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RISING INEQUALITY IN ASIA AND POLICY IMPLICATIONS

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Abstract

This paper looks at the recent trends of rising inequality in developing Asia, asks why inequality matters, examines the driving forces of rising inequality; and proposes policy options for tackling rising and high inequality. The paper argues that technological change, globalization, and market-oriented reform have driven Asia's rapid growth, but have also had significant distributional consequences. These drivers have favored owners of capital over labor, skilled over unskilled workers, and urban and coastal areas over rural and inland regions. Furthermore, unequal access to opportunity caused by institutional weaknesses and social exclusion has compounded the impacts of these forces. All these combined have led to a falling share of labor income in national income, increasing premiums on human capital, and growing spatial disparity—all contributing to rising inequality. The three drivers of rising inequality cannot and should not be blocked, because they are the same forces that drive productivity and income growth. This paper outlines a number of policy options for Asian policy makers to consider in addressing rising inequality. These options, aiming to equalize opportunity and, thereby, reduce inequality, include efficient fiscal measures that reduce inequality in human capital, policies that work toward more and high-quality jobs, interventions that narrow spatial disparity, and reforms that strengthen governance, level the playing field and eliminate social exclusion.

JEL Classification: D63, O15, O53

1. INTRODUCTION¹

Poverty reduction in developing Asia over the past two decades has been faster than any other region of the world, at any time in history. Still, the bulk of the region's population lives in countries with rising inequality. This is in contrast both to the "growth with equity" story that marked the transformation of the newly industrialized economies in the 1960s and 1970s, and to recent trends in some other parts of the developing world, in particular Latin America, where income inequality has been narrowing since the 1990s.

The drivers of Asia's rapid growth—technological change, globalization, and market-oriented reform—have had significant distributional consequences. These drivers have favored owners of capital over labor, skilled over unskilled workers, and urban and coastal areas over rural and inland regions. Furthermore, unequal access to opportunity caused by institutional weaknesses and social exclusion has compounded the impacts of these forces. All these combined have led to a falling share of labor income in national income, increasing premiums on human capital, and growing spatial disparity—all contributing to rising inequality.

This dilemma presents a huge challenge for Asian governments. The three drivers of rising inequality cannot and should not be blocked, because they are the same forces that drive productivity and income growth. This paper outlines a number of policy options for Asian policy makers to consider in addressing rising inequality. These options, aiming to equalize opportunity and, thereby, reduce inequality, include efficient fiscal measures that reduce inequality in human capital, policies that work toward more and high-quality jobs, interventions that narrow spatial disparity, and reforms that strengthen governance, level the playing field and eliminate social exclusion.

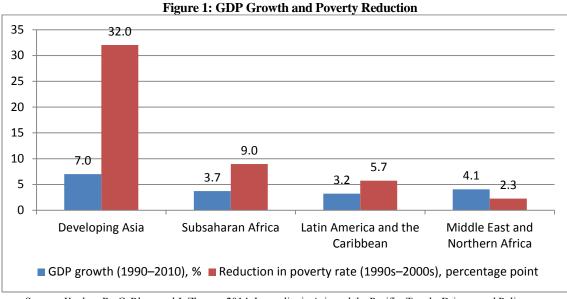
2. RECENT TRENDS IN INEQUALITY IN DEVELOPING ASIA

In the last two decades, many countries in Asia and the Pacific have achieved remarkable growth and poverty reduction. From 1990 to 2010, the average annual growth rate of gross domestic product (GDP) for developing Asia reached 7.0% in 2005 purchasing power parity (PPP) terms, more than double the 3.4% for Latin America and the Caribbean (Figure 1). This growth was driven mainly by the People's Republic of China (PRC) and India—the world's two most populous countries—with annual GDP growth of 9.9% and 6.4%, respectively.

The rapid growth has dramatically improved living standards and greatly reduced poverty. During 1990–2010, the region's average per capita GDP in 2005 PPP terms increased from \$1,633 to \$5,133. The proportion of the population living at or below the \$1.25-a-day poverty line fell from 53% in 1990 to 21% in 2010, as about 700 million

¹ This paper draws heavily on the theme chapter of Asian Development Outlook 2012 (ADB 2012).

people were lifted out of poverty. Seventeen countries reduced poverty by more than 15 percentage points in the period.



