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Call for Papers

Instructions for Authors
Editorial

The *Asian Development Review* (ADR) has been an important part of the history of the Asian Development Bank (ADB) and of its mission of reducing poverty across Asia and the Pacific since 1983. ADB and the ADB Institute (ADBI) are now undertaking a major effort to raise the profile of the ADR, with the aim of making it one of the best international journals focusing on Asian economic development. We plan to make the ADR a major source of knowledge on development issues in Asia and a contributor to better policy making in the region.

To raise the ADR’s profile, we have (1) enhanced existing editorial processes and the journal’s organizational structure; (2) revamped the composition of the editorial board, including adding an honorary board; (3) organized and hosted conferences to augment academic research articles; and (4) entered into a partnership with the MIT Press as our new publisher. We intend to make every effort to attract internationally renowned scholars to submit articles for publication.

The papers in this issue span a wide range of topics related to economic and social development in Asia. The role of globalization in Asian economic development is very important, and the paper by Srinivasan examines the impacts of real and financial global integration of major Asian economies since the 1980s. At the microeconomic level, Sawada et al. use natural and artefactual experiments to analyze the determinants of collective action and free ridership in Sri Lankan villages. Chandra, Lin, and Wang discuss the so-called “leading dragon phenomenon,” the relocation of low-skill manufacturing jobs to other low-wage countries due to rising labor costs in the People’s Republic of China (PRC). Huang and Wang analyze the unique features of the PRC’s overseas direct investment. Hill reviews the ASEAN experience of economic policy reforms. Using household survey data, Kanbur and Zhuang provide a quantitative analysis of the effects of urbanization on inequality in the People’s Republic of China, India, Indonesia, and the Philippines. Finally, Eichengreen’s ADB Distinguished Lecture entitled “Renminbi Internationalization: Tempest in a Teapot?” discusses the formidable obstacles to be overcome for successful internationalization of the renminbi by the next decade.

I would like to invite all scholars and researchers working on Asia’s economic and social development issues to help make the *Asian Development Review* the premier journal in the field. I hope all of us can ensure that the journal makes an important contribution to the achievement of balanced, inclusive, and sustainable growth in Asia.

Masahiro Kawai
Editor, *Asian Development Review*
Dean and CEO, Asian Development Bank Institute
The dynamic process of integration of national economies has a long history, with two distinct waves: one, from the middle of the 19th century until its interruption with outbreak of the First World War in 1913 till the end of the Second World War in 1945. The second wave is ongoing dating from 1950. Two sub-processes of integration are usually distinguished. The first, called real integration related to flows of goods, services and factors across borders; the second called financial integration related to financial flows of claims on the nominal returns on financial assets. Financial integration has had a checkered history. Private financial flows, particularly debt flows, were evident in the first wave. During the second wave, debt flows, both intergovernmental and private banking lending were dominant during 1950–1980. Only after 1980, private non-debt flows particularly equity flows accelerated.

This paper’s primary focus is on the real and financial integration and their impact on trade, growth and poverty in the world’s two dominant developing countries in emerging markets, namely the People’s Republic of China (PRC) and India. The paper also discusses the reforms of institutional (domestic and multinational) foundations of real and financial integration, particularly the World Trade Organization, the World Bank, the International Monetary Fund, and the Group of 20. The impacts of the 2008–2009 financial crisis on the PRC and India are noted and the need for domestic financial sector reforms in both for them to cope with and respond to future financial crises is pointed out. Attention is drawn to the inadequacy of available analytical tools, in particular the absence of an appropriately integrated model of real and financial sectors to enable a meaningful assessment of the impact of financial shocks on the real sector.

Keywords: two waves of globalization, real and financial integration, trade institutions, real and financial flows, international financial institutions, People’s Republic of China, India

JEL codes: F02, F13, F15, F43, F33, F36, F41, F42, F43, F60, F63, G01, 053
I. Introduction

Globalization, defined as the integration of national economies, is a dynamic process that has a long history going back to the emergence of nation states after the Treaty of Westphalia in 1648. For this paper, globalization in the period since the onset and spread of the industrial revolution from Britain in the 18th century is of interest.

Two waves of globalization—the first from the middle of the 19th century until the outbreak of the First World War and the second, which is still ongoing, from the end of the Second World War—have attracted the analytical attention of economists (Baldwin and Martin 1999; Bordo and Eichengreen 2002; Bordo, Eichengreen, and Irwin 1999; Williamson 2002). Keynes (1920) described the glories of the first wave and lamented its abrupt end in August 1914. During the first wave, as Keynes noted, there were no policy-created barriers to the flow across national borders of people, goods, and capital and adherence to the gold standard minimized uncertainty of currency exchange rates.

The period between the end of World War I in 1918 and the outbreak of the second in 1938 was disastrous to the world economy and the people of the world. The Great Depression that lasted a decade from the stock market collapse of 1929 resulted in a steep fall in output and a large rise in unemployment. The exchange rate system based on the gold standard of the first wave of globalization collapsed, and a steep rise in policy-created trade and other barriers led to a drastic reduction in world trade and financial flows. In an attempt to forestall a repeat of the disastrous interwar experience, as World War II was drawing to a close, the institutions of the International Monetary Fund (IMF) and the World Bank were established, at the initiative mainly of the UK and United States (US), to govern global exchange rates and finances and for funding postwar reconstruction and development. The attempt to establish a third institution, the International Trade Organization (ITO), to govern trade flows failed. In its place, the General Agreement on Tariffs and Trade (GATT), signed in 1947 by 23 customs jurisdictions, called contracting parties, came into operation on 1 January 1948 with a provisional protocol of application. Subsequent attempts to replace GATT which was in effect a treaty among its contracting parties by a formal international organization with a Constitution or articles of association failed. GATT governed world trade until the establishment of the World Trade Organization (WTO) in 1995 (see Srinivasan 1998 for the history).

It is generally agreed that the eight rounds of multilateral trade negotiations (MTN) under the auspices of the GATT, with increasing participation of developing countries over time, succeeded in reducing tariff barriers to very modest levels in nonagricultural trade. By the conclusion of the eighth and last round, the Uruguay Round in 1994, a rule-based system governing trade had taken root and its

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1Britain rather than the United Kingdom is used following the convention in the literature on the Industrial Revolution.
disciplines had been extended to trade in services and trade-related intellectual property rights. Agricultural trade has been substantially though not fully brought under the disciplines that have governed nonagricultural trade. The WTO subsumed GATT and consolidated its achievements. As of 10 May 2012, there were 155 members in total including Hong Kong, China; Macau, China; and the European Union (EU). This compared to the 23 contracting parties who signed GATT in 1947 and the 123 who signed the final act concluding the Uruguay Round at Marrakech in April 2004 (and who later became founder members of WTO). The Doha Round, the first under the auspices of the WTO, was initiated in November 2001. As of 31 July 2012, it is still to be concluded. The prospects of its successful conclusion in the near term do not appear bright.

Two distinct sub processes of globalization are usually distinguished. The first relates to the flow across nations of goods and services and is often termed the process of “real integration” of national economies. The second, the process of “financial integration,” relates to financial flows particularly of claims on the returns from financial assets and/or ownership of such assets (for example, foreign assets and liabilities in balance sheets of individual participants and of the nation in aggregate). There is a near consensus among analysts on the potential benefits of greater real integration on balance for all participants and economies including developing ones. There is no such consensus on whether greater financial integration is similarly beneficial. Economists such as Jagdish Bhagwati who are advocates of greater real integration do not see net benefits on balance from greater financial integration. The issues are well-known and have been laid out in the debate on globalization, for example in Bhagwati (2004) and Stiglitz (2002, 2007) and others. I do not have much to add to the debate and I will not revisit it.

Instead, I will first document the trends in real and financial integration in the People’s Republic of China (PRC) and India in Section II. Then I will focus on the implications of rising financial integration for the international transmission of impacts of financial shocks. It has been suggested that the capacity to absorb financial shocks without significant costs on the real economy, particularly on real growth and welfare of vulnerable socioeconomic groups, is tied to the depth and strength and resilience of the domestic financial system, which in turn depends on progress in financial sector reform. For this reason, I will in Section III look at domestic financial sector reforms in both countries and also the Group of Twenty (G20) decisions on global financial stability. This is followed by concluding remarks in Section IV.

II. Developments in the Global Trading System: GATT to WTO and Beyond

It was previously noted that through the eight rounds of MTN between 1948 (the year of coming into force of GATT) and 1994 (the year of its formal end), barriers to trade had been lowered substantially, trade in services and trade-related
intellectual property services came under multilateral disciplines, and agriculture was substantially though not fully brought under disciplines similar though not identical to those that applied to nonagricultural trade since the beginning of GATT. Real integration of trade in goods since the start of the GATT era in 1948 and of services since the conclusion of the Uruguay Round in 1994 correspondingly grew.

A. Trends in Real and Financial Integration of the PRC and India

It is widely believed that the process of global financial integration accelerated from the early 1980s on, with private financial flows consisting of flows of foreign direct investment (FDI), portfolio investment and also trade in debt (bonds) contributing to the acceleration. The comparison of India with the PRC is interesting for many reasons. Let me mention just one that is salient from the perspective of globalization. After India’s independence in 1947 and the establishment of the PRC in 1949, both economies embarked on their similar Soviet-style planned economic development with rapid industrialization and a heavy industry focus as the main planks of their development strategies. Both insulated their economies from external competition and investment.

After Deng Tsiao Ping became the PRC’s paramount leader in 1978, he embarked on reforming the PRC’s economy. An important element of his reform agenda was to open the PRC’s economy to foreign trade and investment or, to put it more broadly, to participate in the process of globalization. India introduced reforms hesitantly and in piecemeal fashion in the 1980s and systemically across most sectors of the economy in 1991, with greater opening to foreign trade and investment as important elements. Since both economies grew at a very modest and similar rate during 1950–1980, or until their reforms and globalization featured significantly in their development processes, it is natural to compare their performance before and after such reforms.

1. Exports and Imports of Goods and Services

Both the PRC and India insulated their economies from markets when they began their national development in 1950. Indicators of the attitudes of the PRC and India towards opening their markets during the reform era are their import tariff profiles. First, the PRC at its accession to the WTO as a member in 2001 bound all of its tariff lines, while India as a founder of the organization in 1995 bound only 74% of them. Moreover, the bound and applied most favored nation (MFN) rates in later years were very close to each other for the PRC in agricultural and nonagricultural products, whereas in India’s case, the gaps were wide particularly in agricultural products. A major reason for this is not only India’s continuing ambivalence about opening its domestic markets to external competition, but also the fact that India
as a founder member of the WTO did not have to sign accession agreements with the other members. The PRC had to do so to become a member in 2001. The PRC applied to be a signatory of GATT in 1986, the year when the Uruguay Round of MTN began, and patiently negotiated accession agreements with the signatories of GATT. The negotiations dragged on even after the conclusion of the Uruguay Round in 1994 and the establishment of the WTO and concluded only in 2001 at the Doha Ministerial Meeting after it had signed its last accession agreement with Mexico. The accession agreements required the PRC to liberalize its trade to a greater extent than the original WTO members had agreed to at the Uruguay Round.

The PRC’s signing of accession agreements and determination to become a member of the WTO had been motivated largely by two reasons. First, by committing to liberalize as part of its accession agreements with the contracting parties of GATT at the time and also the Uruguay Round Multilateral Agreement, the PRC formally committed to liberalize trade. To derive benefits of liberalization, it had to undertake the necessary domestic reforms. The commitment to liberalize trade in a multilateral forum meant the implementation of associated reforms also became credible in the domestic politico-economic context. Second, unlike India, the PRC was convinced that opening its economy would be beneficial. In fact, from 1980 to 2000, prior to its becoming a member of the WTO, the PRC had already gained significant market shares in labor-intensive manufactured products while India’s share stagnated (Table 1).

Table 2 provides data on the shares of the two countries’ trade in goods and services in their GDP and in world trade. In both countries, trade shares in GDP went up particularly after 1990. By 2010, the share of exports of goods and services in India’s GDP was 20%, while the share in the PRC’s output was a higher 30%. The share of imports in India’s GDP in 2010 was 26% and higher than the share of exports. The share of imports in the PRC’s GDP was also 26% but lower than its export shares. These reflect the fact that India had a trade deficit while the PRC had a trade surplus in 2010.

Interestingly, the share of the PRC in world merchandise exports increased 10 times from 1% in 1982 to 10.4% in 2011. India’s share went up far more modestly from 0.5% to 1.6% during the same period. In 2011, the PRC was the largest single exporter of goods in the world and India a distant 19th. In commercial services trade, India was sixth in the world with a 3.5% share, while the PRC was fourth with a share of 4.4%, a gap not as large as in goods trade (WTO 2012a).

Table 3 provides the data on the rates of growth of trade. The acceleration of trade (exports and imports) in the post-1980 period, particularly after 2000 in both countries, is evident. During 2000–2010, reflecting the impact of the global financial crisis of 2008–2009, export growth slowed in both countries but to a greater extent in India.

Table 4.1 summarizes the composition of goods exports from India and the PRC during the 1980s and beyond in terms of the SITC (Revision 2) one-digit
Table 1. Participation of the PRC and India in Major Export Markets

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PRC Garments</td>
<td>3.93</td>
<td>6.93</td>
<td>8.74</td>
<td>14.95</td>
<td>18.78</td>
<td>19.70</td>
<td>20.45</td>
</tr>
<tr>
<td>PRC Fabrics</td>
<td>5.15</td>
<td>7.48</td>
<td>8.28</td>
<td>8.25</td>
<td>7.87</td>
<td>8.87</td>
<td>9.36</td>
</tr>
<tr>
<td>PRC Leather and leather manufactures</td>
<td>0.41</td>
<td>0.61</td>
<td>0.75</td>
<td>2.55</td>
<td>2.94</td>
<td>4.07</td>
<td>4.82</td>
</tr>
<tr>
<td>PRC Jewelry</td>
<td>1.13</td>
<td>1.05</td>
<td>1.36</td>
<td>2.69</td>
<td>5.97</td>
<td>7.14</td>
<td>9.48</td>
</tr>
<tr>
<td>PRC Others</td>
<td>1.07</td>
<td>1.93</td>
<td>3.27</td>
<td>7.73</td>
<td>14.6</td>
<td>16.9</td>
<td>18.1</td>
</tr>
<tr>
<td>India Garments</td>
<td>3.95</td>
<td>3.43</td>
<td>3.46</td>
<td>3.82</td>
<td>4.40</td>
<td>4.97</td>
<td>5.27</td>
</tr>
<tr>
<td>India Fabrics</td>
<td>2.04</td>
<td>1.38</td>
<td>1.45</td>
<td>1.43</td>
<td>1.99</td>
<td>2.10</td>
<td>2.42</td>
</tr>
<tr>
<td>India Leather and leather manufactures</td>
<td>8.85</td>
<td>7.45</td>
<td>7.13</td>
<td>5.52</td>
<td>4.03</td>
<td>3.42</td>
<td>3.44</td>
</tr>
<tr>
<td>India Jewelry</td>
<td>0.61</td>
<td>1.02</td>
<td>1.40</td>
<td>2.18</td>
<td>2.21</td>
<td>2.97</td>
<td>4.61</td>
</tr>
<tr>
<td>India Others</td>
<td>0.31</td>
<td>0.24</td>
<td>0.20</td>
<td>0.25</td>
<td>0.29</td>
<td>0.30</td>
<td>0.31</td>
</tr>
</tbody>
</table>

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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PRC Garments</td>
<td>3.73</td>
<td>8.00</td>
<td>8.81</td>
<td>13.19</td>
<td>21.30</td>
<td>21.42</td>
<td>20.59</td>
</tr>
<tr>
<td>PRC Fabrics</td>
<td>3.73</td>
<td>5.31</td>
<td>5.61</td>
<td>5.66</td>
<td>6.25</td>
<td>5.84</td>
<td>6.52</td>
</tr>
<tr>
<td>PRC Leather and leather manufactures</td>
<td>0.14</td>
<td>0.45</td>
<td>0.49</td>
<td>2.57</td>
<td>6.67</td>
<td>7.65</td>
<td>8.44</td>
</tr>
<tr>
<td>PRC Jewelry</td>
<td>0.50</td>
<td>0.42</td>
<td>0.25</td>
<td>1.77</td>
<td>3.99</td>
<td>5.51</td>
<td>8.13</td>
</tr>
<tr>
<td>PRC Others</td>
<td>0.72</td>
<td>1.51</td>
<td>2.98</td>
<td>9.92</td>
<td>20.89</td>
<td>25.62</td>
<td>26.57</td>
</tr>
<tr>
<td>India Garments</td>
<td>4.89</td>
<td>4.14</td>
<td>4.12</td>
<td>4.60</td>
<td>5.80</td>
<td>5.56</td>
<td>5.34</td>
</tr>
<tr>
<td>India Fabrics</td>
<td>6.02</td>
<td>2.64</td>
<td>2.69</td>
<td>2.98</td>
<td>4.62</td>
<td>5.93</td>
<td>5.73</td>
</tr>
<tr>
<td>India Leather and leather manufactures</td>
<td>9.38</td>
<td>8.89</td>
<td>6.51</td>
<td>4.09</td>
<td>3.05</td>
<td>2.33</td>
<td>2.05</td>
</tr>
<tr>
<td>India Jewelry</td>
<td>0.39</td>
<td>0.83</td>
<td>1.34</td>
<td>2.46</td>
<td>4.57</td>
<td>7.01</td>
<td>9.60</td>
</tr>
<tr>
<td>India Others</td>
<td>0.19</td>
<td>0.11</td>
<td>0.14</td>
<td>0.22</td>
<td>1.28</td>
<td>1.09</td>
<td>1.01</td>
</tr>
</tbody>
</table>

PRC = People’s Republic of China.

classification. Based on data availability, the precise period covered is 1980–2010 for India and 1984–2010 for the PRC.

Panagariya (2012) notes three points in discussing the composition of Chinese and Indian exports. First, SITC categories 6–8, which consist largely of manufactures, have accounted for more than half of the total exports of each country throughout the period. Moreover, the joint share of these categories has steadily risen from 55% during 1984–1990 to 62% during 2001–2004 in India and from 57% to 86% over the same period in the PRC. However, during 2008–2010, India
Table 2. Exports and Imports of Goods and Services (BOP data)

<table>
<thead>
<tr>
<th></th>
<th>India</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>PRC</th>
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<tbody>
<tr>
<td>As % of GDP</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exports of goods and services</td>
<td>6.2</td>
<td>7.2</td>
<td>13.1</td>
<td>21.8</td>
<td>20.2%</td>
<td>11.7</td>
<td>16.2</td>
<td>23.3</td>
<td>40.1</td>
<td>29.57</td>
</tr>
<tr>
<td>Goods exports</td>
<td>4.7</td>
<td>5.8</td>
<td>9.5</td>
<td>13.6</td>
<td>13.1%</td>
<td>10.5</td>
<td>14.5</td>
<td>20.8</td>
<td>36.7</td>
<td>26.68</td>
</tr>
<tr>
<td>Imports of goods and services</td>
<td>9.9</td>
<td>9.3</td>
<td>16.2</td>
<td>25.8</td>
<td>25.5%</td>
<td>9.4</td>
<td>13.2</td>
<td>20.9</td>
<td>32.2</td>
<td>25.66</td>
</tr>
<tr>
<td>Goods imports</td>
<td>7.2</td>
<td>7.4</td>
<td>11.8</td>
<td>18.3</td>
<td>18.7%</td>
<td>8.4</td>
<td>11.9</td>
<td>17.9</td>
<td>28.4</td>
<td>22.39</td>
</tr>
<tr>
<td>As % of the World</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exports of goods and services</td>
<td>0.5</td>
<td>0.5</td>
<td>0.8</td>
<td>1.4</td>
<td>1.87%</td>
<td>1.1</td>
<td>1.3</td>
<td>3.5</td>
<td>7.3</td>
<td>9.37</td>
</tr>
<tr>
<td>Goods exports</td>
<td>0.5</td>
<td>0.5</td>
<td>0.7</td>
<td>1.1</td>
<td>1.51%</td>
<td>1.2</td>
<td>1.5</td>
<td>3.9</td>
<td>8.2</td>
<td>10.57</td>
</tr>
<tr>
<td>Services Exports</td>
<td>0.7</td>
<td>0.5</td>
<td>1.1</td>
<td>2.7</td>
<td>3.48%</td>
<td>0.6</td>
<td>0.7</td>
<td>2.0</td>
<td>3.3</td>
<td>4.82</td>
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<tr>
<td>Imports of goods and services</td>
<td>0.8</td>
<td>0.7</td>
<td>0.9</td>
<td>1.4</td>
<td>2.42%</td>
<td>0.8</td>
<td>1.1</td>
<td>3.2</td>
<td>8.4</td>
<td>8.34</td>
</tr>
<tr>
<td>Goods imports</td>
<td>0.8</td>
<td>0.7</td>
<td>0.8</td>
<td>1.4</td>
<td>2.20%</td>
<td>0.9</td>
<td>1.2</td>
<td>3.4</td>
<td>6.4</td>
<td>9.02</td>
</tr>
<tr>
<td>Memo</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Share of services in total exports</td>
<td>24.1</td>
<td>20.2</td>
<td>27.8</td>
<td>37.9</td>
<td>35.44%</td>
<td>10.6</td>
<td>10.2</td>
<td>10.9</td>
<td>8.7</td>
<td>9.77</td>
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<tr>
<td>GDP (current billion $)</td>
<td>194.8</td>
<td>316.9</td>
<td>457.4</td>
<td>911.8</td>
<td>1,727.1</td>
<td>202.1</td>
<td>354.6</td>
<td>1198.5</td>
<td>2644.7</td>
<td>5926.6</td>
</tr>
<tr>
<td>GDP per capita (constant 2000 $)</td>
<td>234.2</td>
<td>315.5</td>
<td>450.2</td>
<td>634.0</td>
<td>823.0</td>
<td>208.2</td>
<td>391.7</td>
<td>949.2</td>
<td>1,598.0</td>
<td>2,425.0</td>
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</table>


Table 3. Growth Rates of Exports and Imports (%)

<table>
<thead>
<tr>
<th></th>
<th>India</th>
<th>PRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imports of goods and services</td>
<td>6.9</td>
<td>10</td>
</tr>
<tr>
<td>Exports of goods and services</td>
<td>8.4</td>
<td>10.3</td>
</tr>
<tr>
<td>Goods exports</td>
<td>9.2</td>
<td>9.3</td>
</tr>
<tr>
<td>Goods imports</td>
<td>6.7</td>
<td>9.3</td>
</tr>
<tr>
<td>GDP (constant 2000 $)</td>
<td>6</td>
<td>5.5</td>
</tr>
<tr>
<td>GDP per capita (constant 2000 $)</td>
<td>3.8</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Note: Figures based on current $ measure.

experienced a decline in the export share of SITC category 6 in its total exports from 36% to 27%.

Second, that Chinese exports have shown much greater dynamism than Indian exports during 1980–2004. Recent data from 2008–2010 further illustrate this dynamism. For instance, miscellaneous manufactures (SITC 8) of the PRC, which
largely consist of labor-intensive products, increased their share in the total exports from 24% during 1984–1990 to 37% during 1991–2000, this declined to 29% during 2001–2004, and declined still further to 26% during 2008–2010. The share of machinery and transport equipment (SITC 7) rose from 12% during 1984–1990 to 25% during 1991–2000, and further to 42% during 2001–2004 and 47% during 2008–2010. Thus, the PRC appears to have shifted exports away from simple labor-intensive manufactured products to more capital-intensive and sophisticated products as domestic costs of production of the former increased relative to other manufactures. The sharp decline in export of labor-intensive manufactured goods experienced during 2008–2010 could arguably be due to the global economic crisis.

Finally, within the same categories (SITC 6–8), while exports of the PRC are concentrated in categories 7 and 8, those of India are concentrated in category 6. Moreover, since the three categories accounted for approximately 50% of total

### Table 4.1. Composition of Exports (%)

<table>
<thead>
<tr>
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<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Food and live animals</td>
<td>23.6</td>
<td>17.6</td>
<td>14.6</td>
<td>10.1</td>
<td>7.5</td>
<td>12.4</td>
<td>6.7</td>
<td>3.9</td>
<td>2.5</td>
</tr>
<tr>
<td>1</td>
<td>Beverages and tobacco</td>
<td>2.6</td>
<td>1.0</td>
<td>0.6</td>
<td>0.4</td>
<td>0.5</td>
<td>0.5</td>
<td>0.6</td>
<td>0.3</td>
<td>0.1</td>
</tr>
<tr>
<td>2</td>
<td>Crude materials, inedible, except fuels</td>
<td>10.2</td>
<td>9.0</td>
<td>4.8</td>
<td>5.3</td>
<td>6.0</td>
<td>8.6</td>
<td>2.6</td>
<td>1.2</td>
<td>0.7</td>
</tr>
<tr>
<td>3</td>
<td>Mineral fuels, lubricants, and related materials</td>
<td>8.6</td>
<td>4.7</td>
<td>1.9</td>
<td>6.5</td>
<td>16.0</td>
<td>13</td>
<td>3.6</td>
<td>2.6</td>
<td>1.9</td>
</tr>
<tr>
<td>4</td>
<td>Animal and vegetable oils, fats and waxes</td>
<td>0.4</td>
<td>0.3</td>
<td>0.6</td>
<td>4.0</td>
<td>0.3</td>
<td>0.3</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>5</td>
<td>Chemicals and related products, n.e.s.</td>
<td>4.1</td>
<td>5.7</td>
<td>8.9</td>
<td>9.1</td>
<td>11.5</td>
<td>5.8</td>
<td>5.4</td>
<td>4.5</td>
<td>5.4</td>
</tr>
<tr>
<td>6</td>
<td>Manufactured goods classified chiefly by material</td>
<td>30.9</td>
<td>37.7</td>
<td>39.3</td>
<td>35.8</td>
<td>26.9</td>
<td>21.1</td>
<td>18.9</td>
<td>16.6</td>
<td>16.5</td>
</tr>
<tr>
<td>7</td>
<td>Machinery and transport equipment</td>
<td>7.2</td>
<td>6.9</td>
<td>7.5</td>
<td>9.2</td>
<td>14.5</td>
<td>11.9</td>
<td>24.7</td>
<td>41.8</td>
<td>47.0</td>
</tr>
<tr>
<td>8</td>
<td>Miscellaneous manufactured articles</td>
<td>12.2</td>
<td>15.8</td>
<td>19.8</td>
<td>17.9</td>
<td>14.0</td>
<td>23.9</td>
<td>37.1</td>
<td>28.9</td>
<td>25.8</td>
</tr>
<tr>
<td>9</td>
<td>Transactions not classified elsewhere</td>
<td>0.3</td>
<td>1.4</td>
<td>1.9</td>
<td>1.7</td>
<td>2.7</td>
<td>2.5</td>
<td>0.3</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

SITC = Standard International Trade Classification.

Note: Data refer to SITC one-digit classification.

Table 4.2. Composition of Imports (%)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Food and live animals</td>
<td>3.7</td>
<td>2.6</td>
<td>1.9</td>
<td>1.7</td>
<td>6.5</td>
<td>3</td>
<td>1.7</td>
<td>1.4</td>
</tr>
<tr>
<td>1</td>
<td>Beverages and tobacco</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
<td>0.5</td>
<td>0.2</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>2</td>
<td>Crude materials, inedible, except fuels</td>
<td>8.5</td>
<td>6.5</td>
<td>5.5</td>
<td>5.2</td>
<td>8.7</td>
<td>7.5</td>
<td>8.8</td>
<td>14.5</td>
</tr>
<tr>
<td>3</td>
<td>Mineral fuels, lubricants, and related materials</td>
<td>22.3</td>
<td>27.1</td>
<td>30.9</td>
<td>36.2</td>
<td>1.7</td>
<td>5.7</td>
<td>7.6</td>
<td>13.5</td>
</tr>
<tr>
<td>4</td>
<td>Animal and vegetable oils, fats and waxes</td>
<td>2.8</td>
<td>2.5</td>
<td>2.9</td>
<td>1.8</td>
<td>1.2</td>
<td>1.0</td>
<td>0.6</td>
<td>0.8</td>
</tr>
<tr>
<td>5</td>
<td>Chemicals and related products, n.e.s.</td>
<td>13.2</td>
<td>12.7</td>
<td>9.3</td>
<td>11.3</td>
<td>12.4</td>
<td>13</td>
<td>12.1</td>
<td>10.8</td>
</tr>
<tr>
<td>6</td>
<td>Manufactured goods classified chiefly by material</td>
<td>21.5</td>
<td>18.3</td>
<td>16.7</td>
<td>15.3</td>
<td>25.3</td>
<td>22.3</td>
<td>15.1</td>
<td>9.9</td>
</tr>
<tr>
<td>7</td>
<td>Machinery and transport equipment</td>
<td>20.7</td>
<td>16.8</td>
<td>19.3</td>
<td>22.0</td>
<td>38.2</td>
<td>40.8</td>
<td>45.6</td>
<td>39.5</td>
</tr>
<tr>
<td>8</td>
<td>Miscellaneous manufactured articles</td>
<td>3.1</td>
<td>3.4</td>
<td>4.2</td>
<td>3.4</td>
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<td>5.9</td>
<td>7.9</td>
<td>8.7</td>
</tr>
<tr>
<td>9</td>
<td>Commodities and transactions not classified elsewhere in the SITC</td>
<td>4.1</td>
<td>10.1</td>
<td>9.3</td>
<td>3.0</td>
<td>0.3</td>
<td>0.6</td>
<td>0.4</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

SITC = Standard International Trade Classification.
Note: Data refer to SITC one-digit classification.

merchandise exports in India compared with 87% in the PRC during 2008–2010, some of the products with large export shares in India fall outside these three categories. It is also interesting to note that India experienced a sharp increase in the share of SITC code 3 products comprising mineral fuels and lubricants. The share decreased from 8.6% of India’s merchandise exports during 1980–1993 to 1.9% in 1991–2000, but has increased steadily to 6.5% by 2001–2004 and 16% by 2008–2010. In the PRC, the share of mineral fuel and lubricants has been steadily declining from 8.7% in the late 1980s to less than 1% during 2008–2010.

The pattern of imports of goods and services of India and the PRC (Table 4.2) indicate notably that machinery and transport equipment (SITC 7) account for nearly two-fifths of the PRC’s imports during 2008–2010. The corresponding figure for India is slightly over a fifth (22%). The differential patterns of exports and imports of the PRC as compared to India not only reflects the PRC’s emphasis on
2. Foreign Investment Flows

Table 5 shows the pattern of foreign investment flows. The PRC has attracted and still attracts more FDI than India, but the picture is mixed on portfolio investment—the PRC seems to have attracted larger net flows than India in the second half of the decade 2000–2010. The impact of financial crisis resulting in a net outflow from India and a sharp drop in net inflow to the PRC in 2008–2009 is evident.
3. Three Integration Measures

It is now standard to measure integration of economies in trade in goods and services—or real integration—by the share of exports and imports of goods and services in GDP. The credits and debits in the current account of the balance of payments (BOP) include, in addition to exports and imports of goods and services, entries such as factor income inflows and outflows and inward and outward remittances. Some of the flows in the current account could be financial flows. The credits and debits on the capital account, meanwhile, obviously reflect transactions on the capital account. Their sum as a proportion of GDP is the measure of financial integration.

Figures 1 and 2 depict the trends of the three integration measures for the PRC and India. The rising trend in the three measures of integration of the two countries is evident in the figures. In the PRC, financial integration as measured by the trends in the capital and finance account did not take off from 14% of GDP until 2002 and rose relatively rapidly to 51% in 2007, fell to 27% during the financial crisis in 2009, then recovered to 34% in 2010. In India, capital account integration also hovered around 15% until 2002, rose rapidly to a little over 60% in 2007, but then subsequently fell to a little under 40% in 2008 at the height of the global financial crisis, recovering to around 45% in 2010. Broadly, though not precisely, India integrated financially faster and to a greater extent than the PRC.

Trade and current account integration measures also show significant differences in the extent but not as much in time patterns. The PRC’s trade (current
account) integration began in the 1980s though Figure 1 begins only in 1997. It rose steadily from a little under 40% (around 40%) to a peak of 71% (75%) in 2006, then declined to 49% (54%) in 2009, and later recovered to 55% (61%). Indian data go back to 1990. Here, trade (current account) integration rose steadily from 1990 onwards from below 20% (20%) to a peak of a little over 50% (60%) in 2008, then fell in 2009, and recovered in 2010 to around 53% (in both measures). Clearly, the impact of the global financial crisis appears to be larger on the PRC in trade and current account measures consistent with the larger share of exports in its domestic expenditure (i.e., greater dependence on foreign demand).

B. Growth Outcomes and Prospects

1. Economic Growth in a Historical Perspective

Table 6 drawn from the work of economic historians, the late Angus Maddison and Robert Fogel, shows that starting from roughly the same per capita income in purchasing power parity (PPP) exchange rates in 1870, India did much better than the PRC during the first wave of globalization from 1870 to 1913 with a 26% increase in its per capita income compared to just a 4.2% increase for the PRC. During the
Table 6. **Per Capita GDP in Historical Perspective**
(constant 1990 international $)

<table>
<thead>
<tr>
<th>Year</th>
<th>PRC</th>
<th>Share in World GDP</th>
<th>India</th>
<th>Share in World GDP</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820</td>
<td>600</td>
<td>32.9</td>
<td>533</td>
<td>16.0</td>
<td>667</td>
</tr>
<tr>
<td>1870</td>
<td>530</td>
<td>17.1</td>
<td>533</td>
<td>12.1</td>
<td>–</td>
</tr>
<tr>
<td>1913</td>
<td>552</td>
<td>–</td>
<td>673</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>1950</td>
<td>448</td>
<td>4.6</td>
<td>619</td>
<td>4.2</td>
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</tr>
<tr>
<td>1973</td>
<td>839</td>
<td>–</td>
<td>853</td>
<td>–</td>
<td>4,091</td>
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<tr>
<td>1990</td>
<td>1,871</td>
<td>–</td>
<td>1,309</td>
<td>–</td>
<td>–</td>
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<td>2003</td>
<td>4,803</td>
<td>15.2</td>
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<td>2010a</td>
<td>6,890</td>
<td>12.8</td>
<td>3,280</td>
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<td>10,594</td>
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<tr>
<td>2030</td>
<td>15,763</td>
<td>23.1</td>
<td>7,089</td>
<td>10.4</td>
<td>11,814</td>
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<tr>
<td>2040b</td>
<td>85,000</td>
<td>40.0</td>
<td>24,000</td>
<td>12.0</td>
<td>35,382</td>
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Table 7. **Growth of Real GDP (%)**

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<tr>
<td>PRC</td>
<td>4.40a</td>
<td>10.30</td>
<td>10.60</td>
<td>10.40</td>
<td>9.60</td>
<td>9.10</td>
<td>10.30</td>
<td>9.2</td>
<td>8.2</td>
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<tr>
<td>India</td>
<td>3.75b</td>
<td>5.70</td>
<td>5.90</td>
<td>7.90</td>
<td>6.80</td>
<td>8.00</td>
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Projections:

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</thead>
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<td>8.6</td>
<td>8.5</td>
</tr>
<tr>
<td>India</td>
<td>6.9</td>
<td>6.5</td>
</tr>
</tbody>
</table>


a Projections based on IMF (2012f) and World Bank (2012b).
b Maddison (2008).
c Authors’ estimates.

disastrous period between the beginning of World War I in August 1913 and the start of their planned development in 1950, both experienced a decline in their per capita incomes. With a bigger drop seen in the PRC during the period, India’s per capita income in 1950 ended up 38% higher than the PRC’s. Moreover, roughly during the Mao era (1950–1976), the PRC merely caught up with India in terms of per capita income. Only after Deng Tsiao Ping’s reforms did the PRC vastly outpace India, and by 2011, its per capita income grew to more than twice that of India. Interestingly, Table 6 also shows that the PRC and India accounted for half of the world’s GDP in 1820, and according to Fogel’s projection, will do so again more than two centuries later, in 2040.

2. Growth since 1950

Average annual real GDP growth rates of the PRC and India for selected periods since 1950 are shown in Table 9. In the pre-reform era, both countries
grew at modest average rates with the PRC growing at a slightly faster rate, the
difference likely to be within the measurement error band around the difference
in the average rate. Remarkably, after Deng Tsiao Ping’s reforms, the PRC grew at
annual growth rates averaging over 10% for nearly three decades, during 1980–2008.
The global financial crisis of 2008–2009 slowed down growth to 9.6% in 2008 and
9.1% in 2009. However, growth recovered to 10.3% by 2010. The uncertainties
associated with the eurozone crisis lowered the growth rate to around 9.2% in 2011
and to projected growth rates in the ranges of 8%–8.2% in 2012 and 8.5%–8.6% in
2013.

