

# Urbanization and Inequality in Asia

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This paper provides a quantitative analysis of how the changing dual economic structure and urbanization affect inequality in Asia. Focusing on data for four countries—the Peoples' Republic of China, India, Indonesia, and the Philippines—the paper asks three questions. First, how much of the past increase in inequality can be attributed to urbanization per se—the rising share of urban population, as opposed to other drivers related to the region's dual economic structure, such as the urban–rural income gap, inequality within the urban sector, and inequality within the rural sector? Second, how might urbanization affect these countries' inequality in the future as its process continues? Third, moving forward, what is the relative importance of each of these drivers in containing rising inequality in Asia? It is hoped that the framework developed and calculations presented in this paper provide more insights into the dynamics of rising inequality in Asia and can help policy makers prioritize policy actions for confronting it.

*Keywords:* inequality, Kuznets curve, turning point, urbanization, Asia

*JEL codes:* D63, N35, O53, R23

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## I. Introduction

This paper is motivated by three stylized facts for Asia over the last 2 decades. First, inequality has risen significantly relative to historical trends. As highlighted in ADB (2012a), more than 80% of Asia's population now lives in countries where inequality has risen in the last 20 years. Second, rural–urban income gaps in Asia are significant, reflecting the dominance of but also a changing dual economic structure in a large part of the region. For example, the rural–urban divide accounts for close to 20% of the economy-wide inequality in Indonesia and the Philippines, 25% in Bhutan, India, and Viet Nam, and 45% in the People's Republic of China (PRC), and this divide has increased sizably in some countries. Third, urbanization has proceeded apace. Asia's share of urban population has increased from 40% to 46.2% in the last 2 decades (ADB 2012b). In the PRC, the share of urban population increased from 27% in 1990 to 52% in 2012 (World Bank 2012).

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The evolution of inequality at the economy-wide or national level is a complex phenomenon, impacted by history, culture, technology, demography, and policy. It is not our intention in this paper to provide a comprehensive explanation of inequality trends in Asia. Instead, the purpose of this paper is narrower and more focused. Given the three stylized facts and using data for four Asian countries—the PRC, India, Indonesia, and the Philippines, we look at how the changing dual economic structure in Asia and particularly urbanization have impacted the evolution of national inequality in the past and how the former might impact the latter in the future.

Urbanization features strongly in the classic analysis of inequality and development by Kuznets (1955). In his seminal 1955 paper, Kuznets identifies a number of forces that together may lead to the well-known inverted U-shaped Kuznets curve—as a country develops, inequality increases initially and declines after a certain average income level is attained. These forces include the concentration of savings among rich households which tends to increase inequality as a country moves to higher income levels; and political pressures for income redistribution, demographic changes, the emergence of new industries, rising importance of services sector incomes (that rely more on individual excellence), and urbanization, all of which, according to Kuznets (1955), tend to help reduce inequality as a country becomes more and more developed. The Kuznets hypothesis has been tested empirically by many, although results have not been uniformly supportive.

To illustrate how urbanization affects inequality at the national level, Kuznets (1955) uses numerical examples and shows that, holding within-rural and within-urban income distributions and the urban–rural income ratio constant, the mere population shift from the lower-income and lower-inequality rural sector to the higher-income and higher-inequality urban sector could lead to an inverted-U curve—inequality first increases, reaches a turning point and then declines. The bulk of the analysis in his paper follows this framework. In reality, however, it is not realistic to assume that rural and urban inequalities and the urban–rural income ratio would stay constant when urbanization takes place, as many other forces, highlighted above, are at work to shape income distribution. Nevertheless, it is useful to see how urbanization alone has influenced the dynamics of income distribution in the four countries and what it implies for their inequality in the coming years as urbanization proceeds.

The paper has three specific objectives. Using Theil's second measure of income inequality, a change in national inequality over a certain period of time can be decomposed into changes in inequality within the rural sector, in inequality within the urban sector, in the gap in mean incomes between the two sectors, and in the population share of the urban sector—a measure of urbanization. The first objective of this paper is to estimate how much of the observed changes in inequality in the four Asian countries over the last 2 decades can be attributed to changes in the above four components or drivers.

The second objective is to provide a more in-depth analysis of the relationship between urbanization and national inequality. We follow Kuznets' numerical examples and look at how urbanization alone has affected national inequality of the four countries, how the former may affect the latter in the coming years, and, in particular, whether these countries have passed the turning point as numerically illustrated in Kuznets' classic paper.

The third objective is to estimate the impact of a marginal change in each of the four components on national inequality. This information is useful, as it gives guidance to policy makers on where to focus interventions to mitigate the rise in national inequality in the future. This is particularly important given that Asian policy makers have identified rising inequality as one of the major policy challenges of the coming decades and urbanization as a key policy instrument to meet the challenge (Hu 2012).