Source: Kanbur, R., C. Rhee, and J. Zhuang. 2014. Inequality in Asia and the Pacific: Trends, Drivers, and Policy Implications. Co-published by ADB and Routledge.

Growth and poverty reduction have, however, been accompanied by rising inequality in many countries. Of the 28 countries that have comparative data between the 1990s and 2000s, 12—accounting for more than 80% of developing Asia's population in 2010 experienced rising inequality (Figure 2):

- The Gini coefficient of per capita expenditure² worsened in 12 economies, including the PRC, India, and Indonesia. From the early 1990s to the late 2000s, the Gini increased from 32 to 43 in the PRC, from 33 to 37 in India, and from 29 to 39 in Indonesia. There appears to be a positive, statistically significant relationship between the increase in the Gini and GDP growth.
- The change in the quintile ratio³ is more pronounced than the change in the Gini for all the 12 economies. This suggests that rising inequality have been driven by the rich getting richer much faster than the poor.
- The expenditure shares of the richest 1% and 5% of population also show rising gaps between the rich and poor. For many countries with available data, the share of the richest 1% was in the range of 6-9% and of the richest 5% was in the range of 17–22%. For the Pacific countries, the shares of the richest 1% and 5% are higher with wider variation, at 5-16% and 15-28%, respectively.

This is the ratio of the per capita expenditure of the top 20% of population to that of the bottom 20%

A common measure of inequality, ranging from zero indicating perfect equality and 1 indicating perfect inequality. For convenience, this note cites the Gini multiplied by 100.

This is the ratio of the per capita expenditure of the top 20% of popul

Although Asia's inequality levels are generally below those in other developing regions—developing Asia's range of the Gini coefficients is 28-51, compared with 30-66 for Sub-Saharan Africa and 45-60 for Latin America and Caribbeaninequality declined elsewhere, with the exception of OECD countries. Majority of OECD countries—with the Gini in the range of 25-40—also experienced rising inequality in the last two decades.⁴

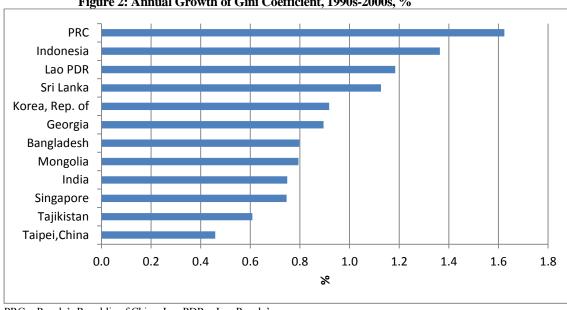


Figure 2: Annual Growth of Gini Coefficient, 1990s-2000s, %

PRC = People's Republic of China, Lao PDR = Lao People'

Source: Asian Development Outlook 2012, Asian Development Bank, Manila, Philippines.

Another challenge facing developing Asia is inequality of opportunity, which is a crucial factor in widening income inequality. Huge disparities exist in the means to raise one's living standards, such as physical assets (e.g., capital and land), human capital (e.g., education and health), and market access (e.g., labor and finance). Inequality of opportunity also derives from unequal access to public services, especially education and health. National household surveys conducted in the mid- to late 2000s revealed many facets of diverging opportunities:

- School-age children from households in the poorest income quintile were three to five times as likely to be out of primary and secondary school as their peers in the richest quintile in some countries. The situation was worse for tertiary education where poorer college-age individuals were 10-20 times more likely not to attend college than their better-off peers.
- Infant mortality rates among the poorest households in some countries were double or triple the rates among the richest households. In the most extreme

⁴ The Gini coefficients are based on per capita expenditure for developing Asia and Sub-Saharan Africa and per capita disposable income (after tax and transfers) for Latin America and Caribbean and OECD countries. Income-based Gini coefficients are normally higher than expenditure-based Gini coefficients, and the difference is in the range of 5-10.

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examples, the chance of a poor infant dying at birth was more than 10 times higher than for an infant born to a rich family.

With few exceptions, the region's economies have made significant progress toward gender parity in primary and secondary education. Yet high gender disparities in tertiary education remain in South Asia and the Pacific.

Inequality of opportunity and of income can lead to a vicious circle as unequal opportunities create income disparities, which in turn lead to differences in future opportunities for individuals and households.