In India, growth rates averaged at slightly below 6% a year during 1980–2000
and close to 8% during 2000–2008. During the last three years of this period, in
2005–2008, the average growth rate exceeded 9%. A growth slowdown started in
the fourth quarter of 2008 even before the global financial crisis of 2008–2009 hit
India. The slowdown continued during the crisis so that the growth rate declined to
only 6.8% in 2008. The recovery from the financial crisis raised the growth rate to
8.4% in 2010, but uncertainties arising from the eurozone brought this down again
to 7.4% in 2011. IMF and World Bank projections for the calendar year of 2012
and 2013 are not encouraging—even by 2013, the growth rate is projected only to a
range of 6.5%–6.9%.

C. Trends in Poverty

Table 8 documents the trends in poverty in the PRC and India. The data
indicate trends in the proportion of people deemed poor in the total population. They
are based on household consumption expenditure (or income) surveys and
poverty lines drawn to distinguish the poor from non-poor. A national poverty line
in terms of the domestic currency and an international one in terms of US dollars
at PPP exchange rates are used to measure the extent of poverty. The data suggest
that, regardless of the poverty line used, significant reductions in the proportion of
the poor in the population took place in both countries only in the post-reform era.
In general, the level of poverty based on the national poverty line is higher but the
trends are similar.

The empirical evidence on trends in real and financial integration and growth
and poverty all suggest a possible structural break in the data for both economies
around the onset of reforms. In the PRC, the onset can be more or less identified
to be 1980, representing the assumption of Deng Tsiao Ping as the paramount

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2I will not go into the enormous conceptual literature on poverty and on measurement of the extent of poverty
in a society at a point of time and over time. For the history of poverty lines in India going back to the late 19th
century, see Srinivasan (2007) and for trends in the decline of poverty see Srinivasan (2012).
leader in 1978 and the start of his reform agenda. In India, the reform process in some sense could be deemed a continuous one, without a sharp and identifiable break except for the reforms after the severe macroeconomic and BOP crisis of 1991. Moreover, in the PRC, there was pressure for reforms from the population following the disastrous Mao era and the assumption of power by Deng Tsiao Ping, who had been purged more than once earlier by Mao for his pragmatic approach to economic policy (as paramount leader). In India, there was no popular pressure for reforms, which were initiated by political and bureaucratic leadership. Empirical (econometric) searches for possible structural breaks in the data (aggregate and sectional) without postulating one based on prior considerations and testing for it vary in their findings. However, viewing the break in terms of policy changes more or less across the board rather than in the observed growth data, which are influenced by and which in turn influence policy changes, it is natural to identify the breaks with Deng Tsiao Ping’s reforms beginning 1980 for the PRC and post-1991 reforms for India.

Leaving aside the structural break issue, the empirical finding that growth seems to have accelerated and poverty reduced significantly in the post-reform era in both economies suggests a strong association between reforms and growth acceleration and poverty reduction. But association is most assuredly not causation. Other than flagging it, I will not discuss this deeper issue in this paper.
III. Financial Sector and the Real Economy: Reform Issues

A. Financial Sector and the Real Economy

Shocks to the financial sector such as booms and busts in nominal credit and liquidity, asset prices, bankruptcies, etc., as well as shocks to the real sector such as to demand and supplies in the aggregate and/or major sectors have impinged on individual economies fairly regularly over time. Not infrequently, shocks to the real and financial sectors have occurred simultaneously across countries. However, the transmission of shocks—both between real and financial sectors within an economy and also across economies in a globalizing set of national economies—and their intensities vary so that not all instances of shocks lead to outcomes that could be characterized as crises. But in some instances in the past, they did indeed lead to crises. Reinhart and Rogoff (2009) in their well-known book look at financial crises and financial follies over nearly eight centuries in 63 countries including the most recent one of 2008–2009.

Their analysis explores the commonalities and differences across crises. Their basic and simple message as stated in the very first paragraph of the preface is “... no matter how different the latest financial crisis or crises always appears, there are usually remarkable similarities with past experiences from other countries and from history. Recognizing these analogies and precedents is an essential step both to reduce the risk of future financial crises and to better handle catastrophes when they happen” (p. xxv).

While this is very pertinent, it is most unlikely that any future crisis will be an exact analogue of the most recent one. This being the case, it would be, first of all, a mistake to focus exclusively on trying to avoid the same mistakes of the most recent crisis (as well as replicating successes), like the proverbial generals preparing to fight the most recent war better. Second, not only are the analytical tools for identifying the likelihood of a serious crises like the previous one or pinpointing the features of a different future one in advance inadequate, but also the needed policy reforms for avoiding past mistakes and replicating past successes seemingly quite rare—at best difficult, and at worst not feasible.

Reinhart and Rogoff (2009, xxvi) aimed to be “expansive, systematic, and quantitative” in their empirical analysis. As I am sure they would readily admit, there is no formal analytical and empirical model that integrates the financial and real dimensions of a crisis underpinning their analysis. It is best viewed as analytically driven description that yields valuable insights described in the concluding chapter for further exploration with formal tools.

It happens to be the case that formal macroeconomic models that incorporate a demand function of money (or more generally nominal assets) in an open economy in a general equilibrium framework turn out to be formed on an ad hoc behavioral foundation (Srinivasan 2010b). Be that as it may, the literature on open economy
TRENDS AND IMPACTS OF REAL AND FINANCIAL GLOBALIZATION

The macroeconomics of the global financial crisis has emphasized that the spread to and impact on any individual country’s economy depends significantly on the depth and efficiency of the domestic financial sector and the distributional (across domestic socioeconomic groups) consequences of the crisis depend in particular on how well the groups can access and make efficient use of the financial instruments available in the country’s domestic financial sector, i.e., the extent of so-called “financial inclusion.” The literature on the global financial crisis has also amply demonstrated the gaps not only in the global financial architecture, particularly its constituents such as the international financial institutions (IFIs), but also in the domestic financial architecture. The literature articulates an agenda of reforms.

B. The G20 on Financial Sector Reforms

The G20 grew out of the earlier G22, which consisted of a group of central bankers and finance ministers of 22 economies (the current G20 minus Turkey and the EU plus Hong Kong, China; Malaysia; Poland; and Thailand) gathered to coordinate a collective response to the Asian financial crisis. This ad hoc group did not disband after the Asian crisis was over but survived because a member, Canada, wanted to create a permanent forum that would meet regularly. Thus, the G22 was reincarnated as the G20.

The original membership of the G20 was drawn by G7 and has not changed since its formation. Practical considerations meant that the group had to be of a manageable size. The G20 is arguably a manageable group of countries that on balance could be reasonably justified as legitimate and relevant for global leadership on economic and financial matters. Arguable or not, the issues of legitimacy and manageability are now moot. The G20 not only exists but has also designated itself to be the premier forum for international economic cooperation in its Pittsburgh, Pennsylvania Summit of 24–25 September 2009 (Paragraph 1a of the Preamble to the Pittsburgh Summit Declaration).

Thus far, seven summits of the leaders of the G20 have been held, including the most recent one in June 2012 at Los Cabos, Mexico. Future summits in the Russian Federation in 2013, Australia in 2014, and Turkey in 2015 are scheduled. The declaration of the Cannes Summit in France in 2011 states, that “As part of our reforms to the G20, annual presidencies of the G20 will be chosen from rotating regional groups.” It is unclear why such a choice is deemed a reform of the G20.

The dominant topic of the very first summit in November 2008 had been financial markets and the global economy, while that of the most recent had been the eurozone crisis and the global economy. Reform of the international financial architecture and in particular of IFIs, specifically the IMF and the World Bank

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3The declarations of all the six G20 summits are available at http://www.g20.org/en/leaders-summit/previous-leaders-summits
and other multilateral trade and development banks (MDBs), is also a continuing theme. The declaration at the Cannes Summit in 2011 devoted several paragraphs to financial sector reform issues. These include a reiteration of their commitment at the Seoul Summit a year earlier to build a “more stable and resilient international monetary system” (paragraph 9) and affirmation of a commitment to move more rapidly towards a more market-determined exchange rate system and exchange rate flexibility (para. 12 and 13), and to strengthen IMF surveillance (para. 17–20). Other paragraphs relate to actions addressing factors identified as having contributed to the 2008–2009 global financial crisis such as inadequate capacity to cope with crises, the “too-big-to-fail” issue, and gaps in the regulation and supervision of the financial sector. On reform of IFIs, other than a commitment to implement in full the 2010 governance reforms of the IMF (para. 16), there is not much else. I have reviewed the issues of IFI reforms and the actions of the G20 relating to these in Srinivasan (2010b). I concluded that except on financial-crisis-related issues, the declarations are long on action plans and commitments but short on specific national and global actions. The most recent Los Cabos Summit is no exception.

The most conspicuous example of the failure to act on commitments is that of failing to conclude in 2010 the Doha Round of MTNs after having committed to do so in more than one summit. Notwithstanding fervent declarations warning against reverting to protectionism when faced with financial crisis and vowing support for multilateralism in several summits including the summit of Los Cabos 2012, the fact remains that as of 31 July 2012, the Doha Round is neither concluded nor anywhere near conclusion.

In my view, the G20 leaders by and large have identified the problems with the global and national financial architecture and, in a broad sense, their proposals for reforms are appropriate, needed, and well designed. However, some relevant issues have not been recognized or sufficiently explored. To take just one example, in India, nearly 12% of GDP, or roughly about a third of gross domestic savings and capital formation, are direct savings in the form of physical assets by households. In other words, these savings/investment flows apparently do not involve any financial intermediation at all. Taking into account all transactions, not just saving/investment transactions, the share of transactions that are not monetized and do not involve the financial sector is significant. Sources of finance include institutions regulated by India’s central bank (i.e., the Reserve Bank of India) and also a variety of non-formal institutions, most of which are out of the regulatory system. They are by no means the analogues of the weakly regulated shadow banking system in developed countries. Also, a large share of the assets of India’s banking system (nearly 60% or more) and even larger share of employment in the banking sector are in public sector banks, which makes closing failing public banks virtually impossible. Also, the almost inevitable recapitalization of failing public sector banks using public resources not only creates moral hazard by eroding the incentives of banks to avoid the need for recapitalization, but also adds to the fiscal deficit.
My reading of the G20 discussions suggest that the leaders were mostly concerned with the strongly or weakly regulated parts of developed country financial systems that are quite similar across developed countries and not so much with the very heterogeneous developing country systems. Issues of jurisdiction shopping as well as capture of the regulatory system by those it seeks to regulate are well known and widely discussed in the literature in developed countries. These are not only likely to be important in developing countries but also may take different forms given endemic political and administrative corruption. The focus of the G20 on developed country financial systems was probably driven by the perceived origin of the virus of the financial crisis in developed countries and their spreading to infect the rest of the world. While this is understandable in thinking about reforms of the global financial system, a much broader perspective is needed to avoid the all too tempting “one-size-fits-all” approach. Besides, the checkered progress of financial sector reforms (particularly on consumer protection) in the US in the context of sharp domestic political divisions on these reforms suggests that regulations reflecting a political compromise over conflicting approaches there may not be relevant for other political economy contexts.

At the summits, the G20 has delegated many tasks to its creation, the Financial Stability Board, and also to the IMF, the World Bank, and MDBs. Presumably, the leaders have confidence in the capacity of these institutions to deliver on the delegated tasks. Unfortunately, there are serious concerns that such confidence may be unwarranted. Let me raise a few starting with the strengthening of IMF surveillance mentioned in the 2011 Cannes declaration. Just a year ago the Independent Evaluation Office (IEO) delivered a scathing report on the performance of IMF surveillance during the run-up to the financial crisis (IEO 2011a). The high points of IEO (2011a) were: (i) the IMF provided few clear warnings about the risks and vulnerabilities associated with the impending crisis before its outbreak; (ii) in its bilateral surveillance of the US and the UK, the IMF largely endorsed policies and financial practices that were seen as fostering innovation and growth; (iii) surveillance paid insufficient attention to risks of contagion or spillover from a crisis in advanced economies that were not included in the vulnerability exercise launched after the Asian crisis; (iv) although the risks that materialized subsequently were recognized in other IMF reports, they were undermined both by their presentation in general terms and by the accompanying sanguine overall outlook, and above all, they were not reflected in flagship publications such as the World Economic Outlook and public declarations; and finally, (v) although the IMF appropriately stressed the urgency of addressing the large global current account imbalances that in its view risked triggering a rapid and sharp decline in the US dollar, it did not link these imbalances to the systemic risks building up in financial systems. The report claims, using pop-psych jargon, that the IMF’s ability to correctly identify the mounting risks was hindered by a high degree of group-think and intellectual capture, resulting in a general mind-set that a major financial crisis in large advanced economies
was unlikely. The report refers cryptically to political constraints and poor internal governance and incentives to work across units and raise contrarian views, these factors presumably playing an important role.

The report makes five recommendations, outlining what the IMF needs to do in the future: (i) create an environment that encourages candor and considers dissenting views, (ii) modify incentives to “speak truth to power,” (iii) better integrate macroeconomic and financial sector issues, (iv) overcome the silo mentality and insular culture, and (v) deliver a clear, consistent message on the global outlook and risks. These recommendations are unexceptionable but do not identify who in the IMF hierarchy would be responsible for implementing them and whether and how they would be held accountable. IEO (2011a) makes no reference to the needed research at IMF for it to provide relevant advice during surveillance. IEO (2011b), which evaluated IMF research, was appointed almost a decade and half after the Mishkin Committee of 1998 (IMF 2000), where I was a member and which had done an independent evaluation of IMF research. In effect, IEO (2011b) repeats many of the findings of the earlier Mishkin committee and makes recommendations that are strikingly similar. It found that some of the recommendations of the Mishkin Committee have been carried out, but several remain to be implemented even 15 years after.

Surprisingly, IEO (2011b) does not recognize the importance of IMF research, particularly in-house research that the earlier report had emphasized—specifically, the need for the fund to stay relevant and have adequate knowledge of factors that could end up precipitating a serious systemic financial crisis. Saying that the fund did not provide adequate and clear signals of the vulnerabilities accumulating in the system is simply not adequate without examining whether its research and analytical capability could have been the main constraint that precluded it from providing such warnings. Had it recognized the importance of research, it would have gone back to the earlier reports that provide an evaluation of research and asked why the fund had apparently not done enough research on domestic financial sectors, particularly in major financial centers, and the global financial sector.

The Independent Evaluation Group (IEG) of the World Bank Group had a few critical things to say on the contrasting responses of the different agencies of the group to the financial crises (IEG 2010). Like IEO (2011a), IEG (2010) did not apparently recognize the importance of in-house research and did not evaluate it. However, an independent evaluation chaired by Professor Angus Deaton was very critical of World Bank research and its relevance for the bank’s mission. I chaired a committee that evaluated the research at the Asian Development Bank’s (ADB’s) Asian Development Bank Institute in Tokyo. We also found some of the research to be of poor quality, although there were also many instances of good research relevant to ADB’s mission. In sum, the evaluations of the research at the three major IFIs—the IMF, the World Bank, and the ADB—indicate that the institutions may not yet have the analytical capacity or understanding to deliver independent policy
advice to their member governments, particularly, or to fulfill adequately the many tasks that the G20 has been delegating to them.

C. Global Financial Stability

IMF (2012b, p. 1) points out that “in late 2011, the euro area’s banks and government bond markets came under stresses that pushed financial stability risks to a new peak of intensity. Subsequent policy actions eased bank funding strains and helped stabilize sovereign markets, but the risks of global financial stability remain elevated.” I will discuss the eurozone issues in Section IV.

My understanding of IMF (2012b) is that, as far as emerging markets of Asia are concerned, their financial sector could be particularly exposed to a sudden reversal of bank-related and portfolio flows. The report argues that if portfolio flows come to a sudden stop, the fall in asset prices would decrease the net worth of firms and negatively affect bank balance sheets, diminishing an economy’s capacity to generate credit (IMF 2012c, Box 2.5). For example, the report projects the percentage of nonperforming loans (NPL) in total loans in the PRC under various macroeconomic scenarios. A severe negative shock that lowers the growth rate to 4% and property prices by 26% would raise the share of NPL to 8%, roughly four times its level of around 2% if there were no adverse shocks.

However, Asian emerging markets, particularly the PRC and to a significant extent India, have sufficient foreign exchange reserves and room to adjust monetary, fiscal, and credit policies to counter a range of financial shocks such as from the eurozone if the current policies in the eurozone and elsewhere continue. But the reserves and policy room are not unlimited. Table 2.4 of IMF (2012b) illustrates these problems. IMF (2012c, p. 22) on Asia reinforces the analysis of IMF (2012b) by saying “looking ahead, Asia’s policy makers still have ample room to respond aggressively to a sharp deleveraging of banks arising from a euro area shock. The space for a macro policy response is smoother than it was before the global financial crisis.”

D. Domestic Financial Sector Reform

Unlike the US and Europe where commercial banks are largely if not wholly privately owned, in Asia, particularly in the PRC and India, the public sector owns and controls a large share of the assets of the banking system. The government decides the extent of private ownership. For a number of reasons, the divestment of public ownership stakes in parts of the economy has been in the agenda of reforms in India. Instances of infusion of public capital to shore up public banks (i.e., bailouts) have not been infrequent. Only the capacity of the treasury to bail out these banks limits such actions. In the PRC, with the fiscal situation being stronger than India’s, the bailout capacity is higher. By creating a public sector reconstitution and
recourse agency some years ago and transferring NPLs away from banks’ balance sheets, Chinese banks were made solvent. This is nothing but a bailout. Other than foreign-owned banks, there are no private banks in the PRC. In my view, reform of bank ownership and control is essential in the PRC. In India, as mentioned earlier, the fiscal capacity to recapitalize public sector banks, which dominate the banking system, is lower and the stock of NPLs in bank portfolios alarmingly high as of July 2012.

The depth and efficiency of financial markets affect the capacity to absorb financial shocks but also limit the range and effectiveness of financial policy interventions. For example, domestic bond markets in Asia generally are not very deep and not deemed efficient. In particular, the market for private corporate debt either does not exist or remains very shallow. Public debt held outside the banking system is small in most of Asia. Few countries in Asia can successfully float bonds denominated in their own currency abroad. Reform of debt markets is another major issue.

It is well documented that access to finance from the formal financial sector is limited for large sections of the population in Asia. The currently fashionable cliché, “financial inclusion,” is a pompous description of the widening of financial access as a plank of the agenda for financial sector reforms. Those with limited access include some of the more productive segments of the economy such as small and medium enterprises, exporters, and firms. The experience of Bangladesh and India in microfinance and the problems that microfinance institutions have run into suggest not only the need and scope for further expansion but also for intelligent regulation.

In his very thought-provoking and insightful comments on the occasion of the release of the updated Festschrift for Manmohan Singh, India’s Prime Minister and the chief architect of the country’s 1991 reforms, Raghuram Rajan listed the needed and urgent next-generation reforms and what stood in their way. Among the evidently successful financial sector reforms since 1990, he mentioned the spread of ATMs and the ease with which one could withdraw money from US bank accounts from a nearby Indian ATM and how a migrant worker could now send money using a cellular phone to his or her family’s bank account in a remote village. Another achievement had been the creation of a national stock exchange with one of the lowest, if not the lowest, transaction costs in the world. That said, he rightly pointed out that despite the tremendous success of the first-generation reforms, some of the next-generation reforms have been stymied. It is too soon to tell if the announced intention to implement some of the next-generation reforms in October 2012 will actually be implemented, but the post-announcement market reaction suggests that the market expects they will be.

Since his talk, the government has announced reforms that have been characterized by the financial press as “big bang reforms.” These are meant to induce foreign investors to invest in the real economy and reduce India’s dependence on
volatile short-term financial flows. Whether the reforms will increase the less volatile and non-debt creating flows such as FDI remain to be seen.

Rajan also referred to the then depreciating Indian rupee, which has since depreciated more since his talk, as a first warning sign of an unstable economy. He did not however touch what he considered to be the needed reform of the current exchange rate policy of nonintervention in the market (i.e., not targeting a particular level of the exchange rate but intervening only to reduce its volatility) nor did he mention the related issue of capital control. I would argue that a reconsideration of exchange rate and capital control policies are urgent and needed. Although Rajan referred to reform of public ownership and even monopoly in sectors deemed “commanding heights of the economy,” to use Lenin’s phrase, other than divestment and sale of shares in some public enterprises, serious reconsideration of public ownership has not taken place. As mentioned earlier, the large share of public ownership of banking system assets is a matter of concern that needs to be addressed.

Rajan mentioned many issues requiring reforms that fall under the category of political economy using phrases such as “lack of political will” and “opposition to economic liberalization.” I am afraid that at best these could be characterized as symptoms of deeper causes that originate from the structural features of India’s economy and polity. Nonetheless, he is absolutely right in emphasizing that the “full extent of those (1991) reforms, to liberalize so as to enhance competition and efficiency, to move from a producer to a consumer bias and allocate national resource opportunities fairly” has not been realized in a number of areas of the economy.

In an interview after becoming the chief economic advisor in the Department of Economic Affairs of the Ministry of Finance and with the government’s announcement that it will resume the reform process with a slew of reforms, Rajan reiterated that these reforms had been debated and the only surprise was that government went so far as to put all of them together. He presumed “the reason is (that) the political equation changed somewhat so that the government saw space for it and knew it.” Unfortunately, he did not elaborate on the political equation perhaps for the reason that he was not privy to it. His presumption of a change in the political equation is more of an ex-post rationalization that follows from his emphasis of “lack of political will” as a contributor to the stalling of reforms previously rather than an ex-ante causal story.

In a recent paper, Rangarajan (2012) reviews the reforms of the 1990s, external sector performance (the current account and its components, especially exports and imports of goods and services, and invisibles, particularly private transfers), and capital flows. The review is followed by a discussion of a major policy concern, i.e., how to narrow the current account deficit, to a sustainable level estimated at 2.3% of GDP based on an analogue of the conventional and well-known debt sustainability framework. What seem interesting are the analytics and empirics of recent exchange rate movements and exports. The paper concludes with the way forward in the short and long term.
The paper is very interesting and an important contribution by providing needed injections of analysis to the debate on the external sector. Rangarajan lays out the reasons why “true” aggregate trade elasticities may in fact exist as stable parameters but conventional empirical analysis may not reveal their existence in the context of reforms intended to change policy regimes. As he himself notes, these reasons are not new, and there have been studies, which he cites, that attempt to overcome some of them. While I am in strong support of more micro level studies for India for their own sake, I am not entirely persuaded that they would contribute significantly in “getting a good understanding about true trade elasticities for India” as Rangarajan suggests.

My skepticism arises from the fear that some of the deep conceptual problems associated with the estimation of aggregate trade elasticities are irresolvable. Rangarajan’s policy recommendations include preventing an appreciation of the real exchange rate. It is not clear whether he intends it to be an intrinsic and desirable social objective in and of itself or only an instrumental goal to achieve other objectives (intrinsic and instrumental). Certainly, in the context of a sustained incipient current account deficit, the need for capital inflows to finance them will rise. An appreciation of the rupee through its impact on exports and imports would worsen the current account deficit as well as incentives for foreigners to invest in India and stoke inflationary forces. All these ceteris paribus effects do not necessarily suggest that policies be deployed to prevent real appreciation. After all the current level of the exchange rate is not necessarily its long-term equilibrium rate, which can be computed only with an appropriate theoretical framework and its empirical version. Without knowing the equilibrium rate, it would be impossible to tell whether policy intervention to maintain the rate at its current level is appropriate. Rangarajan does not suggest any implicit or explicit macroeconomic model from which to derive policy recommendations, including on the exchange rate, by maximizing the expected present value of social welfare. This is unfortunate.

In the short term, Rangarajan suggests boosting investor confidence to attract capital inflows. In his view, fiscal consolidation, lowering of inflation, and an undefined “careful” liberalization of capital flows could all contribute to creating a conducive investment environment for all investors, domestic and foreign. In this context, he supports recent reforms of raising FDI in retail, aviation, and insurance, and allowing foreign investment in government securities. On capital control, other than approvingly referring to the well-known Tarapore committee reports, Rangarajan does not take a position. On the common presumption that foreign institutional investments (FII) are more volatile than FDI, Rangarajan argues that even in the worst environment following the bankruptcy of Lehman Brothers, FII outflows were modest.

Taken together, the short-term reform proposals are plausible. His conditional conclusion that if India continues to grow at 8% a year (which means a significant rise from the 6.3% a year during the first quarter of 2012) and if the fiscal deficit
remains controlled (there is no evidence of this happening yet), the ability to attract capital flows will remain strong is conceivable hinged on the conditions being met. In my view, however, they are unlikely to be met in the near term.

Rangarajan’s long-term reforms consist of nine disparate proposals. Some such as on the need for improving infrastructure covering all forms of transport have been pursued for quite some time with limited success. An evaluation of the reasons behind successes and failures and drawing on them to formulate proposals for improving the chances of reforms already being implemented and suggesting new ones would have been helpful. Such an evaluation necessarily has to be based on available analytical tools, which may be inadequate for the task. Hence, policy recommendations from such an evaluation may be incomplete at best, infeasible at worst. In any case, I have no idea what the marginal social cost/benefit ratios would be of the nine disparate proposals.

On imports, Rangarajan mentions only policies for reducing oil imports through a drive to reduce domestic consumption and raise domestic production. By not discussing the issue of a complete or partial pass-through to domestic prices of trends in international prices independently of subsidies on tariff-inclusive landed prices on the use of petroleum products, Rangarajan missed an opportunity to clarify that the two are in principle separate and serve different objectives. For example, an ad valorem tariff will allow a complete pass-through but with a proportional wedge between the two. It will ensure that domestic producers and consumers would face the true opportunity cost of oil in a small open economy. Whether or not domestic producers and/or consumers should be sheltered from facing international trends in opportunity costs of international prices is a separate issue.

Rangarajan argues that controlling inflation will tend to reduce investment in assets deemed to be hedges against inflation such as gold. However, such assets could have other potential uses besides serving as inflation hedges. He assumes that gold imports have to be reduced, and controlling inflation has the plausible benefit of enhancing intertemporal social welfare. But what if reducing gold imports, considering the effects from all its uses, would reduce social welfare? If I may caricature the tone of the paper, it prefers discretionary rather than rule-based interventions in the economy and implicitly views all exports to be good and all imports to be bad for the economy as a whole and not just for reducing the current account deficit.

IV. Concluding Remarks

The process of real integration of national economies into a global system of multilateral exchange of goods, services, technology, and knowledge and the associated emergence of multinational supply chains and networks have been beneficial to the participants, and both are likely to continue. The pace is unlikely to be
smooth, unidirectional, and devoid of significant reversals followed by recoveries. The current reality is that multilateral negotiations of the Doha Round for reductions in remaining barriers are at a standstill. The G20, after committing to conclude the Doha Round in 2010 with a balanced outcome, conspicuously failed to deliver. In the meantime, virtually every member of the WTO is involved in some preferential trade agreement (PTA) or the other.

It is very unlikely the drive towards concluding PTAs would be blunted by the facts that, first, notwithstanding the operation of many PTAs, nearly 85% of global trade takes place on a nondiscriminatory MFN basis, and second, most empirical evaluation of PTAs do not suggest that they lead to greater expansion of trade than multilateral trade liberalization. This being the case, it is disappointing that the G20 at their Los Cabos meeting in June 2012 did not credibly and strongly commit to reviving and concluding the Doha Round before the next scheduled ministerial meeting of the WTO in 2013 in Indonesia. In the Asian region, there is further room for reduction of trade barriers in South Asia and elsewhere including, in particular, procedural barriers. Infrastructure investment in the region has to be expanded and ways of financing such investments have to be found both for accelerating and sustaining growth but also for expanding trade.

It was noted that the process of financial integration of national economies has been accelerating since the 1980s, particularly with greater private sector participation. Not surprisingly, financial integration opens up a channel for the international transmission of financial shocks. The data clearly show a slowdown in financial integration after the 2008–2009 financial crisis in 2010 and at the end of 2011, as the uncertainties of the euro area had their impact. Economists are divided on the issue of whether financial integration is fundamentally different from and not necessarily as beneficial as real integration. On balance, I would argue that, in principle, both processes would be socially beneficial net of costs given an appropriate domestic policy and institutional environment. However, the domestic environment needed to gain from financial integration is in general more difficult to establish than the one needed to benefit from real integration. Among the policy actions needed is to reform the domestic financial sector.

In the near term, the festering uncertainty emanating from the eurozone is the major risk facing the global economy. Again, economists are divided on whether the fundamental design defect of the euro area, namely the absence of fiscal union, can be resolved by means other than bringing about a formal fiscal union. In my view, proposed arrangements other than a formal fiscal union are not credible and the eurozone as is cannot be sustained. This means that the eurozone’s collapse is inevitable and certain, but it is uncertain when and how soon this will happen. Policy actions needed in anticipation of the collapse to minimize potential costs when it occurs have to be devised and implemented.

Lastly, Asia by and large has benefited greatly from global integration. It has chosen to build significant financial barriers and undertaken prudential actions.
Economies in the region have the policy space to take further actions as needed. Having said this, I must add that as pointed out almost unanimously by all IFIs, the Asian region with its financial and policy buffers can withstand the uncertainties from the euro area, but there are limits to their capacity to absorb adverse external shocks. Excessive and prolonged risks from the euro area would be beyond the capacity of Asian buffers to withstand. It is essential that the region supplement its buffers and above all urge the euro area to resolve the basic flaw of its design.

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In a canonical model of collective action, individual contribution to collective action is negatively correlated with group size. Yet, empirical evidence on the group size effect has been mixed, partly due to heterogeneities in group activities. In this paper, we first construct a simple model of collective action with the free rider problem, altruism, public goods, and positive externalities of social networks. We then empirically test the theoretical implications of the group size effect on individual contribution to four different types of collective action, i.e., monetary or nonmonetary contribution to directly or indirectly productive activities. To achieve this, we collect and employ artefactual field experimental data such as public goods and dictator games conducted in southern Sri Lanka under a natural experimental situation where the majority of farmers were relocated to randomly selected communities based on the government lottery. This unique situation enables us to identify the causal effects of community size on collective action. We find that the levels of collective action can be explained by the social preferences of farmers. We also show evidence of free riding by self-interested households with no landholdings. The pattern of collective action, however, differs significantly by mode of activity—collective action that is directly rather than indirectly related to production is less likely to suffer from the free rider problem. Also, monetary contribution is less likely to cause free riding than nonmonetary labor contribution. Unlike labor contributions, monetary contributions involve collection of fees which can be easily tracked and verified, possibly leading to better enforcement of collective action.

**Keywords:** collective action, social preference, natural and artefactual field experiment, irrigation, South Asia

**JEL codes:** C93, H41, H54, O13, Q15

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I. Introduction

In the real world, most political, social, or economic activities are undertaken by groups. Naturally, there has been active academic research in identifying determinants of individual contributions to collective action within a group. Particularly, group size and social and economic heterogeneities among group members are regarded as important determinants of members’ effort levels.\(^1\) While the canonical theory of free riding implies a negative relationship between group size and individual contribution (Olson 1965, Holmstrom 1982), empirical studies on the group size effect present mixed results (Bandiera et al. 2005, Banerjee et al. 2007).\(^2\) Ostrom (2011, p. 52) stated that, “Unfortunately, we do not find that single variables such as size of group or amount of payoffs are always associated with failure or success in achieving collective action.” This paper aims to shed new light on heterogeneous group size effects of collective action by employing artefactual field experimental data collected under a unique natural experimental situation in Southern Sri Lanka.

In the existing studies, mixed empirical evidence on the group size effect may arise from the following reasons. First, the net effect of group size on collective action is not necessarily theoretically unambiguous (Banerjee et al. 2007, Esteban and Ray 2001). It depends on the nature of goods, i.e., whether they are local private goods or public goods (Agrawal and Goyal 2001, Banerjee et al. 2007, Dayton-Johnson 2000). As Esteban and Ray (2001) argue, when the collective good produced is purely private, an inverse relationship between effective collective action and group size arises but when the collective good is purely public and fully non-excludable, the free rider problem never emerges.

Collective action also reflects team production technologies—concavity or convexity, monitoring and commitment devices, and monetary incentives. If there is a convex technology arising from positive network effects, it is even possible to observe a positive correlation between individual contribution to collective action and group size. Also, a particular incentive contract can generate a positive group size effect too (Bandiera et al. 2005).

The conventional theories consider one-shot non-cooperative games by selfish individuals. In this framework, collective action is poorly induced because of the prisoner’s dilemma (Rapoport and Chammah 1965), which alternatively can be called the problem of free riding (Olson 1965) or the tragedy of the commons (Hardin 1968). On the other hand, the repeated-game framework predicts cooperation without commitment or third-party enforcement. This may be due to social capital among

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\(^1\)Bandiera et al. (2005), Banerjee et al. (2007), and Fayssse (2005), discuss broader issues on collective action.

\(^2\)Bardhan (2000) and Fujiie et al. (2005) find a negative community size effect, where increasing the community size reduces individual contribution to irrigation maintenance. On the other hand, Dayton-Johnson (2000) and Khwaja (2009) find insignificant community size effects. Agrawal and Goyal (2001) theoretically and empirically show that a medium-sized group is more suitable to manage collective action. In experimental studies employing the public goods game, Isaac and Walker (1988) show that an individual’s contribution declines in larger groups, a result attributed to the decline in marginal benefit.
group members which solve the moral hazard and enforcement problems (Anderson et al. 2004, Durlauf and Fafchamps 2005). Moreover, individual contribution to collective action can be explained by pro-social behavior such as altruism and voluntary cooperation (Chen and Li 2009, Falk and Fischbacher 2006, Fehr and Fischbacher 2002).\(^3\)

Previous studies examined the group size effect without focusing on heterogeneities in characteristics of group activities. Individuals, however, may act differently when collective activities are for production purposes rather than when they are for nonproduction purposes such as ceremonial and funeral events. Whether the nature of contribution is monetary or non-monetary may also change individual’s incentives significantly.

Finally, existing empirical studies do not take into account the endogeneity of group sizes, potentially leading to estimation bias (Bandiera et al. 2005, p. 475; Kosfeld et al. 2009). Hence, the lack of a clear relationship between group size and collective action may be the result of econometric problems. For example, a community may have a specific mechanism to control group size so that it can maintain a desirable level of collective action. This will generate reverse causality.

This paper aims to carefully address these issues.\(^4\) First, we investigate how the individual contribution varies across preferences, production technologies, and types of collective action. Second, we exploit a natural experimental situation to address the concern regarding endogenous community size. To achieve these goals, we first illustrate the mixed group size effects in the augmented Holmstrom (1982) model by differentiating local private goods from public goods, incorporating altruism, and considering scale economies. Then, we empirically identify the causal relationship between group size and collective action using unique data from a large-scale irrigation system in Southern Sri Lanka called the Walawe Left Bank (WLB) Irrigation Area where an irrigation upgrading and extension project was implemented from 1995 until 2008 with financial assistance from a Japanese ODA loan. This project provides us with natural experiments where the group sizes were assigned exogenously since lands were allocated by quasi-lottery mechanisms. Artefactual field experiments are used in order to elicit altruism and willingness to cooperate.\(^5\) Finally, by combining these data, we compare four types of collective action—monetary or nonmonetary contribution to productive or nonproductive (indirectly productive) activities—to uncover differences in the patterns of voluntary contribution.

To preview the results of our empirical analysis, the pattern of collective action differs significantly by mode of activity. First, irrigation maintenance activities

---

\(^3\)Experimental studies show that participants of public goods games contribute some amount between the self-interested equilibrium and the social optimum (Ledyard 1995).

\(^4\)Shoji et al. (2010) use the same dataset as this paper and examine the way in which the heterogeneity of crop choice affects participation in community work, but they do not compare various modes of collective actions.

\(^5\)An artefactual field experiment is defined as a conventional laboratory experiment conducted with nonstandard subjects (Harrison and List 2004, p. 1014).
that are directly related to production are less likely to suffer from the free rider problem. In contrast, free riding is widespread in indirectly productive activities such as expenses for ceremonies and participation in community work. We also find that monetary contribution is less likely to cause the free rider problem than nonmonetary contribution for both irrigation maintenance and community events. Finally, selfish farmers with no landholdings are less likely to contribute in larger communities.

The rest of this paper is organized as follows. Section II describes the theoretical framework. The study site, our dataset, and the empirical strategies are discussed in Section III. Section IV presents the expected results followed by concluding remarks in Section V.

