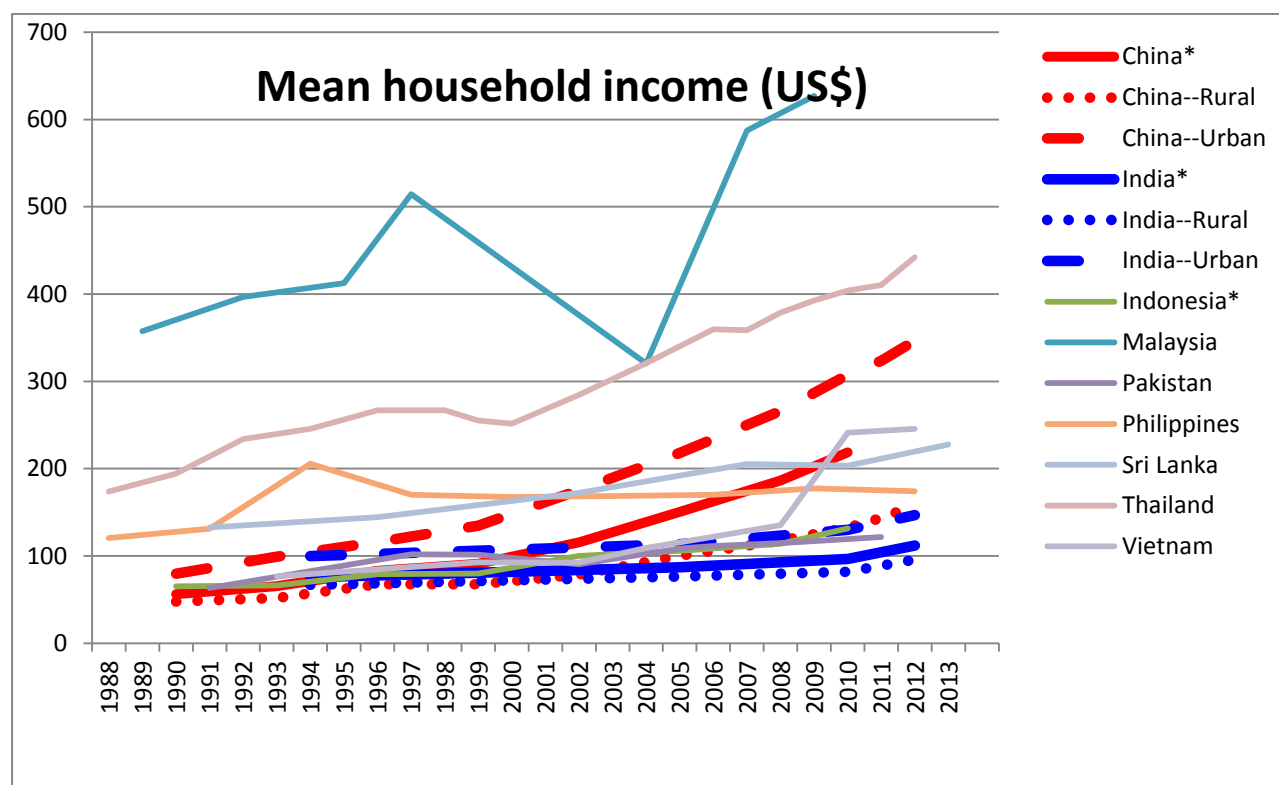
rural 24.5% to 24.5% in 1997-2011).

Figure 2 –Annual Mean Household Income (at PPP in 2011, US$) for different Asian Countries from 1988 to 2013, based on Povcal data/World Development Indicator from World Bank (Authors' own computations)

Figure 2 plots the trends of annual mean household income during the period 1988-2013. The

trends of national, urban and rural mean incomes in China suggest that household income has

increased more rapidly in urban than in rural areas, which explains the increasing rural-urban

disparity in China. On the other hand, mean household income in India has increased at

slower rates in both urban and rural areas.[5] In recent years (after 2000), mean household

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[5] In Appendix 1 (Figure A-1), we have compared the trends of GDP per capita (at 2011 PPP) for China and India with regional and population-weighted averages of East Asia and South Asia (in both of which developing countries are excluded). As China and India are the two most populous countries in the world, China's trend coincides with East Asia's, while India's trend coincides with South Asia's. China and India, however, surpassed the regional average after 2005-2006 (to a much larger extent in China). We have also compared poverty headcount ratios and poverty gaps for China, India

income in rural India appears to increase faster than mean household income in urban India, suggesting the *narrowing* of rural-urban income gap.[6] Mean household income, however, was fluctuating in Malaysia. Other countries have experienced more or less steady growth of mean income in the same period (e.g. Thailand and Sri Lanka).
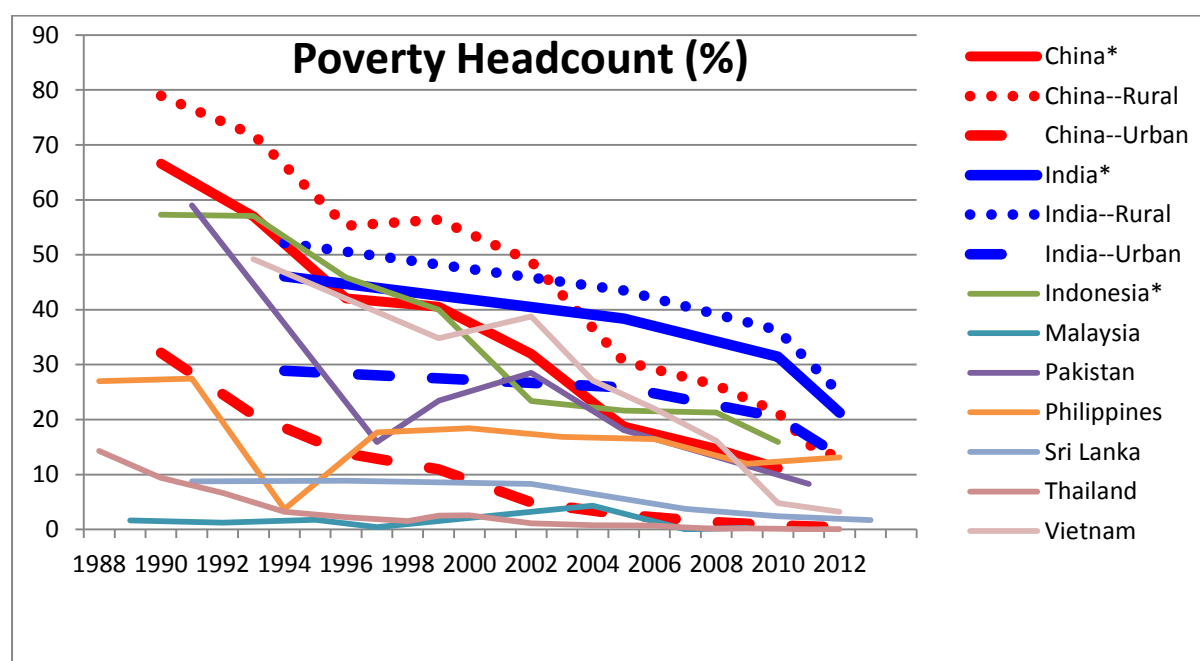

Figure 3 - Poverty headcount trends for different Asian Countries from 1988 to 2013, based on povcal data from World Bank (Authors' own computations).

and their regional population-weighted averages and have found that China's poverty figures match East Asia's and India's are broadly same as South Asia's (Figures A-2 and A-3). It is noted that while China's poverty figures lower than East Asia's after 2004, India's poverty estimates are higher than South Asia's after 2002-2003. Overall, China and India's trends explain regional trends of GDP per capita and poverty. Regional averages of the Gini coefficients are not available from WDI.

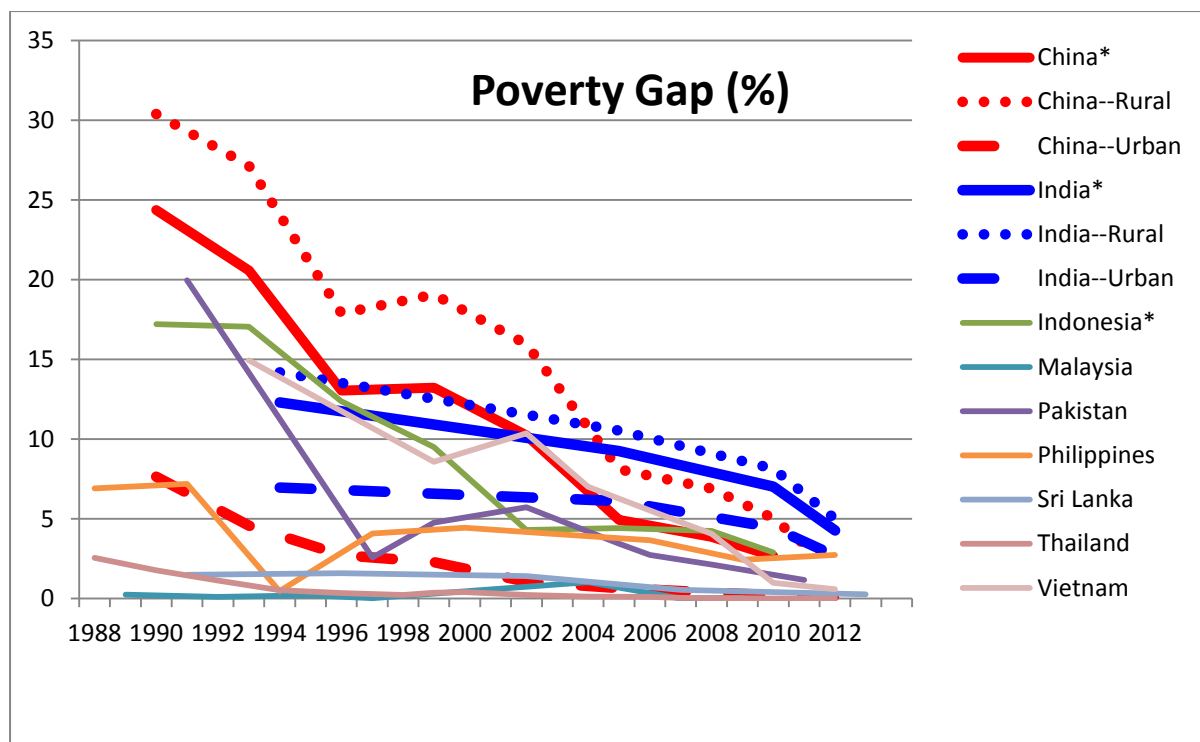[6] This is investigated in greater detail in the next section.