3. WHY INEQUALITY MATTERS

Rising inequality hampers poverty reduction. Economic growth will generate a lower rate of poverty reduction when inequality is increasing than when it remains unchanged or is decreasing. Simulations reveal how rising inequality holds back poverty reduction (Figure 3). Had inequality not increased, the poverty headcount rate at the \$1.25-a-day poverty line would have been:

- 29.5% instead of the actual 32.7% in 2010 in India;
- 4.9% instead of the actual 13.1% in 2008 in the PRC;
- 6.1% instead of the actual 16.3% in 2011 in Indonesia.

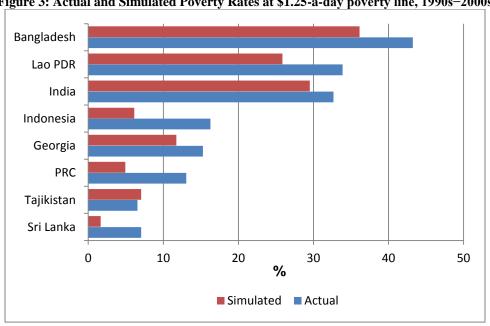


Figure 3: Actual and Simulated Poverty Rates at \$1.25-a-day poverty line, 1990s-2000s

Note: Simulated poverty rate is the poverty rate that would have been observed in the final year (with the same mean per capita expenditure) had inequality remained at its level during the initial year.

Source: Simulations using PovcalNet (accessed 9 March 2012) and synthetic expenditure data derived from household surveys.

For the 12 economies, the cost of rising inequality comes to 240 million more people trapped under the \$1.25-a-day poverty line—6.5% of the region's population today.

Inequality can weaken the basis of growth itself. High and rising inequality can affect growth through a number of economic, social, and political mechanisms. Inequality of wealth and income can lead to large divergences in human capital. Those with little wealth or low income face formidable challenges in investing in human capital, or wealth- and income-enhancing activities, and will remain poor. In principle they may be able to borrow for investment purposes. But imperfect financial markets, coupled with other market failures, often heavily constrain their ability to borrow and invest. Widening inequality—leaving more people at the top and bottom of the income distribution—can mean a smaller middle class. Growth driven by and benefiting a middle class is more likely to be sustained, both economically, to the extent that the rent seeking and corruption associated with highly concentrated gains to growth are avoided, and politically, to the extent that conflict and horizontal inequalities between racial and ethnic groups are easier to manage.

In fact, there is a broad consensus among researchers on the link between inequality and the quality of institutions. Along several dimensions, ranging from political stability, through institutional stability, to property rights, the negative impact of inequality on institutional quality seems to be well established, although the two-way causality is also widely accepted. Similarly, the effect of inequality on crime and violence and, through that, on the investment climate is also recognized.

Finally, greater inequality may lead to a political backlash, in which pressure for governments to enact populist policy measures grows. In response to the rising demands, the political process may favor policies which, in the short term, would benefit the lower end of the income distribution, but which in the long run could hold back efficiency and growth. Under such conditions, the interests of the political system diverge from the interests of the economy as a whole. This is a widespread concern in developing and developed countries alike.

Asian governments are responding to rising inequality, as seen in their development plans, which include explicit goals to make growth more inclusive. In India, the government made an explicit commitment to inclusive growth in its Eleventh Five-Year Plan (2007–2012). The central vision of the plan is "...not just faster growth but also inclusive growth, that is, a growth process which yields broad based benefits and ensures equality of opportunity for all." The development goal in the PRC's Eleventh Five-Year Plan (2006–2010) is to build a harmonious society. This goal has been reaffirmed in the Twelfth Five-Year Plan (2011–2015), with greater emphasis on the quality—not just the rate—of growth, and making growth inclusive. In Indonesia, Malaysia, and the Philippines, inclusive growth or development is at the heart of their current medium term development strategies.

The distinction between inequality of opportunity and inequality of outcome is important in guiding public policy. Inequality of opportunity—access to education, health, public

services, or jobs—often arises from differences in individual circumstances that are outside the control of individuals, such as gender, ethnic origin, parental education, or birth location. Such inequality largely reflects institutional weaknesses and social exclusion, and should be the target of public policy. On the other hand, given an individual's circumstances, what the individual chooses for effort in the labor market or in education will also influence his or her outcomes—such as income or consumption. Inequality of outcomes arising from differences in individual efforts reflects and reinforces the market-based incentives that are needed to foster innovation and growth. The general public and policy makers in Asia seem to be aware of this distinction, as shown by the results from the World Values Survey and ADB's survey of Asian policy makers.