II. The Theoretical Model

We augment the basic Holmstrom (1982) model of team production to determine the amount of effort provided by farmers. We do so by incorporating altruism and the scale effect of social networks. Suppose that there are \(N\) farmers, who jointly produce a single output, \(g\), that is, for example, the quality of an irrigation facility or system. The amount of effort from the \(i\)th farmer is denoted by \(a_i\). Therefore, the joint output, e.g., the level of irrigation quality, can be described by the following function:

\[
g = g(a_1, a_2, a_3, \ldots, a_N; X_1, X_2, X_3, \ldots, X_N),
\]

where \(X_i\) is a matrix of observables which affect the output. Let us assume that the utility function of a farmer \(i\) is expressed as

\[
u_i = s_i - a_i,
\]

where \(s_i\) is the output share of farmer \(i\). 6

The efficient regime of this economy can be solved as the following social planner problem:

\[
\text{Max}_{\{a_i\}} g(a_1, a_2, \ldots, a_N; X) - \sum_{i=1}^{N} a_i.
\]

The first-order condition (FOC) of this problem is

\[
\frac{\partial g}{\partial a_i} = 1.
\]

Suppose that the function \(g\) takes an additive separable form:

\[
g(a_1, a_2, \ldots, a_N; X) = \sum_{i=1}^{N} X_i a_i^{\gamma_i},
\]

where \(\gamma_i < 1\). Then the FOC becomes:

\[
X_i \gamma_i a_i^{\gamma_i - 1} = 1,
\]

and the Pareto optimal level of effort, \(a_i^*\) which satisfies this FOC becomes:

\[
a_i^* = \left(\frac{X_i}{\gamma_i}\right)^{\frac{1}{1-\gamma_i}}
\]

In contrast, a Nash equilibrium is derived by solving an individual farmer’s utility maximization problem:

\[
\text{Max}_{a_i} s_i(g) - a_i,
\]

given the production technology, \(g\), where \(s_i(g)\) is the sharing rule or technology of the joint output. The FOC is:

\[
\frac{\partial s_i}{\partial g} - \frac{\partial g}{\partial a_i} = 1,
\]

where \(\frac{\partial s_i}{\partial g}\) denotes private benefit from the irrigation infrastructure and \(\frac{\partial g}{\partial a_i}\) denote the marginal output of effort. This FOC gives an individually optimal effort level, \(a_i\). Under the functional form of production technology, we have the

---

6 Alternatively, we can employ a general convex disutility function from effort provision, denoted by \(v_i(a_i)\). Such a generalization will not change the qualitative results.
the individual optimal effort level: \( \lambda_i X_i \gamma_i a_i^{\frac{1}{1-\gamma_i}} = 1 \), where \( \lambda_i \equiv \partial s_i / \partial g \). In equation (2), \( \lambda_i \) is a weight which shows the degree of benefit a farmer \( i \) obtains from this joint irrigation management. This FOC provides us with the effort level under individual optimization of:

\[
a_i = (\lambda_i X_i \gamma_i)^{\frac{1}{1-\gamma_i}}.
\]

We consider three cases of team production: the first case when the collective good is purely private, the second when there is positive altruism and/or voluntary public goods contribution, and the third when the collective good is a public good or involves positive externalities from a social network.

A. Joint Production of Pure Local Private Goods

The case of pure local private goods, which are rivalrous, can be formalized by a condition, \( \sum_{i=1}^{N} s_i = g \), or equivalently, \( \sum_{i=1}^{N} \lambda_i = 1 \). For expositional purpose, if we further assume that the benefit of irrigation is equally divided among participants, then we have \( s_i = g/N \) and thus the optimal effort level becomes: \( a_i^P = (X_i \gamma_i / N)^{\frac{1}{1-\gamma_i}} \), which is strictly smaller than \( a_i^* \) if \( N > 1 \). This is the moral hazard problem in team production formalized by Holmstrom (1982). It is evident that the requirements of the Pareto optimal effort level and the individually optimal level contradict each other if \( N > 1 \). The only situation where the Nash equilibrium is at a Pareto optimum is when there is only one farmer, i.e., \( N = 1, \lambda_i = 1 \), and thus \( a_i^P = a_i^* \). However, as \( N \) increases, the gap between the Pareto optimal effort level and the individually optimal effort level widens because of the free rider problem (Rahman and Sawada 2012).

B. Joint Production of Pure Local Private Goods with Altruism

To investigate the case of pure private goods with altruism, we assume that the utility function of a farmer \( i \) takes an additive separable form, \( u_i = s_i + \rho(\sum_{j \neq i} s_j) - a_i \), where \( \rho \) is the altruism parameter. Since equally divided private goods can be described by \( s_i = g/N \) for all \( i \), we now have: \( u_i = g [1 + \rho(N-1)] / Na_i \). Hence, \( \lambda_i^A \equiv \partial s_i / \partial g = [1 + \rho(N-1)] / N > 1/N \) if \( N > 1 \) and \( \rho > 0 \). This means that the optimal effort level under private goods with altruism becomes:

\[
a_i^A = (\lambda_i^A X_i \gamma_i)^{\frac{1}{1-\gamma_i}},
\]

which is larger than \( a_i^P \) under the assumptions of \( N > 1 \) and \( \rho > 0 \). Also, it is easy to show that \( \partial a_i^A / \partial \rho > 0 \). These analytical results indicate that altruism mitigates the free rider problem unambiguously. Note that in the case of full altruism with \( \rho = 1 \), \( a_i^A = a_i^* \), indicating that the individual solution becomes socially optimal. In other
words, the free rider problem arises when there are multiple farmers who are motivated by self-interest over private goods.

C. The Case of Pure Public Goods

The case of pure public goods with non-excludability and non-rivalry, can be described by the case of $s_i = g$ for all $i$, or, alternatively, $\lambda_i \equiv \partial s_i / \partial g = 1$ for all $i$. It is straightforward to show that individual optimization can achieve social optimality. In addition to the condition that $\lambda_i \geq 1$, positive “perceived” externalities arising from the group social network can be formulated by the case of $\partial \lambda_i / \partial N > 0$. In this case, the individual effort level will be even higher than that of the social optimal.

III. Study Site and Data Description

A. Study Site

Our study site is the Walawe Left Bank (WLB) Irrigation Area, located in the Hambantota and Moneragal districts in the southern part of Sri Lanka. Figure 1 shows the map of five study blocks in this region. In this area, the WLB Irrigation Upgrading and Extension Project was implemented from 1995 until 2008 with

Figure 1. Study Site

Source: Authors’ compilation.
Categories of Collective Action

<table>
<thead>
<tr>
<th>Direct Production Activity</th>
<th>Indirect Production Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monetary contribution</td>
<td>Expenses for ceremonial events</td>
</tr>
<tr>
<td>Nonmonetary contribution</td>
<td>Expenses for irrigation maintenance</td>
</tr>
<tr>
<td>Labor participation in irrigation maintenance</td>
<td>Labor participation in community work</td>
</tr>
</tbody>
</table>

financial assistance from a Japanese ODA loan (JBIC Institute 2007). Under this project, the old irrigation system was rehabilitated and a new irrigation system was constructed. In this project area, all farmers received fairly homogenous land: 0.2 hectares (ha) of land for residence and 1.0 ha of irrigated paddy field or 0.8 ha of field for other food crops.

Rehabilitation and construction started in the north of WLB close to the Uda Walawe reservoir and gradually extended toward the south. By the end of the first phase of the project, 2,900 ha of the irrigated area were rehabilitated and 1,040 ha of irrigated area were newly developed in the northern blocks such as the Sevanagala, Kiribbanwewa, and Sooriyawewa blocks (Figure 1). In the second phase, an additional 5,340 ha of irrigation system was newly constructed in the southern part of WLB, the extension area. By the end of 2008, almost all households had access to irrigation facilities except for the rain-fed part of Sevanagala block, i.e., Block 2 in Figure 1.

The structure of the WLB canal system is composed of the main canal, the branch canals, the distribution canals, and the field canals with the last one being the smallest unit. In each distribution canal (D-canal), there is a formal organization called the Farmers’ Organization (FO), which is used as a unit of collective action in this paper. According to the farmers’ responses to our survey, the objectives of FOs are to maintain irrigation facilities and communal roads, procure farm inputs collectively, cooperatively market products, and prepare for community activities such as religious festivals, funerals, and weddings. All farmers in the irrigated areas are required to register with the FO. While registered farmers are supposed to contribute to activities of the registered FO, an effective enforcement mechanism of such contribution is not necessary in place. In this study, we consider the FO as a unit of the community to perform collective action and, in the areas without access to irrigation facilities, we use villages as a unit of community.

We focus on four different types of collective action organized by FOs: (i) expenses for irrigation maintenance, (ii) labor participation in irrigation maintenance, (iii) expenses for ceremonies, and (iv) participation in community work. As summarized in Table 1, we classify these actions, respectively, as: (i) monetary contributions to productive activity, (ii) nonmonetary contributions to productive...
Table 2. Implementation of Land Allocation

<table>
<thead>
<tr>
<th>Any opportunity to state your preferences?</th>
<th>Residences</th>
<th>Irrigated Plots</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>29.70%</td>
<td>31.54%</td>
</tr>
<tr>
<td>Block level</td>
<td>10.91%</td>
<td>12.75%</td>
</tr>
<tr>
<td>Unit-canal level</td>
<td>2.42%</td>
<td>2.69%</td>
</tr>
<tr>
<td>D-canal level</td>
<td>1.21%</td>
<td>2.01%</td>
</tr>
<tr>
<td>Plot level</td>
<td>55.76%</td>
<td>51.01%</td>
</tr>
<tr>
<td>Total</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Land allocation process</th>
<th>Obs. = 162</th>
<th>Obs. = 148</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquired the preferred area without process</td>
<td>51.23%</td>
<td>45.95%</td>
</tr>
<tr>
<td>Lottery within or outside the claimed area</td>
<td>24.08%</td>
<td>29.06%</td>
</tr>
<tr>
<td>First come, first served basis</td>
<td>8.02%</td>
<td>9.46%</td>
</tr>
<tr>
<td>Negotiation among the resettlers</td>
<td>3.70%</td>
<td>4.05%</td>
</tr>
<tr>
<td>No formal permission regarding land use</td>
<td>8.64%</td>
<td>6.76%</td>
</tr>
<tr>
<td>Others</td>
<td>4.32%</td>
<td>4.73%</td>
</tr>
<tr>
<td>Total</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Source: Panel dataset collected by authors from seven surveys conducted during 2001–2009.

activity, (iii) monetary contributions to indirectly productive activity, and (iv) non-monetary contributions to indirectly productive activity. Irrigation maintenance is one of the most important tasks of FOs (Shoji et al. 2012). Expenses for ceremonies include those for religious festivals, funerals, and weddings.\(^8\) Regarding community work, FO members attend informal meetings, or Shramadana, literally meaning free labor supply, and devote their time to community activities such as cleaning communal roads and preparing for religious festivals.

B. Natural Experiment

An important unique feature of this irrigation area is that the size of FO was exogenously determined for each household due to a particular land distribution process, which enables us to identify the causal relationship between group size and collective action. Interestingly, when the government distributed irrigated plots and residences to farmers, the government used lotteries in each block. Table 2 reports that approximately 30% of households followed this process and received plots for certain crops regardless of their characteristics. As to the remaining farmers, around 50% of households could claim their preference on the location of plots at the plot level. Such households were basically those who had lived in the project areas before project implementation and therefore were forced to relocate. However, it may still

\(^8\)It should be noted that there is the possibility that households could have spent for ceremonies in different FO communities. However, the ceremony groups, such as funeral societies, are formed based on geographical characteristics and this largely overlaps with FO communities. Therefore, we still use the FOs as a unit of this collective action.
be reasonable to assume that the “size” of FO is exogenous given for farmers even without the lottery process because the exact routes of the irrigation canals and thus number of farmers connected to their own distribution canals were not known prior to construction. Indeed, the observed household characteristics, such as household head characteristics and demographics, are not significantly different between the farmers with and without the lottery process (Shoji et al. 2010). Hence, we consider community and household characteristics—e.g., the size of FOs, neighborhood characteristics, irrigation access, and distance to their plots—to be exogenous.9 Yet, we also perform robustness checks by including household fixed effects and period-specific block effects.

C. Data and Experimental Design

This study uses a seven-round panel dataset which we collected from 2001 until 2009. The first four surveys were conducted in June and October of 2001 and June and October of 2002 with 858 randomly selected households, which comprise about 4.6% of the total population of 18,767 households (Hussain et al. 2002). The timing of each survey corresponds to the cropping season in the study area. In June and October 2007, in order to examine the five-year changes in livelihoods in the formerly and newly irrigated areas, the fifth and sixth surveys were conducted with 193 households who were randomly chosen out of the original 858 households. Finally, in March 2009, we conducted the artefactual field experiments such as public goods and dictator games with a total of 268 households: 186 from the original 858 households and 82 newly invited households.10

The dictator game is played by two participants, a sender called a dictator and a receiver (Camerer and Fehr 2004, Levitt and List 2007, Cardenas and Carpenter 2008). The two are randomly matched from the same distribution canal in an anonymous setting. The sender receives 500 Sri Lanka rupees (SLRs) of the initial endowment—roughly equivalent to the prevailing daily wage in the area—from experimenters and the receiver gets nothing initially. The dictator can then transfer as much as he wishes of his endowment to the receiver from the possible transfer amounts. The material payoff of the dictator and receiver are \(500 - \rho\) and \(\rho\), respectively, where \(\rho\) denotes the amount he allocates to the receiver and \(\rho \in \{0, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500\}\). Since there is no reason for self-interested dictators to transfer money and the dictator’s zero transfers is a Nash equilibrium, the amount of transfer is interpreted as a measure of pure altruism (Camerer and

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9For the details of the test on the exogeneity of land allocation to the settlers, see Aoyagi et al. (2013). They regress settlers’ observed characteristics in comparing across blocks, where the government has done the relocation programs gradually from north blocks to south blocks. The results show that households were exogenously allocated to D-canal as well as within D-canal area.

10While the sample size changes across the surveys, according to our qualitative assessment of the survey results, this is not because of migration or refusal of the survey households.
Figure 2. Histogram of Experiment Result

Public Goods Game

Dictator Game

Fehr 2004). Since we asked all participants from each distribution canal to play as both dictator and receiver using the strategy method in an anonymous setting, we were able to obtain the altruism measure of all participants.

The second artefactual experiment is the canonical public goods game (Camerer and Fehr 2004, Levitt and List 2007, Cardenas and Carpenter 2008). In this game, each participant is placed in a group of four participants from the same distribution canal anonymously with the initial endowment of SLRs500. Each group has an investment project in public goods. The total investment amount by the group members is doubled by the experimenters and returns back to the four participants equally regardless of the individual contribution amounts. The material payoff of participants is the sum of the amount kept initially and the reallocation from the public goods. Each participant decides how much out of the endowment to contribute to the public goods under this situation. Again, the zero investment amount is the Nash equilibrium, and thus the positive investment amount can be interpreted as a measure of reciprocally expected cooperation (Camerer and Fehr 2004), altruism, fairness, and conditional reciprocity (Levitt and List 2007), or social capital (Anderson, Mellor, and Milyo 2004).

The empirical analysis of this study uses the 186 households which participated in both the panel surveys and the experiment, making the panel sample size of our econometric analysis 1,072 samples. Figure 2 presents the results of the public goods game and dictator game experiments (Cardenas and Carpenter 2008). We can see that a majority of subjects exhibit pro-social behavior by sending positive amounts in these two games.

Figure 3 depicts the kernel density of FO size, showing two peaks around at 120 households and 250 households. Table 3 shows the descriptive statistics of the variables used in this paper by the size of FO community (note that we set the median

11The instructions of these experiments are available from the corresponding author upon request.
12Since the FO size variable includes missing values, we use the mean value of reported data at the D-canal level.
of the FO size, 126 households, as the threshold to divide samples in this table). Panel A reports descriptive statistics of the four collective action variables that we use as dependent variables. It is shown that large communities are less likely to participate in production activities, although we can verify that the opposite tendency applies to the other activities. Panel B of Table 3 summarizes the descriptive statistics of the independent variables. Since these variables do not change much over time, Panel B reports the numbers from the first-round survey only. We confirm that most household characteristics are uncorrelated with the FO size. While the land sizes and numbers of children are systematically different depending on the size of FO, we will use these variables as control variables in regression.

D. Empirical Strategy

We empirically implement the theoretical implication contained in equation (3) because the marginal share variable, λ, summarizes the different cases we present in the theory section. More importantly, our econometric strategy utilizes the natural experimental situation to examine the impact of exogenous community size, N, on the contribution to the four types of collective actions. Specifically, we
Table 3. Descriptive Statistics of Variables

<table>
<thead>
<tr>
<th>FO Less Than 126 Households</th>
<th>FO More Than 126 Households</th>
<th>Mean</th>
<th>S.D.</th>
<th>Mean</th>
<th>S.D.</th>
<th>Diff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenses for Irrigation Maintenance</td>
<td>0.288</td>
<td>0.453</td>
<td>0.212</td>
<td>0.409</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>Participation in Irrigation Maintenance</td>
<td>0.201</td>
<td>0.401</td>
<td>0.164</td>
<td>0.371</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expenses for Ceremonies (religious festivals, funerals, weddings)</td>
<td>0.562</td>
<td>0.497</td>
<td>0.625</td>
<td>0.485</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>Participation in Community Works (Shramadana)</td>
<td>0.740</td>
<td>0.439</td>
<td>0.778</td>
<td>0.416</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>573</td>
<td>499</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel A: Collective Action Variables (binary variables)\(^a\)

<table>
<thead>
<tr>
<th>Time-Variant Variables</th>
<th>Size of Farmers’ Organization (× 10(^3) households)</th>
<th>0.083</th>
<th>0.030</th>
<th>0.175</th>
<th>0.049</th>
<th>—</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holdings of unirrigated land (ha)</td>
<td>1.299</td>
<td>1.516</td>
<td>2.022</td>
<td>1.781</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>Holdings of irrigated land (ha)</td>
<td>1.435</td>
<td>1.201</td>
<td>1.032</td>
<td>1.169</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>573</td>
<td>499</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel B: Control Variables

<table>
<thead>
<tr>
<th>Time-Invariant Variables</th>
<th>Investing proportion in the public goods game</th>
<th>0.436</th>
<th>0.237</th>
<th>0.414</th>
<th>0.243</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sending proportion in the dictator game</td>
<td>0.295</td>
<td>0.212</td>
<td>0.267</td>
<td>0.207</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of head (× 10(^3))</td>
<td>0.047</td>
<td>0.011</td>
<td>0.044</td>
<td>0.010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schooling years of head</td>
<td>5.773</td>
<td>3.272</td>
<td>5.347</td>
<td>3.230</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female-headed dummy</td>
<td>0.102</td>
<td>0.305</td>
<td>0.061</td>
<td>0.241</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males aged 16 or over</td>
<td>1.761</td>
<td>1.093</td>
<td>1.561</td>
<td>0.850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females aged 16 or over</td>
<td>1.784</td>
<td>0.976</td>
<td>1.643</td>
<td>0.997</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children</td>
<td>1.386</td>
<td>1.245</td>
<td>2.143</td>
<td>1.478</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>Distance to city (km)</td>
<td>4.460</td>
<td>4.030</td>
<td>4.398</td>
<td>1.984</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample households</td>
<td>88</td>
<td>98</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Significant at *** 1% and ** 5% level. The data were collected in 2009, at the seventh round of surveys. However, for time-invariant statistics, Panel B reports the numbers from the first round.

\(^a\)Variables take the value of one if the household contributes to the activities at least once during the survey period, zero otherwise.

Source: Panel dataset collected by authors from seven surveys conducted during 2001–2009.


declare estimate the following estimation equation which is based on equation (2) and (3):

\[
\alpha_i^{jt} = \lambda^{j} (\rho_i, N_{it}) + X_{it} \beta^{j} + u_i^{j} + u_{B,t}^{j} + \varepsilon_{it}^{j}, \tag{4}
\]

where \(\alpha_i^{jt}\) is a proxy for the effort level, \(a_i^{jt}\), and takes the value of one if household \(i\) contributes to activity \(j\) at period \(t\) and zero otherwise. The number of households in the FO community is denoted by \(N\). \(X\) includes the other observable determinants of collective action such as irrigated and un-irrigated landholdings, indicators of household preference, household head characteristics, demographics, and geographic characteristics. Regarding the household preference, \(\rho\), we use the results of the dictator and the public goods games, as measures of altruism and voluntary cooperativeness, respectively. The last three terms in the right-hand side of
equation (3) are the household fixed effects, period-specific block effects, and a well-behaved error term, respectively.

To distinguish the different cases of collective action described in the theory section, we estimate equation (4) by assuming the function, $\lambda(\cdot)$ is a piece-wise linear function of the community size and the interaction terms with the preference variables and landholdings. i.e.,

$$\lambda_j(\rho_{it}, N_{it}) = \delta_1 N_{it} + \delta_2 N_{it} \cdot \rho_{1i} + \delta_3 N_{it} \cdot \rho_{2i} + \delta_4 N_{it} \cdot L_{it}^U + \delta_5 N_{it} \cdot L_{it}^I$$  \hspace{1cm} (5)

where $\rho_{1i}$ denotes the proportion of investment out of the endowment in the public goods game. Similarly, $\rho_{2i}$ denotes the proportion of endowment that the respondent transferred to his partner in the dictator game. The remaining two variables, $L_{it}^U$ and $L_{it}^I$ are un-irrigated and irrigated land sizes, respectively.

Under our natural experimental situation, we believe that we can plausibly assume that $N$ in equation (5) and $\varepsilon$ in equation (4) are uncorrelated, generating unbiased estimates of $\delta_1$, $\delta_2$, $\delta_3$, $\delta_4$, and $\delta_5$. To mitigate remaining confounding factors, we employ the linear probability model with household level and/or period-specific block level fixed effects. In all estimations, we use the cluster-adjusted robust standard errors at the D-canal level. This addresses the possible correlation of residuals over time across households within each D-canal community.

IV. Empirical Results

A. Regression Results

Table 4 reports the estimation result of the four dependent variables separately shown in specification blocks A, B, C, and D. The first column of each variable block shows the simplest specifications without the cross terms of farmer organization size and household fixed effects. In these specifications, community size does not systematically predict contribution to collective action. While these unclear empirical results may be seen as consistent with the existing studies, the lack of robustness may be generated by specification errors. As to the other variables, the first column of block A shows that irrigated and un-irrigated land ownership, respectively, are correlated with higher and lower contribution to irrigation maintenance expenses. The other three blocks also show a similar qualitative result although coefficients are statistically insignificant.

Columns 2 and 3 in each block include the cross terms, and are estimated without and with the household fixed effects, respectively. The third column of the four blocks indicates evidence that a large community involves a small contribution amount to collective action: First, the coefficients $\delta_1$ are negative and statistically significant in column 3 of blocks A and D, suggesting that selfish households
### Table 4. Regression Results—Linear Probability Model

<table>
<thead>
<tr>
<th></th>
<th>A. Productive, Monetary Expenses for Irrigation Maintenance</th>
<th>B. Productive, Nonmonetary Participation in Irrigation Maintenance</th>
<th>C. Indirectly Productive, Monetary Expenses for Ceremonies</th>
<th>D. Indirectly Productive, Nonmonetary Participation in Community Works</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period specific block fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Household fixed effects</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Nonlinear impact of FO size?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>δ₁: Size of Farmers’ Organization Investing proportion in the public goods game</td>
<td>0.2213 (0.166)</td>
<td>−0.1889 (0.603)</td>
<td>−0.6326∗ (0.357)</td>
<td>0.0333 (0.230)</td>
</tr>
<tr>
<td></td>
<td>(0.357)</td>
<td>(0.509)</td>
<td>(0.430)</td>
<td>(0.434)</td>
</tr>
<tr>
<td>δ₂: x Size of FO Sending proportion in the dictator game</td>
<td>−0.8242*** (0.391)</td>
<td>−1.2126∗ (0.631)</td>
<td>−0.1489 (0.432)</td>
<td>0.5416 (1.180)</td>
</tr>
<tr>
<td></td>
<td>(0.603)</td>
<td>(0.357)</td>
<td>(0.309)</td>
<td>(1.209)</td>
</tr>
<tr>
<td>δ₃: x Size of FO Holdings of un-irrigated land</td>
<td>0.0528 (0.063)</td>
<td>0.0419 (0.145)</td>
<td>0.0111 (0.073)</td>
<td>−0.0007 (0.122)</td>
</tr>
<tr>
<td></td>
<td>(0.073)</td>
<td>(0.167)</td>
<td>(0.122)</td>
<td>(0.148)</td>
</tr>
<tr>
<td>δ₄: x Size of FO Holdings of irrigated land</td>
<td>0.0119 (0.067)</td>
<td>0.7760 (0.041)</td>
<td>0.1091 (0.949)</td>
<td>0.1438 (1.075)</td>
</tr>
<tr>
<td></td>
<td>(0.1041)</td>
<td>(0.342)</td>
<td>(0.342)</td>
<td>(0.871)</td>
</tr>
<tr>
<td></td>
<td>−0.0154* (0.008)</td>
<td>−0.0373 (0.022)</td>
<td>−0.0023 (0.006)</td>
<td>−0.0125 (0.011)</td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td>(0.018)</td>
<td>(0.013)</td>
<td>(0.030)</td>
</tr>
<tr>
<td></td>
<td>0.1592 (0.097)</td>
<td>0.4133*** (0.081)</td>
<td>0.0288 (0.099)</td>
<td>0.1744 (0.193)</td>
</tr>
<tr>
<td></td>
<td>(0.038)</td>
<td>(0.031)</td>
<td>(0.059)</td>
<td>(0.267)</td>
</tr>
<tr>
<td></td>
<td>0.0514* (0.026)</td>
<td>−0.0079 (0.047)</td>
<td>0.0186 (0.016)</td>
<td>0.0139 (0.013)</td>
</tr>
<tr>
<td></td>
<td>(0.038)</td>
<td>(0.031)</td>
<td>(0.037)</td>
<td>(0.033)</td>
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</tbody>
</table>

Continued.
## Table 4. Continued.

<table>
<thead>
<tr>
<th></th>
<th>A. Productive, Monetary Expenses for Irrigation Maintenance</th>
<th>B. Productive, Nonmonetary Participation in Irrigation Maintenance</th>
<th>C. Indirectly Productive, Monetary Expenses for Ceremonies</th>
<th>D. Indirectly Productive, Nonmonetary Participation in Community Works</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \delta_5 \times \text{Size of FO} )</td>
<td>0.5015* (0.257)</td>
<td>0.6750** (0.262)</td>
<td>(-0.5026) (0.249) &amp; (-0.3281) (0.236)</td>
<td>(-0.0025) (0.221) &amp; (-0.3860) (0.260)</td>
</tr>
<tr>
<td>Age of head</td>
<td>3.7056** (1.477) &amp; 3.5404** (1.629) &amp; 3.3118 (3.578) &amp; (-1.4891) (1.316) &amp; (-1.1465) (4.020) &amp; (0.1366) (2.094) &amp; (-9.7690) (6.401) &amp; (0.3860) (0.995) &amp; (-0.0833) (3.625)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Schooling years of head</td>
<td>0.0008 (0.004) &amp; 0.0002 (0.004) &amp; 0.0140 (0.008) &amp; (-0.0016) (0.005) &amp; (-0.0011) (0.008) &amp; (-0.0009) (0.006) &amp; (-0.0010) (0.014) &amp; (-0.0001) (0.006) &amp; (-0.0002) (0.014)</td>
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<tr>
<td>Female-headed dummy</td>
<td>(-0.0119) (0.045) &amp; (-0.0138) (0.046) &amp; (-0.0532) (0.112) &amp; (-0.0937) (0.052) &amp; (-0.0936) (0.051) &amp; (-0.0016) (0.076) &amp; (-0.0020) (0.076) &amp; (-0.1213) (0.229) &amp; (-0.0619) (0.454) &amp; (-0.0613) (0.189)</td>
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<tr>
<td>Males aged 16 or over</td>
<td>(-0.0054) (0.025) &amp; (-0.0046) (0.025) &amp; (-0.0058) (0.030) &amp; (-0.0084) (0.012) &amp; (-0.0065) (0.012) &amp; (-0.0031) (0.013) &amp; (-0.0031) (0.013) &amp; (-0.0041) (0.013) &amp; (-0.0012) (0.013) &amp; (-0.0011) (0.019)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Females aged 16 or over</td>
<td>(-0.0017) (0.014) &amp; (-0.0022) (0.014) &amp; (-0.0171) (0.030) &amp; (-0.0250) (0.015) &amp; (-0.0264) (0.014) &amp; (-0.0003) (0.013) &amp; (-0.0003) (0.013) &amp; (-0.0019) (0.013) &amp; (-0.0065) (0.013) &amp; (-0.0063) (0.019)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Children</td>
<td>0.0024 (0.008) &amp; 0.0022 (0.008) &amp; (-0.0234) (0.026) &amp; (-0.0084) (0.007) &amp; (-0.0087) (0.006) &amp; (-0.0253) (0.007) &amp; (-0.0165) (0.013) &amp; (-0.0170) (0.013) &amp; (-0.0063) (0.013) &amp; (-0.0085) (0.015)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance to city</td>
<td>(-0.0111) (0.008) &amp; (-0.0128) (0.008) &amp; (-0.0061) (0.004) &amp; (-0.0035) (0.004) &amp; (-0.0061) (0.004) &amp; (-0.0057) (0.007) &amp; (-0.0044) (0.008) &amp; (-0.0057) (0.008) &amp; (-0.0067) (0.008) &amp; (-0.0050) (0.005)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance to city</td>
<td>(-0.0111) (0.008) &amp; (-0.0128) (0.008) &amp; (-0.0061) (0.004) &amp; (-0.0035) (0.004) &amp; (-0.0061) (0.004) &amp; (-0.0057) (0.007) &amp; (-0.0044) (0.008) &amp; (-0.0057) (0.008) &amp; (-0.0067) (0.008) &amp; (-0.0050) (0.005)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.5087*** (0.094) &amp; 0.5772*** (0.162) &amp; 0.2697 (0.163) &amp; 0.0602 (0.110) &amp; (-0.0150) (0.128) &amp; 0.5081 (0.210) &amp; 0.4653*** (0.149) &amp; 0.5347*** (0.163) &amp; 0.9003* (0.453) &amp; 0.6237*** (0.150) &amp; 0.6726*** (0.162) &amp; 0.8522*** (0.246)</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**H_0: \delta_4 = \delta_5**

**H_0: \delta_1 = \delta_2 = \delta_4 = \delta_5 = 0**

Observations: 1,067

R-squared: 0.570 0.573 0.564 0.243 0.248 0.227 0.064 0.065 0.068 0.149 0.153 0.168

Significant at **1%**, **5%**, and *10% level.

Note: Cluster-adjusted robust standard errors are in parentheses. Five observations are dropped because of data problems.
with no landholdings are less likely to contribute to the collective action in larger communities. This result is consistent with the theoretical implication of the free rider problem in the case of pure private goods.

Second, the coefficients for the interaction variable of public goods contribution and group size, $\delta_2$, are negative except for block C. This suggests that the marginal effect of cooperativeness declines as community size becomes larger, which is consistent with the canonical free rider model with pure private goods.

Yet, the table also shows results that are not simply explained by the team production framework or pro-social behaviors: directions and statistical significance of the altruism coefficient, $\delta_3$, are not necessarily consistent across specifications and activities. The coefficients of un-irrigated landholdings are largely negative, and the cross terms with the size of farmer organization, $\delta_4$, are positive in most cases (column 3 of blocks A, B, and D). These results suggest that when the group size is small, the marginal effect of the un-irrigated land size is negative but turns to be positive as the size becomes larger. A similar positive size effect can be found for irrigated land size when considering monetary contribution to productive activities, i.e., the coefficient $\delta_5$ in column 3 of block A. A possible interpretation is the case of public goods with positive externalities arising from social networks (Labonne and Chase 2011). The return to the social network investment would be larger when the group size is larger, and our result is consistent with this interpretation.

Finally, in order to check robustness of these findings, we also include a private water accessibility variable which is represented by the number of owned water pumps as an additional explanatory variable, although only less than 10% of our sample households own such pumps. The estimation results are the same qualitatively.\(^\text{13}\)

B. Marginal Effect of Community Size

To capture the marginal effect of community size on collective action variables, we compute the following predicted value of the marginal group size effect based on the third column for each dependent variable in Table 4:

$$\frac{\partial \hat{\alpha}^j_{it}}{\partial N_{it}} = \hat{\delta}_1^j + \hat{\delta}_2^j \cdot \rho_1^j + \hat{\delta}_3^j \cdot \rho_2^j + \hat{\delta}_4^j \cdot L_{it}^U + \hat{\delta}_5^j \cdot L_{it}^I \quad (6)$$

\(^{13}\)One might still be concerned about the potential bias by the heterogeneity in the quality of farmer organizations such as the governance structure and the age of organizations. However, the governance structure is expected to be homogeneous since they were all newly established under the irrigation project. While the age of organizations varies across the areas, heterogeneities arising from the organization age variation should be captured by the block fixed effects.
Based on equation (6), we then draw the cumulative distribution function (CDF) of these predicted values of the marginal group size effect (Figure 4). Two patterns can be seen from the figure.

First, irrigation maintenance activities directly related to production are less likely to suffer from the free rider problem. Intriguingly, the marginal group size effect of equation (4) is estimated to be positive for around 50% and 80% of farmers in participation and expenses, respectively, for irrigation maintenance. This may be attributed to the fact that the households with un-irrigated land are more likely to contribute to the irrigation maintenance when the community size is larger, as shown in coefficient $\delta_4$ in block A and B of Table 4 as well as the positive group size effects for irrigated land ownership, i.e., the coefficient $\delta_5$, in block A of Table 4. In other words, irrigation maintenance may be interpreted as investments to public goods of irrigation quality, involving positive externalities arising from social networking. In contrast, more than 80% of households show the negative marginal effect of group size in the indirectly productive activities, which may be related to pure private goods.

Second, monetary contribution is less likely to cause the free rider problem than nonmonetary contribution in the case of both irrigation maintenance and
community events. Unlike labor contributions, monetary contributions involve collection of fees which can be easily tracked and verified, possibly leading to better enforcement of collective action. Also, the collective action problem in the case of nonmonetary contribution may be serious due to binding time allocation. Since nonmonetary contribution is made in labor contribution, labor contribution directly decreases time available for other activities. Because of this opportunity cost of labor contribution, the marginal effect may exhibit a similar pattern as in the case of pure private goods.

We can verify whether these differences in Figure 4 are statistically significant. To compare the pairwise CDFs among activities, we perform two-sample Kolmogorov-Smirnov tests. The results are reported in Table 5, which shows that these depicted CDFs are statistically different in the sense of the first-order stochastic dominance.

Also, using the median FO size as the threshold size, we divide the observations into larger and smaller FOs to estimate specification (3) of Table 4 separately and to compare the marginal effects. We find that free riding is more likely to occur in the smaller organizations—three activities, except for the participation in irrigation maintenance, present negative and smaller marginal effects in the smaller organizations. The differences are statistically significant at the 1% level.

V. Conclusion

In this study, we investigate the impact of group size on farmers’ decisions under four different modes of collective action. Besides the free rider problem predicted by the team production framework, we also examine social preference such as altruism and voluntary cooperativeness elicited by the artefactual field experiments. We combine the artefactual field experiment data with unique panel

<table>
<thead>
<tr>
<th>Test</th>
<th>Description</th>
<th>$\max{F(x) - G(x)}$</th>
<th>$\min{F(x) - G(x)}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F(x): Expenses for irrigation maintenance G(x): Expenses for ceremonies</td>
<td>0.000</td>
<td>−0.673***</td>
</tr>
<tr>
<td>2</td>
<td>F(x): Participation in irrigation maintenance G(x): Participation in community work</td>
<td>0.006</td>
<td>−0.435***</td>
</tr>
<tr>
<td>3</td>
<td>F(x): Expenses for irrigation maintenance G(x): Participation in irrigation maintenance</td>
<td>0.000</td>
<td>−0.342***</td>
</tr>
<tr>
<td>4</td>
<td>F(x): Expenses for ceremonies G(x): Participation in community work</td>
<td>0.049*</td>
<td>−0.226***</td>
</tr>
</tbody>
</table>

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.1$. |
data under a natural experimental situation in southern Sri Lanka where irrigation facilities were constructed under predetermined exogenous rules and farmers were randomly allocated to their land.

We find evidence of free riding by self-interested households with no landholdings. It is also shown that social preference explains the behavior in collective action. The pattern of collective action, however, differs significantly by mode of activity—action that is directly related to production is less likely to suffer from the free rider problem, which is widespread in the indirectly productive activities such as expenses for ceremonies and participation in community work. Finally, we find that the monetary contribution is less likely to cause free riding than non-monetary labor contribution for both irrigation maintenance and community events.