Figure 4 - Poverty gap trends for different Asian Countries from 1988 to 2013, based on povcal data from World Bank (Authors' own computations)

It is observed in Figures 3 and 4 that both poverty headcount ratio and poverty gap have declined over the years for most countries. In China, rural poverty declined dramatically in 1989-2009, which resulted in a sharp decline in national poverty, while urban poverty declined but moderately. This is in contrast with increasing trends in the national Gini, the rural Gini and the urban Gini (Figure 1). That is, economic growth has resulted in substantial poverty reduction in both urban and rural areas, but rural-urban disparity as well as inequality within rural or urban areas increased during the period when China experienced economic growth. India shows similar patterns of poverty reduction, that is, both rural and urban poverty declined, while the rate of reduction has been higher in rural than in urban areas for both poverty headcount ratio and poverty gap. However, the rate of poverty reduction is much slower in India than in China regardless of definitions of poverty or rural-urban distinctions. Other countries have also experienced overall poverty reduction during the period 1988 - 2012.
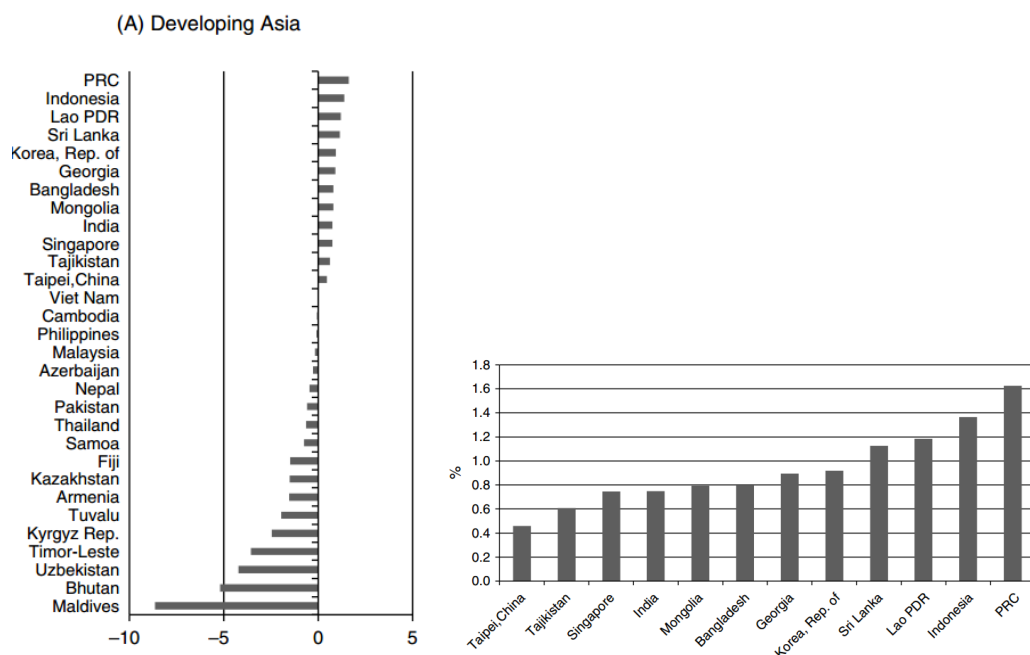
(A) Developing Asia

Figure 3 – Average annual change in the Gini coefficient in developing Asia in the 1990s and the 2000s (%). Source: Inequality in Asia and the Pacific (ADB, 2014)

Figure 3 illustrates the average annual change of the Gini coefficient in different Asian countries. The left panel overviews the average annual changes in the Gini of Asian developing countries, and the right panel identifies the countries with positive changes. It is clear from the left panel that China had the highest increase in the Gini coefficient in the 1990s and 2000s. India also had experienced an increase in the Gini coefficient in the same period.

We can conclude that, while India and China experienced high economic growth and poverty reduction in both urban and rural areas, the rural-urban disparity became larger in China. On the contrary, both 'within-rural' and 'within' urban inequality also increased in both India and China. In India, the rural-urban income gap decreased in recent years.

3. Rural and Urban Income Gaps

Another important question that may arise from the graphical analyses in Section 2 is whether the rural and urban income gaps have narrowed or widened. Given the data limitations on

11

rural and urban income, we also examine agricultural and non-agricultural income gaps as related evidence. Recent studies suggest that the share of income from farming activities has decreased, while the share of non-farm activities has risen as the wealth of households increased (Covarrubias et al., 2013). The authors emphasise the relative importance of agriculture and farm activities for poorer countries. The variation in non-farm income, however, reveals that considerable differences exist between non-farm sources of income within each country (see Figure 4). Covarrubias et al. (2013) highlight the increasing diversity in income generation portfolios among households across countries in Asia.

Figure 4 - Composition of non-farm, non-agricultural, and self-employment by sector. Source: Covarrubias et al. (2013)

Composition of total non-farm employment income by sector

Composition of non-agricultural wage income by sector

Composition of self employment income by sector
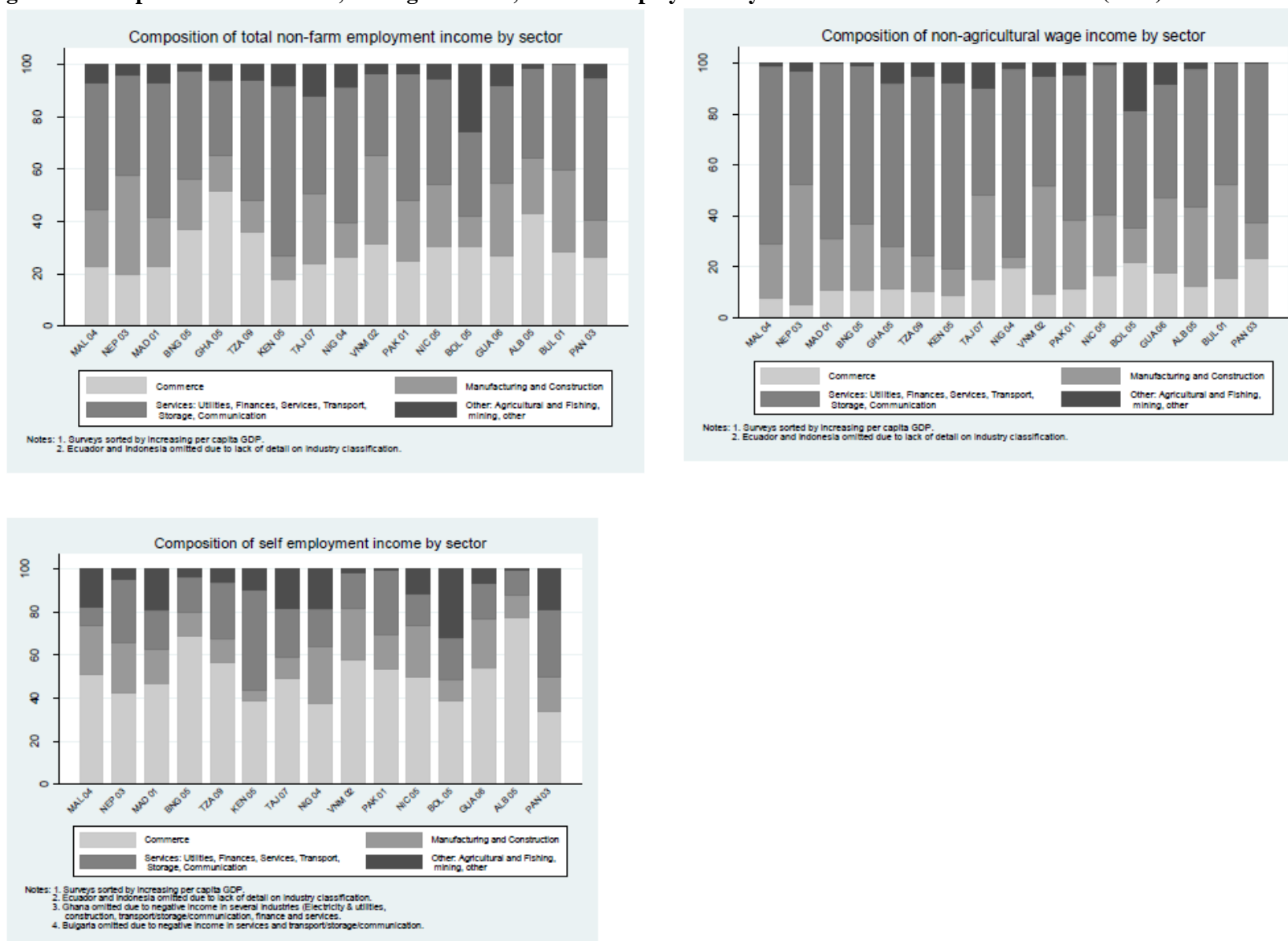
Wiggins and Keats (2014) suggest that an increase in rural wages in the 2000s has been observed in almost all the Asian countries. In China and India, in particular, the increase has taken an accelerated avenue in the second half of the 2000s. The increases between 2005 and 2012 in India ranged between 35% and 92% in China. As shown in Figure 6, similar trends are observed in other Asian countries (Wiggins and Keats, 2014).
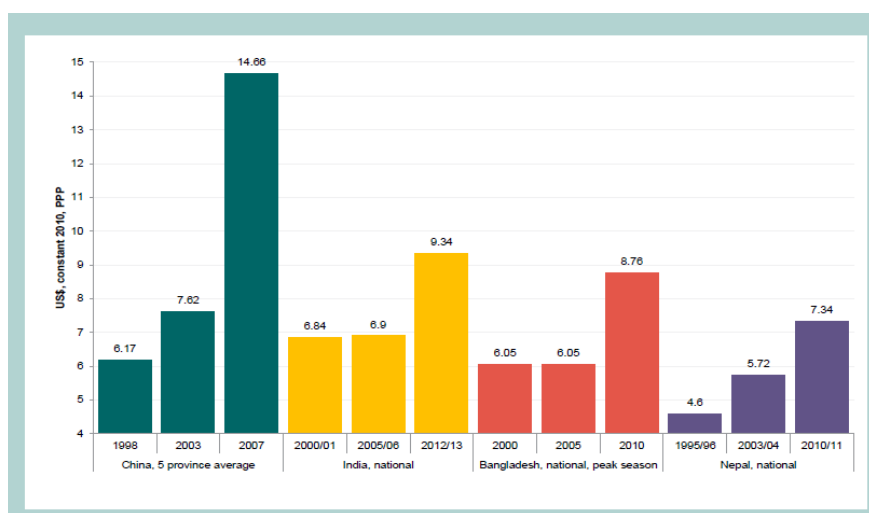

Figure 5 - Changes in real daily wages for agricultural labour in four Asian Countries (US Dollar constant 2010 PPP)   - Source: Wiggins and Keats (2014).