The plan of the paper is as follows. Section II describes the methodology and basic features of the data. Section III presents the accounting exercise, attributing the change in national inequality in each of the four sample countries over the last 2 decades to the four drivers as discussed above. Section IV shows how urbanization has affected and may affect national inequality in the future and provides more in-depth analysis. Section V asks which of the four drivers would have the biggest marginal impact on reducing national inequality. Section VI concludes the paper with a discussion of the main findings and limitations of the analysis.

## II. Inequality Index, Data, and Basic Trends

### A. Inequality Index

Let income be denoted by  $y$  and let the two sectors—urban and rural—in the economy have income distributions with densities  $f_1(y)$  and  $f_2(y)$ , respectively. Let the population share of sector 1 (urban) be  $x$ ; the share of sector 2 (rural) is thus  $1 - x$ . With this specification, the economy-wide or national income distribution is simply

$$f(y) = xf_1(y) + (1 - x)f_2(y) \quad (1)$$

National income distribution is thus a function of  $f_1$ ,  $f_2$ , and  $x$ . A change in national inequality is the result of changes in urban income distribution  $f_1$ , rural income distribution  $f_2$ , and/or a shift of population from rural to urban, measured by a change in  $x$ .

This paper focuses on the case where inequality is given by Theil's second measure, that is, the  $GE(0)$  measure from the generalized entropy family. Let the mean of  $f_1$ , urban mean income, be  $m_1$  and let the mean of  $f_2$ , rural mean income,

be  $m_2$ . Let  $k = m_1/m_2$  be the ratio of the two means. Let the national inequality be denoted  $L$ , with  $L_1$  and  $L_2$  being urban and rural inequalities, respectively.

Using Theil's second measure, it can be shown that national inequality,  $L$ , can be decomposed into a within-group component and a between-group component, i.e.,

$$L = L(x, k, L_1, L_2) = L_W + L_B$$

or

$$L = xL_1 + (1 - x)L_2 + \log[xk + (1 - x)] - [x \log(k)] \quad (2)$$

In Equation (2),  $L_W$  is the within-group component of national inequality, which is simply a population-weighted sum of urban and rural inequalities.  $L_B$  is the between-group component of national inequality—the inequality that would be present if everybody in the urban sector had the mean income of that sector,  $m_1$ , and everybody in the rural sector had the mean income of that sector,  $m_2$ . This between-group component of national inequality depends only on the ratio of urban and rural mean incomes,  $k$ , and the share of urban population,  $x$ . As shown by Equation (2), and as is well known,  $L$  is an additively decomposable inequality measure.

Equation (2) contains all the analytical structure that we will need for our empirical analysis. Using Equation (2), we will be able to trace national inequality as a function of the share of urban population ( $x$ ), urban–rural income ratio ( $k$ ), urban inequality ( $L_1$ ), and rural inequality ( $L_2$ ). Before moving to specific applications, however, we turn now to a brief account of the data and of the four countries that form the focus of this paper.

## B. Data

The four Asian countries included in this paper are the PRC, India, Indonesia, and the Philippines. This paper uses data from two sources. For India, Indonesia, and the Philippines, unit-level household survey data are used, while for the PRC, data are sourced from the World Bank's PovcalNet since the unit-level household survey data are not available. It is important to note that, for all the four countries, estimated means and inequalities in this paper are all based on per capita household consumption expenditure. As is well-known, for a given country, inequality estimated from per capita household consumption expenditure is normally lower than that estimated from per capita household income (ADB 2012a).

Table 1 gives the values of the four key variables,  $x$ ,  $k$ ,  $L_1$ , and  $L_2$ , for the early 1990s and late 2000s. For India, Indonesia, and the Philippines, for both years,  $k$  is greater than 1, meaning urban mean income is higher than rural mean income, and urban inequality  $L_1$  is higher than rural inequality  $L_2$ , consistent with the assumptions of Kuznets' numerical examples in his 1955 paper. However, in the case of the PRC, while urban mean income is higher than rural mean income, urban inequality is

Table 1. Key Variables in the Early 1990s and Late 2000s

	Early 1990s				Late 2000s			
	$x$	$k$	$L_1$	$L_2$	$x$	$k$	$L_1$	$L_2$
<b>PRC</b>	0.27	1.74	0.108	0.161	0.43	2.37	0.208	0.259
<b>India</b>	0.23	1.74	0.219	0.149	0.26	2.02	0.239	0.161
<b>Indonesia</b>	0.35	1.78	0.193	0.118	0.57	1.77	0.228	0.122
<b>Philippines</b>	0.39	2.07	0.338	0.211	0.55	2.04	0.300	0.233

$k$  = urban–rural income ratio,  $L_1$  = urban inequality,  $L_2$  = rural inequality, PRC = People’s Republic of China,  $x$  = share of urban population.