4. WHAT DRIVES INEQUALITY IN DEVELOPING ASIA

The key drivers of developing Asia's rapid growth in the last two decades—technological progress, globalization, and market-oriented reform—have had huge distributional consequences. Combined, they have favored skilled over unskilled labor, capital over labor, and urban and coastal areas over rural and inland regions. These forces can explain a large part of the movements in income distribution and inequality in many countries in Asia.

Technological change can influence the distribution of income among different factors of production. If it favors skilled labor (more educated or more experienced) over unskilled labor by increasing its relative productivity, we can expect the skill premium—the ratio of skilled to unskilled wages—to rise, which would most likely increase income inequality. Technological change can also affect the distribution of income between labor and capital. If it is biased in favor of capital—leading to increasing share of capital income in national income—it can also increase inequality, since capital incomes in general are less equally distributed and accrue to the rich more than to the poor. Similarly, globalization can affect income distribution. Trade integration, for example, can change relative demand for and hence relative wages of skilled and unskilled workers. It can also affect income distribution between capital and labor because capital and skills often work together due to their complementarity. Financial integration could broaden access to finance by the poor—but could also increase the risk of financial crises and hurt the poor more than the rich. Globalization can also magnify the distributional impact of technological progress.

⁵ The 2005 World Values Survey asked representative samples of people in 69 countries to locate their views on a scale of 1 to 10, with 1 meaning "incomes should be made more equal" and 10 meaning "we need larger income differences as incentives." The Asian responses are more skewed toward 10—about 63% of the responses are in the 6-10 range—although there is still significant weight in the lower value responses. In comparison, the OECD responses are spread more evenly over the 10 categories. Results from ADB's webbased survey indicate that about 60% of the respondents agree or strongly agree with the statement that it is more important to reduce inequality of opportunity (such as access to education, health, and employment services) than to reduce inequality of income; and 84% of the respondents agree or strongly agree.

Existing literature has yet to provide a clear-cut answer toward understanding the impacts of trade integration, financial integration, and technological change on income distribution. One complication is that there are several, closely linked, confounding factors. A cross-country study by the International Monetary Fund (IMF) in 2007 finds that global trade integration helps reduce inequality while global financial integration increases it. IMF also finds that technological progress is the most important contributor to rising inequality globally in the last two decades. The analysis suggests that these impacts are particularly pronounced in developing Asia.

Lastly, market-oriented reform is an important driver of growth, but can also have significant distributional consequences. Trade policy reform is often part of the driving forces of globalization. Labor market reforms can change the bargaining position of labor vis-à-vis owners of capital, impacting on wage rates and income distribution between labor and capital. Economic transition from a command to a market economy can improve efficiency and make returns to assets more closely reflective of resource scarcity, which can affect income distribution among different productive assets.

Moreover, the impacts of the three drivers of growth—technological progress, globalization, and market-oriented reform—can be geographically uneven, leading to a further channel of changing income distribution: spatial inequality. This is because new economic opportunities, released by these drivers, are often most easily seized by locations closer to the existing trade routes—coastal areas, for example, not inland ones—and areas with better public infrastructure—such as urban locations, not rural areas. Agglomeration economies also facilitate a self-perpetuating process of increasing concentration. These lead to shifts in income distribution among different geographic locations.

In sum, the three key drivers of growth can affect income distribution through three channels: capital, skill, and spatial bias. The bias toward capital reduces labor's share of national income while increasing the income share of the owners of capital. Similarly, the heightened demand for better skilled workers raises the premium on their earnings. And spatial disparities are becoming more acute: locations with superior infrastructure, market access, and scale economies are better able to benefit from changing circumstances. Moreover, inequality of opportunity magnifies the distributional consequences of the three drivers of growth. Those individuals and groups excluded from the market because of individual circumstances beyond their control or discrimination would certainly not benefit from these opportunities.

Figures 4, 5, and 6 provide empirical evidence on three key sources of rising inequality in developing Asia, corresponding to the three channels described above: shifts in income distribution between skilled and unskilled labor, between labor and capital, and between different locations.