If we examine the case of Bangladesh more closely, the gap between urban and rural wages has narrowed as a result of rise in rural wages (Zhang et al., 2013, see Figure 6 below). Here the average rural wage for a male worker has increased by around 45% during 2005-2010.
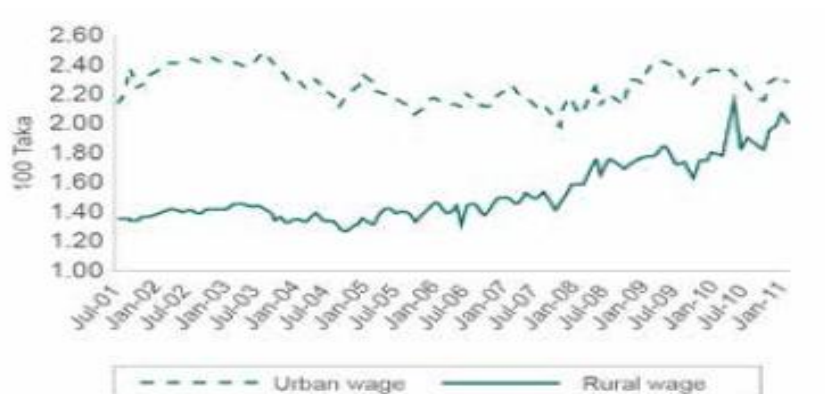

Figure 6 - Urban and rural wages for unskilled workers trends in Bangladesh 2001-2011 Source: Zhang et al. (2013, p.5)

We have processed and analysed the Indian Human Development Survey (IHDS)[7] household data (2005 to 2012) as well as VHLSS data (2002, 2004 and 2006) to examine closely the distribution of income per capita. A number of graphs are reported in Appendix 2. For instance, in India we have found that (i) The gap showing the degree of inequality across different distributional points - narrowed between 2005 and 2012 and (ii) both rural inequality and urban inequality rose in the same period (Figure A4 in Appendix 2). It is found that the rural-urban gap in income inequality (in terms of real income per capita) marginally narrowed over the period 2002-2006 in Vietnam (Figure A7 in Appendix 2).

We have also used data from the ILOSTAT for mean monthly employment related income from all self-employed persons in the working age population for Thailand. We observe an increase from 2011 to 2014 in mean income in rural areas, an increase of urban income from 2011 to 2013 followed by a slight decline in 2014, and an overall increase in average income. From 2011 to 2013, rural and urban income moved almost in parallel, but the difference reduced in 2014. So overall, the gap between urban and rural income has narrowed in Thailand.
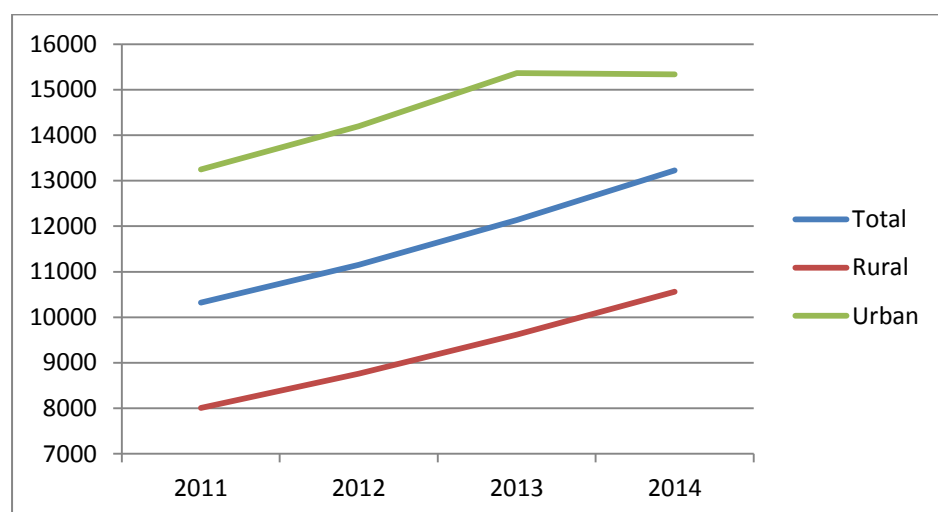

Figure 7 - Data on income of the self-employed on the basis of the mean monthly employment-related income of all self-employed persons in the working age population (Source ILO-STAT)

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[7] Details of IHDS are found on http://www.ihds.umd.edu/.

It is generally inferred that the rural-urban gaps of households at different distributional points have been narrowing in a number of Asian countries over time, for instance, due to the reduction of the rural-urban wage gap over time.

4.   Cross-country evidence

We will now turn our attention to the underlying factors which explain the gap between agricultural and non-agricultural incomes. Ideally, we should examine the causes for the rural-urban income gap using the cross-sectional data, but to our knowledge such data are not available. Because rural non-agricultural income is growing while urban agricultural income is low, it is inferred that the estimate of the gap between agricultural and non-agricultural income provides the upper limit of the urban-rural income gap. Also, the share of the rural-nonfarm sector varies considerably across countries. We would thus use the gap between the non-agricultural and agricultural income gap only as a crude estimate of urban-rural income gap. In this section, we will also examine the determinants of rural inequality and the rural-urban migration.

The factors which narrowed the farm and non-fame income gap are estimated by the following econometric model applied to the cross-country panel data for Asian countries.

$$AD_{it} = \sum_{j=1}^{P} \alpha_j \Delta AG_{it-1} + \sum_{k=0}^{Q} \beta_k \Delta NAG_{it-1} + X'_{it}\gamma + \eta_i + \varepsilon_{it} \tag{1}$$

where *i* and *t* denote country and year (1963, … , 2012), AD_{it} is the difference between non-agricultural value added per capita and agricultural value added per capita, which serves as a proxy for agricultural and non-agricultural income disparity, ΔAG_{it-1} is the lagged first difference of log of agricultural value added per capita (or lagged agricultural growth), and ΔNAG_{it-1} is the lagged first difference of log of non-agricultural value added per capita (or lagged non-agricultural growth). Agricultural growth and non-agricultural growth are lagged to consider, at least partially, the endogeneity of these terms. X'_{it} is a vector of control variables including, macro institutional quality, land area, population density, fragility index,

trade openness, and labour force with secondary index (see Appendix 3 for definitions and descriptive statistics of the variables). η_i is an unobservable individual effect and ε_{it} is an error term. Using the Hausman test, we reject the hypothesis that the household-level effects are uncorrelated with the covariates we control for. We therefore choose the fixed-effects model as our preferred specification.

Table 1 - Fixed Effects and Random Effects results of the Farm-Non Farm Income Disparity

VARIABLES	(1) FE	(2) RE
L.dlogagrivapc		
(lagged agricultural growth)	0.03	0.0344
	(0.675)	(0.685)
L.dlognoagrivapc		
(lagged non-agricultural growth)	**6.492***	**9.230***
	(2.248)	**(2.021)**
Institutional Quality	**0.874***	**0.872***
	(0.131)	**(0.135)**
land	**-0.670***	**-0.678***
	(0.136)	**(0.144)**
population_density	**0.164***	0.0957
	(0.0595)	(0.0616)
fragility_index	**0.165***	0.0678
	(0.0490)	(0.0423)
Openness	-0.0496	-0.0909
	(0.0601)	(0.0599)
Ethnic fractionalization	**-0.575***	**-0.641***
	(0.128)	**(0.132)**
lab_with_second	**0.152***	**0.148***
	(0.0338)	(0.0341)
Constant	6.998	8.299
	(0.839)	(0.851)
Observations	125	125
R-squared	0.824	0.824
Number of years	17	17

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Statistically significant coefficient estimates are shown in bold.

The result in Table 1 indicates that the higher lagged non-agricultural growth tends to widen the sectoral income gap, while the lagged agricultural growth does not. If sectoral growth is persistent over time, there still remains the issue of the endogeneity of these lagged sectoral growth terms, but given this caveat, our results imply that a higher level of non-agricultural growth tends to widen the non-agricultural and agricultural income gap over the years. As non-agricultural growth can be associated with both urban and rural non-agricultural growth, but given that the urban non-agricultural growth is likely to be much larger than rural non-agricultural growth, we can infer that higher non-agricultural growth rate tends to widen the urban-rural gap over time, while agricultural growth is unrelated to it.

If a country has better macro institutional quality, the gap between non-agricultural and agricultural income tends to be larger. That is, after controlling for (lagged) agricultural and non-agricultural growth, better institutional quality at the country level is associated with a larger sectoral income gap. This is consistent with urban institutional quality favouring investment in urban areas and thus contributing to non-agricultural growth. Larger land areas, on the other hand, tend to narrow the income gap in favour of agricultural sector, while the higher population density - which tends to be correlated with urbanisation - is associated with larger income gap.

If the country's macro situation is more fragile, the non-agricultural and agricultural income gap tends to be larger. The higher ethnic fractionalization index - which reflects the probability that two randomly selected people will not belong to the same ethnolinguistic group - , the smaller is the agricultural and non-agricultural income gap. It is plausible that ethnic fractionalisation dampens both agricultural and non-agricultural growth. Also, better education in terms of the share of labour force with secondary education is associated with higher sectoral income gap.