Note: Early 1990s data: 1990 for the PRC and Indonesia, 1991 for the Philippines, and 1993 for India; late 2000s data: 2008 for the PRC and India, 2010 for Indonesia, and 2009 for the Philippines.

Sources: Unit-level household survey data and World Bank’s PovcalNet.

lower than rural inequality—not consistent with one of the Kuznets assumptions. For all the four countries, the share of urban population increased between the early 1990s and late 2000s, and the increase was very significant for the PRC, Indonesia, and the Philippines. In comparison, the pace of urbanization was much slower in India, where the share of urban population increased only by 3 percentage points in about 15 years.

In the PRC and India, the pace of growth was faster for urban mean income than for rural mean income, leading to a significant widening in the urban–rural income gap between the early 1990s and late 2000s: the ratio of urban mean income to rural mean income,  $k$ , increased from 1.74 to 2.37 in the PRC and from 1.74 to 2.02 in India. In Indonesia and the Philippines, however,  $k$  remained more or less unchanged in the last 2 decades, at about 1.8 in Indonesia and 2.1 in the Philippines.

In the PRC, India, and Indonesia, both urban and rural inequalities increased in the last 2 decades, and the increases were particularly pronounced in the PRC. For these countries, urban inequality grew faster than rural inequality, especially for the PRC. Since the PRC’s urban inequality was lower than rural inequality in the early 1990s, a larger increase in urban inequality implies its difference from rural inequality has declined relatively. For India and Indonesia, however, this suggests a widening in the difference between urban and rural inequalities. In the case of the Philippines, while rural inequality grew, urban inequality actually declined.

Table 2 shows the values of national inequality, measured in both the second measure of the Theil index [ $GE(0)$ ] and the Gini coefficient. The PRC’s Gini coefficient increased from 32.4 in 1990 to 43.4 in 2008<sup>1</sup>; India’s Gini coefficient worsened from 32.5 in 1993 to 37 in 2010, and Indonesia’s Gini rose from 29 in 1990 to 39 in 2011. On the other hand, inequality changed little in the Philippines,

<sup>1</sup>Some studies have reported much higher Gini coefficients for the PRC (see, for example, *The Economist*, 15 December 2012). One of the major reasons for the difference is that in this paper, the Gini coefficient is estimated from per capita household consumption expenditure, while those in other studies which are found to be much higher are estimated from per capita household income. According to ADB (2012a), the difference between the two measures can be as high as 10 when the Gini coefficient is measured such that it ranges from zero to 100.

Table 2. National Inequality of Per Capita Consumption Expenditure

	Gini Coefficient		Theil Index, [ $GE(0)$ ]	
	Early 1990s	Late 2000s	Early 1990s	Late 2000s
<b>PRC</b>	32.4	43.4	0.179	0.329
<b>India</b>	32.5	37.0	0.194	0.233
<b>Indonesia</b>	29.2	38.9	0.183	0.221
<b>Philippines</b>	43.8	43.0	0.326	0.330

Note: Early 1990s data: 1990 for the PRC and Indonesia, 1991 for the Philippines, and 1993 for India; late 2000s data: 2008 for the PRC and India, 2010 for Indonesia, and 2009 for the Philippines, except for the Gini coefficient for India which refers to 2010 and for Indonesia which refers to 2011. Source: Authors' estimates using unit-level household survey data and World Bank's PovcalNet.

with the Gini falling from 43.8 to 43.0 but the Theil index [ $GE(0)$ ] increasing from 0.326 to 0.330 during 1991–2009.

A recent study by ADB (2012a) highlights three fundamental drivers of rising inequality in Asia: technological change, globalization, and market-oriented reform. It is noted that these forces have opened enormous new opportunities for Asian economies to prosper, but have not benefited all Asian people equally. More specifically, these forces have affected income distributions through three channels: rising skill premiums, falling labor's share of total income, and increasing spatial inequality. It is also noted that impacts of these have been further compounded by unequal access to opportunity due to weaknesses in governance and social exclusion (ADB 2012a).

### III. Accounting for Changes in National Inequality

As shown in the previous section, national inequality ( $L$ ) in Asia has changed significantly over the past 2 decades, and so have its constituent components  $x$ ,  $k$ ,  $L_1$ ,  $L_2$ . How have changes in these components contributed to the changes in national inequality? This section will develop a sense of the quantitative contribution of each of these forces to the actual changes in national inequality between the early 1990s and late 2000s for the four countries under study.