There are several possible promising research areas related to our study. It would be important to examine the effectiveness of farmer organizations and collective action in improving farm productivity and household welfare. Since the role of irrigation is in providing water even during dry seasons, dynamic outcomes such as production, income, and consumption smoothing should be studied carefully (Sawada et al. 2010). Finally, while this study finds heterogeneous contributions across types of collective actions, our framework does not necessarily identify the mechanism. Further studies on this issue will be required. Unlike labor contributions, monetary contributions involve collection of fees which can easily be tracked and verified, possibly leading to better enforcement of collective action.

References


Leading Dragon Phenomenon: New Opportunities for Catch-up in Low-Income Countries

VANDANA CHANDRA, JUSTIN YIFU LIN, AND YAN WANG*

Modern economic development is accompanied by the structural transformation from an agrarian to an industrial economy. Since the 18th century, all countries that industrialized successfully have followed their comparative advantages and leveraged the latecomer advantage, including emerging market economies such as the People’s Republic of China (PRC), India, and Indonesia. The current view is that Chinese dominance in manufacturing hinders poor countries from developing similar industries. We argue that rising labor cost is causing the PRC to graduate from labor-intensive to more capital-intensive and technology-intensive industries. This will result in the relocation of low-skill manufacturing jobs to other low-wage countries. This process, which we call the “leading dragon phenomenon,” offers an unprecedented opportunity to low-income countries. Such economies can seize this opportunity by attracting the rising outward foreign direct investment flowing from Brazil, the PRC, India, and Indonesia into the manufacturing sectors. All low-income countries can compete for the jobs spillover from the PRC and other emerging economies, but the winner must implement credible economic development strategies that are consistent with its comparative advantage.

Keywords: structural transformation, Asia, Africa, People’s Republic of China, flying geese

JEL codes: B10, O10, O14, O25

I. Introduction

Many developing economies have tried to catch up with industrialized countries but only a handful of countries, mostly in East Asia, have succeeded. Entering into the 21st century, Brazil, the People’s Republic of China (PRC), India, Indonesia, and a number of other large developing countries achieved dynamic growth and emerged as the drivers of global growth in a new multipolar world.

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Lin (2010) and Lin and Monga (2011) show that a developing country can achieve dynamic growth and catch up by exploiting the latecomer advantage and developing industries that are aligned with its comparative advantage. In this paper, we build on this theme and use historical and comparative perspectives to show that because of similarity in the comparative advantage of low-income countries, the dynamic emerging economies, when they upgrade their industrial sectors, will create a huge space for low-income countries. In contrast to the conventional thinking that the PRC’s dominance in manufacturing export dooms poor countries to economic backwardness, we argue that its growth spiral may in fact be a boon. As the PRC upgrades its labor-intensive industries and cedes market shares, millions of labor-intensive jobs will be relocated to low-wage countries and can accelerate their industrialization. This process, which we call the “leading dragon phenomenon,” offers an unprecedented opportunity to low-income countries. To the skeptics, we point to current trends in South–South foreign direct investment (FDI) flows as drivers of industrialization in low-income countries. If other emerging market countries such as Brazil, India, and Indonesia follow the PRC’s growth trajectory, they will create even more labor-intensive jobs in low-income countries.

Section II motivates the analysis by reviewing the evidence on structural transformation and its role in industrialization in the world. Section III examines the experiences of the Industrial Revolution, the post-World War (WW) II period, and the more recent East Asian successes in catching up. Section IV first discusses the failures to catch-up in various countries that followed protectionist strategies. It then analyzes the PRC’s meteoric rise in the context of its “comparative advantage following” strategy. Section V investigates the impact of the PRC’s rising labor costs on its employment structure and the industrial upgrading and job relocation currently being facilitated through outward foreign direct investment (OFDI). Section VI concludes.

II. Structural Transformation and Catch-up

A. Catch-up in a Multipolar World

Sustained and rapid income growth is a modern phenomenon that appeared only after the Industrial Revolution in the 18th century. Before that time, for a long period, almost all countries in the world had agrarian economies and were poor relative to today. The income gap among countries was very small. The richest country’s per capita income was only about five times greater than the poorest country’s per capita income (Maddison 2010). The Industrial Revolution led to accelerated growth in the Western European countries, the United States (US), and other western offshoots, but most other countries failed to do so. As a consequence, there has been great divergence in income levels between developed and developing countries and between developing countries with dynamic growth and those trapped
in low-income or middle-income status (Lin 2011). By the end of the 20th century, the gap had significantly widened, with per capita income of industrialized high-income countries at more than 50 times that of low-income economies (Maddison 2010). Among the set of developing countries, only a handful were successful in transforming their aspirations for catching up into reality. Among them were Japan and the East Asian tigers (Hong Kong, China; the Republic of Korea; Singapore; and Taipei, China).

The growth poles in the past were all high-income countries such as Germany, Japan, the United Kingdom (UK), and the US. In the 1980s and 1990s, among the top five contributors to global growth, all but the PRC were G7 industrial countries. By 2009, all except the US were emerging economies. The replacement of G7 by G20 as the primary global forum since the eruption of the global crisis in 2008 underscores the emergence of a multipolar world. The sheer size of the large emerging economies combined with their dynamic and sustained growth has elevated Brazil, the PRC, India, and the Russian Federation (known as BRICs) to become the largest contributors to economic growth in the world (Figure 1). During 2006–2010, almost 45% of global GDP growth was generated in the BRICs. The era of a multipolar world seems to have been firmly established.

B. Structural Transformation and Catch-up

The path to prosperity in the developed countries was marked by a process of structural transformation as reflected in employment and value-added of
primary, secondary, and tertiary industries. Long-term economic trends from the pre-industrial stage of development in a large number of developed countries confirm that at the end of each episode of catch-up, the fast grower’s economy had a structure closer to that of a developed country as opposed to a low-income one (Syrquin 1988, p. 206; Chenery 1979, xvi; Abramowitz 1983, 85; Lin 2009, 2010, 2011, and 2012b).

Simon Kuznets sought to understand and document long-run transformation through a series of stylized facts, though he was reluctant to offer a theory of development. His empirical studies identified four features of modern economic growth. According to the first Kuznets fact, structural transformation occurs when the share of the nonagricultural sectors in an economy increases. A reconstruction of national accounts from a variety of sources for western countries shows that such a transformation raised overall productivity and increased the returns to workers and capital. From 1800–1849 to 1951–1960, for example, agriculture as a share of gross domestic product (GDP) declined from 30% to only 5% in the UK and from 20% to 4% in the US. The share of industry inclusive of manufacturing meanwhile increased from 23% to 56% in the UK and from 33% to 43% in the US (Kuznets 1966). Second, this sectoral shift is mirrored in the structure of employment. Third, the population is redistributed from rural to urban areas. And fourth, the capital–labor ratio in the nonagricultural sectors of the economy rises.

History points to the critical role of industrialization as an engine of sustained growth in the long term. Since productivity growth is associated with technological change and industrial upgrading, it can be said that continuous structural change in technologies and industries is the main feature of modern economic growth (Kuznets 1966, Maddison 2010). In Western Europe, the annual per capita income growth before the 18th century was about 0.05%, accelerated to about 1% in the 18th and 19th centuries, and reached 2% in the 20th century. The required time for doubling per capita income thus fell from 1,400 years before the 18th century to 70 years in the 18th and 19th century and further to 35 years in the 20th century (Maddison 2010).

History also demonstrates that in the first stage of catch-up, manufacturing was instrumental in the transfer of new technologies to nonmanufacturing sectors of the economy. Manufacturing has contributed to the modernization of the agricultural and mining sectors, which provide raw materials through backward linkages, and spawning services through forward linkages. In addition, manufacturing can serve as an indirect source of demand and thus spur catch-up. Because there is a tight nexus with the services sector, technological progress and growth in manufacturing lead to a larger demand for services, propelling overall economic growth.

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1Kuznets (1966, 1971).
Except for a few oil-exporting countries, no country has achieved high-income status without dynamic industrial upgrading. In general, a change in GDP per capita is strongly and positively correlated with growth in value-added in the manufacturing sector (Figure 2). If countries rich in natural resources or land countries have achieved a middle-income status without a large manufacturing sector, they rarely succeeded in sustaining growth. More importantly, growth in the resources sector does not create much employment.

### III. Industrialization, The Flying Geese Pattern, and Catch-up in a Historical Perspective

History shows that following comparative advantage to tap the latecomer advantage is the best way for developing countries to start and sustain a dynamic growth path for diversification and industrialization (Lin 2009, Lin and Monga 2011). The spread of industrialization in Western Europe in the 19th century, rapid catch-up in the post WWII period, and the East Asian miracle starting in the 1980s are all reminiscent of the flying geese pattern. In this section, we provide evidence on this assertion.

In the 1930s, economists researching “catch-up growth models” argued that catch-up was not random. Kuznets and Akamatsu explored the conditions under which the Industrial Revolution occurred in the UK and how it spread only to those countries that had sufficient accumulation of capital and skilled labor, among other
LEADING DRAGON PHENOMENON

conditions (Kuznets 1930). The focus on structural transformation and industrial upgrading (Rostow 1960) and cross-country catch-up (Gerschenkron 1962) can be found in Akamatsu’s work (1935, 1961, and 1962) on Japan, a country that started from a much lower level of income than the Western European countries. In a seminal paper in the 1930s, Akamatsu documented what he called the “wild-geese flying pattern” in economic development and noted that “wild geese fly in orderly ranks forming an inverse V, just as airplanes fly in formation” (Akamatsu 1962, p. 11).

The flying geese pattern describes the sequential order of the catch-up process of industrialization of latecomer economies. It focuses on three dimensions or stages: (i) the intra-industry dimension; (ii) the inter-industry dimension; and (iii) the international division of labor dimension. The third element in particular involves the process of relocation of industries across countries, from advanced to developing countries, during the latter’s process of convergence. A prominent feature of this stage is that exports of consumer goods start declining and capital goods begin to be exported. In this stage, a group of economies advance together through emulation and learning-by-doing. The focus of this paper is on the second and third dimensions of the flying geese model as illustrated in Figure 3 from a note prepared by the National Graduate Institute for Policy Studies in Tokyo for the GRIPS Development Forum in 2002.

A weakness in Akamatsu’s model is that it only describes the flying geese pattern without linking it to a country’s endowment structure and comparative advantage. He did not recognize that the market mechanism is a necessary condition for a country to follow its comparative advantage successfully. However, he noted that the accumulation of capital, technological adaptability of people, and government’s protection policy to promote the consumer goods industries matter for the flying geese pattern (Akamatsu 1962, p. 3).

There is a fundamental difference between the traditional Structuralist views and the New Structural Economics (NSE) (Lin 2010). NSE contends that the flying geese model can be used by latecomers to catch up only if they follow the comparative advantage of their own countries. This is called the comparative advantage following, or CAF, approach. In other words, with the CAF strategy, latecomers can follow the lead goose, whose income levels and endowment structure are not too different, and can tap into their comparative advantage and reduce their risk and cost of innovation. As long as industrialization is CAF, there is no need for government

2 There is an extensive literature on the flying geese pattern, including Kiyoshi Kojima’s seminal work (2000) and Ozawa 2004, who have contributed to the dissemination of the model outside Japan, and applied it in country-level analysis. Being a strategic think piece, a full literature review is beyond the scope of this paper.

3 There is an extensive literature on the spatial patterns of production and vertical disintegration of supply chains (Helleiner 1973, Jones and Kierzkowski 2004, and Kimura 2010). This is consistent with the NSE framework. A country has certain natural and factor endowments which determine the comparative advantage of the country. In any stage of its development, the country would naturally attract those products, parts and components, and processes that utilize the factors that are abundant and less expensive in this country (e.g., labor-intensive parts of a supply chain,
to adopt protectionist policies as firms are able to withstand market competition. Rather, the government’s role is limited to facilitating firms’ entry into new industries where the country has latent comparative advantage by overcoming externalities and coordination issues inherent in the industrial upgrading and diversification process.  

A. The Spread of the Industrial Revolution: Leaders and Latecomers

The Industrial Revolution started in the UK in the 1700s, but for about 50 years, it did not spread to other countries because the British government forbade such as assembly lines. As the country’s factor endowment upgrades, the components or processes attracted to this country would upgrade to more capital- or technological-intensive parts of the supply chain (such as manufacturing of electronic components). Evidence is provided in Section IV as Taiwanese investors upgrade their investment in the PRC to manufacturing (not assembly) electronic parts and components and to services (see Figure 10 in section IV).

An industry is an economy’s latent comparative advantage if, based on the factor costs of production which are determined by the economy’s endowment structure, the economy could be competitive in this industry. However, due to high transaction costs (which are determined by infrastructure), logistics, and other business conditions, the economy may not yet be competitive in the global market in this industry.
the export of machinery, manufacturing techniques, and skilled workers. Eventually, in the 19th century, it gradually spread to other countries in Western Europe. The earliest center of industrial production in continental Europe was Belgium where production of coal, iron, textile, glass, and armaments flourished. By 1830, French firms had employed many skilled British workers to help establish the textile industry, and railroad lines began to appear across Western Europe. Germany was a latecomer in developing industry mainly because no centralized government existed there.

The first steam locomotive was invented in the UK in 1804, but other European countries did not start building railroads until the 1830s. Germany, for example, produced its first locomotive in 1835, but railway construction lagged due to the lack of an integrated central government. After the 1840s, German coal and iron production skyrocketed and by the 1850s, construction began on a rail network. After its political unification in 1871, Germany exceeded the UK in terms of the length of new railroads, and there was a rapid catch-up process in the production of pig iron and other industries (Figure 4).

Relative to the UK, industrialization was delayed in the US because the country at that time lacked the basic factor endowments—labor and capital—to invest in business. When it finally picked up in the 1820s, its growth was explosive. Laborers and capital came from Europe where political revolutions sent immigrants to the US. The first locomotive emerged in 1826, and the first railroad in 1827. The length of the railroad surpassed that of the UK in 1850, reaching 9,021 miles,

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**Figure 4. Spread of the Industrial Revolution—Latecomers Catching Up, 1800–1914**

<table>
<thead>
<tr>
<th>Length of Railroad Lines Open (in kilometers, 1 km = 5/8 mile)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60000</td>
</tr>
<tr>
<td>1830</td>
</tr>
</tbody>
</table>

Latecomers
- Germany
- Russian Federation

G.Britain, the leader

and expanded rapidly to the west in 1890 to reach 129,774 miles, longer than the length of railroads in the entire continental Europe (Depew 1895, p. 111). Rapid industrialization and structural transformation then followed. In 1800, farmers comprised 85% of the US population, but the proportion declined to 50% in 1860.

Gerschenkron (1962) observed that rapid industrialization could start from vastly different levels of “economic backwardness.” In fact, “the more backward a country’s economy, the greater was the part played by special institutional factors (government agencies, banks) designed to increase the supply of capital to the nascent industries” (Gerschenkron 1962, p. 354).

Like Akamatsu, a weakness of Gerschenkron’s theory is that he did not stress that for the latecomer to be competitive, it must identify industries consistent with its comparative advantage or which are CAF. Industrialization can start from a low level of economic development, but if the level of development is too low, industries that are too advanced will be comparative advantage defying (CAD) and may require heavy subsidies and protection from the state. With government support, it is possible to set up advanced industries—however, as long as they are CAD, they will be neither viable nor competitive.

B. Japan’s Catch-up in the Meiji Period: Learning by Importing then Exporting

Starting with an income level that was only one-third of that in the West during the 1850s, Japan achieved rapid catch-up in 50 years to become the first industrial country in Asia in 1904. After opening up trade in 1854, its government encouraged learning from western technology and institutions by sending high-level missions including about half of the ministers to the US and Europe for nearly 2 years (Shimposha 2000, p. 48). After signing the Ansei Treaty in 1858, Japan lost control of its tariff policy but the government provided facilitation by building Japan’s modern infrastructure and encouraging learning-by-doing. Telegraph services between Tokyo and Yokohama began in 1870. The first Japanese railroad connecting Yokohama and Shinbashi was built in 1872, and by 1900, Japan had 3,875 miles of railroad (Ito 1992). The government also actively introduced foreign technology by importing modern machines and hiring thousands of foreign experts to instruct Japanese workers and managers in the late 1800s (Ozawa 2004).

Throughout the Meiji period (1868–1912) Japan’s top exports were raw silk yarn, tea, and marine products, which were consistent with Japan’s comparative advantage. As Japan’s cotton industry grew, its imports fell steadily, and in 1890, it began to export large quantities of cotton, yarn, and cloth to neighboring Asian countries (intra-sector upgrading as in Akamatsu 1962). On the institutional side, a banking system was organized and a central bank was established in 1882 (Ito 1992, p. 21).
**Table 1.** Catch-Up in the Prewar and Postwar Era (Per capita GDP, by 1990 international GK dollars)

<table>
<thead>
<tr>
<th>Europe Targeted the UK, Gaps Were Small</th>
<th>Japan Targeted Germany during the Meiji Restoration</th>
<th>Japan Targeted the US after WWII</th>
</tr>
</thead>
<tbody>
<tr>
<td>France 1870 1.876</td>
<td>1890 2.376</td>
<td>1950 5.186</td>
</tr>
<tr>
<td>Germany 1870 1.839</td>
<td>1900 2.985</td>
<td>1960 7.398</td>
</tr>
<tr>
<td>UK 1870 3.190</td>
<td>1900 4.922</td>
<td></td>
</tr>
<tr>
<td>US 1870 2.445</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan 1870 737</td>
<td>1900 3.922</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Asian NIEs (4 dragons) incl. the Republic of Korea Targeted Japan in the 1960s–1980s</th>
<th>China Targeted East Asian NIEs incl. the Republic of Korea</th>
<th>Latecomers Started to Target PRC after 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan 1960 3,986 9,714 100</td>
<td>1980 13,428 18,789</td>
<td>2000 20,738 22,816</td>
</tr>
<tr>
<td>PRC 1960 662 778</td>
<td>1980 1,061 1,871 23</td>
<td>2000 3,421 6,725 100</td>
</tr>
<tr>
<td>India 1960 753 868</td>
<td>1980 938 1,309</td>
<td>2000 1,892 2,975 44</td>
</tr>
<tr>
<td>Viet Nam 1960 799 735</td>
<td>1980 757 1,025</td>
<td>2000 1,809 2,970 44</td>
</tr>
</tbody>
</table>


Note: Highlighted countries are the targeted countries.

Sources: Angus Maddison Database, authors’ calculations.

Historical experiences of the Industrial Revolution offer several insights. First, countries that are on the technological frontier can play the role of the “lead geese” as Britain did. Latecomers have the economic advantage of “backwardness,” and under certain conditions, they can catch up quickly and even overtake the lead geese. Second, capital accumulation was necessary but not sufficient for success. Political stability, openness to trade, and labor mobility were also important for the country to acquire new technology and develop new industries. In addition, governments were required to play a facilitating role, as in the case of Germany, Japan, and the US. Without the existence of a centralized state in Germany since 1871, there would have been no railroad or Industrial Revolution.

More importantly, selecting the right target country is critical for catching up. Some European countries could catch up with Britain relatively quickly because their stages of development were not too far from the leader (Table 1). According to

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5Britain rather than the United Kingdom is used following the convention of the literature on the Industrial Revolution.
the estimate of Maddison (2010), per capita incomes of France, Germany, and the US were about 60%–75% of Britain in 1870. During the Meiji restoration, Japan targeted the industries of Prussia (later, Germany) and its per capita income was about 40% of the latter. Thus, it was realistic for Japan to target Germany rather than Britain or the US which were too far ahead in terms of relative stages of development. Even though many nation states tried to catch up, Japan succeeded and became the first industrialized nation from the East because it chose the right country to target.

C. Post-WWII Era: The US Showing the Way to Japan and Others

The economies of Western Europe and Japan have enjoyed unprecedented growth and technological upgrading in the decades since WWII in the so-called “golden age of capitalism” (1950–1974). During this period, nearly all developing countries pursued dirigiste capitalism but, except for Japan, the Republic of Korea and other East Asian tigers, they did not succeed. Why? The NSE contends that the crux of Japan’s and East Asia’s success was that their development followed closely their comparative advantage (or was CAF) and their governments played the facilitator’s role (Lin 2010, Lin and Monga 2011).

Just before WWII, textiles and other light industrial goods accounted for 60%–75% of all Japanese exports and Japan’s textile industry was at its peak (Ito 1992, p. 24). In the 1960s, when its per capita GDP was about 40% of the US and it had established a strong industrial base, Japan targeted US industries (Table 1). Japan’s historical labor statistics record that a rising share of labor in Japan’s manufacturing sector coincided with a declining share of labor in the manufacturing sectors of the US. In the 1960s–1970s, Japan supported its heavy manufacturing sectors, including machinery and automobiles. In the 1980s–1990s, just as the US was upgrading its industrial base, Japan expanded its shares in the home appliance, electronics, and computer markets (Figures 5–6).

Figure 6 shows the employment shares in the US during 1958–2005 for five subsectors selected from 99 manufacturing industries, ranked from most labor intensive to most capital intensive. Overall, as the capital–labor ratio increases over time, industrial and employment structures change dramatically. Specifically, the share of labor employed in the most labor-intensive sectors such as fabrics declined monotonically. In sectors such as computer manufacturing, the share of labor employed first increased and then declined, showing a hump or inverse V-shape. In industries such as aircraft and automobile manufacturing, which are capital-intensive but subject to labor-saving scale economies, the share of labor showed a

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6Britain’s per capita income in 1830 was 3,190 in 1990 international Geary-Khamis dollars. Those of most countries in Western Europe were in the range of 1,500–2500 IGK dollars.
Figure 5. **Structural Transformation in Japan—Manufacturing Increase Followed by Slow Decline as Services Expanded (%)**

Note: Figures refer to shares of employment by sector.

Figure 6. **The US as Leader of Transformation—Shares in Total Employment in Selected Subsectors, 1958–2005**

Note: The subsectors, selected from the 99 industrial sectors, are ranked by their capital–labor ratio. These are the: (i) labor-intensive sector (industry 313210, broadwoven fabric mills), (ii) mid-level capital/labor intensity (industry 334111, electronic computer manufacturing), (iii) high capital intensity (industry 336411, aircraft & industry 336111, automobile), and (iv) high technical intensity (industry 326199, other plastic products manufacturing including fiber lens, windshield, and optics). The 1997 6-digit NAICS codes (473 industries) were used.
slow and declining trend. In the most technology-intensive sectors such as plastics including fiber optics and lens, the share of employment shows a monotonic increase indicating that the US still maintains a comparative advantage in these industries. In general, the manufacturing sectors started to shed labor in the 1970s, while the services sector created more jobs throughout the period. This process accelerated in the 1990s.

Why is the employment structure in the US changing so rapidly? First, the simultaneous improvements in education, financial, and legal institutions as well as in hard infrastructure has allowed firms to constantly innovate and create new industries and exhaust the set of production possibilities (Harrison and Rodriguez-Clare 2010). Second, this process has been accelerated by globalization. Because the US maintained an open trade regime and a liberal investment policy, industrial transformation that started in the 1970s–1980s exceeded that of other countries (McMillian et al. 2011). Third, the behavior of multinational corporations has played an important role. Using firm-level data related to outward FDI from the Ministry of International Trade and Industry (MITI) of Japan and the US, Lipsey and his co-authors (Lipsey, Ramstetter, and Blomstrom 2000) found that:

(i) “A Japanese parent’s employment, given the level of its production, tends to be higher, the greater the production abroad by the firm’s foreign affiliates.” This is similar to that of Swedish firms but contrasts with that of US firms.

(ii) US firms appear to reduce employment at home by allocating labor-intensive parts of their production to affiliates in developing countries. “Among US firms, production in developing countries is associated with lower parent employment at home, given the level of parent output.” This could be interpreted as US multinationals being “footloose,” allocating the more labor-intensive parts of their output to developing countries and keeping the more capital-intensive or skill-intensive parts in the parent facilities.

Why was economic growth in Japan not sustained after the 1970s? From the mid-1950s to 1973, Japan for a variety of reasons, was able to sustain rapid growth for nearly 20 years. In 1973, Japan’s rapid growth started declining for three reasons: oil crises, the decline in investment, and the slowdown in technological progress. “Japan finally caught up with the US and the Western European countries technologically in the mid-1970s . . . (and) since it was harder to develop a country’s own new technology compared to merely obtaining a license, Japan’s growth rate then had to fall” (Ito 1992, p. 72). In other words, Japan’s advantage of backwardness had been exhausted. The Japanese economy was then constrained mainly by the speed of indigenous innovations on the global technology frontier. Japan had to relocate some of its production base to the Republic of Korea; Taipei, China; and
other NIEs due to rising domestic labor costs leading to the loss of its comparative advantage in the labor-intensive sectors.

D. The Flying Geese Pattern in East Asia

It has been well documented that several generations of lead geese played significant roles in the rapid development of the East Asian economies. From 1965 to 1990, Japan emerged as the world’s biggest exporter of manufactured goods, increasing its share of the world market from about 8% to almost 12%. Japan’s success was followed by a second generation of economies in the 1970s (Hong Kong, China; the Republic of Korea; Singapore; and Taipei, China), a third generation in the 1980s (Indonesia, Malaysia, the Philippines, and Thailand, or ASEAN4), and a fourth generation in the 1990s (the PRC and Vietnam) (Gill and Kharas 2007, p. 81).

What is less well studied, however, is how this flying geese pattern evolved at the subsector level, how the “jumping” of an industry from one country to another took place, and how the Republic of Korea ceded its dominance in labor-intensive subsectors to the third generation of geese—ASEAN4, the PRC, and Vietnam. Using UN Comtrade data, we show graphically that:

(i) There is an inverse U-shape in some subsectors where the lead goose loses comparative advantage to its followers (as in Akamatsu 1962). Since Akamatsu’s transformation cycle could last for over 100 years, the inverse U-shape emerges only when simple measures such as shares of exports in the sector are used to illustrate the pattern. Each specific sector may have several generations of countries playing the role of lead goose sequentially in different periods as each country’s endowment structure changes. This is reminiscent of Akamatsu’s theory on the international dimensions of the flying geese model (Figure 3).

(ii) In textiles, an upstream but labor-intensive industry, five generations emerged sequentially. Japan ceded to the Republic of Korea in the 1980s, after which the PRC emerged in the 1990s, though its textile exports are now losing steam as labor costs are rising and employment shares declining. ASEAN4, particularly Indonesia and Vietnam, and countries which can expand market share rapidly would have a better chance to benefit by following the PRC (Figure 7a).

(iii) In the 1970s, Japan lost its leading position in the apparel and clothing sector to the Republic of Korea, whose clothing exports show a clear hump shape as it ceded its leading position to the PRC in 1989. The PRC emerged later than ASEAN4, but its low wages and efficient industrial clusters in many provinces enabled it to gain dominance. After many years in the dominant position, the
Figure 7. **Share of Sector Exports in Total Merchandise Exports—Several Generations of Flying Geese**

**Figure 7a: Share of Textile Exports, 5 Generations**
(Japan, the Republic of Korea, the PRC, Indonesia, and Viet Nam)

**Figure 7b: Share of Clothing Exports, 2 Generations**

**Figure 7c: Share of Toy Exports, 2 Generations**

Note: Figures based on SITC rev 1, 3–4 digits.
Source: UN Comtrade data via WITS.
PRC is now losing its comparative advantage due to rising wages and will gradually cede its market shares to ASEAN4, Viet Nam, and countries that can seize the opportunity to rapidly expand exports (Figure 7b).

(iv) In toys, the PRC has recently been losing market share in the European Union and US markets. Shares of toys in total exports have been declining (Figures 7c). This is consistent with what other studies have observed, though shares vacated by the PRC have not yet been taken up by African countries (Maswana 2011). There are large opportunities for other low-income countries to benefit from the PRC’s graduation from these labor-intensive industries.

E. The Republic of Korea—An Example of Successful Industrial Upgrading

The industrial upgrading of the Republic of Korea since 1962 is often described as a good example of flying geese catch-up. The share of manufactures in GDP rose from merely 9% in 1953 to 30.1% in 1988, while that of the agriculture and mining sector shrunk to single digits in the 1990s.

During this phase of industrial upgrading guided by export-oriented industrialization, the benefits of economic backwardness were exploited with sequential structural transformation from labor-intensive industries (i.e., wood manufactures and clothing) to capital-intensive industries (i.e., machinery and transport equipment). Until the early 1980s, labor-intensive products, primarily wood manufactures and clothing, had a combined share of about 60% and accounted for the majority of total exports. Since 1983, capital-intensive machinery and transport equipment products have accounted for the majority of exports. After the mid-1990s, their share exceeded half of total exports.

We argue that the Republic of Korea’s success was due in part to its adherence to its comparative advantage which evolved over time with changes in its factor endowments, suggesting flying geese catch-up patterns. For example, Figure 8a shows the intra-industrial and inter-industrial dimension of “Flying Geese Catch-up” patterns. The Republic of Korea successfully moved up the value chain from exports of clothing to exports of textiles and to production of synthetic fibers (Lim 2011). In the electronics industry, a comparative advantage recorded by the net trade index

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7The authors thank Kwang Park for this section on the Korean experience.
8The Republic of Korea’s industrial upgrading process between the 1960s and the 1980s can be roughly divided into three phases: (i) the “takeoff” phase (1962–1973), (ii) the Heavy and Chemical Industry (HCI) drive phase (1973–1979), and (iii) the liberalization phase (1980–later) (World Bank 1987). For details of Korea’s industry policies, see World Bank (1987), Krueger (1997), Suh (2007), and Lim (2011).
9Some critics have argued that the Republic of Korea adopted a Comparative Advantage Defying (CAD) strategy, and there is a heated debate. For the debate on whether the HCI drive in the 1970s is CAF or CAD, see Lin and Chang (2009). We consider Republic of Korea’s policies as being consistent with the New Structural Economics and Growth Identification and Facilitation (GIF) framework where government plays a strong role based on market signals to identify the latent comparative advantages.
Figure 8a. Revealed Comparative Advantage (RCA) of the Republic of Korea’s Industries

RCA = share of an industry in the economy’s exports/its share in global exports.
Note: Based on SITC rev 1, 2 digits.
Source: UN Comtrade data via WITS, authors’ calculations.

reveals industrial upgrading from simple goods to more sophisticated goods (Lin and Chang 2009). Starting with the assembly of radios from imported components, the Republic of Korea obtained a comparative advantage in the home appliance industry (World Bank 1987). The country started to gain comparative advantage in electronic parts and components (i.e., transistors and semiconductors) in the mid-1980s, and later on in information, communication, and industrial electronics in the 1990s (Figure 8b).

Figure 8b. Trade Specialization Index (TSI) of the Republic of Korea’s Electronics

Note: TSI = (export − import)/(export + import) for each industry.
Source: Korea Electronic Association.
In terms of the inter-industrial dimension, the Republic of Korea maintained a high revealed comparative advantage (RCA) in clothing exports until the end of the 1960s, followed by footwear until the 1980s. In the 1990s, it rapidly developed a high RCA in electronics exports, which was more recently replaced by transport equipment exports.

The Republic of Korea’s flying geese catch-up also had an international dimension involving the relocation of an industry from one country to another. For example, it gained a sharp increase in RCA in footwear in the mid-1960s partly as a result of manufacturing alliances and technology cooperation between local and Japanese firms prompted by increasing wages in Japan which had been weakening the latter’s competitiveness in the sector. A steep decrease in its RCA in the mid-1990s indicates that higher wages in the Republic of Korea had led to a relocation of factories to the PRC, Indonesia, and Viet Nam (The Committee for the 60-year History of the Korean Economy 2010). Since the end of the 1980s when a liberal policy was adopted, outward foreign investment from the Republic of Korea’s labor-intensive industries has increased with its main destination being Asian countries.10

IV. Successes and Failures: CAD versus CAF

A. Import Substitution in the 1950s–1970s

In the post-WWII period, most developing countries were keenly aware of the role that industrialization played in accelerating structural transformation and catch-up in Europe, Japan, and the US. Keen to emulate them, developing countries adopted the prevailing Structuralist paradigm, which advocated an import-substitution-led (IS-led) industrialization strategy to develop advanced industries similar to those in the industrial countries. Examples include heavy industries such as iron and steel, chemicals, machinery, and transport equipment in countries as diverse as Brazil, Egypt, Ghana, India, and the Republic of Korea.

In spite of a large variety of protectionist measures including high tariffs, even the most well-intended policy interventions failed in sustaining CAD industries. In many countries, most tariffs on manufactures led to effective rates of protection (ERP) well in excess of 100%. In a sample of 10 countries chosen for a special study, Krueger (1983) found that all except the Ivory Coast and the Republic of Korea pursued IS-led strategies in the 1960s and 1970s. The average ERP on manufactured products varied from 356% in Pakistan to 384% in Uruguay.

Governments following CAD were not indifferent to the type of industries they were protecting. In other words, they also “picked winners.” Brazil is notable for starting out with high ERPs in the late 1950s but gradually shifting to a strategy

10See Section IV on FDI.
where protection for CAF industries was reduced but protection for CAD industries remained high. Examples are: (i) the plastics industry, where the ERP declined from 489% to 332%; (ii) textiles, where ERP declined from 298% to 232%; and (iii) clothing, where ERP changed from 481% to 321% (Fishlow 1983, p. 58a). In Pakistan, during 1970–1971, the ERPs on most consumer and intermediate goods were between 100%–200%, except for motor vehicles which had an ERP of 595% (Guisinger 1978).

The Indian government had an elaborate brand of IS. At the start of the second 5-year plan (1957–1962), policymakers in India envisioned a country that was not dependent on imports of either consumer or producer goods. This was achieved by using IS to make machines as well as to make consumer products—i.e., imposing import licensing requirements and tariffs on capital and consumer goods. As late as 1991, the Indian economy was one of the most heavily protected economies globally with ERPs averaging 125%, where the highest was 355% (Krueger 2002).

In contrast to Japan and East Asia which followed their comparative advantage, well-intended governments across Africa, Latin America, and South Asia adopted IS and protection in the 1960s and 1970s to achieve dynamic growth in industries that were CAD. They assigned a high priority to the development of capital-intensive heavy industries when in fact capital was scarce. To compensate for the absence of private firms in capital-intensive sectors, governments leveraged large state-owned enterprises to produce capital-intensive products. Examples of such strategies include Indonesia’s launch of a shipbuilding industry in the 1960s when its GDP per capita was only 10% of its main competitor, the Netherlands, and the attempt of Zaire (now the Democratic Republic of Congo) to build an automobile industry in the 1970s when the country’s GDP per capita was only 5% of the US, then the industry leader (Lin 2011).

The Republic of Korea and Japan, on the other hand, had selected target countries that were appropriate to their income levels during their catch-up phase. As reflected in Table 1, Japan targeted Germany whose income was 2.5 times Japan’s in the Meiji period, while the Republic of Korea targeted Japan whose income was 4 times that of the Republic of Korea’s in the 1970s. Countries flourish because they have followed their comparative advantages. They fail to catch up if they do not.

B. The PRC as a Follower: Learning and Industrial Upgrading

The PRC’s success over the past 3 decades is the result of a two-pillar strategy: (i) adopting a dual-track approach to reforms, giving transitory protection to CAD capital-intensive sectors, and liberalizing entry to CAF labor-intensive sectors, thereby achieving stability and dynamic transformation simultaneously; and (ii) as a latecomer, choosing an economic development strategy that tapped into the potential advantage of backwardness along the lines of the flying geese pattern.
Industrial development in the PRC after reforms in 1979 has basically followed the country’s comparative advantage or is CAF. The PRC was an exporter of primary products. In 1984, nearly 50% of the PRC’s exports were crude oil and agricultural products (Figure 9a). The first industrial upgrade from resources to labor-intensive products happened in 1986, when exports of textiles and clothing exceeded crude oil. The second upgrade happened in 1995, when Chinese exports of machinery and electronics exceeded textiles and clothing. This indicated that the PRC has started the transition from exporting traditional labor-intensive exports to nontraditional labor-intensive processes (assembly lines). The third upgrade happened after 2001 following the PRC’s accession to the World Trade Organization, locking in liberalization of trade in goods and services and making PRC laws and

Figure 9a. PRC’s Rapid Transformation in Export Structure Following Comparative Advantage

Source: UN Comtrade; Lin and Wang (2008), updated by the authors.