18

In Equation (2), we specify a fixed effects model to estimate the effect of agricultural and non-agricultural growth on the rural Gini coefficient in rural areas. That is, we examine how sectoral growth affects inequality in the rural areas.

$$Gini\_Rural_{it} = \sum_{j=1}^{P} \alpha_j \Delta AG_{it-1} + \sum_{k=0}^{Q} \beta_k \Delta AT_{it-1} + \eta_i + \varepsilon_{it} \qquad (2)$$

Table 2 - Fixed Effects model of the effect of agricultural and non-agricultural value added on rural Gini coefficient (Cross- country analysis)

	The Gini coefficient in rural areas	Net rural-urban Migration
lagged log Non Agri Value Added PC	**0.703***	123.5
(lagged non-agricultural growth)	**(0.368)**	(100.8)
Lagged log Agri Value Added PC	**-0.823****	-75.20
(lagged agricultural growth)	**(0.363)**	(110.8)
Constant	3.462	0.0327
	(0.0203)	(7.438)
N	81	705
R^2	0.703*	123.5

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Statistically significant coefficient estimates are shown in bold.

The first column of Table 2 suggests that the acceleration of (lagged) agricultural growth tends to reduce the Gini coefficient in rural areas (rural Gini) significantly over time, while the acceleration of (lagged) non-agricultural growth tends to increase rural Gini significantly. This is understandable as non-agricultural growth tends to benefit relatively rich households in rural areas (either through rural-to-urban migration or rural non-agricultural business), while agricultural growth directly benefits the relatively poor households.

We have also examined whether these factors had a dampening effect on rural to urban migration (the second column of Table 2). We find no significant effect of agricultural and non-agricultural incomes on internal migration in Asia. Here the non-significant result could be associated with our proxy for rural- urban migration. Because the cross-country data of rural - urban migration is not available, we measured it as *difference* between the net urban

population growth and the net rural population growth by ignoring the natural population growth in urban or rural areas and international migrations.

The empirical literature suggests that rural-urban migration in itself has a significant effect on inequality in China, as shown by Ha et al. (2016). The authors suggest that inequality and migration have a reciprocally intertwined relationship and find that contemporary migration increases income inequality, while migration from previous periods has a strong income inequality reducing effect. Ha et al. (2016) have estimated a system GMM model and have found that rural-urban migration benefited the communities where households with migrants are dominant. Migration improved educational attainments, increased income and consumption per capita, and promoted faster economic growth of the rural communities. While migration tends to increase the gender wage gap in general, it decreases the gender gap in the migrant's village of origin.

5. Human resource gaps between urban and rural areas

We now turn our attention to the human resource gap between urban and rural areas. Although the urban-rural income gap appears to be narrowing in several Asian countries except China (see Sections 2 and 3), we observe a clear rural-urban gap in human resources in terms of educational levels. In this section, to track the evolution of the rural-urban human resource gap, we use household data from India - the India Human Development Survey (IHDS) data in 2005 and 2012.

Table 3 reviews the proportion of households in terms of the highest educational attainment of all household members in each household, based on the four categories - no schooling, primary education, secondary education, and higher education. We observe a significantly higher proportion of households with no schooling in rural areas (26.9% in 2005, 22.1% in 2012) than in urban areas (9.7% in 2005, 7.4% in 2012), while the proportion

decreases between 2005-2012 in both areas. The shares of households with primary, secondary, and higher education have consistently risen during 2005-2012 in both rural and urban areas (columns (e) and (f)). The gap in human resources between the two areas decreased for 'no-schooling', primary education and secondary education, but slightly increased at the higher education level (columns (g) and (h)), which is expected given the concentration of higher education institutions in urban areas.

Table 3 - Educational attainment in rural and urban areas in India 2005 and 2012

	India							
	2005		2012		Change (within) from 2005 to 2012		Gap Across rural and urban areas	
	Rural **(a)**	Urban **(b)**	Rural **(c)**	Urban **(d)**	Rural **(e)** =(c)-(a)	Urban **(f)** =(d)-(b)	2005 **(g)** =|(b)-(a)|	2012 **(h)** =|(d)-(c)|
No Schooling	26.88%	9.74%	22.06%	7.42%	-4.82%	-2.32%	**17.14%**	**14.64%**
Primary Ed.	72.96%	90.18%	77.94%	92.58%	4.98%	2.40%	**17.22%**	**14.64%**
Secondary Ed.	55.78%	80.49%	62.25%	84.13%	6.47%	3.64%	**24.71%**	**21.88%**
Higher Ed.	8.20%	27.87%	10.15%	30.80%	1.95%	2.93%	19.67%	20.65%
No. Obs.	26734	14820	27579	14573				

(Source: IHDS data, authors' calculations)

6.   Demographic Transitions, Urbanization, Labour Force Growth, Demographic Dividend

In this section we carry out analyses to illustrate demographic transitions in Asia by reviewing demographic changes in different age groups in rural and urban areas during the period 1960-2014, and by analysing the trends in labour force for selected Asian countries in the same period.

We find that the population aged between 0 and 14 has declined from the mid-1990s onwards for all Asian countries. This is consistent with evidence in the literature documenting decrease in fertility rates across Asia (Imai and Sato, 2014). China - along with India (ibid, 2014) - has experienced a sharp decline as an outcome of the one-child policy (as shown by the dark red line in panel 1).

On the other hand, the population aged between 15 and 64 has continued to increase, resulting in an increase in the working-age population. This suggests a positive demographic dividend, used as a proxy for the future economic growth potential.[8] On the other hand, the population above 65 years shows an increasing trend, particularly in China and India, suggesting the ageing of these countries.

We then turn our attention to the change in rural and urban population structure. We observe that across Asia the trends suggest dramatic increases in urban population, which is a result of growing urbanization in Asia, and small increases in most Asian rural population (except for India and China, which exhibit increasing trends).

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[8] Strictly speaking, the younger workforce population should be analysed, but the graphs suggest that many Asian countries have experienced a decline in fertility and an increase in workforce at the same time. UNFPA (2016) argues that "(a) country with both increasing numbers of young people and declining fertility has the potential to reap a 'demographic dividend' – a boost in economic productivity that occurs when there are growing numbers of people in the workforce relative to the number of dependents" (http://www.unfpa.org/demographic-dividend). This situation, however, is changing swiftly in China where the younger working-age population has declined due to the one child policy which was implemented in 1979, while old-age population has increased significantly (Zhong, 2011).
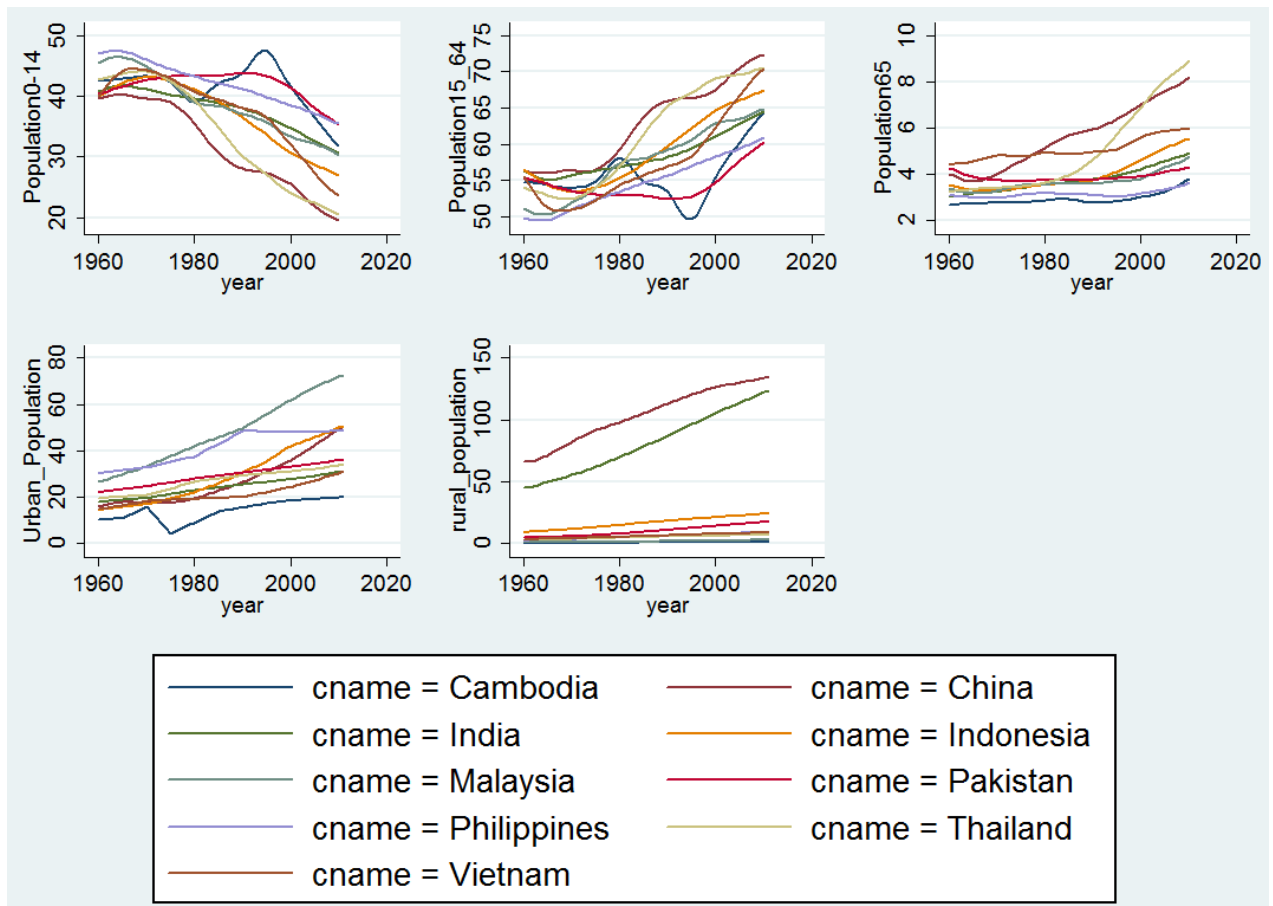
Figure 8 - Changes in population by age groups (Authors' Calculations using cross-country data)