Using Equation (2), we can write the change in national inequality as follows:

$$dL = A_x dx + A_k dk + A_{L1} dL_1 + A_{L2} dL_2 \quad (3)$$

where

$$A_x = (L_1 - L_2) + [(k - 1)/(x(k - 1) + 1)] - \log(k) \quad (4a)$$

$$A_k = x/(1 - x + xk) - x/k \quad (4b)$$

$$A_{L1} = x \quad (4c)$$

$$A_{L2} = (1 - x) \quad (4d)$$

Table 3. **Estimated Coefficients**

	Year	$A_x$	$A_k$	$A_{L1}$	$A_{L2}$
<b>India</b>	<b>Base-year</b>	0.150	0.064	0.227	0.773
	<b>End-year</b>	0.182	0.077	0.260	0.741
<b>PRC</b>	<b>Base-year</b>	0.009	0.070	0.274	0.726
	<b>End-year</b>	-0.053	0.089	0.431	0.569
<b>Indonesia</b>	<b>Base-year</b>	0.113	0.078	0.345	0.655
	<b>End-year</b>	0.069	0.074	0.574	0.426
<b>Philippines</b>	<b>Base-year</b>	0.151	0.087	0.394	0.606
	<b>End-year</b>	0.016	0.080	0.549	0.451

$A_x$  = coefficient of share of urban population,  $A_k$  = coefficient of urban-rural income ratio,  $A_{L1}$  = coefficient of urban inequality,  $A_{L2}$  = coefficient of rural inequality.

The four coefficients,  $A_x$ ,  $A_k$ ,  $A_{L1}$  and  $A_{L2}$ , can all be calculated from actual data. Notably, their numerical values will be different depending on whether the base-year or end-year data are used, as shown in Table 3.

In the accounting exercise below, we use the average of the two numerical values for each coefficient: one estimated from the base-year data and the other from the end-year data.<sup>2</sup> Multiplying the change in each of the four variables ( $x$ ,  $k$ ,  $L_1$ ,  $L_2$ ) between the early 1990s and late 2000s by its respective coefficient gives an estimate of the contribution of that variable to the change in national inequality for each country. The contributions will not add up to the actual change because of non-linearity and interaction effects and there will be a residual term. Table 4 reports absolute and percentage contributions to the change in national inequality by each of the four variables as well as the residual term for the four countries.

Table 4 shows that, for all the four countries, changes in the four components between the early 1990s and late 2000s can explain almost all of the observed change in national inequality. But the relative importance of each of the four components differs from country to country:

- i. In the case of India, half of the total observed change in national inequality was accounted for by the widening urban-rural income gap ( $k$ ), about 23% by rising rural inequality ( $L_2$ ), and about 13% each by an increase in the urban population share ( $x$ ), and urban inequality ( $L_1$ ).
- ii. In the PRC, 43% of the total observed increase in national inequality can be explained by rising rural inequality, 33% by the widening urban-rural income gap, and 24% by rising urban inequality, while the impact of urbanization as

<sup>2</sup>Although the numerical values of the coefficients estimated from the early 1990s data differ from those estimated from the late 2000s data, the difference does not alter the conclusions of this section. The results estimated from base-year data and end-year data, separately, are available from the authors upon request.

Table 4. Accounting for Changes in National Inequality, the Early 1990s and Late 2000s

	Change in National Inequality [ $GE(0)$ ] between 1990s and 2000s	Contribution (% share)				Residual
		$x$	$K$	$L_1$	$L_2$	
<b>India</b>	0.039 (100)	0.005 (13.7)	0.02 (50.0)	0.005 (12.6)	0.009 (23.3)	0.000 (0.4)
<b>PRC</b>	0.149 (100)	-0.003 (-2.3)	0.05 (33.4)	0.035 (23.5)	0.064 (42.6)	0.004 (2.9)
<b>Indonesia</b>	0.039 (100)	0.021 (54.0)	-0.001 (-1.7)	0.016 (42.3)	0.003 (6.6)	0.000 (-1.1)
<b>Philippines</b>	0.004 (100)	0.013 (308.1)	-0.002 (-54.9)	-0.018 (-419.8)	0.012 (247.3)	-0.000 (-7.6)

$k$  = urban-rural income ratio,  $L_1$  = urban inequality,  $L_2$  = rural inequality,  $x$  = share of urban population.  
Note: Figures in parentheses are percentage shares.

measured by rising urban population share is negligible—in fact it helps reduce inequality, with the resulting reduction amounting to 2.3% of the total observed increase in national inequality.

- iii. In Indonesia, the most important driver of the observed increase in national inequality was urbanization explaining 54% and rising urban inequality explaining 42%, while rising rural inequality explained 7% and the impact of the urban-rural income gap was negligible.
- iv. The Philippines experienced a small increase in national inequality. Falling urban inequality and a narrowing in the urban-rural income gap helped reduce national inequality, with the resulting reduction amounting to 420% and 55% of the observed increase in national inequality, respectively. On the other hand, urbanization and rising rural inequality increased national inequality, with the resulting increase amounting to 308% and 247% of the observed increase in national inequality, respectively.