• *Rising skill premiums*. The share of inequality accounted for by differences in education attainment increased in all the countries with available data during the periods looked at, with the increase most significant in the PRC, from 8.1% in 1995 to 26.5% in 2007, followed by India, from 20% in 1993 to 30% in 2010. In

late 2000s, as high as 25-35% of the total inequality can be explained by interperson differences in human capital and skill endowments in most Asian countries with available data (Figure 4).

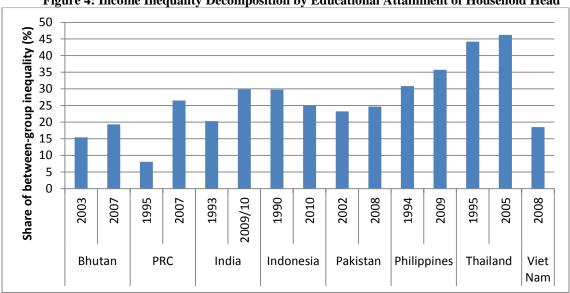


Figure 4: Income Inequality Decomposition by Educational Attainment of Household Head

PRC = People's Republic of China.

Source: ADB estimates using unit level data.

Falling labor's share of total income. Between the mid-1990s and the mid-2000s, labor income as a share of manufacturing output in the formal sector fell from 48% to 42% in the PRC and from 37% to 22% in India (Figure 5). The employment intensity of growth in Asia has also declined in the last two decades. Being less equally distributed, capital has contributed to rising inequality.⁶

⁶ The abundance of labor relative to capital, which depresses wage rates, is also a contributing factor to the declining labor income share in developing Ásia.

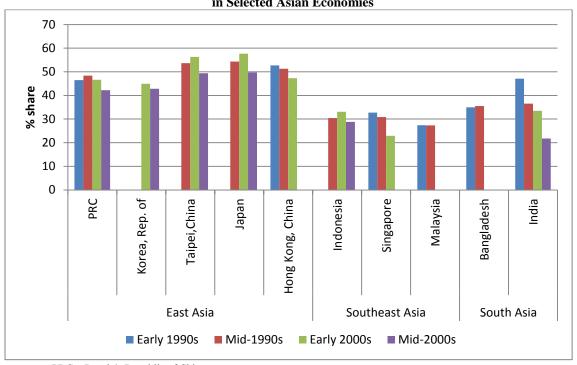


Figure 5: Share of Labor Income in Industrial/Manufacturing Value Added in Selected Asian Economies

PRC = People's Republic of China.

Note: Early 1990s (1990–1992), mid-1990s (1994–1996), early 2000s (2000–2002), and mid-2000s (2004–2006) for the PRC; India; Singapore; Malaysia; India; Hong Kong, China; and Bangladesh.

Sources: OECD Stat database for Japan; Republic of Korea; Taipei, China; and Indonesia (accessed 1 March 2012); Felipe and Sipin (2004) for Singapore; Malaysia; Hong Kong, China; and Bangladesh; Bai and Qian (2009) for the PRC; and Felipe and Kumar (2010) for India's organized manufacturing sector.

• Increasing spatial inequality. Inequalities between rural and urban areas and across provinces/states have increased significantly in many Asian countries during the last two decades. In late 2000s, about 25-50% of total inequality can be explained by spatial inequality—between urban and rural and inter-province/state inequalities combined—in some countries, including the PRC, India, and Indonesia (Figure 6).

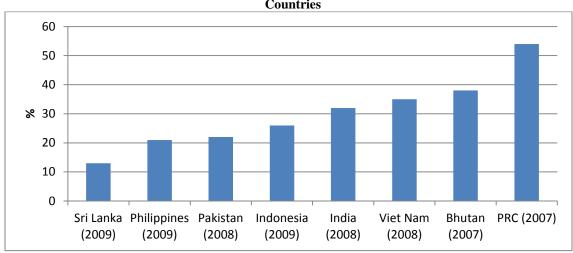


Figure 6: Combined Contribution of Spatial Inequality to Overall Inequality in Selected Asian Countries

PRC = People's Republic of China. Source: ADB estimates using unit level data.