For a subset of the countries and years displayed in Figure 16, the International Labour Organization has some data for selected countries from 2009 to 2012. Although Figure 17 is a snapshot of the long-term trend shown in Figure 16, it is still useful to draw some inferences about the urbanization in labour force in Asia. Although the total labor force population (both rural and urban) shows no statistically significant changes during the period, this can be attributed to the growing urban labour force and the decline in rural labour force as observed in panels 2 and 3 of Figure 17. This is an indication of the growing urbanization of Asia. This might also be due to an increase in rural-urban migration.
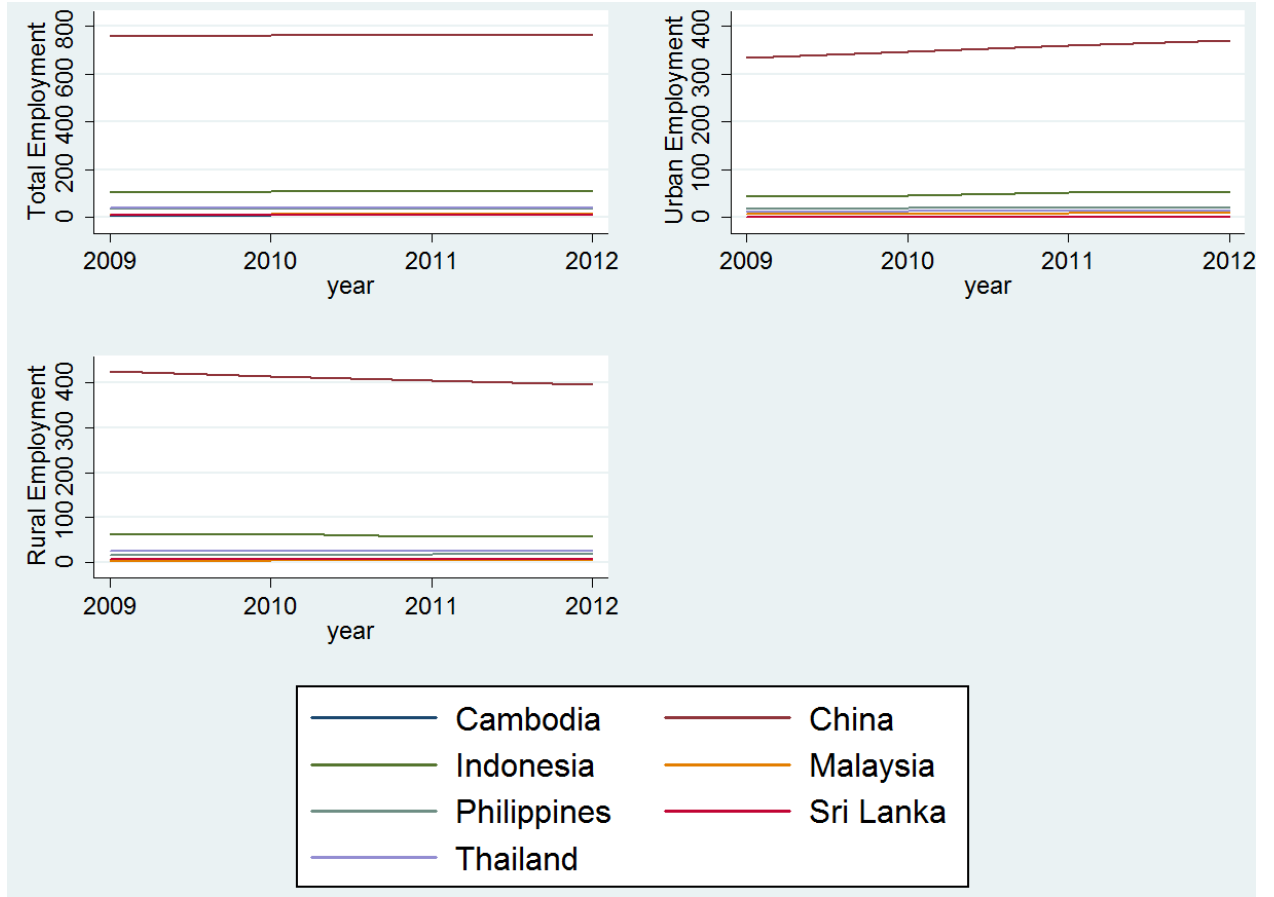
Figure 9 - Employment changes in Select Asian Countries (Source: ILO Statistical Database - Labour Force Surveys) Authors' Calculations

To analyse the extent to which Asian countries have benefited from the demographic dividend, we estimate the following fixed effects model.

$$GDP_{Growth_{it}} = \alpha_1 + \alpha_2 Population15to64_{it} + \alpha_3 SecEduc + \alpha_4 SecEduc * Population15to64_{it} +$$

$$X_{it} \cdot \alpha_5 + \eta_i + \varepsilon_{it} \tag{3}$$

where *'Population15to 64'* (years) denotes the population in the working age group (15-64 years) and *'SecEduc'* is the share of the working age population that is educated to a secondary education level. *'Population15to 64'* and *'SecEduc'* are interacted to examine whether the effect of the population dividend varies depending on the country's educational level. X_{it} is a vector including several control variables, namely, FDI share of GDP, Services Value Added share of GDP, Trade share of GDP, Agricultural Value Added share of GDP, and Industry's value added share of GDP. The coefficient estimate of population from 15 to

64 ($\hat{\alpha}_2$), and the interaction of secondary education and working age population ($\hat{\alpha}_2$) are of interest as they represent the demographic dividend's effect on GDP growth. $\hat{\alpha}_2$ shows an overall demographic dividend, while $\hat{\alpha}_3$ measures the extent to which the effect of demographic devident is changed according to the level of education. The results are reported in Table 4.

Table 4 - Results of fixed and random effects models of the Demographic Dividend

	(1) Fixed Effects GDP growth	(2) Random Effects GDP growth
Pop15to64	**0.349*** (0.122)**	**0.417*** (0.108)**
SecEdu	**4.475* (2.633)**	**5.615** (2.553)**
Pop15to64*SecEduc	**-0.0752* (0.0407)**	**-0.0909** (0.0396)**
FDI share of GDP (t-1)	**0.332*** (0.104)**	**0.283*** (0.0881)**
Services VA share of GDP (t-1)	0.0132	0.0257
Trade share of GDP (t-1)	(0.0250)	(0.0231)
Agri VA share of GDP (t-1)	**-0.0170** (0.00603)**	**-0.0121* (0.00625)**
Initial industry VA share of GDP		
agriva_share	**0.0997*** (0.0316)**	**0.115*** (0.0315)**
indva_share	0.0184 (0.0427)	0.0139 (0.0411)
Constant	-18.80 (7.741)	-23.97 (7.063)
N	364	364
Hausman test	chi^2(8)= 15.66	
	Prob>chi2 = 0.0475	

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Statistically significant coefficient estimates are shown in bold.

We have estimated both fixed-effects and random-effects models in Table 4. As Hausman test result is statistically significant and in favour of fixed-effects model, our discussion is based on it (Column (2)). We find a positive and significant effect of the working age population, suggesting that there is a positive 'demographic dividend' effect on economic growth. However, the interaction term shows that as the demographic dividend tends to weaken as the share of labour force with secondary education increases. Secondary education is positive and statistically significant. It is inferred that the demographic dividend is mainly associated with the uptake of non-skilled urban jobs in Asia.

7.   Remittance flows, impacts on poverty, inequality and national and sectoral growth

We illustrate the movement of international remittance flows to selected Asian countries in Figure 18. This shows increases in the levels and the growth rates of the remittance flows across the years for the Asian countries. In Figure 19, we find that the poverty headcount ratios both at the rural and urban level have decreased. A negative statistical correlation between poverty and remittance flows is implied by these diagrams.

Imai et al. (2014) examine how remittances affect poverty in Asian countries where the effect of remittances on economic growth is also taken into account. They find that in India for instance, a 50% increase in the share of remittances in GDP (3.59–5.39%) accelerates economic growth (from 7.65% to 8.84%) and reduces the US$1.25 poverty headcount from 41.6% to 38.9%, and the US$2 poverty headcount from 75.6% to 72.5%. Similar results are obtained for Sri Lanka, the Philippines, and Nepal. This suggests that remittances have a substantial poverty-reducing effect as well as a growth enhancing effect. They conclude that both migration and remittances are likely to have a positive and substantial effect on development efforts. They, however, note that this does not necessarily imply the best option.

For instance, as migration and remittances increase, the country of origin may suffer negative externalities such as brain drain, lower work effort, and the Dutch disease.

More significantly, Imai et al. (2014) found that most of the migrants are not from very poor households, suggesting that access to credit is a viable strategy. But the use of conventional financial services is very limited – to avoid the risk of money laundering and financial terrorism. This leaves households with the need to rely on costly money-transfer services or other informal modes of transferring money. This has important policy implications on how remittances can be steered in a way to enhance the development process and help in building capacities (financial and by knowledge transfer) for farm and non-farm investments to flourish in poor countries.
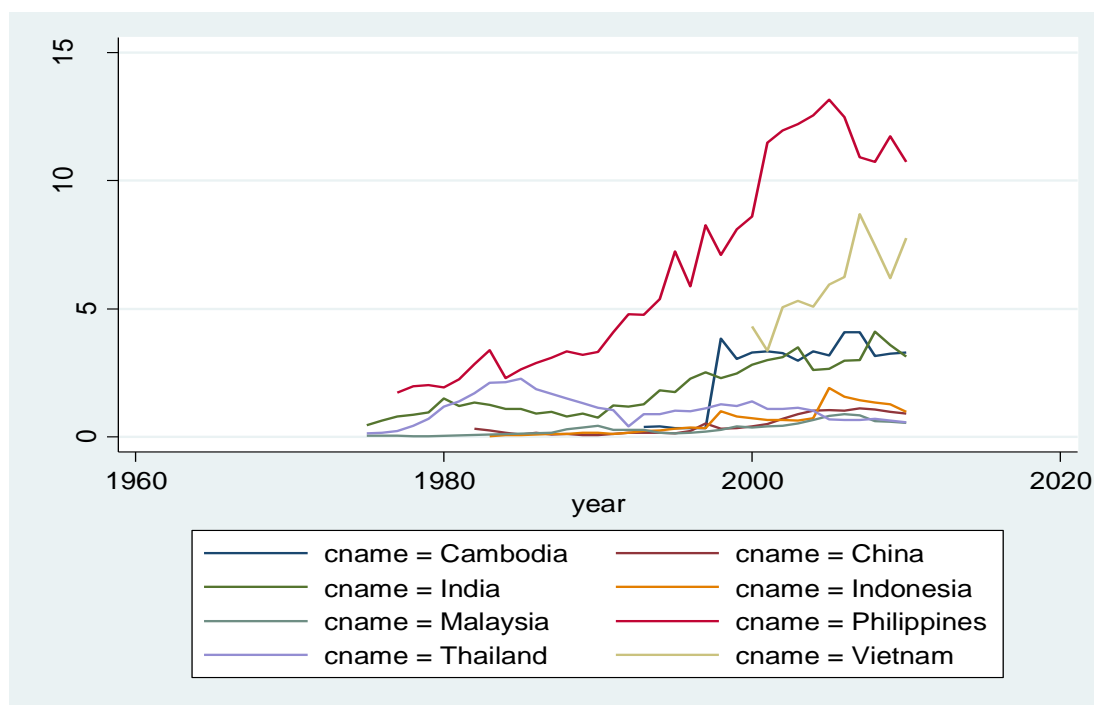