These results suggest that rising inequalities in the four countries have different driving forces. Urbanization played a major role in driving up national inequality in Indonesia and the Philippines, mainly because of a large increase in the share of urban population during the last 2 decades, a higher urban inequality relative to rural inequality, and the fact that the two countries have not passed the turning point as illustrated in Kuznets' numerical examples (see further discussion in the next section). Urbanization has also contributed to rising inequality in India; but it is not a major driver, because the increase in the share of India's urban population in the last 2 decades has been rather modest. For the PRC, urbanization has actually helped reduce national inequality despite the large increase in the share of urban population. This is partly due to its lower urban inequality relative to rural inequality.

The widening urban–rural income gap was a major contributor to rising national inequality in both India and the PRC. It was the most important for India and second most important for the PRC. For Indonesia and the Philippines, the urban–rural income gap actually narrowed slightly, and hence helped reduce national inequality.

Neither the increase in urban inequality nor in rural inequality was the most important contributor to rising national inequality among the four countries, with the exception of the PRC, where the increase in rural inequality was the most important contributor to rising national inequality in the last 2 decades. This finding is in contrast to what has been widely believed: widening urban–rural income gap and rising urban inequality are the two most important drivers of rising inequality in the PRC in the last 2 decades (Lin et al. 2008).

#### IV. Urbanization and the Turning Point

As noted in the introduction, Kuznets (1955) put the process of urbanization at the heart of his analysis of inequality change and he used a particular model to describe how inequality changes with the process of urbanization and to derive an inverted-U relationship between the two. The argument was made with the aid of numerical examples, as follows:

“The basic assumptions used throughout are that the per capita income of sector B (nonagricultural) is always higher than that of sector A; that the proportion of sector A in the total number<sup>3</sup> declines; and that the inequality of the income distribution within sector A may be as wide as that within sector B but not wider. With the assumptions concerning three sets of factors—inter-sector differences in per capita income, intra-sector distributions, and sector weights—varying within the limitations just indicated, the following conclusions are suggested: . . . [[I]f the differential in per capita income between the two sectors remains constant and the intra-sector distributions are identical for the two sectors, the mere shift in the proportions of numbers produces slight but significant changes in the distribution for the country as a whole. In general, as the proportion of A drifts from 0.8 downwards, the range tends first to widen and then to diminish.” (Kuznets 1955, pp. 12–13).

It is important to note that urbanization is only one of the forces that underlie the well-known Kuznets curve, and other important forces identified by Kuznets

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<sup>3</sup>This refers to population.

include the concentration of savings among rich households; political pressures for income redistribution through, for example, tax policy; demographic changes; the emergence of new industries; and rising importance of services sector incomes that rely more on individual excellence rather than accumulated wealth.<sup>4</sup> Nevertheless, given that the mere population shift from the rural to urban sector may lead to an inverted-U curve after holding urban and rural inequalities and the urban–rural income gap constant, it is interesting to apply this model to the four sample countries, to examine how urbanization may affect these countries’ inequalities in the coming years and, in particular, to look at where the turning points as illustrated in Kuznets’ numerical examples are.

The basic question posed by Kuznets through his simple numerical model was: what happens to national inequality as urbanization proceeds and the share of urban population goes from zero to 100%? This can be answered by using the  $GE(0)$  measure of inequality. Differentiating Equation (2) with respect to the share of urban population,  $x$ , gives:

$$dL/dx = (L_1 - L_2) + [(k - 1)/(x(k - 1) + 1)] - \log k \quad (5)$$

We assume that  $k > 1$ , so that sector 1 is the sector with the higher mean income. With this specification we come close to the natural specification with sector 1 being the urban sector and  $x$  increasing with development. The mathematical expression for the turning point,  $x^*$ , can be obtained by setting  $dL/dx = 0$ , and is given by:

$$x^* = 1/[\log(k) - (L_1 - L_2)] - 1/(k - 1) \quad (6)$$

As shown in Anand and Kanbur (1993a), the turning point will be between 0 and 1 when

$$L_1 - L_2 < 1/k - 1 + \log(k) \quad (7)$$

Substituting the values of  $k$ ,  $L_1$ , and  $L_2$  in Equation (6) would give us the predicted turning point following Kuznets’ simulation. We used both base-year and end-year data to estimate turning points, as reported in Table 5. Understandably, turning points differ depending on which year’s data are used. Some interesting observations emerge.

For India, Indonesia, and the Philippines, both base-year and end-year urban population shares are smaller than the predicted turning points whether using base-year or end-year data. This suggests that national inequalities of these countries

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<sup>4</sup>Following on from Kuznets (1955), the complex nature of national inequality evolution and the key role for policy have been emphasized in the subsequent literature—see for example, Piketty (2006) and Kanbur (2012).

