

# Escaping the Middle-Income Trap

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An eminent economist once observed that “(t)he dramatic modernization of the Asian economies ranks alongside the Renaissance and the Industrial Revolution as one of the most important developments in economic history.” The economist in question was—members of this audience will have guessed—Larry Summers.

He was referring to the rapid economic growth of the late 20th and early 21st centuries and to Asian economies other than Japan. In these remarks I want to reflect not on the familiar if still contested issue of what explains this “Asian Miracle” but on whether it can continue at anything approaching the same pace (although the two issues are obviously connected). The question is whether the fast-growing economies of East Asia are now poised to slow down. It is whether they will fall prey to what is referred to as the “middle-income trap.”

History helps to shed light on this question. In joint work with Donghyun Park of the Asian Development Bank and Kwanho Shin of Korea University, I have attempted to identify previous experiences with growth slowdowns in fast-growing economies since World War II.<sup>1</sup> By fast-growing we mean economies in which GDP per capita was growing by at least 3.5 percent per annum, on a per capita basis, for an extended period (in practice we consider a seven-year

window).<sup>2</sup> Recall that the average per capita GDP growth rate in the advanced economies is approximately 1.5 percent. We therefore define growth slowdowns as a decline in the growth rate of per capita GDP between successive (nonoverlapping seven-year) periods by at least 2 percentage points (that being the difference between the fast-growing and advanced country averages).

Finally, we limit the historical sample to cases where per capita GDP is at least \$10,000 in 2005 constant prices, ruling out observations that are more accurately characterized as further collapses in not yet successfully developing, still poor economies. (The reason why everything is measured in 2005 international prices is that this is the convention in the most recent incarnation of the Penn World Tables.) One can of course define growth slowdowns in different ways, requiring a faster initial growth rate, a larger deceleration, or a lower per capita income cutoff, for example. In practice the results are robust to such changes.<sup>3</sup>

We find that growth slowdowns typically occur at per capita incomes of \$16,700.<sup>4</sup> At that point, the per capita growth rate slows from 5.6 percent to 2.1 percent, or by an average of 3.5 percentage points. For purposes of comparison, note that China's per capita GDP, in constant 2005 international (purchasing power parity) prices, was \$8,500 in 2007. Extrapolating its growth rate between then and now, China will reach the threshold value of \$15,100 around 2016—that is to say, five years from now.

There are multiple reasons to doubt that high growth in a relatively poor developing country will continue forever. Growth in late-developing countries is associated with a demographic transition that yields a dividend in its early stages but a penalty later. In the late stages of the demographic transition, the fertility rate falls (the mortality rate having fallen earlier), causing the youth dependency ratio to decline. This translates into a rising share of the population in the labor force, causing per capita output to grow more rapidly than otherwise. Savings rates are higher, as suggested by the life-cycle model, financing additional investment. Upward pressure on wages and downward pressure on profits are less. This demographic dividend has been especially important in East Asia because the demographic transition

there began earlier than in Southeast and South Asia and because it was compressed in time. David Bloom and Jeffrey Williamson argue that the demographic dividend explains up to half of the East Asian Miracle, which they define as growth of per capita incomes in excess of the steady-state rate.<sup>5</sup>

Note that the demographic dividend is not limited to East Asia. My favorite natural experiment in the phenomenon is the legalization of contraception in Ireland in 1979, which created a demographic dividend that helped to fuel the Irish economic miracle in the 1990s. China of course has its own unique natural experiment—the one child policy introduced in 1978—to which I will return below.

Then there is the fact that fast growth in developing countries is typically associated with the transfer of workers from underemployment in the rural sector to employment in urban manufacturing, something else that cannot continue forever. Eventually the pool of underemployed rural labor will be drained. Real wages in urban manufacturing will begin to rise. This is the developmental “turning point” of which W. Arthur Lewis famously wrote.<sup>6</sup> Soon after that, the share of employment in manufacturing will peak, and the shares of output and employment in the service sector, where boosting productivity is harder, will begin to rise.

This brings me to a key point. Growth slowdowns are almost always total factor productivity (TFP) growth slowdowns. In the growth slowdowns my co-authors and I consider, TFP growth falls on average from 3 percent to less than 1 percent.<sup>7</sup> This fall in TFP growth accounts, in a proximate sense, for the majority of the phenomenon we are seeking to explain. To be sure, rates of growth of the capital stock and labor force decline as well, as the demographic dividend gives way to population aging and more investment must go to make good depreciation on a now larger capital stock. But their contributions to the slowdown are small by comparison.<sup>8</sup>

This said, there is no iron law of slowdowns. There is considerable dispersion in the income levels at which they occur. Mean per capita income may be \$16,700, as noted earlier, but the standard deviation is \$6,000. The minimum is \$10,000, the maximum \$40,000

(again, to remind using 2005 international prices). This variation, especially at the upper end, reflects the presence of influential outliers. Small open economies like Hong Kong and Singapore appear to experience growth decelerations at unusually high levels of per capita GDP.<sup>9</sup> Small open economies can grow by exporting without creating tensions with their partners or turning the terms of trade against themselves. They can rely on imported labor, which is another way of reaping the demographic dividend and raising the stock of human capital (foreign bankers and professors in Singapore, Russian engineers in Israel). None of these conditions apply to large open economies, including the country of special concern in this context, China.