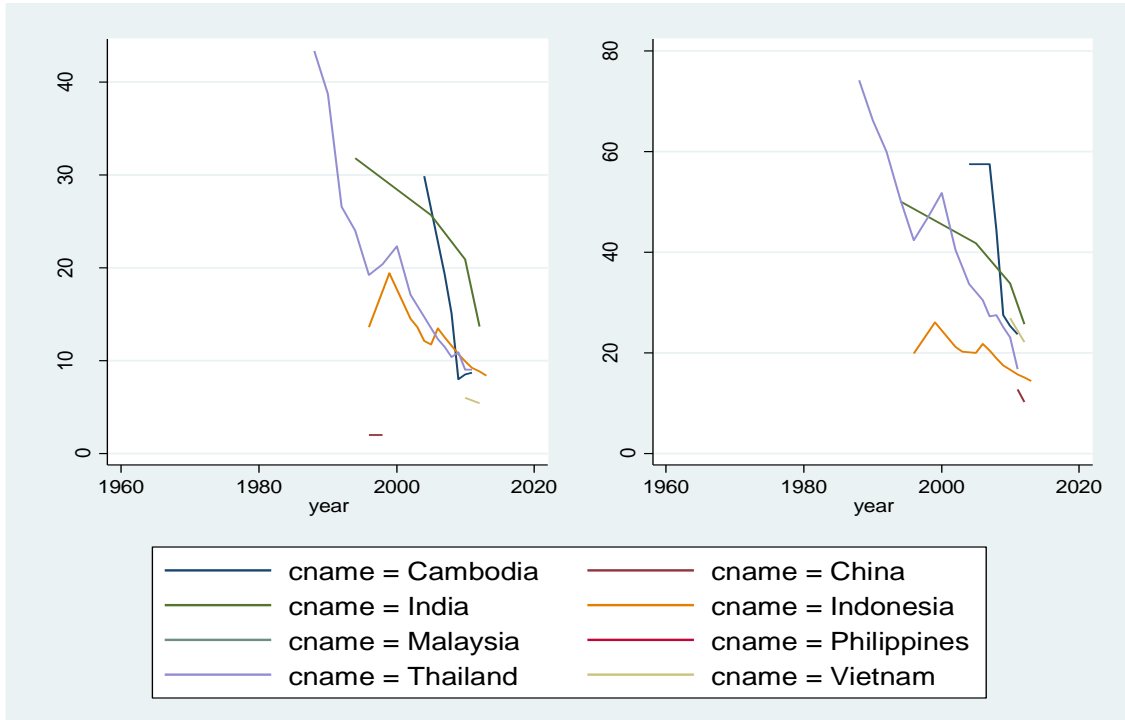**Figure 10 - Remittance flows by country (Authors' own computations)**

Figure 11 - Poverty Headcount by rural and urban areas of selected Asian countries (N.B. this series includes many missing values)

Based on the analysis above, we could draw policy implications regarding remittance towards farm/nonfarm investments (e.g. premium exchange rates as in Bangladesh, development bonds, Foreign Exchange Bearer Certificate (Pakistan), lower import duties on machinery and equipment by migrants (depending on target sectoral investment increase), granting preferential access to capital goods and raw material imports (India), offering an advisory and investment service for returning migrant-worker customers and supplementary loans (Thailand)).

8. Conclusions and Policy Implications

This study offers evidence on the rural-urban gap in the context of growing inequality in Asia. Our findings are summarised as follows.

First, China and India explain the trends of regional inequality given their large population, as major contributors. Overall, China's income inequality is characterised by rural-urban

disparity, but the inequality within-rural and within urban areas has constantly worsened, while it experienced very high economic growth. India is mainly characterised by high inequality within urban areas despite a sharp reduction in urban poverty. Rural-urban income gap has narrowed in recent years. Given the huge populations in India and China, the steady increase in income inequality of these countries is likely to be a leading cause of the overall shift in income distribution in Asia. The rural-urban disparity in GDP per capita- as well as the high and increasing inequality in rural China and the high and increasing inequality in urban India- characterise overall inequality at national levels. If we examine the recent changes in household income distributions in both rural and urban areas, we find that the rural and urban income gap has narrowed in many countries, such as, India, Vietnam and Thailand. This could be associated at least in part with the narrowing of the rural and urban wage gap in recent years.

Second, our econometric results on the agricultural and non-agricultural income gap suggest that higher non-agricultural growth rate tends to widen the urban-rural gap over time, while agricultural growth is unrelated to the rural-urban gap. If the country's macro situation is more fragile, the gap tends to be larger. On the other hand, the acceleration of agricultural growth tends to reduce inequality in rural areas significantly over time, while the acceleration of non-agricultural growth tends to increase rural inequality significantly. Rural-to-urban migration will increase income and consumption and reduce the gender gap (Ha et al., 2016).

Third, the rural-urban human resources gaps in terms of educational attainment have increased in both India and China. This will have to be interpreted in the growing literature on demographic dividend in Asia. While the working-age population has increased and the population of 0-14 years old has decreased, an overall positive effect of the former on economic growth is reduced if the share of educated labour force is higher. Promotion of education in rural areas without undermining the positive benefit from demographic dividend

is likely to be important in many Asian countries. It should be noted that secondary education alone has a positive and significant effect on economic growth.

Fourth, remittances reduce poverty in many countries. But given that poor households may not benefit enough from remittances or migration (Imai et al., 2014), these households need to be supported by policy measures, such as, policies facilitating their access to credit or skill development by which they can work in the non-agricultural sector. It has also been suggested that use of remittances for the productive purposes is important for poverty reduction.

In term of policy implications, policies which would promote agricultural growth and/or those facilitating the access of the poor or disadvantaged households to remittances or credit are important for reducing rural poverty. Given that higher non-agricultural growth tends to widen the rural-urban income gap, the acceleration of agricultural growth rate (towards non-agricultural growth rate) would reduce the income gap. Policies to promote education in rural areas are deemed important to narrow the rural-urban gap of human resources. Policies which would stabilise the macro economic conditions and reduce fragility are likely to fill the rural and urban income gap.

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Appendix 1. Positions of India and China in the changes of Poverty and GDP per capita in the region
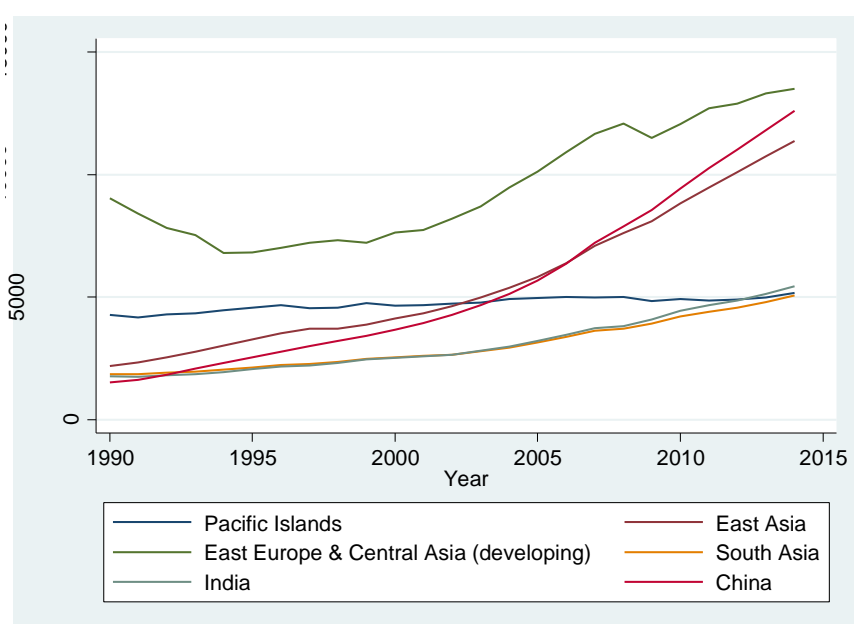
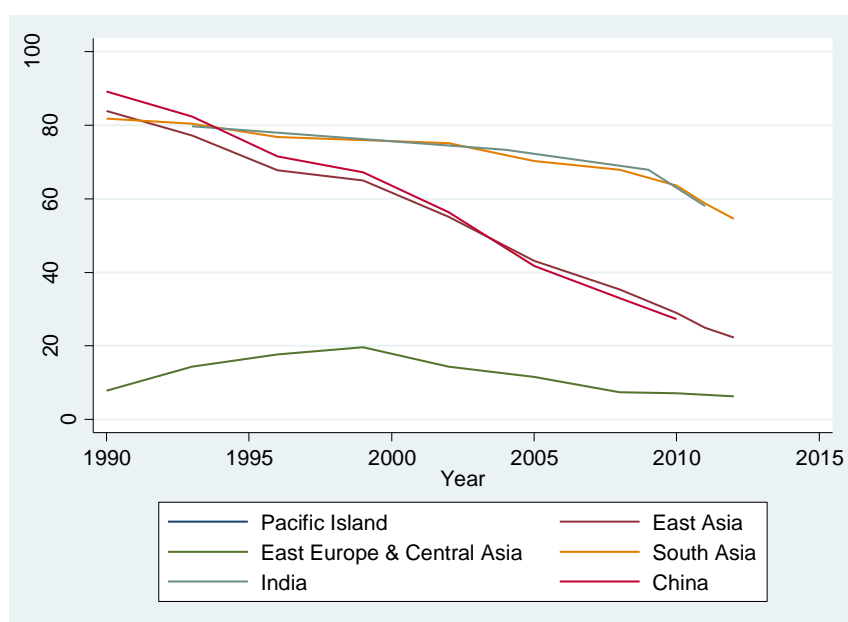