Table 5. Predicted Turning Points

	Share of Urban Population (%)		Predicted Turning Point Using Base-year Data (%)	Predicted Turning Point Using End-year Data (%)
	Base-year	End-year		
<b>India</b>	23	26	71.4	62.0
<b>PRC</b>	27	43	29.7	36.4
<b>Indonesia</b>	35	57	71.1	84.9
<b>Philippines</b>	39	55	73.0	58.7

have not reached their turning points. For India and Indonesia, given that end-year urban population shares are still much smaller than the predicted turning points using end-year data, the two countries still have many years to go for national inequality to peak even if urban and rural inequalities and the urban–rural income gap stay constant. For the Philippines, however, the end-year urban population share is very close to the predicted turning point using end-year data.

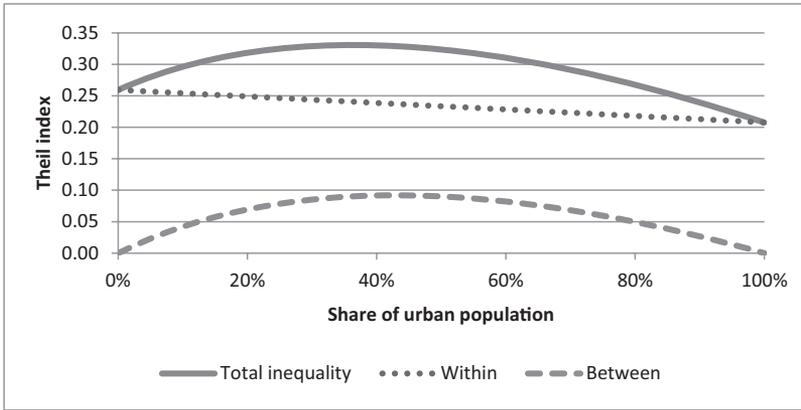
The picture for the PRC is different. The PRC's predicted turning point using base-year data lies between base-year and end-year urban population shares, suggesting that national inequality would have peaked if urban and rural inequalities and the urban–rural income gap stayed constant between base-year and end-years. Moreover, the PRC's end-year urban population share is greater than the predicted turning point using end-year data, suggesting that the PRC's national equality has passed the turning point if urban and rural inequalities and the urban–rural income gap will remain constant.

In reality, however, the assumptions of urban and rural inequalities and the urban–rural income gap staying constant are unlikely to hold as Asia's recent experiences have shown. Therefore, reducing national inequality requires efforts on all fronts (ADB 2012a). Nevertheless, from the viewpoint of policy making, it is useful to know that shifting population from the rural to urban sectors, holding all other factors constant, will increase national inequality for India and Indonesia, will have limited impact on national inequality for the Philippines, and will help reduce national inequality for the PRC, in the coming years.

In Figures 1–4, we show graphically how inequality changes as urbanization proceeds. For this exercise, we use Equation (2) and set other variables ( $k$ ,  $L_1$ , and  $L_2$ ) in the equation at their end-year values. We show national inequality as well as its two components: within-group inequality and between-group inequality.

For India, Indonesia, and the Philippines, the within-group component of inequality increases monotonically as urbanization proceeds. This is because for these countries urban inequality is higher than rural inequality, so shifting population from the rural to urban sectors will always increase the within-group inequality. On the other hand, between-group inequality increases with urbanization when the level of urbanization is low and decreases with urbanization when the level of urbanization

Figure 1. Urbanization and Inequality: PRC



is high, with the turning point occurring at the urbanization rate of around 45% for all the three countries. The turning point for national inequality, the sum of the two components, occurs at a higher rate of urbanization: 62% for India, 85% for Indonesia, and 59% for the Philippines. Given that India’s actual share of urban population in the later 2000s was about 26% and Indonesia’s was 57%, the two countries have many years to go to reach the turning point. The Philippines’ actual share of urban population was 55% in the late 2000s, which is close to its predicted turning point.

In the case of the PRC, within-group inequality declines monotonically with urbanization, because urban inequality is lower than rural inequality and shifting population from the rural to urban sectors will always reduce within-group inequality. Like the other three countries, the PRC’s between-group inequality also increases