Figure 9b. But Slow Transformation of the Employment Structure

Source: UN Comtrade; Lin and Wang (2008), updated by the authors.
regulations conform to international standards. Regulatory reforms led to rapidly rising FDI inflows, bringing in new technologies and processes. As a result, the level of product sophistication increased.\textsuperscript{11}

The evolution of the PRC’s export structure in the last three decades reflects significant structural transformation in the flying geese style that has enabled the country to graduate from being an exporter of labor-intensive products such as apparel, textiles, and leather to producing more sophisticated items such as home appliances, office machines, and electric machinery (Figure 9).\textsuperscript{12} Unlike the case of the Republic of Korea, FDI played a critical role in the PRC’s industrial upgrading. The following points about this can be made:

(i) Inward FDI helps industrial upgrading. Many studies have pointed out that foreign investors are quick to identify a country’s comparative advantage and serve as the most dynamic forces in industrial development and upgrading (Harrison and Rodriguez-Clare 2010; Aghion et al. 2011). In our view, foreign investors serve as identifiers of growth sectors, providing advanced technology and helping reduce first-mover risks and transaction costs when firms attempt to enter a new product or market. The PRC’s capital–labor ratio in the manufacturing sector increased from 0.4 in 1985 to nearly 4.0 in 2007. Foreign-invested enterprises accounted for about 20% of tax revenue, 55% of imports and exports, and over 80% of high-tech exports (MOFCOM 2011).

(ii) In the last 5 years (2005–2009), FDI inflows have been shifting towards higher value-added products, parts and components, and subsectors including services, as shown by Figure 10. Investors from Taipei, China have provided much-needed technology and managerial skills that firms need in electronics and information technology. These firms are moving the manufacturing of electronic parts and components to the PRC. Wholesale and retailing have shown the fastest growth rate in recent years, as the PRC moved toward promoting domestic consumption.

(iii) The process of three-stage upgrading shows the importance of learning-by-exporting from lower-end manufacturing goods to higher-value-added goods and subsequently to services. Initial learning activities occurred within sectors,

\textsuperscript{11}There is, however, a myth on the level of export sophistication which was discussed at length in Koopman, Wang, and Wei (2008) and Lin and Wang (2008). In fact, over 50% of exports in terms of value-added were foreign value-added—i.e., goods and services produced by foreign-invested enterprises (FIEs). Among high-technology goods, over 80% were exported by foreign-invested firms.

\textsuperscript{12}In the context of vertical disintegration of supply chains, the flying geese pattern still exists as multinationals move the labor-intensive part of their production (often the assembly line) to the PRC and other low-wage countries, keeping the critical components and parts at home. This does not change the fundamental premise of our paper. As wages and salaries increase in the PRC, the labor intensive assembly lines will shift to other lower-income countries, and the PRC will upgrade to higher value added components and parts, as well as higher tech products, as shown in Figure 10.
then gradually spilled over horizontally to new sectors, and eventually diversified through outward FDI to other countries (Lin and Wang 2008).

C. Sub-Saharan Africa—Trailing Far Behind

There are several signs of a slow deindustrialization in Africa in the last decades, when the PRC and India were emerging as large industrial countries and African countries were undertaking structural reforms and liberalizing and integrating with global markets. An overview of Africa’s industrial performance during 1990–2010 indicates that 40 out of 45 countries had manufacturing value-added (MVA) per capita of less than $200 and almost half experienced negative growth in MVA per capita (UNIDO 2011, p. 46).

The report by UNIDO (2011) also shows how the share of labor in the manufacturing sector has declined, suggesting that employment in light manufacturing industries (e.g., textiles, apparel, and leather products), which are labor intensive, declined after 1990. A large part of the employment losses had been due to a decline in the share of textiles, from about 7% in 2000 to 5% in 2009 (UNIDO 2011, p. 27). The fact that Africa is increasingly dependent on other regions for light manufactures is significant for three reasons. First, the trade deficit indicates that African economies have a sizeable domestic market for light manufactures. Second, light manufacturing sectors are a stepping-stone towards more technologically sophisticated manufacturing industries (UNIDO 2011). Third, given the size of global demand for light manufactures, there is significant potential for African exports of light manufactures which can facilitate structural transformation into more advanced sectors.
V. The Emergence of Leading Dragons

A. The Phenomenon of Relocating Manufacturing Jobs is Not New

The PRC is at a stage where the western countries and Japan had been during the 1970s and where other Asian economies (Hong Kong, China; the Republic of Korea; Singapore; and Taipei, China) found themselves in during the 1980s. As labor-intensive industries matured, wages increased, and firms moved into more technologically sophisticated industries in accordance with the upgrading of the underlying endowment structure. In the western countries and the Asian tigers, as the capital intensity of production in manufacturing increased, there was an overall contraction in manufacturing jobs and a reallocation of resources towards the services sectors. For example the share of manufacturing employment in the US reduced from 17% in the 1980s to 9% in 2004, in Japan from 18% to 12% during the same period. When labor-intensive industries in the high-wage countries shut down, their jobs relocated to other lower-wage economies such as the East Asian tigers.

The PRC’s labor cost is rising rapidly, while the structure of its industries, exports, and employment is changing. Many Chinese economists argue that the
country has already absorbed its surplus labor and approached the Lewisian turning point (Cai et al. 2009a, Huang and Jiang 2010). Recent data indicates that wages in the PRC’s manufacturing sector grew rapidly, rising from just over $150 per month in 2005 to around $350 per month in 2010 (Figure 11). More precisely, the wage gap between the PRC and other high middle-income countries is closing, a trend that will likely continue with certainty over the coming decade.

The PRC’s 12th Five-Year Plan projects that during the period 2011–2015, the economy will grow at 7% per year on average. It also proposes that real wages will grow as fast as GDP. Both growth rates are likely to be achieved which implies that real monthly wages will double from around $350 per month to $700 per month over the next decade. When combined with continued currency appreciation, the PRC’s real wages could approach $1,000 per month within a decade or about the level of some of the higher middle-income countries (e.g., Turkey and Brazil) and $2,000 per month by 2030 or the level of the Republic of Korea and Taipei, China today.

B. Significant Changes in Employment Patterns and Location

Spillovers from the leading dragon phenomenon spurred by rising Chinese wages are already helping to relocate its labor-intensive jobs to other lower-wage countries. This is happening in several ways.

(i) The most evident is the ongoing transformation in the PRC’s manufacturing sector. Following the flying geese pattern of development, the country is transitioning from labor-intensive industries towards more advanced ones, with machinery becoming increasingly dominant in manufactured exports. New evidence shows that urban manufacturing industries had restructured during 2002–2009. As a result, the largest decline in manufacturing employment is currently unfolding in textile, chemical fiber, printing and record media, tobacco processing, and nonmetallic mineral product industries (Figure 12).

(ii) The PRC’s restructuring could accelerate. First, with rapid urbanization, expansion of tertiary education, and greater labor market flexibility, young workers may be unwilling to stay locked in low-skill manufacturing jobs and may begin to seek upward mobility. Although it will remain a “labor surplus” economy until 2014, the growing demand for service sector employees will gradually stretch the Chinese job market (McMillan 2011). Second, with gross domestic

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13 From Oxford Analytica, on 28 March 2011. During 2010–2011, the PRC’s minimum wage for 30 municipalities rose by 25% or more.

14 There is a possibility of relocating labor-intensive manufacturing from coastal regions to inland regions, but the wage rate difference between the two regions is only 30%, and transportation and transaction costs are higher in inland regions. Multinationals will be the first to relocate to other low-income countries, and Chinese enterprises will follow. Labor-intensive manufacturing will move to other low-income countries sooner or later, depending on external and internal factors.
savings as high as 45% for over 25 years and gross capital formation of over 50%, capital availability has increased substantially, with the channels for exporting this capital largely open. The government encourages enterprises in labor-intensive sectors to go global by providing guidance and incentives including, but not limited to, setting up 19 industrial zones outside the PRC.

(iii) Evidently, rising wages in labor-intensive industries have already triggered relocation of low wage jobs overseas. Many lower-wage countries in the PRC’s neighborhood such as Cambodia, Lao People’s Democratic Republic, and Viet Nam, and even Bangladesh are emerging as the new growth nodes for garment, footwear, and other labor-intensive industries. The number of jobs each country can attract depends on the incentives package it offers to investors.

(iv) Perhaps the most critical channel is outward FDI flows from the PRC and other emerging market economies to manufacturing sectors in lower-wage countries, as explained in the next section.

C. Significant Potential for Relocation of Jobs to Low-Wage Countries

Due to the sheer size of the PRC’s labor market, the number of jobs that the ongoing industrialization will create for low-income countries is potentially huge. As employment statistics for manufacturing is extremely sparse and tentative, we cannot provide any estimates of potential job relocation. However, rough calculations
are informative and sufficient. Currently, the PRC employs about 85 million workers nationwide in its manufacturing sector. Rising wages will force the PRC to upgrade to higher value-added and more capital-intensive and technology-intensive sectors and to relocate jobs in the existing sectors to countries that have a lower wage rate. India currently employs about 9 million workers and Brazil employs about 13 million (Table 2). These emerging market countries employ about 120 million workers whose jobs could be relocated to other developing countries in the coming decades.

It seems reasonable to suggest that the leading dragon phenomenon alone can create sufficient labor-intensive manufacturing jobs for developing sub-Saharan African countries to bring them to par with most industrial countries. Even if the PRC’s manufacturing sector sheds 10% of its total employment in the next few years, a pool of 8.5 million jobs will be ready to relocate overseas. The number could almost double employment in manufacturing in African countries in a few years, jumpstarting its process of industrialization.

D. Accelerating the Leading Dragon Phenomenon in Sub-Saharan Africa—The Role of FDI

Asian and African countries are not alone in competing for the millions of jobs relocating from the PRC. In particular, in sub-Saharan Africa, the scarcity of local entrepreneurial skills and investment capital are invariably the top two constraints for a competitive manufacturing sector. Evidently, availability of outward FDI can enable them to overcome these constraints and take advantage of the leading dragon phenomenon to finally participate in the global production of labor-intensive products. Outward FDI from developing and transition economies reached $442 billion in 2011 (UNCTAD 2012). At the helm were the Russian Federation in 2011 and the PRC in 2010, while Brazil, India, Indonesia, and the Republic of Korea (collectively, BRIICK) followed as the other key sources of FDI (Figure 13). Roughly 60% of outward FDI from developing countries went into other developing countries, mostly in the form of greenfield investments that can typically open the door for South–South relocation of various industries from the PRC and other emerging economies.

A large share of the PRC’s outward FDI is flowing to Africa, growing from a few hundred million dollars in 2002 to a cumulative amount of $13 billion by the end of 2010, accounting for 4% of the total stock of outward FDI (MOFCOM

Table 2. Employment in Manufacturing, Potential Dragons, 2009–2010

<table>
<thead>
<tr>
<th></th>
<th>Brazil</th>
<th>PRC</th>
<th>India</th>
<th>Indonesia</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment in Manufacturing (million)</td>
<td>13.1</td>
<td>85</td>
<td>8.7</td>
<td>12.5</td>
<td>119.3</td>
</tr>
<tr>
<td>Population (million)</td>
<td>192</td>
<td>1,324</td>
<td>1,140</td>
<td>277</td>
<td>2,934</td>
</tr>
<tr>
<td>Outward FDI ($ billion 2010)</td>
<td>11.5</td>
<td>68</td>
<td>14.6</td>
<td>2.7</td>
<td>96.8</td>
</tr>
</tbody>
</table>

2011). About 22% of outward FDI from the PRC is presently concentrated in the manufacturing sectors, second only to mining which accounts for 29%. In 2010, Chinese firms also increased the number of jobs created overseas by 10% and capital investment by 2.5%. The PRC ranked eighth in the world according to job creation overseas (FDI Intelligence 2011). Two recent papers found that the PRC’s outward FDI has played a significant role in the growth of African countries (Weisbrod and Whalley 2011, Mlachila and Takebe 2011). India currently invests over 40% of its outward FDI in manufacturing. In addition to a booming economy, India’s liberalization reforms during the 1990s also facilitated the global spread of Indian firms (Athukorala 2009, p. 146). A recent World Bank survey shows that over 64% of Chinese firms operating in Ethiopia engage in manufacturing, creating 15,910 jobs (World Bank 2012, p. 12).

VI. Summary and Implications

The emergence of large middle-income countries such as Brazil, the PRC, and India as new growth poles in the world and their dynamic growth and ascent up the industrial ladder offer an unprecedented opportunity to all lower-income developing economies, especially in sub-Saharan Africa, to accelerate industrialization and catch-up. This paper tried to explain why.

In addition, this paper argues that:

(i) Economic development is a process of continuous industrial and technological upgrading, and modern economic development is accompanied by structural
transformation. Nearly all countries that industrialized successfully adopted CAF strategies to tap the latecomer advantage in a flying geese pattern. Successful industrialization in Japan before 1900, the “passing of the torch” from the US to Japan after WWII, rapid catch-up of East Asian NIEs, the ASEAN4, and latecomers such as the PRC and Viet Nam have all followed the flying geese pattern, albeit to varying degrees.

(ii) This paper provides evidence that not only are industries jumping across borders, but those jumping industries are also upgrading. In the late 1970s and 1980s, the lead geese for the PRC were the East Asian tigers. As the Republic of Korea and Taipei, China are upgrading, industries that have relocated to the PRC are now also ascending to higher-end products. In a fraction of the time it took Japan and the East Asian tigers, the PRC has been able to replace simple labor-intensive products with more sophisticated ones. This is enabled by a government that fosters CAF industries.

(iii) Dynamic growth, high savings, and substantial investments in education have triggered a rapid upgrading of the PRC’s factor endowments for more technologically advanced industries. This has pushed up wages at an amazing rate since 2002, causing labor-intensive industries to contract. The PRC has an estimated 85–100 million workers in manufacturing, with most of them in labor-intensive industries or labor-intensive segments of supply chains. As these industries shed labor, they will create a huge opportunity for lower-wage countries to start labor-intensive manufacturing production. This process, which we call the leading dragon phenomenon, will offer millions of labor-intensive job opportunities to developing countries. If Brazil, India, Indonesia, and other large middle-income countries maintain their current pace of growth, a similar pattern and employment space will arise.

(iv) Labor cost is only one of many factors for the flying geese and leading dragon phenomenon, governments in both leading and following countries have critical roles to play, as indicated in the Growth Identification and Facilitation Framework (Lin 2011 and 2012b). Low-income countries must compete to gain access to capital, technology, and capacity development opportunities. If they have the right policy framework, the industrial upgrading in large emerging market economies, especially in the PRC, would provide them a golden opportunity for dynamic manufacturing-sector-led growth in the years to come.

In an increasingly globalized world, opportunities for economic transformation abound. The emergence of a multi-polar world is a blessing even for the most backward economies because it provides them a chance to enter a new age of rapid industrialization and structural transformation. Clearly, the opportunities
that lie ahead for labor-abundant economies in Asia and Africa, which are currently exporting mostly minerals, are enormous—provided that they quickly formulate and implement credible economic development strategies consistent with their comparative advantage. However, the actual benefit for countries and regions depends very much on the right policy environment, institutions, and implementation capacities. Countries must still compete to gain access to capital, technology, and capacity development opportunities.

References


Investing Overseas Without Moving Factories Abroad: The Case of Chinese Outward Direct Investment

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Chinese outward direct investment (ODI) is unique in the sense that it starts in the early stage of economic development and does not move factories overseas. Empirical analyses using firm-level data confirm that the main purpose of Chinese ODI is to strengthen domestic production and productivity by acquiring strategic assets overseas. This Chinese style of ODI, which is different from Japanese efficiency-seeking ODI or American market-seeking ODI, is mainly underscored by significant cost advantage and abundant foreign exchange. We suggest that there might be a life cycle of ODI, which evolves from the Chinese style to the Japanese style and then to the American style as the economy develops. Following this proposition, we expect a major wave of ODI by Chinese small-sized and medium-sized manufacturing enterprises in the coming decade.

Keywords: Chinese outward direct investment, Chinese style ODI, ODI life-cycle
JEL codes: E220, F210, F230

I. Introduction

The People’s Republic of China (PRC) has been a major exporter of capital for the past decade. But so far, the main form this has taken has been accumulation of foreign exchange reserves. At the end of 2010, the PRC’s outstanding foreign assets amounted to $3.415 trillion, of which $2.847 trillion or 83.4% were foreign reserves (Table 1). Direct and portfolio investment by the private sector, valued at $311 billion and $257 billion, respectively, were quite small, with each accounting for less than 10% of the total.

Such a unique pattern of the PRC’s foreign investment position had been a result of government policy choices. At the beginning of economic reform in the
late 1970s, the PRC had a tightly controlled capital account and an artificially set exchange rate for its currency, the renminbi. Over the years, authorities gradually loosened controls over cross-border capital flows following broad strategies that preferred inward over outward investment, long-term over short-term investment, and direct over portfolio investment. Inward foreign direct investment (FDI), which cumulated to \$1.476 trillion at the end of 2010, had in fact been one of the key contributors to the PRC’s economic success during the reform period.

The government’s policy choice to intervene in the foreign exchange market led to massive accumulation of foreign exchange reserves, which could be utilized for overseas investment. At the height of the Asian financial crisis, Chinese policymakers decided to fix the exchange rate at CNY8.28 = \$1.00 to maintain domestic and regional financial stability. Soon after, however, market pressure for depreciation of the domestic currency turned to pressure for appreciation as the economy recovered. However, the government largely resisted this by heavily intervening in the foreign exchange market, although modest exchange rate adjustment began to occur from mid-2005. Rapid accumulation of foreign exchange reserves, from about \$100 billion at the end of 1996 to \$3.2 trillion by end-2011, had been a direct consequence of foreign exchange market intervention.

Although outward direct investment (ODI) accounts for a relatively small part of the PRC’s total foreign assets, it has been growing very rapidly, and the country already counts among the largest investors in the world. This is at odds with general international experience. The investment development path theory of Dunning (1981) suggests that with an increase in per capita income, a country initially attracts growing amount of FDI; subsequently becomes an ODI player; and eventually, its ODI exceeds FDI or the two fluctuate around a rough balance. Such a close connection between a country’s ODI and its economic development reflects domestic firms’ changing competitive advantage against foreign competitors. It also reflects the changing attractiveness of the country in terms of production costs, market opportunities, and natural or created resource endowments (Dunning et al. 2008).
Although its GDP per capita is still close to $6,000, the PRC is already the world’s fifth largest direct investor following the US, Germany, France, and Hong Kong, China in flow terms. Some of the cases—for example, Chinacol’s proposal to take a stake in Rio Tinto, CNOOC’s plan to invest in Unocal, and Huawei’s investment in 3Leaf System—were worldwide stories. But this is probably only the beginning of the PRC’s rising ODI story. Ongoing reforms aimed at increasing exchange rate flexibility and liberalizing capital account controls imply a lot more Chinese ODI in the future. For instance, He et al. (2012) predict that the PRC’s cumulative ODI would probably reach $5.149 trillion in 2020, a net increase of $4.832 trillion from 2010 ($317.21 billion). Even the more modest predictions by the Asia Society in the US of $1 trillion–$2 trillion in 2020 would imply an average of $100 billion–$200 billion a year during the current decade, compared with around $70 billion in 2011.

But currently, Chinese ODI appears to be quite different from ODI of some developed economies. Typically, firms make ODI either to take advantage of low production costs in the host countries (Japanese-style ODI) or to increase market share by bypassing tariff and nontariff barriers to imports (American-style ODI).\(^1\) We argue that the unique feature of Chinese ODI is that most Chinese firms made overseas investment but did not move their factories abroad. Huang and Wang (2011) identify three broad motivations for Chinese-style ODI: (i) to secure resource supply, (ii) to acquire advanced technology, and (iii) to facilitate export expansion.

In this paper, we apply statistical approaches to identify the main motivations of Chinese ODI by using two sets of enterprise data. The first dataset, collected by the authors, consists of approved ODI projects from the National Development and Reform Commission (NDRC). This includes 293 investment projects with total investment of $99.43 billion made by 216 firms between 2003 and the first half of 2011. Most of the projects are large in terms of investment and involve known Chinese firms. The second dataset is provided by the Foreign Trade and Economic Cooperation Bureau (FTECB) of Zhejiang Province and covers all the registered ODI from that province from 2006 to 2008. They are representative of investment by the PRC’s private sector and small-sized and medium-sized enterprises (SMEs). There are 1,270 projects in the dataset, totaling investment of $1.75 billion or $1.4 million per project on average. This is quite small compared with average investment of $339 million for the NDRC dataset.

Based on these two complementary sets of enterprise data, we employ the probit model to statistically verify if the announced investment purpose by large investors and the registered investment type by SMEs actually reflect their investment motives. We find that for the large investors in the NDRC sample, the main

\(^1\)The pattern of Japanese ODI has evolved since the 1990s, becoming more similar to that of American ODI, as discussed in Section V. However, the term Japanese-style ODI is still used in this paper to describe the type of investment that seeks to take advantage of low production costs in host countries.
objectives are to acquire resources (resource-seeking) and purchase strategic assets (technology-seeking). For the SME investors of the Zhejiang sample, the main purposes of ODI are to facilitate exports to host economies and to provide after-sale services (trade-facilitating).

Finally, we propose a life cycle thesis of ODI, which may be viewed as an extension of Dunning’s investment development path theory. As an economy develops, it becomes a direct investor, and its ODI may transition from the Chinese style to the Japanese style and, finally, to the American style. Apparently, the most important determinants of evolution of this life cycle are cost and technology. The distinctions among the different styles of ODI are only relative. Often, we can observe more than one style in an economy. However, if the life cycle thesis actually holds, then our prediction is that we may see increasing Japanese-style ODI in the PRC in the coming years, i.e., large numbers of small-sized and medium-sized labor-intensive manufacturers moving to other low-cost countries.

This paper is organized as follows. The next section reviews existing economic studies on ODI and highlights the relevance of this study. Sections III and IV assess motivations of Chinese ODI by large investors and SMEs. Section V compares Chinese-style ODI with American-style and Japanese-style ODI and discusses key factors contributing to the Chinese characteristics. The final section provides some concluding remarks.

II. Literature Review

There is a rich literature on FDI, especially its motivations, forms, and impacts. One useful angle is to explore how national firms grow into multinational giants by undertaking ODI.

The modern theory of multinational enterprises (MNEs) started by analyzing the proprietary resources and capabilities possessed by domestic firms to generate a monopolistic or competitive advantage over indigenous firms in host countries and counteract inherent disadvantages of doing business abroad (Buckley and Casson 1976, Caves 1971, Hymer 1976, Kindleberger 1969 and 1970). This was consistent with the experience of early MNEs from Europe, Japan, and the US in the 1970s and 1980s. Before they invested abroad, their advantages and assets were well built at home. They invested overseas mostly in wholly-owned or majority-owned subsidiaries, transferring technology and know-how from headquarters to far-flung operations around the world (Guilla and Garcia-Canal 2009).

Early literature on ODI from developing economies called “third-world multinationals” (Lall 1983) also described how investing firms established exploitable proprietary advantage. These advantages come from low input costs and management and marketing skills adapted to conditions in the third world. Some are associated with conglomerate ownership. Developing country MNEs expand

Investing firms optimized their activities along the value chain across host locations and exploited their competitive advantage (Dunning 1980, 1981, and 1988). The country-specific determinants for ODI include market size, production factors (availability, quality, and price), infrastructure, transport and communication cost, taxes and subsidies, regulatory framework, etc. ODI firms expand horizontally into foreign countries to secure or defend a market position (market-seeking ODI), or operate vertically into host economies to exploit local factor endowments such as oil, gas, timber, and other natural resources (resource-seeking ODI), or cheap labor (efficiency-seeking ODI).

Recent studies have recognized that firms undertake ODI not only to exploit but also to develop their competitive advantage. Such asset-seeking or technology-seeking strategy has sometimes been identified to explain how latecomer and newcomer MNEs overcome their competitive disadvantage by investing abroad (Child and Rodrigues 2005, Li 2003, Makino et al. 2002, Mathews 2002 and 2006, UNCTAD 2006, Wesson 1999). Here, technology is broadly defined to encompass production technology, management skills, and brand names.

Makino et al. (2002) empirically found that firms from newly industrialized economies (NIEs) pursue technology-seeking and market-seeking ODI in developed countries but pursue resource-seeking ODI in less developed countries (LDCs). In fact, several studies revealed how technology-seeking ODI had been an important motivation for MNEs from Brazil, Mexico, Poland, Romania, and Taipei, China (Carvalho et al. 2010, Hitt et al. 2000, Makino et al. 2002). One important reason for this phenomenon is limited geographical spread of knowledge since research and development (R&D) activities are often highly concentrated in advanced economies (Audretsch and Feldman 1996, Jaffe et al. 1993).

This technology-seeking strategy is not only observed in ODI by MNEs from LDCs but is also common in intra-triad merger and acquisitions (M&As), most of which are in knowledge and information-intensive sectors (Dunning 1998 and 2006). A number of studies actually found that much of the ODI targeting the US had been motivated by a technology-seeking objective (Almeida 1996, Chang 1995, Kogut and Chang 1991, Shan and Song 1997).

The competitive advantage at least should follow if not lead firms’ internationalization even for technology-seeking ODI (Dunning 2000). To assimilate and manage the acquired assets, investing firms need to possess certain levels of productivity, absorptive capability, and technology transfer skills so that the entire company could gain from overseas investment (Smeets and Bosker 2011).

The study of Chinese ODI is a relatively new but rapidly growing field. Most of the earlier studies were descriptive in nature—reviewing historical trends, chronicling the changing composition of industry and/or destination of investment and evolution of government policies, and some in-depth case studies (e.g., Deng

A small number of studies have looked at firm-level experiences by applying some survey data, with a special focus on the key drivers of Chinese ODI. Luo et al. (2011) elucidated that international ventures by private Chinese firms had been prompted by an inducement to exploit firm-specific advantages as well as to circumvent market imperfection residuals embedded in the economic transformation of the home country. They examined the impact of firm resources, industry dynamics, and government policies on the ODI motivations of Chinese firms. Their findings confirm that government supports are conducive to both technology-seeking ODI and market-seeking ODI. Firms’ technology-based competitive advantages and a high level of industry R&D intensity tend to motivate technology-seeking ODI, whereas firms’ export experience and higher level of domestic industry competition tend to induce market-seeking ODI.

These analyses based on survey data reflect management’s considerations of ODI, as many of the interviewed firms were not necessarily investing overseas. Studies focusing on Chinese overseas M&As support the resource-seeking and technology-seeking motivations of Chinese MNEs (Antkiewicz and Whalley 2007, Deng 2009, Rui and Yip 2008).

In this study, we first construct two unique datasets, one on large ODI projects approved by the NDRC and the other on ODI projects by SMEs in Zhejiang Province. We then apply statistical approaches to verify the investment motivations claimed by investors. To our best knowledge, this study is the first to assess the relative weights of four different motivations of Chinese ODI (market seeking, technology seeking, natural resource seeking, and efficiency seeking). It is probably also the first study to compare and analyze ODI motivations for Chinese enterprises of different sizes and ownership.

III. Why Chinese Companies Invest Overseas

Firms undertake ODI to pursue one or a combination of the following four objectives: to seek markets, natural resources, technology and other strategic assets, and efficiency (Buckley et al. 2007, Cross and Voss 2008, Dunning 1992 and 1993). Respectively, these are the market-seeking, resource-seeking, technology-seeking, and efficiency-seeking motives.

In this paper, we take two steps to determine the main motivations of Chinese ODI. First, we go through all available project documents to identify claimed investment objectives following conventional definitions in the literature (for example, Buckley et al. 2007). Second, we apply the probit model to verify the credibility of claimed investment objectives. For instance, market size of the host country should

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2This step was conducted and collated by the authors and outside researchers separately.
be a key determinant of market-seeking ODI, while wage rates should be a key
determinant of efficiency-seeking investment.

A. The Dataset

The reason why we spent a considerable amount of time collecting project data
is because aggregate data do not offer much useful or accurate information about
Chinese ODI. According to official data released by the Ministry of Commerce
(MOFCOM), about 78% of the PRC’s ODI flow went to the British Virgin Islands,
the Cayman Islands, and Hong Kong, China from 2003 to 2009. Commercial services
accounted for 32.26% of total ODI during the same period. These headline data could
be misleading since MOFCOM reports only the first destination, which sometimes
is just a stepping stone to the final destination.

To avoid this problem, we construct a dataset with detailed investment in-
formation at the project level. We first collect basic information of ODI projects
approved by the NDRC. We retain project data if: (i) investment amount is re-
ported, (ii) investment content is identified, and (iii) Chinese investors control more
than 10% of the target projects. We discard the project data if: (i) both the buyer
and the seller are Chinese firms, (ii) the project is round-tripping investment, and
(iii) the purpose of investment is to set up a trading center; industrial, scientific, or
technology parks; or an economic zone.

The final dataset contains 293 investment projects with a total of $99.43
billion invested by 216 Chinese firms between 2003 and the first half of 2011. This
dataset covers the majority of Chinese ODI during that period.

B. Explanatory Variables and Hypotheses

Market-seeking ODI occurs as the investing firm expands horizontally into
markets to secure or defend a market position established through arm’s length or
to develop a new market previously unserved (Buckley et al. 2007). Market-seeking
ODI could be defensive in following trade if a foreign country imposes or threatens
to impose barriers to imports. Defensive market-seeking ODI could also occur
when a firm aims to better serve established customers and strengthen their loyalty
by setting up a (foreign) affiliate close to (local) customers. Market-seeking ODI
could also be offensive to explore new markets.

Market-seeking ODI should respond to variables that measure market oppor-
tunities such as host market size, income, and growth momentum. In this study, we
include three variables: (i) gross domestic product (GDP) of the host country, GDP;
(ii) GDP per capita, GDPP; and (iii) GDP growth rate, GDPG. These three variables
are all from the World Bank’s database, World Development Indicators (WDI). We
take the logarithm for GDP and GDPP. An important aspect of market-seeking ODI
is to follow trade, and we thus include the variable, Export, to measure the PRC’s
exports to host countries (also in logarithms). This trade measure is from the United Nations Conference on Trade and Development (UNCTAD) database.

Given other conditions, market-seeking ODI should positively respond to the host country’s GDP and GDPP. As for GDPP, the sign is unclear. A higher per capita GDP indeed suggests a higher purchasing power. But there is also evidence that developing countries usually invest heavily in other developing countries (UNCTAD 2006), one of the reasons being that products made by developing firms are more likely to suit the tastes and needs of consumers in countries with similar levels of economic development. The sign for Export is also uncertain. In theory, exporting and ODI are two alternative means of penetrating foreign markets—exporting goods to satisfy foreign demand, or exporting capital and producing locally. However, if ODI is meant to defend an existing export market, there could be a complementary relationship between these two. Also, there is evidence that the existing trade relations between the investing economy and the host country could facilitate ODI because of the experience gained in trade (Blonigen 2001 and 2005).

Resource-seeking ODI seeks to exploit local factor endowments such as oil, gas, mineral, timber, and other natural resources. The abundance of natural resources in host countries is the key determinant for this type of ODI. We apply two measures: one is orefuel, the share of ores and fuels in the host country’s total exports; the other is raw, the host country’s share in the PRC’s total imports of raw materials. These two variables are calculated based on the merchandise trade matrix from the UNCTAD database. We hypothesize that resource-seeking ODI should respond positively to orefuel and raw.

Technology-seeking ODI pursues technology as well as other strategic assets in host countries where technology already exists or is developing (e.g., through technology clusters). Investing firms could tap the knowledge pool directly by cooperating with local companies, or indirectly, through spillovers and demonstration effects. Broadly defined, technology-seeking ODI also aims at acquiring brands and improving access to distribution channels and tacit assets, with a view to help the acquirer fulfill certain long-term strategic objectives.

We use the revealed comparative advantage (RCA) index in high-tech exports, \( RCA_{hi-tech} \), as proxy for the abundance of technology in the host economy. The RCA index is the ratio of the share of an individual sector’s exports in total exports for a particular country to that share for the world (Balassa 1965). An index less than one implies relative disadvantage, whereas a value greater than one indicates relative advantage.

Following the definition of Balassa (1965), this can be written as:

\[
RCA_{c,i,t} = \frac{EX_{c,i,t}}{\sum_{c} EX_{c,i,t}} / \frac{\sum_{i} \sum_{c} EX_{c,i,t}}{\sum_{i} \sum_{c} EX_{c,i,t}}
\]  

\(^{3}\)Raw materials are calculated as the PRC’s total imports of goods minus total imports of manufactured goods.
where $EX_{c,i,t}$ denotes the exports of industry $i$ of country $c$ in year $t$. $RCA_{c,i,t}$ denotes the revealed comparative advantage of industry $i$ of country $c$ in year $t$.

In this study, we calculate $RCA_{hitech}$ using the trade matrix in the UNCTAD database. In addition, rich countries with high GDP per capita, $GDPP$, to some extent are also possessed with more technologies. Hence, we expect a significantly positive response of technology-seeking ODI to both $RCA_{hitech}$ and $GDPP$.

Efficiency-seeking ODI, by dispersing design and production facilities globally, is undertaken to generate economies of scale and scope and to secure access to cheaper input factors, especially labor. ODI firms take advantage of the difference in factor endowments to improve productive efficiency. Efficiency-seeking ODI is normally sensitive to cost factors. Thus, we introduce three variables: (i) GDP deflator, $inflation$, which is an inflation indicator; (ii) exchange rate change relative to the previous year, $exchanf$, which measures exchange rate fluctuations; and (iii) $GDPP$, representing labor cost. The data source for $inflation$ and $GDPP$ is the WDI, while $exchanf$ is calculated based on the UNCTAD database.

Table 2 depicts the correlation between these determinant variables. The correlation matrix indicates that there is generally no multicollinearity problem. Moreover, to partially address the concern over possible endogeneity, all the macro variables in this study are presented with a one-period lag.

### C. Empirical Results

Table 3 lists the motivations behind Chinese ODI and gives their distribution. About 41% of investment projects (51% in terms of investment value) went overseas to take advantage of the availability of natural resources. Following were market-seeking investment, which ranked second, and technology-seeking investment, which ranked third.

<table>
<thead>
<tr>
<th>Table 2. Pairwise Correlations between Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnGDP</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>lnGDP</td>
</tr>
<tr>
<td>lnGDPP</td>
</tr>
<tr>
<td>GDPG</td>
</tr>
<tr>
<td>lnExport</td>
</tr>
<tr>
<td>RCA_hitech</td>
</tr>
<tr>
<td>orefuel</td>
</tr>
<tr>
<td>raw</td>
</tr>
<tr>
<td>inflation</td>
</tr>
<tr>
<td>exchanf</td>
</tr>
</tbody>
</table>

$\text{lnGDP = log of GDP, lnGDPP = log of per capita GDP, GDPG = GDP growth rate, lnExport = log of exports to host countries, RCA_hitech = revealed comparative advantage index in hi-tech exports, orefuel = share of ores and fuels in the host country’s total exports, raw = host country’s share in the PRC’s total raw materials imports, inflation = GDP deflator, exchanf = exchange rate change relative to the previous year.}$
Table 3. **Motivations behind Chinese ODI**

<table>
<thead>
<tr>
<th>Primary Motivation</th>
<th>By Number</th>
<th></th>
<th>By Value</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Share (%)</td>
<td>Value</td>
<td>Share (%)</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market seeking</td>
<td>87</td>
<td>29.7</td>
<td>28.2</td>
<td>28.4</td>
</tr>
<tr>
<td>Resource seeking</td>
<td>121</td>
<td>41.3</td>
<td>51.0</td>
<td>51.3</td>
</tr>
<tr>
<td>Technology seeking</td>
<td>78</td>
<td>26.6</td>
<td>20.0</td>
<td>20.1</td>
</tr>
<tr>
<td>Efficiency seeking</td>
<td>7</td>
<td>2.4</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market seeking</td>
<td>49</td>
<td>27.2</td>
<td>6.9</td>
<td>22.2</td>
</tr>
<tr>
<td>Resource seeking</td>
<td>61</td>
<td>33.9</td>
<td>9.9</td>
<td>31.6</td>
</tr>
<tr>
<td>Technology seeking</td>
<td>63</td>
<td>35.0</td>
<td>14.2</td>
<td>45.5</td>
</tr>
<tr>
<td>Efficiency seeking</td>
<td>7</td>
<td>3.9</td>
<td>0.2</td>
<td>0.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Primary and Secondary Motivation</th>
<th>By Number</th>
<th></th>
<th>By Value</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Share (%)</td>
<td>Value</td>
<td>Share (%)</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market seeking</td>
<td>101</td>
<td>29.5</td>
<td>32.5</td>
<td>27.5</td>
</tr>
<tr>
<td>Resource seeking</td>
<td>126</td>
<td>36.8</td>
<td>51.1</td>
<td>43.3</td>
</tr>
<tr>
<td>Technology seeking</td>
<td>94</td>
<td>27.5</td>
<td>32.2</td>
<td>27.3</td>
</tr>
<tr>
<td>Efficiency seeking</td>
<td>21</td>
<td>6.1</td>
<td>2.2</td>
<td>1.9</td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market seeking</td>
<td>58</td>
<td>27.0</td>
<td>7.6</td>
<td>21.1</td>
</tr>
<tr>
<td>Resource seeking</td>
<td>66</td>
<td>30.7</td>
<td>10.0</td>
<td>27.9</td>
</tr>
<tr>
<td>Technology seeking</td>
<td>71</td>
<td>33.0</td>
<td>16.1</td>
<td>44.8</td>
</tr>
<tr>
<td>Efficiency seeking</td>
<td>20</td>
<td>9.3</td>
<td>2.2</td>
<td>6.2</td>
</tr>
</tbody>
</table>

The subset of manufacturing projects tells a slightly different story. Here, the key driver of ODI is actually the technology-seeking motive, which accounts for 35% of the projects or 46% of total investment value. Clearly, many Chinese manufacturers go overseas to seek strategic assets—i.e., advanced technology, established brands, and marketing channels—in order to increase profit margins and climb up the industrial value chain. Natural resource seeking, however, is also an important objective for Chinese manufacturers investing abroad. Interestingly, efficiency seeking is not a main driver of Chinese ODI. Only seven out of the total 293 projects had gone overseas to reduce production costs.4

In reality, firms undertaking ODI may be driven by more than one motive. Even after considering both primary and secondary motivations, however, we find that the relative importance of each motivation does not change.