5. HOW TO RESPOND TO RISING INEQUALITY?

Because the forces behind rising inequality are also the engines of productivity and income growth, policy makers should not hinder their progress. A distinction needs to be made between the income differences that arise as economies and individuals take advantage of the new opportunities of technology, trade, and efficiency-enhancing reforms; and those that are generated by unequal access to market opportunities and public services. This latter source of inequality requires a policy response since it gets magnified by the driving forces of growth, leads to inefficiency, and undermines the sustainability of growth.

The ADO 2012 theme chapter highlights three sets of policy responses to rising inequality in Asia: (i) efficient fiscal policies to reduce inequality in human capital with a view to addressing rising skill premium relative to low wages of unskilled workers; (ii) interventions to reduce spatial inequality; and (iii) policies to make growth more employment-friendly with a view to increasing labor demand and hence labor's share in national income. These measures cannot eliminate inequality, but will go a long way toward reducing it and, at the same time, not endanger development and hurt growth.

- Efficient fiscal policies. These include: (i) spending more on education and health, especially for poorer households; (ii) developing and spending more on better targeted social protection schemes, including conditional cash transfers that target income to the poor but also incentivize the buildup of human capital; (iii) switching fiscal spending from general price subsidies (such as on fuel) to targeted transfers; and (iv) broadening the tax base and strengthening tax administration for greater and more equitable revenue mobilization.
- Interventions to address lagging regions. These include: (i) improving transport and communications networks between developed and poor regions; (ii) creating growth poles in lagging areas; (iii) strengthening fiscal transfers for greater

- investment in human capital and better access to public services in lagging regions; and (iv) and removing barriers to within-country migration.
- Policies to make growth more employment-friendly. These include: (i) facilitating structural transformation to create a greater number of productive jobs, and maintaining a balanced sectoral composition of growth between manufacturing, services, and agriculture; (ii) supporting development of small and medium-sized enterprises; (iii) removing factor market distortions that favor capital over labor; (iv) establishing or strengthening labor market institutions; and (v) introducing public employment schemes as a temporary bridge to address pockets of unemployment and underemployment.

6. SUMMARY: TOWARD INCLUSIVE GROWTH IN ASIA

Driven by globalization, technological progress, and market-oriented reform, developing Asia has had a remarkable period of growth and poverty reduction. However, the drivers of growth are also magnifying the effects of inequalities in physical and human capital, leading to rising income inequality. These forces require Asian policy makers to redouble their efforts to generate more productive jobs; equalize opportunities in employment, education and health; and address spatial inequality. Without such growth-enhancing policies, Asia may be pulled into inefficient populist policies, benefiting neither growth nor equity.

The policy options outlined constitute key elements of a strategy for inclusive growth. Broadly, inclusive growth can be defined as "growth coupled with equality of opportunity," supported by three policy pillars: sustained growth to create productive jobs for a wide section of the population; social inclusion to equalize access to opportunity; and social safety nets to mitigate vulnerability and risks and prevent extreme poverty (see Figure 7 and also Zhuang and Ali 2010). Such a strategy would ensure that all members of society can participate in the development process productively and benefit equitably from the opportunities generated by economic growth.

More and more developing Asian countries are embracing the concept of inclusive growth, with an increasing number of countries—including the PRC, India, and many Southeast Asian countries—placing inclusive growth at the heart of their development policy. Indeed, the entire development community is embracing the concept of inclusive growth. These developments will go a long way toward reducing poverty and inequality and making the world a more equitable place.

Figure 7: Policy Pillars of Inclusive Growth



Source: Adapted from Zhuang (2010).

REFERENCES

Asian Development Bank. 2012. Asian Development Outlook 2012. Manila. Philippines.

- Paes de Barros, R., F. Ferreira, J. R. Molinas Vega, and J. S. Chanduvi. 2008. Measuring Inequality of Opportunity in Latin America and the Caribbean. Conference Edition. Washington, D.C., World Bank.
- Son, H. H. 2013. Inequality of Human Opportunities in Developing Asia. *Asian Development Review* 30 (2): 110–130.
- Zhuang, J. and Ifzal Ali. 2010. Poverty, Inequality and Inclusive Growth in Asia. In J. Zhuang, ed. *Poverty, Inequality and Inclusive Growth: Measurement, Policy Issues, and Country Studies*. A co-publication of Anthem Press and ADB.
- Zhuang, J. 2010. Poverty, Inequality and Inclusive Growth: Measurement, Policy Issues, and Country Studies. A co-publication of Anthem Press and ADB.

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