Figure A1. Changes of real GDP per capita (at 2011PPP)

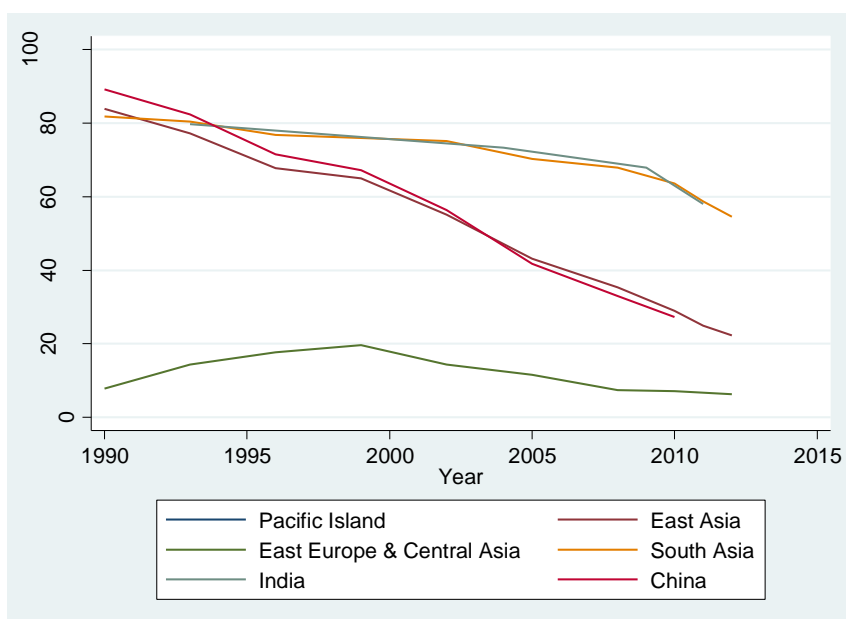Figure A2. Changes of Poverty Head Count (based on $1.90 a day at 2011PPP)

Figure A3. Changes of Poverty Head Count (based on $3.10 a day at 2011PPP)

Appendix 2 Graphs showing the distribution of income per capita

Figure A4 illustrates the Lorenz curves of inequality for rural and urban areas. These figures clearly show that (i) the gap between the rural and urban Lorenz curves - that is, the gap showing the degree of inequality across different distributional points - narrowed between 2005 and 2012 and (ii) both rural and urban Lorenz curves shifted towards the right during 2005-2012, suggesting that both rural inequality and urban inequality rose in the same period. This is consistent with Figure 1, which shows that (i) both the urban Gini index and the rural Gini indexed increased in India, and (ii) the difference between the urban Gini and the rural Gini became larger between 2005 and 2012 because the urban Gini increased substantially, while the rural Gini increased only marginally during the same period.
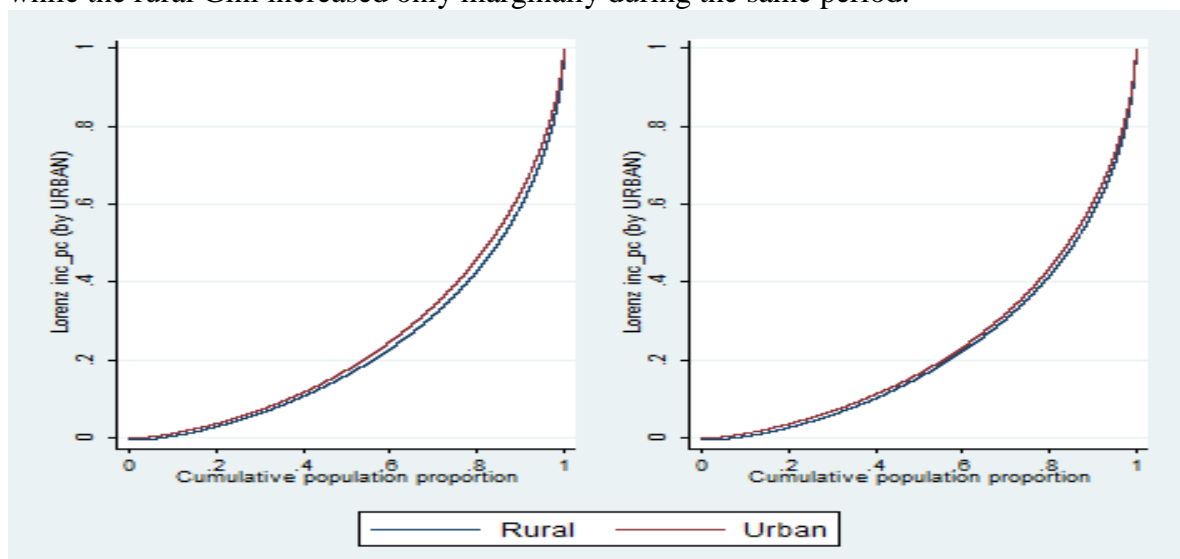

Figure A4 - Graphs showing the distribution of income per capita between rural and urban areas using the IHDS (2005, left) and (2012, right). Authors' calculations.
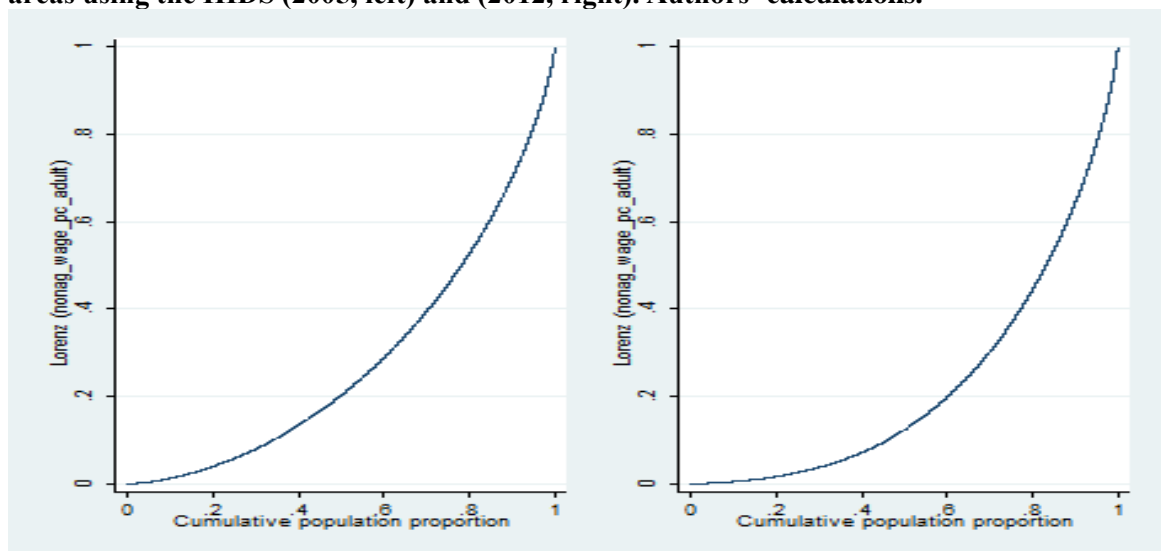

Figure A5 - Graphs showing the distribution of rural non-agricultural wage using the IHDS (2005, left) and (2012, right)

In Figure A5 we show the distribution of rural non-agricultural wage which has shifted further to the right during 2005 - 2012. This suggests that the inequality of rural non-agricultural wages rose in India from 2005 to 2012.

Furthermore, we plot the Lorenz curves for agricultural and non-agricultural incomes per capita using the Indian IHDS data in Figure A6. We observe a similar pattern, that is, inequality in both agricultural and non-agricultural income rose in the same period. While the Lorenz curves in the two sectors almost overlap in each year, the Lorenz curve of non-agricultural income lies below that of agricultural income in the middle range of cumulative distributions (or 0.2-0.6). That is, non-agricultural income became more unequally distributed in 2012.
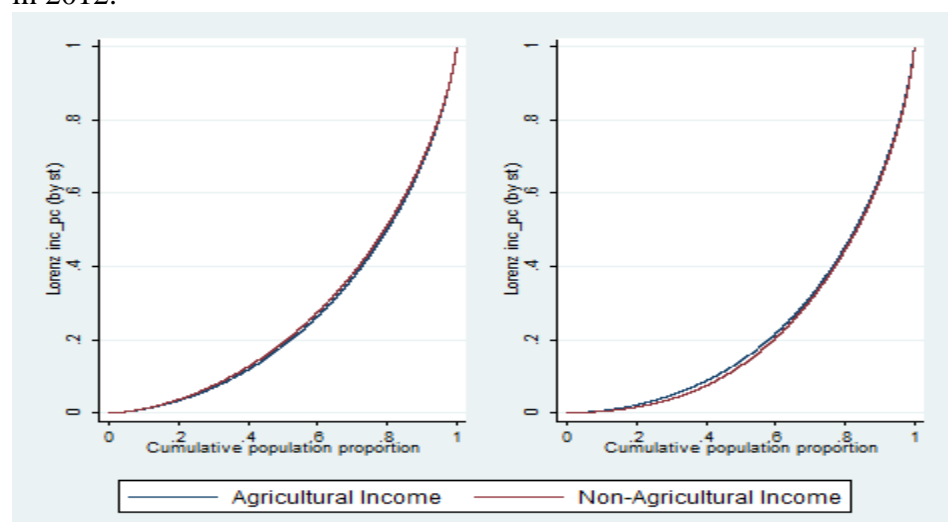

Figure A6 - Graphs showing the distribution of agricultural versus non-agricultural income per capita using the IHDS (2005, left) and (2012, right)

We have also repeated the same analyses using the Vietnam Households Living Standard Survey data[9] in 2002, 2004, and 2006. In Figure A7, we have plotted the Lorenz curve for each year. The rural-urban gap in income inequality (in terms of real income per capita) marginally narrowed over the period 2002-2006 in Vietnam.