We use the probit model to verify the above claimed objectives (Table 4, first four columns). Indeed, market-seeking ODI is significantly affected by market

---

4This may be partly explained by the potential for many coastal manufacturers to migrate to the vast inland provinces, where production costs are much lower, instead of going overseas. Also, our sample covers large investment projects. It is possible that cost pressures are greater for SMEs in low value-added manufacturing.
Table 4. Results of the Identification of Motives behind Chinese ODI

<table>
<thead>
<tr>
<th></th>
<th>Primary Motivation</th>
<th>Robustness Check</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Market</td>
<td>Asset</td>
</tr>
<tr>
<td>lnGDP</td>
<td>0.418***</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>(3.98)</td>
<td>(0.53)</td>
</tr>
<tr>
<td>lnGDPP</td>
<td>−0.30***</td>
<td>1.02***</td>
</tr>
<tr>
<td></td>
<td>(2.64)</td>
<td>(2.60)</td>
</tr>
<tr>
<td>GDPG</td>
<td>0.119***</td>
<td>−0.055</td>
</tr>
<tr>
<td></td>
<td>(3.22)</td>
<td>(1.16)</td>
</tr>
<tr>
<td>lnExport</td>
<td>−0.27***</td>
<td>0.042</td>
</tr>
<tr>
<td></td>
<td>(2.66)</td>
<td>(0.27)</td>
</tr>
<tr>
<td>RCA_hitech</td>
<td>0.184</td>
<td>0.842*</td>
</tr>
<tr>
<td></td>
<td>(0.6)</td>
<td>(1.75)</td>
</tr>
<tr>
<td>orefuel</td>
<td>−0.666</td>
<td>−2.289**</td>
</tr>
<tr>
<td></td>
<td>(1.38)</td>
<td>(2.22)</td>
</tr>
<tr>
<td></td>
<td>(1.58)</td>
<td>(1.43)</td>
</tr>
<tr>
<td>inflation</td>
<td>−0.004</td>
<td>−0.103</td>
</tr>
<tr>
<td></td>
<td>(0.18)</td>
<td>(1.51)</td>
</tr>
<tr>
<td>exchanf</td>
<td>2.164</td>
<td>−0.064</td>
</tr>
<tr>
<td></td>
<td>(1.36)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Observations</td>
<td>289</td>
<td>289</td>
</tr>
<tr>
<td>Pseudo R-squared</td>
<td>0.3349</td>
<td>0.5198</td>
</tr>
</tbody>
</table>

lnGDP = log of GDP, lnGDPP = log of per capita GDP, GDPG = GDP growth rate, lnExport = log of exports to host countries, RCA_hitech = revealed comparative advantage index in hi-tech exports, orefuel = share of ores and fuels in the host country’s total exports, raw = host country’s share in the PRC’s total raw materials imports, inflation = GDP deflator, exchanf = exchange rate change relative to previous year, *** = significant at the 1% level, ** = significant at the 5% level, * = significant at the 10% level. All regressions include yearly and industry dummies. The numbers in parentheses are absolute value of z-statistics.
variables—GDP, GDPP, GDPG, and Export. As expected, GDP and GDPG show a positive link, while GDPP and Export show a negative link with the destinations’ market attraction. Also as predicted, technology-seeking ODI has a significantly positive response to GDPP and RCA_hitech, while resource-seeking ODI is significantly and positively determined by orfuel and raw.

However, the result for efficiency-seeking ODI is not satisfactory. Although inflation has a significantly negative impact as predicted, the coefficients for exchanf and GDPP are not significant. This is probably due to the limited size of observations for efficiency-seeking ODI, only seven, which makes estimation difficult to conduct.

A robustness check largely supports the results (Table 4, last four columns). In addition to empirically testing the primary motivation, it takes the secondary motivation of Chinese ODI into consideration.

IV. Evidence from SMEs in Zhejiang

The above analysis is based on projects, mainly undertaken by large investors. Other projects, however, may be undertaken by SMEs and may exhibit different characteristics. Fortunately, we also have a dataset covering ODI by SMEs in Zhejiang Province between 2006 and 2008. This data is owned by the FTECB of Zhejiang Province.

From 2003 to 2009, 82.57% of Chinese nonfinancial ODI flow came from enterprises controlled by the central government, but 92.24% of Chinese ODI firms were local enterprises. Zhejiang Province, Jiangsu Province, Shandong Province, Guangdong Province, Shanghai, and Heilongjiang Province accounted for 66.5% of these local firms on average between 2005 and 2009. The largest group could be found in Zhejiang Province, which accounted for 22.44% of the total during the period. ODI from Zhejiang Province is also widely representative of the behavior of private investing firms in the PRC. Approximately 70% of privately-owned Chinese ODI firms come from Zhejiang Province and Fujian Province.

During 2006–2008, Zhejiang recorded a total of 1,270 ODI projects, or $1.75 billion in total investment. The average investment for each project is $1.4 million compared with $339 million for the full NDRC dataset and $174 million for the manufacturing subset.

Table 5 reports the distribution of ODI according to organization type based on the Zhejiang dataset. The majority of investors (77.32%) seek to facilitate Chinese exports to foreign markets by setting up trading or trading-related affiliates. We call this type of investment “Trade.” The other important type, “Production,” involves activities in the form of manufacturing or processing. The other types of organization such as resource exploration and R&D do not have large shares. Thus, unlike resource-seeking or technology-seeking ODI of large Chinese investors, ODI of SMEs seems to be driven by a market-seeking and efficiency-seeking objective.
The “Trade” type of ODI aims at securing or defending the market position and to some extent implies market seeking by firms. However, trade-facilitating ODI differs from the normal market-seeking type of ODI in the sense that production activities are still retained in the PRC, and foreign markets are still served through exports. The role of investment here is to facilitate exports.

In contrast, the “Production” type of ODI embodies both a market-seeking (but in this case, moving production facilities abroad) and efficiency-seeking intent (by investing and producing in low-cost economies). The sum of market-seeking (“Trade” and part of “Production”) and efficiency-seeking (part of “Production”) motives accounts for 90% of SMEs’ ODI in number terms and 72% in dollar terms. Technology seeking and resource seeking absorb only small shares.

We again apply the probit model to statistically verify the motivations of SME ODI (Table 6). As expected, “Trade” type of ODI responds positively to the PRC’s exports to host countries (Export). The host countries’ GDP per capita, GDPP, are also significant in attracting this type of Chinese ODI. For the “Production” type of ODI, market size (GDP) has a positive impact while production cost (GDPP) has a negative influence.

Unlike the technology-seeking counterpart of large investment projects, host countries’ technological advantage, $RCA_{hitech}$, does not have a significant impact in terms of attracting “R&D” among SMEs. Instead, this type of ODI responds mainly to host countries’ GDP per capita, GDPP, which to some extent also reflects the level of economic development of the host country.

As expected, resource-seeking ODI by Chinese SMEs is positively correlated with host countries’ possession of ores and fuels, orefuel. However, SMEs are generally only attracted by resources in low-income countries, while large investors we examined in the previous section do not display such discrimination.

To rule out possible biases due to the influence of offshore financial centers, we exclude the Cayman Islands, the British Virgin Islands, and Hong Kong, China from the sample, and redo the regression. As seen in the last six columns of Table 6, the main empirical results are unchanged and remain robust.

---

**Table 5. ODI from Zhejiang Province, by Type of Organization**

<table>
<thead>
<tr>
<th>Type of Organization</th>
<th>No. of Projects</th>
<th>Share of Total (%)</th>
<th>Investment Amount ($ ten thousands)</th>
<th>Share of Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade</td>
<td>982</td>
<td>77.32%</td>
<td>55710.34</td>
<td>31.87%</td>
</tr>
<tr>
<td>Production (Manufacturing &amp; Processing)</td>
<td>159</td>
<td>12.52%</td>
<td>69630.02</td>
<td>39.84%</td>
</tr>
<tr>
<td>Construction &amp; Real Estate</td>
<td>36</td>
<td>2.83%</td>
<td>11542.07</td>
<td>6.60%</td>
</tr>
<tr>
<td>Resource Exploration</td>
<td>32</td>
<td>2.52%</td>
<td>15875.53</td>
<td>9.08%</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>25</td>
<td>1.97%</td>
<td>6252.68</td>
<td>3.58%</td>
</tr>
<tr>
<td>Industrial Parks</td>
<td>7</td>
<td>0.55%</td>
<td>4453.38</td>
<td>2.55%</td>
</tr>
<tr>
<td>Others</td>
<td>29</td>
<td>2.28%</td>
<td>11316.43</td>
<td>6.47%</td>
</tr>
</tbody>
</table>

Source: FTECB, Zhejiang Province.
Table 6. Results of the Identification of Motives behind Chinese ODI from Zhejiang Province

<table>
<thead>
<tr>
<th></th>
<th>Full Sample</th>
<th>Robustness: Excluding OFC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trade</td>
<td>Production</td>
</tr>
<tr>
<td>lnGDP</td>
<td>-0.068</td>
<td>0.12**</td>
</tr>
<tr>
<td></td>
<td>(1.27)</td>
<td>(2.03)</td>
</tr>
<tr>
<td>lnGDPP</td>
<td>0.391***</td>
<td>-0.376***</td>
</tr>
<tr>
<td></td>
<td>(7.77)</td>
<td>(6.86)</td>
</tr>
<tr>
<td>GDPG</td>
<td>0.024</td>
<td>0.012</td>
</tr>
<tr>
<td></td>
<td>(0.93)</td>
<td>(0.43)</td>
</tr>
<tr>
<td>lnExport</td>
<td>0.103**</td>
<td>-0.069</td>
</tr>
<tr>
<td></td>
<td>(2.01)</td>
<td>(1.21)</td>
</tr>
<tr>
<td>RCA_hitech</td>
<td>-0.076</td>
<td>-0.091</td>
</tr>
<tr>
<td></td>
<td>(0.50)</td>
<td>(0.55)</td>
</tr>
<tr>
<td>orefuel</td>
<td>-0.008</td>
<td>-0.485*</td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(1.71)</td>
</tr>
<tr>
<td>raw</td>
<td>0.786</td>
<td>-1.565</td>
</tr>
<tr>
<td></td>
<td>(0.28)</td>
<td>(0.50)</td>
</tr>
<tr>
<td>inflation</td>
<td>0.033**</td>
<td>-0.012</td>
</tr>
<tr>
<td></td>
<td>(2.40)</td>
<td>(0.97)</td>
</tr>
<tr>
<td>exchanf</td>
<td>0.931</td>
<td>0.559</td>
</tr>
<tr>
<td></td>
<td>(1.13)</td>
<td>(0.62)</td>
</tr>
<tr>
<td>Observations</td>
<td>1189</td>
<td>1189</td>
</tr>
<tr>
<td>Pseudo R-squared</td>
<td>0.1628</td>
<td>0.1586</td>
</tr>
</tbody>
</table>

lnGDP = log of GDP, lnGDPP = log of per capita GDP, GDPG = GDP growth rate, lnExport = log of exports to host countries, RCA_hitech = revealed comparative advantage index in hi-tech exports, orefuel = share of ores and fuels in the host country’s total exports, raw = host country’s share in the PRC’s total raw materials imports, inflation = GDP deflator, exchanf = exchange rate change relative to previous year, *** = significant at the 1% level, ** = significant at the 5% level, * = significant at the 10% level, OFC = offshore financial center. All regressions include industry and year dummies. Numbers in parentheses are absolute value of z-statistics.
V. Chinese, Japanese, and American Style ODI

A. Market-seeking and Efficiency-seeking ODI

There are two typical styles of ODI, Japanese and American, the identification of which can only be in relative terms (Kojima 1978). Many firms undertake ODI for multiple objectives and these may evolve over time. Japanese-style and American-style ODI correspond mainly to the pattern of ODI at certain stages of economic development. In fact, today’s Japanese ODI is closer to American-style than Japanese-style ODI as classified below.

In this stylized world, US ODI is driven mainly by the market-seeking objective. Although exporting and licensing could also serve to open foreign markets, there are certain advantages to ODI. On one hand, compared with exports, ODI has the benefit of reducing transportation costs and avoiding tariff and other trade barriers. On the other hand, internalizing market transactions through ODI enables firms to overcome transaction costs due to incomplete external markets and maximize profits from its proprietary advantages (Buckley and Casson 1985).

Unlike its US counterpart, Japanese ODI followed a different path, at least in its early years in the 1960s and 1970s. In early postwar Japan, labor-intensive light industries constituted the main part of the Japanese manufacturing sector, accounting for 74.7% of total manufacturing output and 43.5% of total exports in 1955. But in the 1960s, especially since 1963, rising wages started to pressure the competitiveness of labor-intensive industries in Japan. Many of them moved to the Republic of Korea; Singapore; Taipei, China; and other Asian countries with lower labor costs. Following labor-intensive light industries, heavy industries led the second wave of Japanese ODI in the 1970s. Kojima (1978) called the industries under significant cost pressure at home “marginal industries” and proposed the “marginal industry expansion theory.”

There are three key differences between market-seeking US ODI and efficiency-seeking Japanese ODI. First, it had been the marginally efficient firms in Japan that exited from the contracting sector and took initiative to move overseas and not the leading firms as in the US. Second, in the case of Japanese ODI, the more competitive an industry is, the greater is the need for overseas production. In the case of US ODI, the more monopolistic or oligopolistic the industry is, the greater is the potential to exploit through overseas operation. Third, US affiliates were primarily host-market-oriented, while Japanese affiliates were mostly export-oriented (Ramstetter 1991).

B. Chinese-style ODI: Enhancing Domestic Productivity

Chinese-style ODI presents a sharp difference from its counterparts in Japan, the US, and even third-world countries. Chinese ODI by large manufacturers is not
meant to exploit existing advantages for exploring market opportunities in the host
country. Neither is it meant to take advantage of cheap labor and other production
factors by moving production facilities overseas. Instead, large Chinese enterprises
pursue ODI primarily to augment existing assets and strengthen competitiveness and
to secure the supply of resources and raw materials needed for domestic production.

Similarly, ODI by Chinese SMEs is basically designed to serve domestic
production. However, unlike the large investors, the channel used to strengthen
domestic production is not by acquiring strategic assets or securing natural resources
and raw materials but by facilitating Chinese exports to host economies.

We argue that there are at least three reasons explaining why the key theme
of Chinese ODI is to strengthen domestic production rather than to expand overseas
production.

First, in response to rising domestic production costs, Chinese firms prefer
moving their factories inward to the country’s less prosperous inland areas rather
than operating across borders, which could entail huge uncertainties.

Facing a similar situation of rising wage levels, an appreciating currency, and
increasing environmental and resource constraints, Chinese manufacturers, unlike
their Japanese counterparts in the early postwar period, do not respond by moving
factories abroad on a large scale. The key reason lies in the diversity and imbalance
of economic development among provinces within the PRC. As shown in Figure 1,
when per capita GDP in Zhejiang Province in the eastern part of the country rose
to more than $6,000 in 2010, the figure for Hubei Province in the central region
and Guizhou Province in the western region amounted to only $3,300 and $1,700,
respectively. Thus, factories in the more developed eastern coastal areas can find

Figure 1. GDP per Capita of Selected Regions in the PRC and East Asia, 2000–2010 ($)

Source: China Statistical Yearbook, National Bureau of Statistics; World Development Indicators, World Bank.
room to relocate to the central and western regions where production costs are lower.

Admittedly, even compared with the western part of the PRC, some adjacent Asian developing economies such as Viet Nam and Cambodia still enjoy an advantage of cheaper labor and, in fact, are increasingly attracting more Chinese investments. But the lack of supporting infrastructure, possible hyperinflation concerns, territorial disputes with the PRC, and difficulties associated with and the unfamiliarity of operating in foreign countries, result in the premium from cheaper labor being less attractive.

Second, the PRC needs to employ technology-seeking ODI to transform from being a manufacturing big state in terms of scale to a manufacturing strong state in terms of technology and brand names.

Compared with the primary and service sectors, the Chinese manufacturing sector indeed enjoys a comparative advantage in terms of performance in export markets and development in the domestic economy (Huang and Wang 2011). But such advantages have focused on products such as steel, coal, cement, televisions, washing machines, refrigerators, air conditioners, microwaves, and motorbikes, which require minimal technological investment in their assembly and production (Wang and Wang 2011). More than half of the locally-made products rely on foreign technology and components. As a result, Chinese manufacturers only enjoy a fairly small profit margin, with most of the profits accruing to foreign multinationals for their provision of technology, design, and other services. Another outcome has been the passive role of Chinese firms and their constrained ability to engage in core technology and R&D.

Moreover, the PRC lacks world-famous brand names. According to “The World’s 500 Most Influential Brands in 2011,” nine out of the top ten comprised US companies, while the top five were in high-tech industries (Table 7). Included in

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<td>1</td>
<td>Apple</td>
<td>Computer</td>
<td>U.S.</td>
<td>50</td>
<td>CCTV</td>
<td>Media</td>
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<td>2</td>
<td>Facebook</td>
<td>Internet</td>
<td>U.S.</td>
<td>65</td>
<td>China Mobile</td>
<td>Telecommunications</td>
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<td>3</td>
<td>Google</td>
<td>Internet</td>
<td>U.S.</td>
<td>77</td>
<td>ICBC</td>
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<td>4</td>
<td>Microsoft</td>
<td>Software</td>
<td>U.S.</td>
<td>82</td>
<td>STATEGRID</td>
<td>Energy</td>
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<td>5</td>
<td>IBM</td>
<td>Computer</td>
<td>U.S.</td>
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<td>Lenovo</td>
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<td>6</td>
<td>Wal-Mart</td>
<td>Retail</td>
<td>U.S.</td>
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<td>Home Appliances</td>
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<td>7</td>
<td>Coca-Cola</td>
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<td>U.S.</td>
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<td>8</td>
<td>Amazon</td>
<td>Internet</td>
<td>U.S.</td>
<td>240</td>
<td>CCB</td>
<td>Banking</td>
</tr>
<tr>
<td>9</td>
<td>Mercedes-Benz</td>
<td>Automobile</td>
<td>Germany</td>
<td>264</td>
<td>China Life</td>
<td>Insurance</td>
</tr>
<tr>
<td>10</td>
<td>McDonalds</td>
<td>Food and Beverage</td>
<td>U.S.</td>
<td>275</td>
<td>HUAWEI</td>
<td>Electronics and Communication</td>
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Source: The World Brand Lab.
the list were 239 US companies, 43 French companies, 41 Japanese companies, 39 British companies, 25 German companies, and only 21 Chinese companies. Of this short list of Chinese firms, a large segment was owned by the central government, concentrating in monopolized or highly-controlled industries such as finance, energy, telecommunications, and petrochemicals.

Chinese enterprises therefore would not waste any chance to acquire strategic assets such as brand names, technology, distribution networks, R&D facilities, and managerial competencies to elevate their core competitiveness in an increasingly tough world market and more liberalized domestic economy.

Finally, an exceptionally large and heavy secondary industry in the PRC requires a secure supply of resources and raw materials.

The share of industry value-added in the country’s GDP averaged at 46.5% during 2000–2010. In 2009, for example, industry constituted 46.2% of the PRC’s GDP compared to 20% in the US, 26.7% in Japan, and the world average level of 25.4%. This large secondary industry underpins the PRC as the world’s manufacturing big state, serving products consumed on a global scale.

Moreover, an obvious heavy industrialization process had occurred in the PRC from the middle to late 1990s. The share of heavy industry in total industrial output rose sharply from 57.1% in 1998, to 60.2% in 2000, and further to 71.4% in 2010 (Figure 2, 1998 not in the chart.) This industrialization process requires more resources and energy inputs. For a long time now, the country has relied on imports to meet its demand for commodities. However, the commodities boom after

![Figure 2. Share of Industry Value-added in GDP of Selected Countries and Share of Heavy Industry in the Industry Sector of the PRC, 2000–2010 (%)](image)

Note: The line charts correspond to the share of industry in GDP in selected countries and refer to the left-hand axis. The bar chart, the share of heavy industry in the industry sector of the PRC, refers to the right-hand axis. Source: China Statistical Yearbook, National Bureau of Statistics; World Development Indicators, World Bank.
2002 has hiked prices beyond the level that many Chinese producers can bear and still make profits. Hence, Chinese manufacturers, and not only Chinese resource companies, are looking outward, taking major stakes in overseas resource projects and acting as both shareholder and customer.

VI. Concluding Remarks: Is There an Integrated ODI Life Cycle?

The PRC’s jump onto the stage of global ODI is a relatively recent phenomenon. Yet this development is already prominent globally due to the rapidly growing size of Chinese investment and the political sensitivity surrounding state-owned enterprises (SOEs).

Instead of moving factories overseas, Chinese ODI seeks to strengthen domestic production. Instead of exploiting existing firm-specific advantages, Chinese ODI aims to improve investing firms’ competitiveness. As we have demonstrated in this study, Chinese firms going abroad take a stake in overseas resources, acquire advanced foreign technologies and well-established brand names, gain access to market channels, and set up trade-facilitating operations.

Chinese-style investment is very different from traditional ODI of developed economies, which pursues increased market sales or reduced production costs by transferring technology and know-how from headquarters to far-flung operations in the host economy. We identify American-style ODI as market seeking (overcoming market entry barriers), Japanese-style ODI as efficiency seeking (taking advantage of low production costs), and Chinese-style ODI as technology seeking (strengthening domestic firms’ productivity and production). Of course, distinctions among these different styles are only relative—firms often have multiple investment motivations such that different styles may exist in the same country.

Economists have also observed technology-seeking ODI in other developing countries, but they have never been as large and as high profile as in the PRC today simply because developing economies normally do not invest overseas massively. The PRC, though still a middle-income country, is different in this regard on two fronts. First, as the global manufacturing center, the country faces increasing international competition but still enjoys some cost advantage. Second, the PRC has maintained large current account surpluses over the past decade and accumulated foreign exchange resources, taking the main form of reserves but which could be utilized for ODI. These also explain why Chinese-style (i.e., technology-seeking) ODI has not become a prominent international phenomenon until today.

But Chinese-style ODI may also be a transitory phenomenon—as wages, interest rates, exchange rates, and energy prices continue to rise, the PRC may soon lose its cost advantage even in inland provinces. This could force Chinese companies to move overseas to maintain competitiveness, just like what happened when the Republic of Korea; Hong Kong, China; and Taipei, China moved their
textile and clothing factories to Southern PRC in the early 1980s. This could also mean Chinese-style ODI gradually giving way to Japanese-style efficiency-seeking ODI (the so-called marginal industry expansion).

We suspect that there is an integrated life cycle of ODI, where evolution is primarily determined by the level of economic development. Developing countries normally have relatively low levels of both technology and production costs. If they had enough funds, they could engage in Chinese-style ODI to take advantage of low domestic cost as well as advanced overseas technology. As the cost of domestic production rises, developing countries could lose their cost advantage and consequently engage in Japanese-style ODI. At the same time, their domestic companies could move up the technological ladder to stay competitive. With technology improving, cost becomes a less critical factor, while R&D and innovation become more crucial. Eventually, these countries may engage in American-style ODI to overcome market entry barriers in host countries. This was probably what happened to Japanese ODI over the past two decades.

Such an ODI life cycle is logically linked to Dunning’s investment development path theory, under which framework a country evolves from a host country of FDI to a home country of ODI. The ODI life cycle explains how a home country of FDI gradually shifts from Chinese-style ODI to Japanese-style ODI and then to American-style as the economy develops.

Following this life cycle thesis, we expect ODI of Chinese SMEs to surge and become a dominant global phenomenon in the coming decade. Currently, Chinese ODI capturing international headlines mostly trace to the country’s SOEs. This is going to change for several reasons. First, the PRC’s (low) cost advantage is disappearing rapidly. At the moment, many factories are migrating from coastal areas to inland regions, but even in interior cities, costs are growing rapidly. Cost pressures will be most significant on SMEs in labor-intensive industries. Second, the PRC is now accelerating capital account liberalization. While the whole process may take some time, complete liberalization of ODI is on top of the agenda.

References

INVESTING OVERSEAS WITHOUT MOVING FACTORIES ABROAD


The Political Economy of Policy Reform: Insights from Southeast Asia

HAL HILL*

Economists broadly agree on many key economic policy issues, but economics as a discipline has provided much less guidance on why and how economic policy reform occurs and how to develop institutional mechanisms that enable governments to adopt “good” economic policy. Political scientists are adept at identifying coalitions, constituencies, institutions, and interest groups, but they less commonly examine the implications for economic policy. Thus, work at the intersection between economics and politics—of why and how policy reform takes place—remains relatively unexplored territory. This is especially so in developing countries where political processes are more personalistic, institutions often less well established, outcomes more fluid, and the detailed case study literature on economic policy making still in its infancy. This paper provides an analytical survey of economic policy reform in Southeast Asia. It ranges across the major policy U-turns and the incremental reforms, with special reference to macroeconomic management and trade policy. On the basis of several case studies and set against the broader international literature, we advance nine conclusions on the political economy of reform.

**Keywords:** political economy, reform, Southeast Asia, trade liberalization, macroeconomic management

**JEL codes:** E61, F13, O57, Z18

I. Introduction

Although it may not seem obvious to non-economists, economists broadly agree on many key economic policy issues. But economics as a discipline has provided much less guidance on why and how economic policy reform occurs and how to develop institutional mechanisms that enable governments to adopt “good” economic policy. Political scientists are adept at identifying coalitions, constituencies, institutions, and interest groups, but they less commonly examine the implications for economic policy. Thus, work at the intersection between economics and politics, of why and how policy reform takes place, remains relatively unexplored territory.

There is no generally accepted template, much less a “rule book” for how to engineer successful policy reform. This is especially so in developing countries

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where political processes are more personalistic, institutions often less well established, outcomes more fluid, and the detailed case study literature on economic policy making still in its infancy. We therefore need more case study evidence, of both success and failure, to understand why and how successful reform occurs.

Southeast Asia offers a fascinating opportunity for social science researchers interested in these issues. The economic performance of most of the major economies for most of the period since 1970 has been significantly better than the developing world average. But there is much diversity in the record of growth and reform. The reform experience ranges across the major policy U-turns and incremental reforms, successes and failures, and the macroeconomy and the sectors, with both international and domestic factors playing a role. This diversity of the region, reflected also in levels of development and in political and institutional structures, both cautions against generalization but also adds to the richness of the subject matter.

This paper offers an analytical survey of the evidence on economic policy reform in Southeast Asia. To narrow down the topic to manageable, paper-length proportions, we focus primarily on macroeconomic and trade policy reform in three of the lower-middle income economies—Indonesia, the Philippines, and Viet Nam. Section II introduces the issues and provides some country and institutional context. Section III dissects a series of reform episodes in these countries. Section IV then draws some broader lessons and implications.

II. Issues and Context

A. Some Definitions

I define “reform” for these purposes as a durable and significant policy change that improves aggregate socioeconomic welfare, consistent also with an objective function that recognizes distributional and environmental considerations. The underlying rationale is concern for general welfare, the public interest, rather than particular vested interests. Economists have typically defined reform as measures that increase productivity and growth rates, but these goals could obviously be redefined to encompass a broader set of non-economic objectives. In addition to particular measures, reforms can also be about policy-making processes, for example greater transparency in policy making such as when firms claiming special assistance have to submit to a process of public scrutiny and justification.

Obviously, not all policy changes would meet this definition of reform. For example, a redistribution program would not unless it could be shown that this program resulted in increased productivity or met more widely accepted social objectives (e.g., social stability). Similarly, programs that are essentially window-dressing exercises such as anti-corruption campaigns introduced by a deeply corrupt regime or “one-stop-service” investment programs without significant bureaucratic
reform would not meet this definition. It is important to emphasize durability in the sense that the reforms can be implemented and will not be quickly overturned by a successor administration.

Reforms come in many forms, from the large to the incremental. The literature focuses on the “big bang” reforms that constitute a major change in policy direction and which, if durable, are sometimes referred to as “turning points” that lead to accelerated growth and improved living standards. Asian examples include the People’s Republic of China (PRC) in 1978, India in 1991, Indonesia in 1966, and Viet Nam (and its two Indochina neighbors) in the late 1980s. It is not possible to discern such turning points for some countries in the sense that the general policy orientation has been broadly consistent and policy reforms consist of incremental progress. In Southeast Asia, Malaysia, Singapore, and Thailand best fit this characterization. The experience of other countries might be best described as “zigzag reform,” with progress followed by regress.¹

The nature of reforms and their bureaucratic complexity also differs. Some measures are straightforward, stroke-of-the pen deregulations that range across the big bang/incremental spectrum. Examples include the decision to introduce a floating exchange rate, replace nontariff barriers with tariffs, remove certain regulatory requirements, open an industry up to competition, and render redundant a particularly corrupt agency. These decisions of course require careful prior evaluation and a judgment that the parties that previously benefitted from the reforms will not be able to sabotage them. But once this “due diligence” has been undertaken, implementation of the reforms themselves is relatively straightforward.

By contrast, other reforms require a bureaucracy to implement them, and therefore administrative feasibility is a key consideration. For example, a prerequisite of successful tax reform is a competent and honest tax administration. This may be an interactive process in the sense that the reforms are designed to lessen the scope for discretionary interventions (e.g., a value-added tax that builds in an incentive for compliance, simpler tax rates, and regulations).

Some measures may go hand in hand, entailing a different mix of interventions, more of some and less of others. For example, financial liberalization entails relaxed barriers to entry and less bureaucratic intervention in the operations of financial institutions. However, a market-based financial system also requires careful and credible prudential supervision.

B. Drivers of Reform

The literature typically identifies the key drivers of reform as a mixture of factors, including necessity, the triumph of ideas, and the conjunction of reform-oriented political leadership aided by technocratic advisers. Typically, several of

¹The economic histories of Latin America frequently emphasize this point (Edwards 2010).
these factors are present in the case of successful reforms. An understanding of the drivers of reform in turn requires identification of the key policy actors. We summarize here some salient points in the literature.

First, the “crisis hypothesis” as a reform driver was a key conclusion of the comparative study of Lal and Myint (1996, 288), who concluded that “Turning points (in economic policy) are invariably associated with macroeconomic crises.” The trigger could also be some other major event such as a military defeat (or threat), the cessation of external support, or a natural disaster. The underlying hypothesis is that reform is a difficult process, and societies have a natural (“Olsonian”) tendency to become sclerotic. A crisis may be helpful in persuading the community that the current order is unacceptable and requires change. Political leadership may be emboldened and willing to tackle difficult issues. For example, Bardhan (1998) draws attention to India’s 1991 balance of payments crisis as a trigger for reform, enabling the government to push aside the formidable vested interests that had built up around the post-independence dirigiste regimes, both financial and ideological.

Obviously, however, not all crises trigger major reforms. Instead they may result in failed states or at least an inability to seize the opportunity to reform. That is, the hypothesis only works in certain circumstances. For example, the collapse of the communist regimes in the former Soviet Union and Eastern Europe led to a deep economic contraction, and several countries did not regain pre-crisis living standards for over a decade or two (Pomfret 2002). Moreover, deep crises may result in a political and institutional vacuum and incapacity to undertake effective reform. In the transition to a new, perhaps democratic environment, power is generally diffused, structures are established to deliberately weaken the state, and policy lacks credibility. Indonesia in 1998 and the Philippines in 1986 are relatively mild examples of these twin crises, although in Indonesia, economic recovery occurred surprisingly swiftly given the depth of the crisis (Aswicahyono, Bird, and Hill 2009).

Second, effective reform requires a coherent intellectual agenda, an analysis of what needs to be done, how, and in what sequence. Thus, ideas are a central prerequisite (Krueger 2007). These ideas spring from a variety of sources but are most commonly associated with think tanks and economics faculties of leading universities. A common characterization is that of a key group of technocrats receiving training from leading universities abroad—Chile’s “Chicago Boys” and Indonesia’s “Berkeley Mafia” are oft-cited examples—but the channels of influence are in reality much broader. In some cases, the reform agenda is formulated and driven by observing success abroad, most commonly in the neighborhood. The bureaucracy may also become a driver where there is a realization that the system being administered has become increasingly dysfunctional.

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2The importance of a united team of advisers is stressed in much of the literature. See for example Boediono (2005) in the case of Indonesia and Nelson’s (1984) earlier comparative study in which she concludes that “…cases of clear failure all traced collapse in large part to deeply divided economic teams.”
Technocrats are generally politically powerless. To translate their ideas into policy, they need to convince political leaders of the case for reform and to work with them in implementing reform. That leader does not need to be a technical economist—in fact such cases are rare—but at least a person open to persuasion and able to grasp intuitively, if not technically, the case for reform. Obviously, there has to be a close working relationship and a sense of trust between these leaders and their technocrats. In centralized authoritarian regimes, the key is the technocrats having access to the president or ruling party. Here, the technocrats may engage in what Soesastro (1989) termed “low politics” in the Indonesian case. That is, the technocrats seized the opportunity created by the sudden decline in international oil prices in the early 1980s to persuade then President Soeharto to implement far-reaching reforms but without having to engage in large-scale, high-profile public or parliamentary persuasion.

However, approaches to reform change, sometimes radically, in democratic regimes. Politicians have to persuade an electorate, while technocrats have to engage in the public discourse, persuade political and opinion leaders, and ameliorate or buy off potential opposition (and losers). There is higher potential for policy change in regimes with low dispersal of power, in the words of MacIntyre (2003). That is, policy reform is likely to be more difficult where power is more diffused and there are more veto players present. It might be argued that while reform is slower under a democratic regime, it is likely to be more durable since the reform process will be consensus-driven, with greater attention paid to potential losers. Nevertheless, in presidential regimes where both the executive and senior echelons of the bureaucracy are replaced, elections may result in significant policy change. Two examples since the mid-1990s where reformists were followed by democratically elected reform skeptics are Colombia and the Philippines. In both cases, the growth momentum decelerated.

Third, convincing politicians of the case for reform is a key challenge. Political leaders by definition have short-term horizons and a political predisposition to favor a particular constituency. Arguing the case for reform when the benefits may be uncertain and long term in nature, and the short-term costs potentially high, is perhaps the most important challenge in the policy reform agenda. The reforms need to produce a dividend as quickly as possible. Where painful decisions are needed, external support may occasionally be useful. Technocrats themselves may attempt to pick a political winner and lend their credibility to a particular candidate. There may also be scope for institutionally embedding reform momentum. Bates (1994, p. 30) for example argues for “… creating institutions that possess the power to commit (politicians) to collectively rational strategies.” Examples include measures that impose fiscal discipline on a government or create “agencies of restraint” staffed

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3 See Edwards (2001) and De Dios and Hutchcroft (2003), respectively.
by professionals and with public reporting responsibilities (e.g., a productivity or competition commission).

Fourth, as noted, the bureaucracy is a key actor. It may range from being a passive bystander to an active player in a negative or positive sense. The literature generally makes two presumptions concerning their role. The first is a division between the key economic policy agencies such as finance ministries and central banks, which are more likely to be staffed by economists and to favor “orthodox” policies, and line and sector ministries which are more likely to favor and be captured by sector interests. The second is the notion that much of the bureaucracy, the latter groups especially, will be reluctant reformers since most but not all reforms will reduce their discretionary authority and hence the scope for rent seeking. Reform outcomes will therefore depend on the relative strength of these contending groups. More generally, outcomes will be shaped by the relative power of the executive, the legislature, and the bureaucracy; and the scope of the reformers to variously persuade, co-opt, or bypass bureaucratic resistance.