Figure 2. Urbanization and Inequality: India

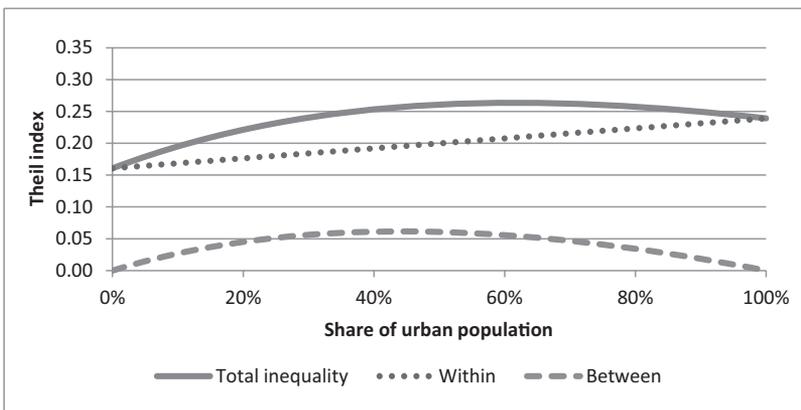
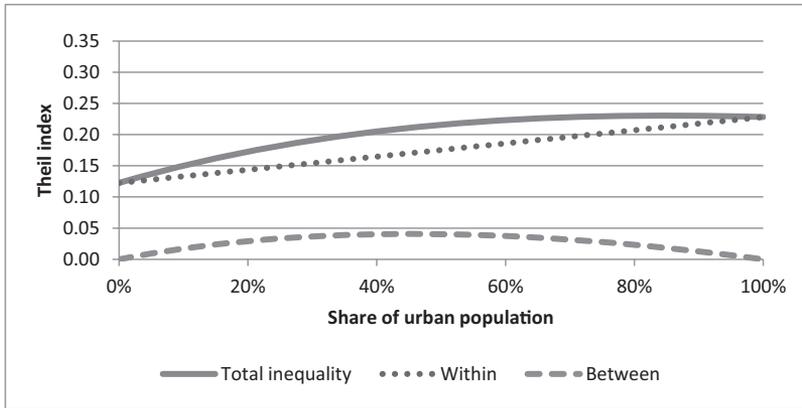


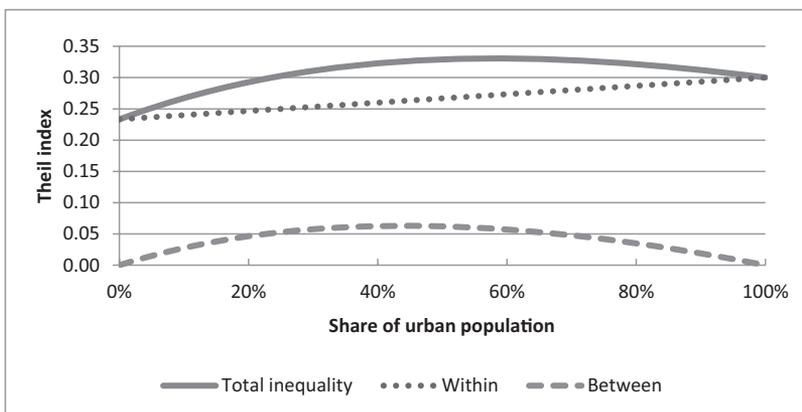
Figure 3. Urbanization and Inequality: Indonesia



with urbanization when the level of urbanization is low and decreases with urbanization when its level is high, with the turning point occurring at around 43%. The turning point for national inequality occurs at around 36%, much earlier than the other three countries. With the actual level of urbanization at 52% in 2012, the PRC has already passed this turning point.

Turning points discussed above are a function of  $k$ ,  $L_1$ , and  $L_2$ , as shown by Equation (5), and hence should only be interpreted from the viewpoint of how urbanization affects national inequality holding constant other factors. Since  $k$ ,  $L_1$ , and  $L_2$  can all change independent of urbanization, the turning point is not unique for each country. It can shift, either forward or backward, depending on how urban inequality, rural inequality, and/or the urban–rural income gap change and interact

Figure 4. Urbanization and Inequality: Philippines



with each other.<sup>5</sup> Therefore, a country's national inequality may still increase in the future even if it has passed the turning point currently. In the case of the PRC, for example, if urban inequality continues to rise and becomes higher than rural inequality, shifting population from the rural to urban sectors may start to increase within-group inequality, and whether national inequality increases or decreases with urbanization will depend on the relative magnitude of the increase in within-group inequality and decrease in between-group inequality.

## V. Prioritizing Drivers of Inequality

The four variables ( $x$ ,  $k$ ,  $L_1$ ,  $L_2$ ) are the drivers of national inequality in the framework followed in this paper. Policy makers may be able to influence these drivers through various instruments. For example, support for small farmers can moderate  $L_2$ , while progressive income taxation could moderate  $L_1$ . General support for rural development can help reduce  $k$ , while policies that restrict or hamper migration could reduce  $x$  to a lower level than it otherwise would have been.

Which policies should be the priority targets of policy makers in order to moderate increases in inequality? The answer depends partly on the relative power of the four drivers of national inequality. To answer this question, we estimate the elasticity of national inequality with respect to each of the four drivers—the percentage change in national inequality corresponding to each percentage change in the value of a relevant driver. A higher elasticity implies greater power.