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[9] See http://www.gso.gov.vn/default_en.aspx?tabid=483&idmid=5 for details.
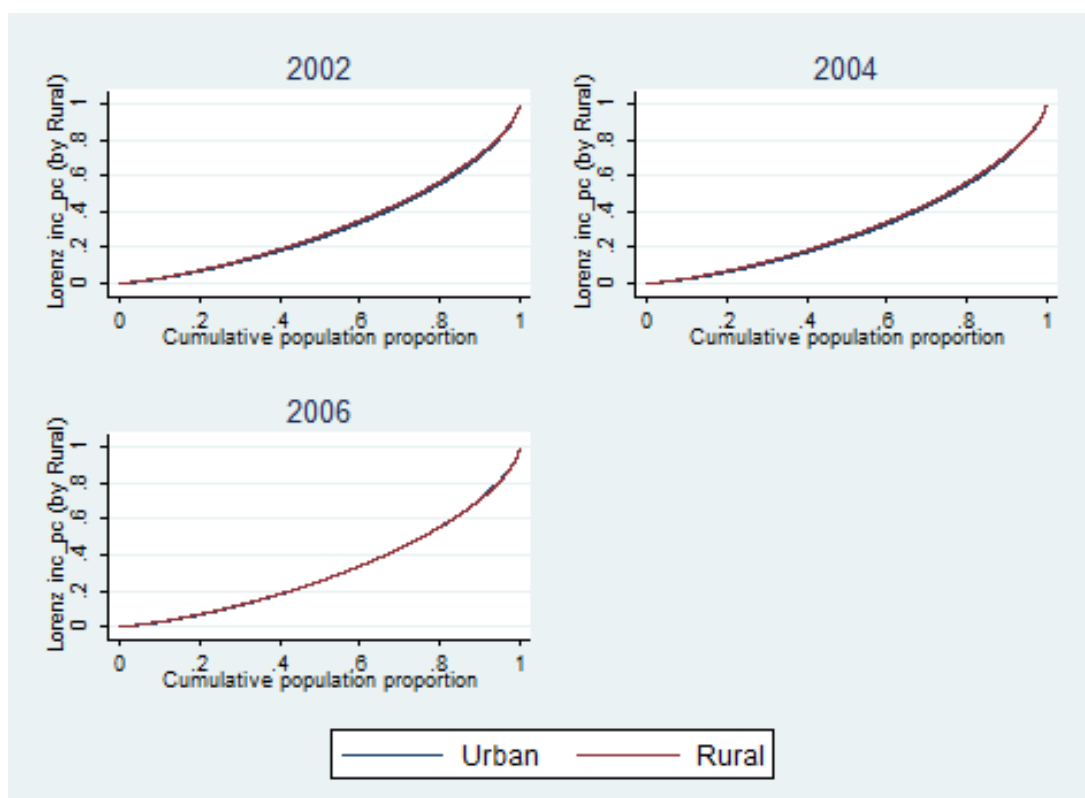
Figure A7 - Graphs showing the distribution of income per capita in Vietnam between rural and urban areas using the VHLSS data 2002-2006

In Figure A8, the Lorenz curves of rural non-agricultural income are plotted for each year. The distribution of rural non-agricultural income remained stable with no observable changes.
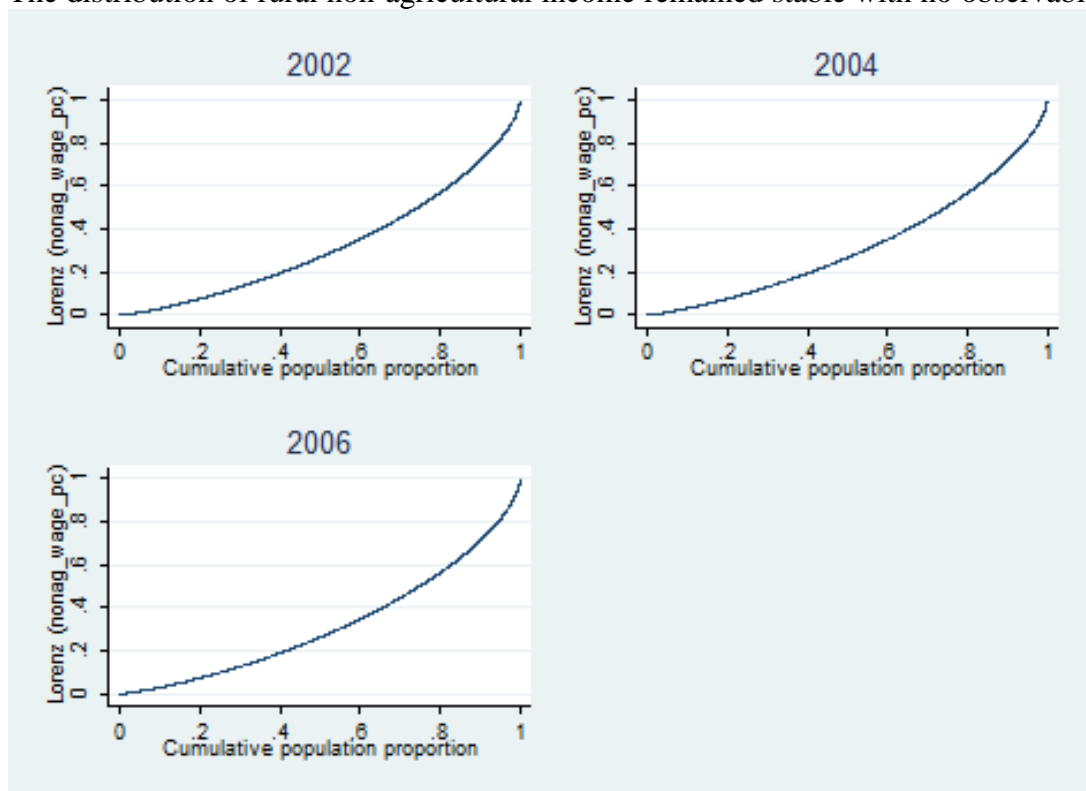
Figure A8 - Graphs showing the distribution of rural non-agricultural wage per capita in Vietnam using the VHLSS data 2002-2006. Authors' calculations.

In Figure A9 we have plotted the Lorentz curves for agricultural income per capita as well as non-agricultural income per capita in Vietnam using the VHLSS data 2002-2006. It is observed that the gap between agricultural and non-agricultural income has slightly narrowed over the period.
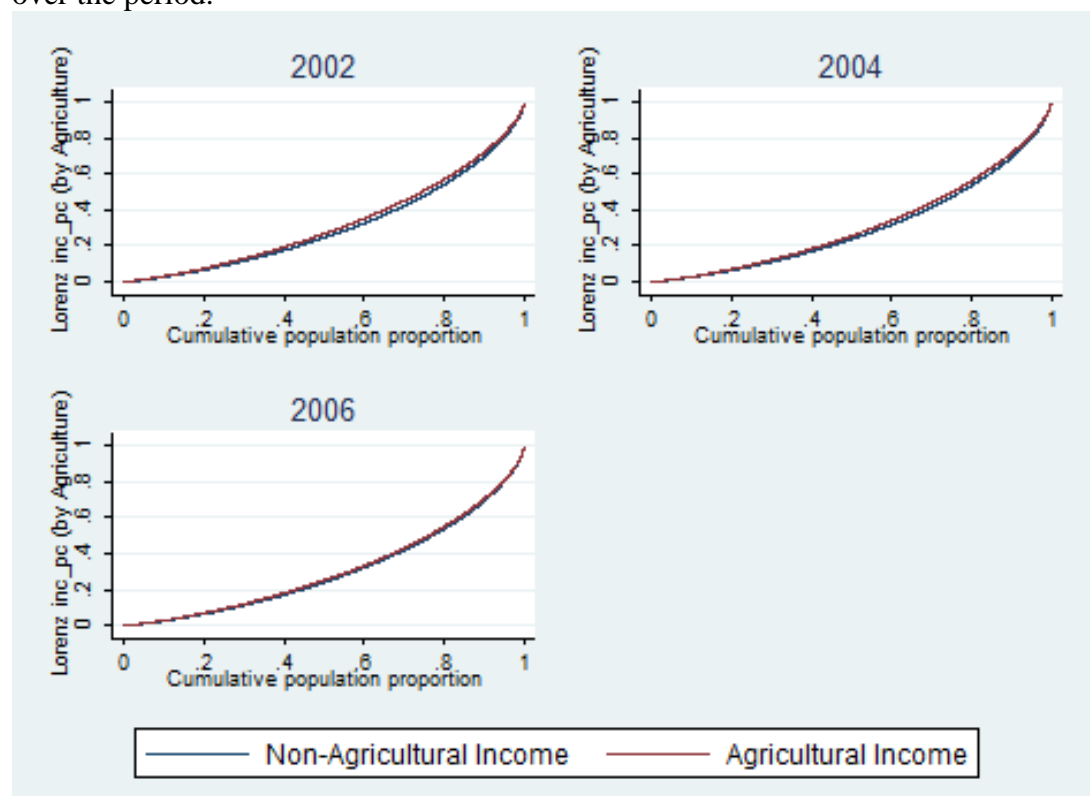

Figure A9 - Graphs showing the distribution of agricultural versus non-agricultural income per capita in Vietnam using the VHLSS data 2002-2006. Authors' calculations.

Appendix 3. Data used for the cross-country regression

Variable	Definition (Data source)	Obs	Mean	Std. Dev.	Min	Max
Macro Institution	Aggregate institutional quality (average of voice and accountability, government effectiveness, regulatory quality, rule of law and control of corruption	395	-0.524	0.464	-1.660	0.940
Land	Land area is a country's total area (WDI).	1,155	3.815	1.166	0.000	5.118
Population_density	Population density (people per sq. km of land area).	1,155	6.302	1.641	0.000	7.636
Fragility Index	CPIA rating of macroeconomic management and coping with fragility (1=low to 6=high)	1,176	7.618	1.193	1.000	8.000
Openness	Imports and exports (value added)/GDP (WDI).	1,155	4.543	2.846	0.000	7.146
Ethnic fractionalization	Ethnic fractionalization Index *1	697	-1.059	0.706	-3.091	-0.308
lab_with_secondary	Labour force with secondary education	1,155	0.150	0.706	0.000	5.209
populati~_14	Population below 14 years old	1,155	1495.045	405.122	205.000	2116.000
populati~65_	Population above 14 years old	1,155	1225.122	366.004	2.000	2080.000

Notes: *1. Ethnic fractionalization Index reflects probability that two randomly selected people from a given country will not belong to the same ethnolinguistic group. The higher the number, the more fractionalized society. The definition of ethnicity involves a combination of racial and linguistic characteristics. The result is a higher degree of fractionalization than the commonly used ELF-index (see el_elf60) in for example Latin America, where people of many races speak the same language.