Fifth, there are various conjectures concerning the impact of external actors and factors. Two have already been identified: crises, some of which are exogenous (in the form of negative external shocks) and which have unpredictable effects; and ideas, many of which originate from abroad. Other foreign influences may also shape the process. There is the demonstration effect of successful reforming economies, especially if they are located nearby. This is the “competitive liberalization” thesis referred to by Indonesia’s Minister for Tourism and Creative Economy Mari Pangestu (2012) and others. The intellectual ascendancy of openness as an engine of economic progress is highlighted in several country studies of trade liberalization (Rajapatirana 2001). Foreign investors have become more interested in global economic integration, and therefore their earlier interest in establishing “tariff factories” behind high protective barriers in developing countries has waned (Bhagwati 2002).

The evidence on donor (particularly, the IMF and the World Bank) conditionality is mixed. Jeffrey Sachs (1994, 504) has opined that “Countries cannot be transformed without the generous and farsighted involvement of the international community.” A large literature of course argues the contrary case (see, for example, Easterly 2006), that aid encourages the recipient countries to postpone difficult policy reforms. International agencies can play an effective role if there is a domestic interest in—and will for—reform (Krueger and Rajapatirana 1999). However, in the absence of these factors, externally-mandated reform attracts domestic opprobrium, implementation is likely to be spasmodic, and the reforms will therefore generally not be durable. These arguments are also consistent with the cross-country econometric evidence that finds aid contributes to growth only when “good policies” are present (Burnside and Dollar 2000).

Sixth, the more successful reforms are invariably comprehensive. Political constraints may in reality result in piecemeal reform. But the danger is that significant gaps in the reform agenda may undermine the entire process. The literature on the
interaction between macroeconomic and trade policy illustrates this issue and also provides an intellectual rationale for the sequencing of reforms. As Rajapatirana (2001) and other analysts of successful trade liberalization point out, a willingness to allow a large depreciation boosts the competitiveness of tradable goods industries and facilitates a lowering of protection. Krueger (1978, p. 231) goes further, arguing that the “... failure to devalue by a sufficient margin will prevent sustained liberalization.” Moreover, a “... realistic real exchange rate (is) an essential condition for sustained liberalization.” In a similar vein, Pinera (1994, p. 228) warns against partial reforms on the basis of the Chilean experience: “It is no use freeing trade and opening up the capital markets if one is going to leave the labor markets untouched.”

III. Southeast Asian Case Studies

In this section, we summarize four major Southeast Asian policy reform episodes. It needs to be acknowledged immediately that there are two forms of sample selection bias in these case studies. First, their selection is inevitably arbitrary, based on documented research and my own research interests. Moreover, the samples selected focus mainly on success stories, working on the principle that economic policy can fail for any number of reasons, but success is more elusive and therefore needs to be investigated. Second, to the extent that the case studies focus primarily on changes in policy direction, the three more advanced economies in the region—Malaysia, Singapore, and Thailand—are underrepresented since they have had much more consistent policy regimes since the 1970s, and therefore there has been less need to undertake far-reaching changes in the policy settings. These three, for example, belong to the tiny handful of countries that have remained “always open” in the Sachs-Warner sense and avoided serious inflation episodes (though not a major growth slowdown during the Asian economic crisis and the global economic recession).

A. Viet Nam’s Doi Moi, and Beyond

Viet Nam’s major reforms from the mid-1980s are of particular interest since they have been highly successful, yet they were undertaken in very difficult circumstances. The country was verging on being a pariah state: frozen out of relations with the US; at loggerheads with its neighbors, the PRC to the north and the Association of Southeast Asian Nations (ASEAN) to the south and west; about to lose the support of its principal international benefactor, the Soviet Union; and having minimal contact with international financial institutions (IFIs). There was a weak

4There is now an extensive literature on Viet Nam’s reforms. I have drawn in particular on Leung (2010), Riedel and Comer (1997), and Rama (2008).
technocracy with very limited knowledge of how to manage the transition process and run a market economy.

Riedel and Comer (1997) argue that policy makers learnt mainly from their bitter experience with a decade of central planning, including disastrous attempts at agricultural collectivization and nationalizations. In their words:

The leadership of Viet Nam did not decide to “go market” because of any kind of ideological conversion from Marxism-Leninism to capitalism; instead it discovered the hard way that the alternative to a market economy does not work.

The Chinese experience, although in its infancy, was closely observed, as this was the country against which Viet Nam benchmarked its performance. Riedel and Comer (1997) stress that the term chosen at the Sixth Party Congress in December 1986, doi moi (renovation), connotes gradualism. However, the hyperinflation of 1986–1988 threatened to undo the early reforms, and this resulted in a successful stabilization program in 1989 that was “…pure IMF orthodoxy, albeit without the IMF behind it.” The main elements were raising interest rates, devaluing and unifying the exchange rate, legalizing gold holdings, and reducing public sector deficits. Deficits were lowered by reducing the ratio of government expenditure to GDP by six percentage points. Subsidies to state-owned enterprises (SOEs) were largely eliminated, half a million soldiers were demobilized, and major state investment programs were cut. In early 1989, the decision was taken to liberalize prices and eliminate the system of state procurement.

Further reforms followed. SOEs saw a hardening of their budget constraints. They were weaned off central bank credits and increasingly forced to buy inputs from the market. Some were closed, and others brought under the control of the Ministry of Finance. Several laws were introduced clarifying the rights of enterprises. Liberalization of the regime for foreign direct investment began in 1988. Trade reform involved the freedom to engage in international trade and the establishment of export processing zones. Reform of the import regime proceeded more slowly, as did financial sector reform.

The pace of reform slowed in the mid-1990s, a factor compounded by the Asian economic crisis. However, a “second doi moi” got underway in the late 1990s, involving further reform of enterprise laws, more liberal trade and investment regulations, and additional SOE reforms. Viet Nam then enjoyed strong economic growth for a decade, until 2008 when a combination of domestic policy missteps and the global economic recession again slowed growth. This success has bequeathed further problems, including in macroeconomic policy, industry policy, and state enterprise reform (Leung 2010, Pham and Riedel 2012), but there seems little doubt that moderately high growth is now entrenched.
This appears to be a case of reform initially triggered by necessity, anticipating a large reduction in its external revenues and disappointment with its central planning experience. It was undertaken by an authoritarian regime intent on national economic development and anxious to learn from and keep up with its neighbors. Apart from necessarily abrupt macroeconomic stabilization, the reforms were mostly gradual and effective. There was a strong export response to the decision to unify the exchange rate, adjust prices to international levels, and free up the trade regime. The country did not experience the Eastern European economic collapse owing to its effective reforms and the absence of a large and inefficient heavy industry sector. There was also some good fortune in the discovery of large oil deposits, which effectively substituted for Soviet aid. Two unusual features were the absence of a group of well-trained technocrats and the country’s international isolation. It is difficult to think of a more compelling case of successful reform against formidable odds in recent times.

B. Trade Liberalization: Indonesia in the 1980s

Trade liberalization has been central to policy reform. This is based on the premise that once macroeconomic stabilization has been achieved and a workable political system established, openness is the key policy lever to ensure a competitive economy, by disciplining rent seekers and preventing policy backtracking. That is, the political economy dynamic, not guaranteed but more likely, is that the efficient, internationally-oriented sectors of the economy producing tradable goods and services will exert pressure on the unreformed sectors of the economy and will demand better quality governance and institutions. The struggle for trade liberalization also illustrates up close how and why reform succeeds. In the words of Bhagwati (2002), the literature on the political economy of trade liberalization emphasizes the interplay of “ideas, interests, and institutions.” We focus here on two major, though quite different, trade liberalizations in Indonesia and the Philippines.

Indonesia achieved comprehensive reform in the mid-1980s, and this elevated growth rates and almost certainly averted a serious debt crisis. This followed an earlier, more significant, and highly successful change in policy direction in the period 1966–1968. While we focus here mainly on trade reform, the broader context is also relevant. By way of background, the Indonesian economy grew strongly over the period 1967–1982, driven by the return to sensible and credible economic management and large oil and aid revenues. In the early 1980s, however, the global economy began to slow down and oil prices fell sharply, from about $30 per barrel to less than $10 per barrel. With oil, gas, and related commodities generating about three-quarters of merchandise exports and two-thirds of government revenue, the Indonesian economy looked precarious. Growth slowed considerably in the early 1980s, but by the end of the decade the economy was growing as fast as it did during the oil boom period.
The details of the reforms are explained elsewhere (see e.g., Hill 2000). Fiscal policy remained prudent, with immediate adjustment on the expenditure side (mainly the shelving of an ambitious heavy industry program) and a series of effective tax reform measures that lifted revenues. Donors also responded quickly and generously. In addition, there were two large nominal exchange rate depreciations, in 1983 and 1986. Combined with low inflation, these provided a major boost to competitiveness. Once macroeconomic stabilization was secured, the government turned to microeconomic measures and implemented a comprehensive reform package. In trade policy, most nontariff barriers were gradually removed, while tariffs were lowered and unified. Exporters were placed on a free-trade footing through an effective duty exemption and rebate system. A sweeping reform of customs side-lined deeply corrupt and obstructive import/export procedures. Foreign investment restrictions were relaxed. The financial sector was deregulated and the stock market reactivated. Many regulatory barriers to entry were removed, particularly in sectors formerly dominated by SOEs such as the strategically important interisland shipping industry.

What explains the success of these reforms? As most analysts of this episode note, strong opposition to the changes was to be expected. The dominant ideological predisposition of the influential policy community was suspicious of liberalism. As soon as the macroeconomic stabilization and liberalization of the late 1960s began to bear fruit, the pendulum swung back towards dirigisme and control, reinforced by the huge commodity windfall gains. As an indication of the sensitivities, whenever liberal reforms were introduced, they were always referred to by the neutral term “deregulation.” Moreover, vested interests had built up around the complex system of controls and intervention in the business sector, the SOEs, and the bureaucracy. There was by contrast a weak export sector and a tiny, marginalized intellectual community calling for reforms.

The key to the success of the reforms was an able, coherent, and powerful group of reformers known as the “technocrats.” This group, the so-called Berkeley Mafia, had occupied all the major economic policy portfolios since the beginning of the Soeharto era. Although lacking any significant political party support, they had strong technical credentials. Most importantly, they had developed close relations with Soeharto before he came to power, and they had overseen the remarkably successful stabilization and recovery of the economy in the second half of the 1960s. This was moreover a political system characterized by Mackie and MacIntyre (1993) as one in which “Soeharto (was) in supreme control.” In addition, from the margins, external actors were helpful. Relations with Japan were exceptionally close. Japan had become the country’s major donor and investor, and it viewed Indonesia as a strategically crucial partner. Throughout this period, it extended its credit lines on

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5 For political economy explanations by Indonesia’s leading economists, see Azis (1994), Soesastro (1989), and the collection of interviews with the key ministerial policy makers of the era in Thee (2003).
highly concessional terms and rolled over most of Indonesia’s debt. This was still the cold war era, and Indonesia’s relations with the US were also very close. The IFIs provided useful policy and analytical advice on a range of issues. However, it should be noted that the reforms were not part of any formal IMF and World Bank conditionality, a factor that made them easier to sell domestically.

There were, in addition, three facilitating factors that enabled the reforms to be introduced with little opposition and that boosted their effectiveness. One was broad-based development presided over by an authoritarian regime that had nevertheless delivered rapid growth. Second was the absence of serious domestic resistance to the reforms that could mobilize popular opposition. The “economic nationalists” and those in the large SOE sector were either neutralized or pushed aside. The personal, egregious vested interests centered on the Soeharto family were then not significant, unlike a decade later at the time of the Asian financial crisis. Third, the regional (East Asian) climate was conducive—other countries were liberalizing; the Plaza Accord was opening up trade and investment opportunities with Northeast Asia; and the PRC was not yet then a really serious export competitor.

In his comprehensive assessment of the reforms, Soesastro (1989) argues that the process was driven by necessity much more than theory and ideology. The reformers deliberately maintained a strategy of “low politics,” avoiding grand ideological debates that would have been polarizing and may have derailed the reforms. Although there was opposition from within the bureaucracy and vested interests in the protected sectors, the packages were implemented effectively and there was a steady flow of new initiatives. Basri and Hill (2004) explained these trade policy dynamics with reference to changes in the relative influence of several key policy actors over this period. That is, they identified the key policy actors, their general trade policy preferences, and how influential they were during each major episode of the Soeharto period.

The drift towards increased protection in the 1970s occurred because both the technocrats and foreign influences on policy were on the wane, at least in the realm of microeconomic policy. They were less needed during these “good times,” and there was less imperative to follow their policy orthodoxy. Moreover, neither group was completely united on core trade policy issues. Economic nationalists were becoming increasingly powerful in this decade, and they were able to build opportunistic alliances with various rent seekers. By contrast, in the mid-1980s, the opposition to trade liberalization began to wane. The technocrats were united and stronger in their resolve to reform, and at that time of looming crisis, they had the ear of Soeharto. Foreign influences were clearly pro-reform, and they had more weight. Indonesia needed funding from the IFIs to help it adjust to lower oil prices. Foreign investors were becoming more interested in the country either as a low-cost export platform or as part of internationally integrated manufacturing operations rather than as a relatively small and protected domestic market. Neighboring countries, most especially the PRC, were liberalizing and growing rapidly, in the process constituting
a powerful demonstration effect. Finally, the idea of coordinated, open, region-wide liberalization in the form of both the Asia-Pacific Economic Cooperation (APEC) and the ASEAN Free Trade Area (AFTA) was beginning to take root in elite government and business circles.

Summing up, this was a very successful reform in which the core elements were a group of able and credible policy advisors with access to the key source of power in the country and not seriously compromised by vested interests. The trigger, which enabled the technocrats to persuade Soeharto of the case for reform, was a developing external crisis. At the margins, various external actors and factors were helpful (technical advice, funds, and other countries reforming). The high quality of both design and implementation produced results, and won over a larger constituency. This is one of the best examples of successful reform in an authoritarian, growth-oriented state.

C. Trade Liberalization II: The Philippines

Philippine trade liberalizations were eventually just as effective and apparently as durable as those of Indonesia. But by contrast, they were much slower, spanning about 15 years that included a deep crisis, a transition from authoritarian rule to democracy, and three administrations. The case for reform was comprehensively argued in major academic publications from the late 1960s and by the country’s leading university economics department, whose graduates have traditionally dominated the main economic policy institutions of government. The major international agencies were also heavily involved, both in advocacy and conditions-based lending programs. The slow pace of reform, spread over more than 20 years, therefore attests to the strength of the opposition and especially the role of several key veto players.

Philippine trade and industry policies have been extensively documented and analyzed, probably more than in any other developing Asian country. The introduction of “temporary” import controls in the late 1940s in response to a balance of payments emergency combined with an ideological predisposition to support “national firms” resulted in one of the most comprehensive and prolonged periods of import substitution in the developing world. Reform since then has been halting and piecemeal. The peso depreciation of 1970 and the introduction of export incentives provided some relief for export-oriented activities but had little overall effect on the incentives regime owing to the widespread use of quantitative restrictions. By the late 1970s, the intellectual battle for liberalization was largely won, and the World Bank provided a major program of structural adjustment assistance. Average tariff rates and their dispersion around the mean began to fall from 1980, and import licensing

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6See for example Power and Sicat (1971), Baldwin (1975), Bautista, Power and Associates (1979), Medalla et al. (1996), and Bautista and Tecson (2003).
was relaxed. A major political and foreign exchange crisis from 1983 to 1986 temporarily set back the reforms, as comprehensive controls on foreign exchange and imports were introduced. However, the crisis-driven exchange rate depreciation boosted competitiveness for the tradables sectors, and there was renewed reform momentum starting in 1987. By the end of the decade, the original trade liberalization program was back on track, albeit delayed. The reforms continued through the 1990s, during both the Aquino and Ramos administrations, and with only a brief and temporary halt in the wake of the 1997–1998 Asian economic crisis.

Bautista and Tecson (2003) emphasize the key role of the professional economics community, which staffed major economic agencies by the 1980s. Economists at the University of the Philippines were the key actors here, combined with a quasi-independent government agency, the Philippine Institute for Development Studies, which employed many of its graduates. Supporting this intellectual foundation were three additional sets of factors. First, World Bank programs in the late 1970s and early 1980s provided additional financial and human capital resources particularly during the adjustment phase. Second, there was a realization by the late 1970s that the Philippines was both growing and liberalizing more slowly than its East Asian neighbors, and thus competitive liberalization became a factor of some influence. Third, the reformist Ramos administration (1992–1998) inherited the trade liberalization agenda and implemented it vigorously, not only by completing the schedule of tariff cuts and decontrol but also by a range of other major policy advances, including macroeconomic stabilization, the floating of the currency, and the removal of many regulatory barriers to competition. Perhaps most importantly, the faster economic growth over this period was the most significant reform dividend for a country where “growth pessimism” had become widespread owing to decades of poor performance.

This was a case of slow but apparently durable reform in a number of respects. It commenced under the Marcos regime at a time when the reformers were being increasingly pushed out by the inner circle of “crony capitalists” (Sicat 1985). There was a temporary setback during the crisis of 1983–1987, but the reforms were re instituted by the Aquino administration, which in other respects was regarded as a rather indecisive and weak regime, attempting to manage economic recovery from a deep crisis and a sudden transition to an unpredictable democracy and against a backdrop of frequent coup attempts. The reform process was then largely completed under the more effective reforming Ramos administration. Many of the policy implementers remained in the bureaucracy over this period, and academic economists continued to occupy the high ground in the debate.

Consistent with the analysis above, Bernardo and Tang (2008) and De Dios and Hutchcroft (2003) identify several sets of drivers. First, the crisis and its aftermath had, with a lag, a galvanizing effect in strengthening the reformers. Second, there was a growing awareness that the Philippines was falling behind in the global trend towards openness, combined with a range of looming regional and multilateral
obligations, including the World Trade Organization (WTO), APEC, and AFTA. Third, the removal of the US bases in 1992 "... had left the country feeling more exposed" (De Dios and Hutchcroft 2003, 54), and aware of the need to engage more with its neighborhood. De Dios and Hutchcroft (2003, 55) also emphasize the importance of leadership, in particular "... the deft and savvy leadership of the president and his key advisors, especially Almonte (who, like Ramos, was a former military officer)." One striking feature, common in such episodes, had been the reformers’ "often expressed marked distrust of the Philippine business elite," many of whom were regarded as beneficiaries of the status quo and therefore as obstacles to reform.

One interesting political economy issue is that while protection for manufactures in the Philippines has declined significantly, that for agriculture has risen and now on average exceeds manufacturing. A similar trend is also observable in Indonesia over the past decade. David (2003) offers three explanations, all of which are applicable to post-crisis Indonesia. First, the sustained intellectual reform effort and the subsequent policy response were concentrated where the problem was, that is, high and variable levels of manufacturing protection. Second, agricultural interests were able to exploit loopholes in various international trade agreements thus permitting the imposition of various protectionist measures in the guise of other objectives such as health and quarantine. The slow pace of agricultural trade liberalization in the OECD north was also seized upon by local vested interests. Third, democratization empowered influential rural constituencies, who were able to dress up their demands for protection by playing on sentimental notions of food self-sufficiency (and rural development more generally).

D. Legislated Central Bank Independence and Fiscal Rules

Several Southeast Asian economies have adopted explicit policies designed to ensure central bank independence, tighten the supervision of the financial sector, and limit deficit financing by imposing fiscal policy rules. We examine here reforms of the central banks of Indonesia and the Philippines and Indonesia’s fiscal policy law of 2003.

The crises in both countries, Indonesia in 1997–1998 and the Philippines in 1985–1986, triggered a reappraisal of macroeconomic management. Both had experienced bouts of high inflation, especially Indonesia, which had hyperinflation in the mid-1960s and again briefly in 1998. Also, in both countries, the central banks were effectively an arm of government, with little operational autonomy and extensive interference. The crises had a devastating impact on public debt through the socialization of financial and corporate debts. As a result, there was a determination to improve macroeconomic management, which attracted broad political support and was consistent with the IMF programs that operated in the wake of the crises. Of the two countries, Indonesia had had the more prudent fiscal policy after it adopted
the so-called “balanced budget” rule in 1970, which meant that the government could spend no more than the sum of its domestic revenue and official development assistance (ODA).

While similar in important respects, the modalities of reform differed. The Philippines embarked on a major overhaul of its central bank in 1993, when a new institution, the Bangko Sentral ng Pilipinas (BSP), was established (Gochoco-Bautista, Socorro, and Canlas 2003). The former practice of the board being dominated by cabinet secretaries, who had an interest in the central bank accommodating fiscal deficits and a bias towards a strong peso, was disbanded, as was the objective of exchange rate targeting. The BSP gradually moving to what is considered monetary policy best practice of inflation targeting, formally adopted in 2001, and a floating exchange rate regime.

This was one of the most important and successful reforms in Philippine economic history. The BSP has a highly credible record of monetary policy management, operating as an island of excellence in a public administration system not otherwise known for its high institutional quality. Inflation has remained low throughout the post-reform period, which has been characterized by great volatility, including political turbulence and large exogenous economic shocks. The exchange rate operated as the necessary “shock absorber” in response to the sorts of events that in the past would have resulted in a significant economic slowdown in the country and possibly a balance of payments crisis. Moreover, the financial sector has remained intact without any serious bank runs or failures since 1993.

Fiscal policy settings were also notably improved during the Ramos administration, with three successive years of budget surpluses in the mid 1990s, a highly unusual event in the country’s economic history (Sicat and Abdula 2003). However, fiscal policy rules were not institutionally embedded, and for much of the Estrada and Arroyo administrations (1998–2010), the government ran substantial deficits. For several years, the Congress blocked appropriation bills resulting in “re-enactment” provisions; that is, the government simply reverted to the previous year’s budgetary provisions, resulting in a substantial reduction in real government expenditures, including civil service salaries.

The Indonesian story differs in two respects. First, although the government formally adopted the principle of central bank independence, the path to reform has been rocky and the inflation record less impressive. Second, however, fiscal policy has been more prudent such that public debt fell remarkably fast, from about 100% of GDP in 2000 to 24% in 2011. The independence of Bank Indonesia (BI) became law in 1999 during the early, chaotic post-Soeharto period. Although BI could no longer purchase government bonds to finance the fiscal deficit and operational autonomy has been more or less preserved, the bank has been the subject of continuous controversy, with three successive governors ending their terms either in jail or house arrest. With regard to fiscal policy, law number 17/2003 required the budget deficit to be no greater than 3% of GDP and public debt to be less than 60% of GDP.
This measure was essentially modeled on the Maastricht Principle but, unlike the EU, Indonesia has kept well within these limits even during the global economic slowdown of 2008–2009.

Why and how were these major reforms introduced? In both cases, there was a constellation of forces at work. First, they were introduced after very deep crises. There was a broad recognition of the costs of bad policy and a predisposition to reform. Second, the reforms did not confront any immediate and powerful vested interests. They were not controversial, and there was no grand ideological debate over them. In fact, especially in the Indonesian case, they were introduced without much fanfare, almost “reform by stealth.” Third, they had strong backing inside government, from key technocrats in the central bank and ministry of finance. Fourth, they occurred under the presidency of leaders who were both predisposed to reform (especially Ramos) and inclined to listen to their technocratic advisers. Seventh, the role of the IFIs was mixed. All three measures occurred while the countries were under IMF programs, which is presumptive evidence that the fund was a significant player. But in both countries, the fund’s role was controversial (and still is in Indonesia), and so it is unlikely that the reforms could have been achieved if any of the four factors mentioned above were strongly negative. Moreover, Indonesia’s fiscal law was introduced precisely because the government wanted to exit the IMF program a year ahead of schedule owing to its unpopularity, and this strengthened the hand of President Megawati’s advisers, who urged that some institutional restraints on fiscal policy needed to be in place prior to the exit.

IV. Summing Up: Nine (Cautious) Conclusions

The political economy of reform is a complex, multi-dimensional issue in which the analytical literature provides at best a suggestive template. There is, therefore, a tension in the literature, between the academic desire for analytical parsimony and the case study literature that (rightly) emphasizes the complex interplay of history, institutions, ideas, leadership, diverse actors, and external influences. This paper has attempted to steer a middle path, drawing on Southeast Asian and other case study material to highlight factors that appear to be consistently, or least substantially, present during significant and durable reform episodes. The caveat of course is that it is difficult to generalize across a highly diverse set of institutional circumstances, development stages, and policy issues. What worked in the disciplined, authoritarian Soeharto era may not do so in freewheeling and unpredictable Philippine politics. But several recurring themes stand out—these are typically interactive so that their aggregate impact is greater than the sum of their parts.

7The Indonesian reforms occurred during the administrations of Presidents Habibie (central bank independence) and Megawati (the fiscal law).
First, ideas are needed to drive an intellectual agenda, sometimes well formulated in advance, but on other occasions developed in response to specific circumstances. From this “ideas factory,” there also needs to be a group of individuals willing to assume public office, interact closely with political leaders, and work together as a united team. However, the link between ideas and policy is an indirect and tenuous one. As the experience of countries as diverse as India and the Philippines demonstrates, there may be long lags between the articulation of ideas and their adoption. These two countries also illustrate that having a strong domestic economics profession is no guarantee that good policies will be adopted, at least quickly.

Second, political leadership is essential, generally featuring a key individual or group of leaders who understand the case for reform and are prepared to actively promote it. Reforms are obviously more likely to be durable the more institutionally embedded they are and the less they depend on a particular individual. One of the challenges of Philippine economic policy making, for example, is that new administrations may well change key policy settings substantially.

Third, major negative exogenous shocks, economic crises, the imminent cessation of external support, and a dawning realization that “the system is broken” have all played a role. The first (a sharp terms-of-trade decline) was the trigger for Indonesia’s major reforms in the 1980s. The third and fourth were the key factors in Viet Nam’s doi moi, and they were of some relevance in the Philippine reforms of the 1990s. The second resulted in substantial macro and financial sector reforms in the economies affected by the 1997–1998 Asian financial crisis (AFC). But crises are at best only a possible precipitating influence, and there is no guarantee of positive impacts. The AFC reportedly slowed reform in Viet Nam for several years. The mid-1980s Philippine crisis in effect incapacitated government for some time, and it took that country 20 years for its per capita GDP to recover to early 1980s levels. The current global economic recession has so far had little positive reform impact and may have spurred anti-globalization sentiments in some quarters.

Other external factors evidently have mixed effects. The Southeast Asian experience lends support to the international literature suggesting that, putting aside the special but important case of humanitarian assistance, aid works only if accompanied by good domestic policies. It is not clear that donors can influence the domestic reform agenda. Donors have worked effectively with growth-oriented regimes in East Asia, but there is no decisive evidence that donors underpinned the establishment of the regimes.

Conditions-based programs have a very mixed record and often invite a nationalist backlash. A stronger view (associated with William Easterly and others) asserts that aid has a malign influence since it enables recipient governments to postpone hard policy decisions. With the possible exception of the Philippines (and perhaps Cambodia), the latter view receives little support in Southeast Asia, in
contrast arguably to the South Pacific and parts of Africa.\textsuperscript{8} As the region as a whole progressively moves into the middle-income group, ODA as a share of GDP is anyway declining, to about 0.3\%-0.4\% of GDP for the larger lower middle-income countries. Where donors can perhaps be most effective is in supporting domestic “agents of change” through building up local analytical capacity, training a future generation of policy makers, and (discreetly) supporting reform-oriented think tanks.

An increasingly powerful external factor is the demonstration effect of a successful reforming economy, resulting in a process of “competitive liberalizations.” This factor seems to be much more important in Asia than either Latin America or Africa, with Singapore and the PRC (and more recently India) as the standouts.

Fourth, reforms are durable only if they deliver and thereby win over a constituency of support. This requires that they be reasonably comprehensive so that they are not sabotaged by “unreformed” sectors of the economy. This also implies that implementation is critical. However, the evidence on explicit compensation measures to facilitate reform is mixed. Macroeconomic stabilization is invariably the bedrock upon which reforms are built. For example, trade liberalization can be jeopardized by misaligned exchange rates resulting from macroeconomic imbalances. The mounting protectionist pressures in contemporary Indonesia, for example, appear to be the result in part of a relatively strong currency owing to the strong terms of trade and capital inflows.

Fifth, reform is not a linear progression, and thus long time horizons are needed. For example, the lag between the articulation of the case for trade policy reform and its implementation took over 30 years in India and over 20 years in the Philippines. Advocates of reform have to be prepared for setbacks. Donors rarely have the patience or time horizons to stay the course. The sometimes slow pace of reform emphasizes again the importance of having strong ideas embedded in key domestic institutions (including universities, think tanks, and sections of the bureaucracy) on hand to quickly take advantage of (sometimes unexpected) reform opportunities.

Governments may also experience reform fatigue. An example of this occurred in Indonesia after the appointment of the 1993 cabinet. The role of the technocrats was then downgraded. As a result—and this is at best an exploratory counterfactual—they did not have the capacity to follow through on the financial liberalization they had introduced a few years earlier.

Moreover, the key reformers may be increasingly bypassed, for instance during the Marcos regime in the late 1970s (see Sicat 1985) and the increasingly populist Thai economic policy in the Thaksin era and beyond (Ammar 2011). A key reform strategy is therefore to “lock in” and institutionalize reforms, insulate key technocratic institutions, and render backtracking by a future regime more

\textsuperscript{8}Nye (2011) draws attention to the problem of donors’ short time horizons in grappling with the complex Philippine political economy.
difficult. Examples, all adopted by some Southeast Asian governments, include independent central banks with a clear inflation objective, legislated restrictions on the extent of fiscal deficits, agencies that require recipients of public subsidies to be subjected to some form of public scrutiny, and broad regional and multilateral trade agreements. Of course, there can never be guarantees against the emergence of a really venal regime other than through a system of democratic checks and balances.

Sixth, the rules of the game change, sometimes dramatically, in the transition from authoritarian to democratic systems where voice, accountability, and public persuasion become important arbiters of reform success. This is most clearly illustrated in the two Southeast Asian countries that have swung from authoritarian to democratic rule in recent times, Indonesia and the Philippines. The two major changes concern the speed and modality of reform. Since there are fewer policy actors in authoritarian regimes, once the inner circle is convinced of the need for change, decisions can be taken very quickly. Reformers do not have to first win their case in the courts of public opinion and parliaments, and fewer concessions need to be made to potential losers. Conversely, it might be argued that while reform in democratic systems is slower, it is more likely to be durable as consultative processes have garnered more widespread community support. Moreover, as Nye (2011) emphasizes in the Philippine context, with effective leadership, democratic space may provide scope to mobilize the support of those groups disadvantaged by politically-inspired favors (e.g., regulations on restrictive practices and barriers to entry) to achieve reform.

Seventh, institutions in some broad sense are critical, but it is not necessary to have “high-quality” institutions to reform. The PRC, Indonesia, and Viet Nam began to institute effective reform programs with very weak bureaucracies and at extremely low levels of per capita income. What mattered had been a clear reform agenda; political commitment; and a sequence for reforms, tackling the major challenges first such as macroeconomic stabilization, the unfettered operation of markets, openness to trade and investment, and major supply-side investments. These experiences therefore cast some doubt on the “institutions rule” hypothesis commonly associated with Rodrik (2003).

But the expression of institutions, that is bureaucracies, clearly do matter, especially where implementation (as distinct from “stroke-of-the-pen” reforms) is central such as tax reform, decentralization, and judicial development. The general presumption is that the bureaucracy is a reluctant reformer to the extent that reform entails a loss of privileges. But this glosses over the heterogeneous nature of most bureaucracies, which typically range from reform-minded segments with analytical strength, such as ministries of finance and central banks, to patronage-based sector and infrastructure departments. The relative strengths of the executive and the bureaucracy and the institutional independence of the latter also matter. If, as in the Philippines, senior echelons of the bureaucracy turn over with each
administration, the executive is generally able to operate with little bureaucratic resistance.\textsuperscript{9}

Eighth, the Southeast Asian experience suggests that it is easier to implement relatively prudent macroeconomic policies and broadly open commercial policy than it is to undertake microeconomic reform. Two political economy factors are at work here. One is that the political consensus in most countries now generally recognizes the costs of macroeconomic instability, and therefore key policy actors are willing to accept that central banks and large fiscal deficits are broadly “off-limits” to political interference. Trade policy is also increasingly governed in substantial measure by the ASEAN and other regional commitments. The second factor is that these policy settings, especially macroeconomic policy, are easier to sustain because there are fewer “veto” players, in contrast to industry policy, state enterprises, government procurements, and so on, where political considerations intrude to a far greater extent. In both these policy areas, the role of the three more advanced Southeast Asian countries (Malaysia, Singapore, and Thailand) as traditionally open, low inflation economies has also been important in setting regional benchmarks.

It is important not to overstate the macro/micro distinction, however. Trade policy remains contested and politicized in most of the countries, and the foundations of macroeconomic policy are shaky in several of them. Examples of the latter include Viet Nam’s recent macroeconomic instability, the Philippines’ budget travails for much of the past decade, large and highly distorted subsidies in Indonesia and Malaysia, the recent bout of fiscal populism in Thailand, and much else.

Ninth, there does not seem to be any clear association between the propensity to reform and the level of corruption. Corrupt regimes that are also growth-oriented frequently display a capacity for partial reform on the presumption that growth offers greater opportunities for both political longevity and rent seeking. Hun Sen’s Cambodia and Soeharto’s Indonesia are perhaps the outstanding Southeast Asian examples. In such regimes the nature of the corrupt activities switches, primarily from tradables (where rent seeking is more likely to be disciplined by trade openness) to non-tradables. Of course, there is a corruption threshold beyond which regimes begin to lose political legitimacy and the will to reform, and institutions are undermined. Soeharto around the mid-1990s and Marcos in the early 1980s are the clearest Southeast Asian examples of this phenomenon.

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\textsuperscript{9}See for example De Dios and Hutchcroft (2003) and Fabella (2007).


Easterly, William. 2006. White Man’s Burden: Why the West’s Efforts to Help the Rest of the World have Done so Much Ill and so Little Good. New York: Penguin.


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

### 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).
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

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

(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

<table>
<thead>
<tr>
<th>Country</th>
<th>Early 1990s</th>
<th></th>
<th></th>
<th>Late 2000s</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>x</td>
<td>k</td>
<td>L₁</td>
<td>L₂</td>
<td>x</td>
<td>k</td>
</tr>
<tr>
<td>PRC</td>
<td>0.27</td>
<td>1.74</td>
<td>0.108</td>
<td>0.161</td>
<td>0.43</td>
<td>2.37</td>
</tr>
<tr>
<td>India</td>
<td>0.23</td>
<td>1.74</td>
<td>0.219</td>
<td>0.149</td>
<td>0.26</td>
<td>2.02</td>
</tr>
<tr>
<td>Indonesia</td>
<td>0.35</td>
<td>1.78</td>
<td>0.193</td>
<td>0.118</td>
<td>0.57</td>
<td>1.77</td>
</tr>
<tr>
<td>Philippines</td>
<td>0.39</td>
<td>2.07</td>
<td>0.338</td>
<td>0.211</td>
<td>0.55</td>
<td>2.04</td>
</tr>
</tbody>
</table>

k = urban–rural income ratio, L₁ = urban inequality, L₂ = rural inequality, PRC = People’s Republic of China, x = share of urban population.


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\(^1\); 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.