Using Equation (2), the elasticity of  $L$  with respect to each of the four variables can be obtained from the following:

$$dL/L = E_x(dx/x) + E_k(dk/k) + E_{L1}(dL_1/L_1) + E_{L2}(dL_2/L_2) \quad (8)$$

$E_x$ ,  $E_k$ ,  $E_{L1}$ ,  $E_{L2}$  are elasticities of  $L$  with respect to  $x$ ,  $k$ ,  $L_1$ , and  $L_2$ , respectively, and are given by

$$E_x = (x/L)A_x \quad (9a)$$

$$E_k = (k/L)A_k \quad (9b)$$

$$E_{L1} = (L_1/L)A_{L1} \quad (9c)$$

$$E_{L2} = (L_2/L)A_{L2} \quad (9d)$$

where  $A_x$ ,  $A_k$ ,  $A_{L1}$ , and  $A_{L2}$  are given in Equations (4a) to (4d).

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<sup>5</sup>In the case of the PRC, Zhang, Yang, and Wang (2010) suggest that at least in terms of wage earnings, the trend of rising urban–rural gap may have turned. They call this the “Lewis turning point” after Lewis (1954).

Table 6. **Inequality Elasticities**

	$E_x$	$E_k$	$E_{L1}$	$E_{L2}$
<b>India</b>	0.202	0.664	0.265	0.510
<b>PRC</b>	-0.069	0.641	0.272	0.449
<b>Indonesia</b>	0.178	0.590	0.591	0.235
<b>Philippines</b>	0.027	0.496	0.499	0.319

The inequality elasticities are shown in Table 6.

Table 6 shows that the value of the inequality elasticity varies across the four drivers and countries. For India, reducing the urban–rural income gap potentially has the largest marginal impact on national inequality, followed by reducing rural and urban inequalities, while urbanization increases national inequality. In the case of the PRC, reducing the urban–rural income gap has the largest marginal impact on national inequality, followed by reducing rural inequality, urban inequality, and urbanization. In Indonesia, reducing urban inequality and the urban–rural income gap have the same and largest marginal impact, followed by rural inequality, while urbanization increases national inequality. Finally, in the case of the Philippines, reducing urban inequality and the urban–rural income gap have similar and the largest impact on national inequality, followed by reducing rural inequality, while urbanization increases national inequality, although the impact is small.

An important caveat for this analysis is that, while inequality elasticity indicates the percentage change in national inequality corresponding to each percentage change in a concerned driver, policy effort needed to bring about each percentage change may differ a lot among different drivers. This should also be taken into consideration in prioritizing policy actions.

## VI. Summary and Conclusions

Let us return to the three questions posed in this paper, in light of the basic stylized facts of inequality and urbanization in Asia.

First, how much of the observed increase in inequality in Asia can be attributed to the changing dual economic structure and urbanization? The answer is highly country specific. Urbanization contributed about 300% of the increase in inequality at the national level in the Philippines, more than 50% in Indonesia, slightly less than 15% in India, but helped reduce inequality somewhat in the PRC. The change in the urban–rural income gap, on the other hand, contributed about 50% of the increase in inequality at the national level in India, one third in the PRC, but helped reduce national inequality in Indonesia and the Philippines. In the PRC, the most important contributor to rising national inequality was an increase in rural inequality,

accounting for 43%, in contrast to what has widely been believed, which emphasizes the importance of a widening urban–rural income gap and rising urban inequality.

Second, how might urbanization affect inequality in the future? The answer is again country specific. The PRC has already passed its “turning point,” that is, holding urban and rural inequalities and urban–rural income ratio constant, urbanization will help reduce inequality at the national level; and the Philippines has not passed but is close to such a turning point. On the other hand, India and Indonesia are still far away from the turning point, suggesting urbanization will lead to an increase in national inequality in these two countries. An important caveat, however, is that the turning point is a function of urban and rural inequalities and the urban–rural income ratio. Since these components depend on many other factors that may not remain constant and, in fact, they could be related to urbanization itself, the turning point is not unique for each country. Nevertheless, it remains true that urbanization is a major driving force of inequality in Asia.

Third, how should Asian governments prioritize the four drivers of inequality on which this paper has focused as the targets? It appears that reducing the urban–rural income ratio will have the largest marginal impact on national inequality for all the four countries. In Indonesia and the Philippines, reducing urban inequality will have a similar marginal impact as reducing the urban–rural income gap. In the PRC and India, the second important driver is reducing rural inequality. The caveat is that prioritizing policy actions also needs to consider both associated costs.

It is hoped that the framework developed in this paper and calculations presented have provided more insights into the dynamics of rising inequality in Asia and can help policy makers prioritize policy actions for confronting it.

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