\(^1\)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

<table>
<thead>
<tr>
<th></th>
<th>Gini Coefficient</th>
<th>Theil Index, ( GE(0) )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Early 1990s</td>
<td>Late 2000s</td>
</tr>
<tr>
<td>PRC</td>
<td>32.4</td>
<td>43.4</td>
</tr>
<tr>
<td>India</td>
<td>32.5</td>
<td>37.0</td>
</tr>
<tr>
<td>Indonesia</td>
<td>29.2</td>
<td>38.9</td>
</tr>
<tr>
<td>Philippines</td>
<td>43.8</td>
<td>43.0</td>
</tr>
</tbody>
</table>

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:

\[
dL = A_x dx + A_k dk + A_{L_1} dL_1 + A_{L_2} dL_2
\]

where

\[
A_x = (L_1 - L_2) + [(k - 1)/(x(k - 1) + 1)] - log(k)
\]
\[
A_k = x/(1 - x + xk) - x/k
\]
\[
A_{L_1} = x
\]
\[
A_{L_2} = (1 - x)
\]
Table 3. Estimated Coefficients

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

\( A_x \) = 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.\(^2\) 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

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\(^2\) 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

<table>
<thead>
<tr>
<th>Country</th>
<th>Change in National Inequality [GE(0)] between 1990s and 2000s</th>
<th>Contribution (% share)</th>
<th>x</th>
<th>K</th>
<th>L₁</th>
<th>L₂</th>
<th>Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>0.039</td>
<td></td>
<td>0.005</td>
<td>0.02</td>
<td>0.005</td>
<td>0.009</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>(100)</td>
<td></td>
<td>(13.7)</td>
<td>(50.0)</td>
<td>(12.6)</td>
<td>(23.3)</td>
<td>(0.4)</td>
</tr>
<tr>
<td>PRC</td>
<td>0.149</td>
<td></td>
<td>-0.003</td>
<td>0.05</td>
<td>0.035</td>
<td>0.064</td>
<td>0.004</td>
</tr>
<tr>
<td></td>
<td>(100)</td>
<td></td>
<td>(-2.3)</td>
<td>(33.4)</td>
<td>(23.5)</td>
<td>(42.6)</td>
<td>(2.9)</td>
</tr>
<tr>
<td>Indonesia</td>
<td>0.039</td>
<td></td>
<td>0.021</td>
<td>-0.001</td>
<td>0.016</td>
<td>0.003</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>(100)</td>
<td></td>
<td>(54.0)</td>
<td>(-1.7)</td>
<td>(42.3)</td>
<td>(6.6)</td>
<td>(-1.1)</td>
</tr>
<tr>
<td>Philippines</td>
<td>0.004</td>
<td></td>
<td>0.013</td>
<td>-0.002</td>
<td>-0.018</td>
<td>0.012</td>
<td>-0.000</td>
</tr>
<tr>
<td></td>
<td>(100)</td>
<td></td>
<td>(308.1)</td>
<td>(-54.9)</td>
<td>(-419.8)</td>
<td>(247.3)</td>
<td>(-7.6)</td>
</tr>
</tbody>
</table>

k = urban–rural income ratio, L₁ = urban inequality, L₂ = 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\(^3\) 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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\(^3\)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. 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:

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

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:

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

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

\[
L_1 - L_2 < 1/k - 1 + \log(k)
\]

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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4Following 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).
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 \((k, L_1, \text{ and } L_2)\) 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

<table>
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<th>Table 5. Predicted Turning Points</th>
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<tr>
<td>Share of Urban Population (%)</td>
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<td>Base-year</td>
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</tr>
<tr>
<td>India</td>
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<tr>
<td>PRC</td>
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<td>Indonesia</td>
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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
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.
with each other.\textsuperscript{5} 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:

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

(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

\[
E_x = (x/L)A_x
\]  

(9a)

\[
E_k = (k/L)A_k
\]  

(9b)

\[
E_{L1} = (L_1/L)A_{L1}
\]  

(9c)

\[
E_{L2} = (L_2/L)A_{L2}
\]  

(9d)

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

\textsuperscript{5}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).
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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Internationalization of the renminbi is a stated goal of the Chinese government, its brief flirtation with Special Drawing Rights and an Asian Currency Unit notwithstanding. Chinese officials understand that a dollar-centric international monetary and financial system is a mixed blessing. Doing cross-border business in their own currency confers convenience value and efficiency advantages on United States (US) banks and firms. It frees them from the costs of converting currencies and hedging exchange rate exposures, something that Chinese banks and firms will enjoy only when they are similarly able to conduct international transactions in their home currency. Relying on the dollar for international liquidity and reserves lays the People’s Republic of China (PRC) open to the foibles of US policy, whose downside was made clear by the incipient liquidity shortage that followed the failure of Lehman Bros. in 2008. It exposes the PRC to the risk of capital losses on its foreign security holdings. Renminbi internationalization is part and parcel with Chinese leaders’ efforts to rebalance their economy from investment to consumption, from exports to domestic absorption, and from manufacturing to services, including financial services. This explains why Chinese policy makers have set their sights on “basic capital account convertibility” within five years and on elevating Shanghai to first-class-financial-center status within ten, at which time the renminbi will be a leading international and reserve currency.¹

In earlier writings I staked out a relatively positive position on the prospects for renminbi internationalization.² Currency internationalization, appropriately implemented, is in the PRC’s interest. Chinese officials have a carefully calibrated approach, beginning with authorization for domestic and foreign companies to settle their merchandise transactions in the currency, followed by permitting a limited but growing range of financial transactions to be conducted in it, and culminating in the use of the country’s currency in a range of additional financial roles, not least as a form for countries to hold their reserves. This is not unlike the PRC’s incremental

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¹Basic capital account convertibility is defined as a situation where many but not all restrictions on cross-border capital flows have been removed (Huang et al. 2011).
²For example, Eichengreen, Park, and Shin (2013).
and experimental approach to other reforms which involves “crossing the stream by feeling the stones beneath the water.” So far, so good.

That said, in this lecture I consciously take a more skeptical view and see how far I can push it. The PRC will encounter major challenges in the course of currency internationalization. Capital account decontrol, which is an unavoidable concomitant of currency internationalization, is a process fraught with dangers, as history generously reminds us. The more flexible exchange rate that should accompany further liberalization of the capital account will be resisted by powerful interests. Success should not be taken for granted.

What are the conditions for that success? An international currency that is widely used in private commercial and financial transactions and held by central banks and governments as reserves has three essential attributes: scale, stability, and liquidity. Scale means that there is a large installed base of international transactions between the country issuing the currency and the rest of the world. Stability means that its users have reason to be confident that its price will not fluctuate erratically and that it will hold its value. Liquidity means that significant quantities of assets denominated in that currency can be bought and sold without noticeably affecting its price. “Scale, stability, and liquidity” will be my mantra in this lecture. Of course, these are just proximate determinants of international currency status. We will need to explore the deeper determinants of these proximate conditions.

History offers precisely one example of a national unit that acquired the status of a first-class international and reserve currency in a period as short as ten years. That example is the US dollar, which went from not being used internationally in 1914 to being the dominant international currency in 1924. It will be useful therefore to consider how the dollar came to meet the conditions for international currency status in such a short time. This is not to imply that the renminbi will have to mechanically repeat its predecessor’s experience. Still, the precedent may be instructive.

But first a brief review of what has been accomplished. The process of renminbi internationalization started in 2010, when select Chinese firms were authorized to use the currency in cross-border trade settlements. By 2012 authorization had been extended to all Chinese exporters. As of mid-2012 some ten per cent of the PRC’s total trade, principally with the country’s Asian neighbors, was denominated and settled in renminbi. The expansion of the PRC’s trade and increasing use of its currency in trade invoicing and settlement, in Asia in particular, means that other Asian currencies have shown a growing tendency to move together with the renminbi.

3See Eichengreen (2011). This is of course not what the textbooks say, but then the textbooks are wrong.
4For evidence see Subramanian and Kessler (2012).
The People’s Bank of China (PBoC), meanwhile, has negotiated bilateral agreements with the Philippines, the Republic of Korea, Japan, the United Arab Emirates, and Australia to swap renminbi for their respective national currencies. In September 2011, the Export–Import Bank of China and Interamerican Development Bank signed an agreement under which the PRC will provide $200 million of credits to finance trade between Latin America and the PRC, part of which will be in renminbi. In December 2011, the PRC and Japan announced an agreement to promote bilateral trade settlement in their own currencies. This was followed in the spring of 2012 by the launching of direct trades in the renminbi/yen cross by the China Foreign Exchange Trade System. The PRC’s State Administration of Foreign Exchange has encouraged trading of the associated cross-currency swap on the domestic market. In conjunction with that agreement, the Japan Bank for International Cooperation was promised authorization to sell renminbi-denominated bonds in the PRC, and the Bank of Japan signaled that it would add the renminbi to its reserve portfolio. In March of 2012, the China Development Bank signed a memorandum of understanding with its Brazilian, Russian, Indian, and South African counterparts to provide renminbi loans for purposes of financing bilateral trade. In August the PRC and Taipei, China signed a memorandum of understanding for cross-Strait currency clearing.

Eligible offshore financial institutions have been permitted to invest renminbi funds in the PRC’s domestic interbank bond market since 2010. Foreign firms wishing to invest in the PRC can issue renminbi-denominated bonds in Hong Kong, China and use the proceeds to finance operations on the mainland. Local nonfinancial firms have similarly been encouraged to place renminbi denominated bonds in Hong Kong, China. At the end of 2011, regulators first permitted offshore renminbi to be used to finance equity investment in the PRC. And in May 2012, the China National Development and Reform Commission announced new rules to encourage onshore nonfinancial corporations to tap the “dim sum” market. In June it released plans for banks in Hong Kong, China to lend renminbi directly to companies in Shenzhen, effectively transforming that city into a special economic zone in which quasi-full capital account convertibility prevails. In some circles, the decline in offshore renminbi deposits in Hong Kong, China in 2012 has been taken as indicating bumps in the road to renminbi internationalization. More likely it reflects the authorities’ success in opening up additional financial channels for those funds to flow back to the Mainland.

While this is impressive progress, it is no guarantee of success, and it certainly is no guarantee of success in as short a period as ten years. The value of offshore renminbi-denominated assets that can be freely bought and sold remains small, and

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5 The PBoC has signed a number of additional bilateral swap agreements, but these entail a commitment to swap dollars, which it holds as reserves, for other countries’ currencies in periods when dollar liquidity grows scarce.

6 Most recently, renminbi settlements have been authorized in London.
the share of those assets that are AAA and therefore attractive to risk-averse central banks is smaller still. Aside from the Hong Kong Monetary Authority, none of the monetary authorities with which the PBoC has signed agreements has actually drawn on its swap lines. The central banks of Malaysia, Thailand, Brazil, Venezuela, Nigeria, and Chile (the latter as custodian of the country’s sovereign wealth fund) hold a share of their reserves in renminbi, but the shares in question are small.

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The ambitious nature of the PRC’s transition is underscored by the observation that, as noted, only one currency, the dollar, has moved from not being used at all in international transactions to being a leading international currency in as few as ten years. The dollar’s position in 1913 was not unlike that of the renminbi in 2009. The dollar was not used at all as a source of trade credit. It was not used as a currency of denomination for international bonds. It accounted for a negligible share of the reserves of foreign central banks and governments.

The leading international financial center of the pre-World War I period was of course London, and the leading international and reserve currency was the pound sterling. The predominance of London and sterling reflected Britain’s status as the first industrial nation and the world’s leading trader. At the middle of the 19th century this relatively small, windswept island off the northwest coast of the European continent was the largest economy in the world. Its 1850 aggregate gross domestic product (GDP) was 20 per cent larger than that of the US. Britain had the world’s largest navy, which meant that the British Isles and consequently official and private investments were secure. With the development of mechanized textile production and then of a range of other industries, Britain became the world’s foremost trading nation. Merchant banks sprang up to provide credit denominated in sterling to British merchants engaged in export–import business and, eventually, to their foreign counterparties. Insurance companies, investment trusts, and individual investors provided a ready market for sterling-denominated bonds issued by foreign governments and companies. A government characterized by checks and balances and a well-represented creditor class prevented arbitrary and capricious expropriation by the executive. A credible monetary regime was backed by a central bank conscious of its role as lender and liquidity provider of last resort.

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7 International bonds means bonds issued by sovereigns and others for sale to foreigners.
8 Only Cuba, occupied by the US in 1898 following Spain’s defeat at American hands, and the Philippines, also occupied by the US at the end of the Spanish–American War, are known to have held reserves in that form.
9 Important from the point of view of the present discussion is that sterling, while dominant, was not the only international and reserve currency, the French franc and German mark also playing consequential roles (Lindert 1969). I return to this below.
10 Following the convention in the literature on the Industrial Revolution, I refer to Great Britain rather than the United Kingdom throughout.
The US, for its part, relied almost exclusively on London and sterling for international financial services. A US importer seeking to purchase, say, coffee beans from Brazil had to obtain a letter of credit to present to the Brazilian exporter. The US importer would go to his bank, which would then contact its London correspondent, which would provide, for a fee, the sterling credit that was the only form of payment acceptable to the Brazilian exporter. The important point, to repeat, is that the dollar had no role as an international currency as late as 1914.

The situation is all the more striking when we observe that the US had long since achieved the scale needed to support an international currency. It surpassed Britain as the largest economy already in the 1870s. The process was the obverse of that driving the overtaking of the US by the PRC: as a labor-scarce, land-abundant economy, the US had higher real wages but a smaller population than Britain for much of the 19th century. Population growth through natural increase and, more importantly, mass migration then allowed the US to overtake Britain in absolute economic size. This is the opposite of what is happening today when the PRC has a population several times that of the US but a labor force that is about to stop growing and when convergence is therefore driven entirely by differential per capita income growth.

A large population or even a large population with high incomes is no guarantee of success at exporting. For the first two-thirds of the 19th century, the US was mainly an exporter of agricultural commodities—wheat, tobacco, sugar, and rice—and an importer of manufactures, not least from Britain. Sustained success is not often achieved on this basis. Britain continued to surpass the US as an exporter for three and more decades after the US had overtaken it in terms of aggregate GDP. This began to change with US natural resource discoveries, specifically of iron ore in the Mesabi Range of Northeast Minnesota in the 1860s and 1870s, and the harnessing of those resources to industrial development, notably the iron and steel complex centered on the Great Lakes, starting in the 1880s. The PRC’s task today is similar in that the country faces the continuing challenge of developing its economy and maintaining its export competitiveness. It is different in that the abundant factor of production to be harnessed is not natural resources but labor.
Scale, US experience suggests, while necessary for international currency status, is not sufficient. The inability of the dollar to play a role analogous to that of sterling reflected the US failure to meet the other necessary conditions for currency internationalization. Specifically, it reflected the instability and illiquidity of markets in dollar-denominated assets. The US was notorious for financial instability, having suffered financial crises in 1873, 1884, 1893, and 1907. Otto Sprague, in a history of crises written for the National Banking Commission, lists in addition a number of “minor” financial crises and panics between these major panic episodes. In contrast to Britain, there was also substantial uncertainty about the US commitment to the gold standard and fears of devaluation in, inter alia, 1893 and 1896.

There were also complaints about the inadequate depth and liquidity of dollar markets. Interest rates spiked when demands for money and credit rose in the planting and crop-moving seasons. These seasonal liquidity problems created credit stringency that further heightened problems of financial instability (Kemmerer 1910). The country’s system of correspondent banking, in which country banks held balances in reserve cities and reserve city banks held balances in central reserve cities, failed to ensure adequate liquidity. Clearinghouse cooperation failed to provide an adequate response to crises.

This situation was then transformed starting in 1914. By 1924 more reserves were held in dollars then sterling. More trade credit was sourced in New York than London and denominated in dollars than sterling. More international bonds were denominated in dollars than in sterling, leaving aside the special case of the British Commonwealth where politics trumped economics. This was a striking turnaround in just ten years.

It is tempting to ascribe this shift to World War I (an event that will have no analog, hopefully, in coming years). Economically, the war and its aftermath were much more disruptive to Britain. Where the US economy grew by 25 per cent between 1914 and 1919, UK GDP fell slightly. Where the US economy then expanded by a further 21 per cent between 1919 and 1924, the UK economy shrank by 3 per cent.

While this growth differential is impressive, the US had already far surpassed Britain in absolute economic size, as noted. More important than comparative growth rates were institutional changes addressing the stability and liquidity problems that discouraged international use of the dollar. The Federal Reserve Act of 1913 allowed US banks to branch abroad for the first time and created a central bank to provide liquidity support to financial markets. A confluence of factors came together to support the creation of a central bank. There was concern over the seasonal stringency problem: the Federal Reserve (Fed) was charged with providing an “elastic currency”

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18 See Sprague (1910).
19 Eichengreen and Flandreau (2009).
20 Eichengreen and Flandreau (2012).
21 Chitu, Eichengreen, and Mehl (2012).
22 Again according to the Maddison database (all figures are in 1990 international Geary-Khamis dollars).
(in the words of the Act) whose supply varied over the course of the year. Interest rates were more stable across the seasons after 1914 than before, enhancing both market liquidity and financial stability.\(^{23}\)

In addition, there was dissatisfaction with the arbitrary way in which the private sector, under the leadership of J.P. Morgan, had dealt with the 1907 financial crisis. The Fed’s record as lender of last resort would be far from unblemished, as it turned out. But the 1920s, at least, were crisis free. This stability was important for enhancing the attractions of the dollar as an international unit.

Finally there was unhappiness with US financial dependence on London and the desire to promote wider international use of the dollar.\(^{24}\) US exporters were handicapped by having to pay two commissions, one to their local bank and a second to its London correspondent, in order to arrange letters of credit. One of the Federal Reserve’s first actions was therefore to promote the development of a market in trade credits.\(^{25}\) The Fed acted as buyer and liquidity provider of last resort to this market. For good parts of the 1920s it was the single largest purchaser of privately-originated trade credits. With market liquidity thus guaranteed, it became attractive for importers and exporters in other countries to similarly turn to New York for credit.

US experience thus shows that through concerted policy reform and institutional innovation, a large country can cultivate the reputation for financial stability and develop the liquid market needed to support internationalization of its currency in a period as short as ten years.

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So is it realistic to imagine that the PRC will be able, in its own way, to match this experience? That will depend on how successfully it meets the three conditions for achieving international currency status.

Consider first scale. The PRC already is a very large economy. It is the world’s largest trading nation, though it looms less large in international financial transactions. According to the Organisation for Economic Co-operation and Development (OECD), which measures economic size in constant (year 2005) purchasing power parity dollars, the PRC will overtake the US in absolute economic size in the second half of the current decade.\(^{26}\) By 2030 it will account for fully 28 per cent of global GDP, compared to just 18 per cent for the US.\(^{27}\) The renminbi will have an even larger platform than the dollar, in other words.

I worry that these forecasts exaggerate the point. For one thing, comparisons of aggregate GDP at purchasing power parity exchange rates are not directly relevant

\(^{23}\)See for example Miron (1986).
\(^{24}\)This last motive, which is particularly relevant in the current context, is emphasized by Broz (1997).
\(^{25}\)These were “trade acceptances” in contemporary parlance.
\(^{26}\)In 2018, assuming 7.75% GDP growth in the PRC compared to 2.5 per cent in the US, 3 per cent inflation in the PRC compared to 1.5 per cent in the US, and 3 per cent annual renminbi appreciation.
\(^{27}\)Johansson et al. (2012), p. 23.
for international currency status. International transactions, which are what matter here, are appropriately valued at market exchange rates.\textsuperscript{28} With transactions valued at market exchange rates, the Chinese economy will still be significantly smaller than the US for years to come. In 2015, the OECD’s purchasing-power-parity overtaking point, the US economy will still be 80 per cent larger at market exchange rates.\textsuperscript{29}

The OECD assumes, moreover, that Chinese growth will continue to average 6.6 per cent per annum between 2011 and 2030, only slightly below the IMF’s latest 7.8 per cent figure for 2012 and the growth rate of 8.4 per cent per annum that the Fund projects between now and 2015.\textsuperscript{30} This would be impressive indeed. All fast growing economies slow down as they reach middle-income status. It is implausible that total factor productivity in the PRC will continue to grow between now and 2030 at anything approaching the six plus per cent annual rate achieved in the last ten years. The OECD acknowledges that productivity growth will fall in the next 50 years relative to the last ten; it just doesn’t say when. Labor force growth in the PRC is already at a standstill, and that labor force will start to shrink in absolute terms before long, whereas that of the US will continue to grow, by 0.7 per cent annually between now and 2020 according to Bureau of Labor Statistics projections.

If the PRC succeeds in growing at 6.6 per cent per annum between now and 2030, its achievement would be unprecedented. (Unprecedented is not impossible but it is, well, unprecedented.) In previous work with Donghyun Park and Kwanho Shin undertaken in part for this institution (Eichengreen, Park, and Shin 2012), we found that fast growing economies typically slowed down significantly – on average by $3\frac{1}{2}$ per cent per annum in per capita terms – at a level of per capita GDP at purchasing power parity (this now being the relevant metric, since we are talking about overall economic growth) significantly lower than that which the PRC is projected to achieve by 2030 according to the OECD. We considered only countries with per capita GDPs of $10,000 or higher, since we were concerned to focus on the so-called middle-income trap. We found that growth slowdowns are more likely in fast growing economies, suggesting an element of mean reversion. This, obviously, sounds like the PRC. We found that slowdowns are more likely in countries with high old age dependency ratios, where a substantial and rising share of savings must go toward health care and other social services for the elderly. Again, this sounds like the PRC. We found that slowdowns are more likely in countries with exceptionally high rates of capital formation, which presumably have difficulty in sustaining high returns on investment. Once again, this sounds like the PRC. Finally, we found that slowdowns are more likely in countries with undervalued exchange

\textsuperscript{28}Purchasing power parity adjustments apply to nontraded goods, which are not relevant in the present context.
\textsuperscript{29}Based on comparisons of gross domestic product at current prices in the IMF’s World Economic Outlook data base.
\textsuperscript{30}The most recent \textit{Asian Development Outlook} at the time of writing (dated October 2012) revises Chinese growth in 2012 down from 7.4 to 6.5 per cent. The Conference Board in its November 2012 forecasts sees the PRC growing by 6.9 per cent in 2013 and then 5.5 per cent in 2014-18 and 3.9 per cent in 2919-25.
rates, which presumably have the least incentive to move up the technology ladder away from low-value-added, unskilled-labor-intensive assembly operations. This too sounds like the PRC, at least until recently.

We have now updated our results. Our new analysis extends the sample period from 2007 through 2010, enabling us to detect and analyze some additional, relatively recent slowdown episodes. In addition, we can use the most recent release of the Penn World Tables (version 7.1) which evens out some kinks in its predecessor.

Most of our earlier results continue to hold. In particular, slowdowns are large: they now average 3.6 per cent between successive seven year periods. We still find that slowdowns are more likely in fast growing economies, in countries with exceptionally high investment rates, and in countries with undervalued exchange rates. But we also find some important differences. We now consider slowdowns in Austria and Mexico in 1960 and 1980, respectively, which we didn’t analyze before because these countries had per capita incomes below $10,000 according to PWT6.3 but have per capita incomes above that threshold according to PWT7.1. Where PWT7.1 evens out previously erratic growth rates, a few slowdowns drop out, and where it shows greater volatility than its predecessor we pick up a few additional cases.


Consistent with this, we now find two modes in the distribution of slowdowns, one at a per capita GDP of approximately $11,000 and another at a per capita GDP of approximately $15,000. The mode around $15,000 is familiar; it showed up in our previous paper. In contrast, the mode at $11,000 is new, reflecting data revisions and the post-2007 extension described above. The PRC’s 2010 GDP in 2005 constant PPP prices was $10,708, according to PWT7.1; extrapolating using IMF WEO growth rates makes this $12,721 in 2012. The PRC, in other words, has just passed through the first of our slowdown thresholds and is approaching the second. These patterns should not be interpreted mechanically. There is considerable variation around the averages. But these regularities, for what they are worth, are suggestive.

Extending the data set to include additional explanatory variables, we were able to identify some further correlates of slowdowns. Slowdowns are less likely in economies with a relatively high share of the population with some secondary

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31In Eichengreen, Park, and Shin (2013).
32PWT7.1 also reports a second estimate of Chinese GDP in 2010, a slightly higher $11,698, which only reinforces the point. The PRC still exceeds the $11,000 mode when the ADB’s somewhat lower estimate of 2012 growth is used.
and university education and in countries with a relatively high share of high-tech exports. This suggests that a country’s ability to move up the technological ladder into the production and export of more sophisticated goods is important for avoiding the middle-income trap. It suggests that achieving the economic scale required to support a first-class international currency will be easier if renminbi internationalization is viewed not as a self-standing goal but as part of an integrated process of rebalancing Chinese exports away from processing trade operations and toward more skilled-labor-intensive products and processes.

None of this is to question that the PRC will eventually overtake the US in terms of absolute economic size, only that the transition may take longer. In any case, historical experience suggests that scale is the easiest of the three preconditions for an aspiring international currency issuer to achieve and that it is a necessary but not a sufficient condition for international currency status.

Stability, US and other experience suggests, may be a harder condition to meet. Stability has multiple dimensions, including financial, economic, price, and political. Political stability gives confidence that policy will be stable and predictable, which private and official investors value when contemplating use of a foreign unit. In contrast, a country wracked by financial crises, like the US before 1913, is unlikely to be an attractive repository for the foreign balances of private and official investors. Economic instability is similarly a handicap for national monetary units aspiring to international and reserve currency status. The dollar lost many of the international gains of the 1920s in the Depression of the 1930s. Japan’s efforts to elevate the yen to international and reserve currency status faded with the country’s economic crisis and lost decade. Inflation is corrosive to the appetite of investors for nominally-denominated debt instruments and more generally to willingness to do international business in a currency. Before World War I the German mark had played a role as one of the three leading international currencies, behind only the pound sterling. It never recovered this position following the hyperinflation of the 1920s.

What does this imply for the PRC? Maintaining financial stability will require further reform of the banking system. The experience of other Asian countries is ample reminder of the risks to stability created by policy lending. When economic activity has weakened, Chinese policy makers have regularly turned to the banking system to fund local governments and state-owned enterprises and ramp up investment. This has contributed to a nonperforming loan problem requiring repeated recapitalization of the banks. Abandoning policy lending and putting the banks on a commercial footing where there is no doubt about their hard budget constraints will

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33 As emphasized by Zhuang, Vandenberg, and Huang (2012).
34 See footnote 9.
be important for instilling confidence among foreign investors. Fully deregulating deposit and lending rates would be useful steps in the same direction.\textsuperscript{35}

But another lesson of international experience is that even banks with hard budget constraints are fragile. Banks operate in information-impacted markets. Because they provide maturity transformation services, they are susceptible to self-fulfilling runs. Managers may take on excessive risk when they know that their banks are too big to fail. All this implies that steps to further strengthen bank regulation will be critical for financial stability and hence for successful currency internationalization.

As noted in my introduction, the capital account liberalization that is a concomitant of currency internationalization poses risks to financial stability. It increases the scope for large capital inflows that feed speculative bubbles.\textsuperscript{36} Inflows can be followed by sudden stops and capital flight, causing financial markets and the currency to crash. Experience with such cycles has underscored the need for strong macro-prudential regulation in countries with relatively open capital accounts. To prevent inflows from encouraging financial excesses, countries on the receiving end should raise capital ratios, strengthen liquidity standards, and tighten collateral requirements. They should adjust fiscal policy to prevent inflows from feeding inflation and currency overvaluation. They should allow additional exchange rate volatility to discourage carry trades. In other words, accommodating a more open capital account will require comprehensive changes in the PRC’s macroeconomic and regulatory regime.

Finally, creating the stable and predictable policy environment expected by private and official investors contemplating whether to allocate a significant share of their investment portfolios in renminbi may pose significant challenges for the Chinese political system. As I have observed elsewhere, the leading international and reserve currencies of the 19th and 20th centuries, sterling and the dollar, were the currencies of political democracies.\textsuperscript{37} Britain and the US had contested elections and political systems that imposed checks and balances on the executive. The Dutch guilder, the leading international currency prior to sterling, was the currency of a republic that, while not exactly democratic, had a federal structure that limited the prerogatives and scope for opportunistic behavior by top leadership. If one goes back still further, Genoa, whose currency, the denaro, was widely used in international transactions, was first a self-governing commune and then a republic. Venice, whose

\textsuperscript{35}A problem in this connection is uncertainty about the level to which interest rates will converge when the PRC deregulates lending rates and opens the capital account, and what this will imply for banks and firms. The level of interbank interest rates in Hong Kong, China provides some information on this (Liu, Yeung, Zhou, and Lam 2012 and Maziad and Kang 2012). But lenders in Hong Kong, China are subject to various regulatory and political constraints. The PRC is therefore allowing Qatar and other offshore centers to similarly accumulate renminbi. The Qatar Monetary Authority then lends renminbi to Qatar commercial banks, which on-lend it to Qatari firms engaged in trade with the PRC. The PRC can thus observe the interest rate and draw inferences about post-liberalization interest rates onshore.

\textsuperscript{36}These dangers are similarly emphasized by Yu (2012).

\textsuperscript{37}See Eichengreen (2013) for fuller development of this argument.
currency, the ducat, was also widely used in international transactions, was similarly a republic.

In a republic power rests with the citizens, who select representatives to take policy decisions. Those representatives of the citizenry, rather than a monarch with absolute powers, possess the ultimate decision-making authority. Because authority resides in more than one individual or body, there are limits to arbitrary action. To the extent that creditors are among the citizens so represented, investor protections are stronger.38 A federal political structure is another source of checks on arbitrary and opportunistic behavior by the central executive. Democracy is often thought to be the ultimate source of checks and balances on executive authority.

An extreme version of the argument is that the PRC will have to complete the transition to political democracy before central banks and governments feel fully secure about holding a significant fraction of their reserves there. A less extreme version is that the country will have to strengthen the powers of the National People’s Congress and the responsiveness to public opinion of the Politburo and its Standing Committee. It will have to give statutory and operational independence to the China Banking Regulatory Commission, the Securities Regulatory Commission, and the Insurance Regulatory Commission in order to foster confidence that regulatory decisions are taken with financial stability rather than political objectives in mind. It will similarly have to grant statutory and operational independence to the central bank.39 It will want to strengthen nongovernmental organizations which monitor government performance. It will have to create an independent media to expose corruption and encourage “intra-party democracy” to air the ruling party’s dirty laundry.40 The question is whether this constitutes a slippery slope. It is whether with political liberalization, as with inflation, it is possible to be half pregnant.

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The third and final prerequisite for international and reserve currency status is market liquidity. Private and official investors need to be able to buy and sell assets denominated in a currency without moving prices against themselves or incurring unreasonable transactions costs. In part this is a matter of market depth: how large is the stock of domestic-currency-denominated bonds and related instruments relative to transactions? In part it is a matter of the efficiency of the clearing, settlement and trading platform—whether transactions are settled over the counter or through a real-time, gross-settlement, delivery-versus-payment system. In part it is a matter of whether the central bank stands ready to act as lender and liquidity provider of last resort when credit is scarce.

39 For an earlier discussion along these lines see Goodfriend and Prasad (2006).
40 All this is suggested by Li (2013).
Asia’s experience in the last 15 years speaks to these questions. Asian countries, both nationally and at the regional level, have sought to develop larger and more liquid bond markets through the Asian Bond Market Initiative and Asian Bond Fund, both operated with ADB assistance. In Emerging East Asia, local-currency bond market capitalization rose to $5.7 trillion as of end 2011 (8.4 per cent of total world capitalization), up from $528 billion (or 2.1 per cent of the world total in 1996).\footnote{According to \textit{Asian Bond Monitor} (September 2012).} In the PRC, bond market capitalization is $4.5 trillion (5 per cent of the world total), up from $62 billion (0.2 per cent of the world total) in 1996.\footnote{This is another finding of Eichengreen and Luengnarumitchai (2006). Bae (2012) reaches the same conclusion on the basis of his analysis of 43 countries in the period 1990–2009.} This is impressive progress. That said, these are still small numbers by the standards of America, Europe, and Japan. The US bond market is almost eight times as large as the PRC’s. Japan’s is almost four times as large. France and Germany’s combined are almost twice as large. It is reasonable to expect that bond market capitalization will rise more quickly in the PRC than the advanced economies. While Chinese growth will slow, it will continue to outpace the advanced countries. And as financial development proceeds, capitalization will rise still faster, assuming financial setbacks are avoided.

The literature on bond market development, much of which was inspired by the Asian crisis, points to the facilitating conditions and constraints that the PRC will face as it moves down this path. McCauley and Remolona (2000), Mohanty (2002), and Eichengreen and Luengnarumitchai (2006) all argue that growing a bond market is easier in large countries. Here the PRC has a leg up. At the same time, international comparisons suggest that countries with well-developed, competitive, well-capitalized banking systems have larger bond markets, both public and private, reflecting complementarities between banking and bond market development.\footnote{Again see Eichengreen and Luengnarumitchai (2006) and Bae (2012). In addition, these studies point to the absence of independent rating agencies to provide public information on corporate issues as an obstacle to bond market development. The PRC has at least one rating agency, Dagong Global Credit Rating, independent enough to controversially give the railway industry a higher rating than the government.} And a variety of investigators point to poor regulatory quality, lack of transparency (failure of firms to follow internationally recognized accounting standards) and corruption as obstacles to bond market development.\footnote{As Bae (2012) notes, the PRC looks better in terms of corporate bond market turnover, but figures here are artificially inflated by regulatory incentives for Chinese banks to trade corporate bonds.} Here the PRC has work to do.

The empirical literature on market liquidity focuses on the bond turnover ratio (the value of bonds traded annually relative to market capitalization) and bid-ask spreads. Turnover in the government bond market is much lower in the PRC than in the Republic of Korea, Malaysia, Singapore, Thailand, and even the Philippines; only Indonesia does worse.\footnote{As Bae (2012) notes, the PRC looks better in terms of corporate bond market turnover, but figures here are artificially inflated by regulatory incentives for Chinese banks to trade corporate bonds.} Bid-ask spreads in the government bond market are
about 13 basis points in the PRC. In Hong Kong, China, in contrast, they are 5 basis points, in the Republic of Korea 2 basis points.

Working in the PRC’s favor as it attempts to rectify this imbalance is the fact that market liquidity tends to be a positive function of country and market size. Working against it is the fact that liquidity tends to be less in countries with capital controls. Authors like Schinasi and Smith (1998) have shown that a large population of international investors is important for enhancing the liquidity of local currency bond markets. Foreign investor participation is a route to the kind of large and diverse investor base conducive to trading, as opposed to a base dominated by buy-and-hold investors such as insurance companies, pension funds, and banks. This observation points to a problem for the PRC, where commercial banks hold nearly 70 per cent of local currency bonds outstanding, insurance companies another ten per cent, and policy banks, the central bank and the finance ministry another 9 per cent, and where foreign investor participation is still limited. It also points to a chicken-and-egg problem: while attracting foreign investors is important for market liquidity, market liquidity is important for attracting foreign investors. This in turn points to the value of proactive steps to attract foreign investor participation, like those the Chinese authorities are currently taking, as a way of breaking out of this low-level-equilibrium trap.

In addition, it has been argued that the market liquidity in Asia generally and the PRC specifically has been limited by the underdevelopment of clearing, settlement, and trading systems (Trairatvorakul 2001, Mares 2002). Not only do efficient clearing and settlement limit transactions costs, but exchange-based trading is a source of information generation and dissemination that encourages turnover. That Chinese bonds tend to be traded on the interbank market rather than on an active secondary exchange is a problem from this point of view.

Finally, authors like Borio (2000) have emphasized the importance for market liquidity of an active lender of last resort. US experience offers both positive and negative examples: positive during and after World War I when the Fed provided liquidity to the market in trade acceptances, negative in the 1930s when it failed to do so adequately, and positively in 2008 when it provided dollar swaps to the European Central Bank, the Swiss National Bank, and four emerging markets (Mexico, Brazil, Singapore, and the Republic of Korea). This last episode importantly illustrates how a proactive lender of last resort can help to ensure adequate market liquidity and support a currency’s international role in turbulent times. That the PRC has negotiated currency swap arrangements with a growing range of foreign central

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45 See McCauley and Remolona (2000).
46 As shown by inter alia Bae (2012).
47 See also Mares (2002).
48 Tax policy can also be an issue; in the PRC corporate bond interest income is taxable whereas interest earned from government bonds is not.
banks sends a positive signal in this regard. When we see these swap agreements activated, we will know that they are of more than just symbolic value.

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The PRC is intent on renminbi internationalization, and there are good reasons for thinking it will succeed. The global economy runs on international liquidity, and the simple logic of convergence is enough to suggest that the US and the dollar cannot continue to provide it in adequate amounts forever. Convergence implies that emerging markets will continue to grow more rapidly than the US and that the US will come to represent a progressively smaller share of the global economy. Eventually the US will no longer possess the relative economic size and fiscal capacity to provide safe and liquid assets on the scale required by an expanding world economy engaged in a growing volume of international trade and payments. Other sources will have to supplement the available dollar liquidity. The PRC, soon to be the world’s largest economy, is the obvious candidate. Thus, renminbi internationalization is not only in the PRC’s interest; it is in the world’s.

At the same time, the PRC is likely to encounter serious challenges in the course of this internationalization process. Economic growth will slow significantly, creating social strains. International transactions will not continue to increase at their recent pace. Economic, financial, and political stability will have to be maintained as the capital account is opened and financial markets develop. Regulatory quality and transparency will have to improve in order to enhance market liquidity. Completing this transition in ten years is a formidable task. Whether the PRC rises to the challenge will have profound consequences not just for the country but for the world.

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