There is also considerable dispersion in the extent of slowdowns. Among the most dramatic (again excluding the oil exporters) are Greece in 1973 and Portugal in 1974 (advance warning of the euro-area crisis for fans of early warning indicators) and, of course, Japan. We place the end of Japan's high-growth period as 1971; its per capita growth rate fell by 6.6 percentage points between the preceding and subsequent seven year periods. You will know that Japan also experienced a second slowdown—we pinpoint it as starting in 1993—but it was small by comparison.

On what does the likelihood of slowdowns depend? We use probit regressions in an effort to get a handle on this question. We find that slowdowns are more likely in countries with persistent high investment rates (above 29 percent as they are measured in the Penn World Tables). The likelihood of a slowdown is minimized when the consumption share of GDP is 60 percent.<sup>10</sup> Recall that China has an extraordinarily low consumption share of GDP—well below 60 percent by any measure. It had an investment share of 31 percent in the 10 years ending in 2007, according to the most recent revision of the Penn World Tables, and it has had an even higher investment share since. The association between exceptionally high investment rates and the likelihood of slowdowns suggests that high investment may put off the day of reckoning by supporting aggregate demand, but it can come back to bite you if that high investment delivers an unproductive capital stock that depresses the growth of aggregate supply subsequently.

The other provocative result is that slowdowns are more likely in countries with undervalued real exchange rates.<sup>11</sup> This finding will attract the attention of China watchers, and Asia watchers generally, although its interpretation is certain to be controversial. My conjecture is that maintenance of a chronically undervalued exchange rate encourages the continued allocation of resources to low-value-added labor-intensive assembly operations. It slows the movement of resources into more technologically sophisticated activities. It weakens the incentive to move up the technological ladder. While it is a tried and true strategy for boosting growth for a time, at some stage it also makes a sharp slowdown more likely. And that sharp slowdown shows up in the fall in TFP growth.

Having spoken in general terms about growth slowdowns, let me refer now to two specific cases: a retrospective one, Korea, and a prospective one, China. Our interest in the latter will be obvious. Interest in the former derives in part from how it serves as a cautionary tale.

Postwar South Korea was a classic high-growth economy. When it entered its period of high growth in the 1960s, it was far from the technological frontier. It enjoyed a huge demographic dividend. It grew by shifting labor from underemployment in agriculture to high-productivity employment in export-oriented manufacturing. It engaged in Gerschenkronian substitution: the state and the chaebol substituted for missing markets in risk-sharing instruments.<sup>12</sup> It engaged in what was, by international standards, an extraordinarily rapid rate of human capital formation.

Rapid growth on this basis was sustained for more than a quarter of a century. But if you ask the computer when the growth rate slowed, the answer it gives is 1989. That's when the Chow test statistic for a break in the trend rate of growth is maximized.<sup>13</sup> Most people would be under the impression that high growth was successfully maintained through the first half of the 1990s. And in some sense it was: the aggregate growth rate averaged 8 percent per annum from 1990 through 1996. We learned subsequently, of course, that much of this high growth was unsustainable. It was achieved by pushing an already high investment rate still higher to nearly 40 percent. The chaebol were able to fund investments in unprofitable noncore

activities through free access to external finance. But although the now customary high GDP growth rate was sustained, the customary high rate of TFP growth was not. TFP growth trended steadily downward over the first half of the 1990s. Chaebol profitability declined (although, given the creativity of accountants, this was not fully appreciated at the time). Problems of external competitiveness mounted. Rising debt loads created financial vulnerability. All this came crashing down in 1997-98, following which the rate of growth appeared to ratchet down by several percentage points.

History is fun, but speculating about the future is more fun still (and less disciplined by the data). So allow me to speculate about China. As noted earlier, it will take China about five years, extrapolating recent growth rates, to reach the level of per capita income at which slowdowns in the rate of growth of per capita GDP averaging 3.5 percentage points have typically occurred. Moreover, China displays a number of the characteristics raising the likelihood of a slowdown. Its exceptionally high investment rate raises questions about whether much of that investment is productive. Its consumption share of GDP is extraordinarily low. Gauged by the methodology used in our study, it has a significantly undervalued exchange rate. All this raises questions about the rate of TFP growth going forward.

There is consensus that China is poised to experience some slowdown in its rate of growth. The World Bank's chief economist in China, Louis Kuijs, projects potential growth as declining from recent rates in the range of 10 percent to 7 percent by 2017.<sup>14</sup> This is also the prediction in the Chinese government's most recent Five-Year Plan released earlier this year, which projects growth as slowing to 7 percent over the plan period.<sup>15</sup> The proximate sources, in Kuijs' analysis, are an unusually large fall in employment growth due to the one-child policy of prior decades and a modest fall in the rate of TFP growth from 2.7 percent to 2.3 percent. Kuijs' projections assume that something close to the current high investment ratio is maintained but that the contribution of capital stock growth to aggregate growth is lower because the capital/labor ratio is now higher and more investment is needed to make good depreciation.

But if the experience of other countries is any guide, it is possible to imagine a sharper fall in TFP growth. That sharper fall in TFP growth could in turn create financial problems that lower investment more dramatically. There has been pressure until now to maintain double digit growth at all costs. Directed lending was used aggressively in 2009 to boost domestic investment spending when export demand collapsed. The investment share of GDP rose from an already high 42 percent before the crisis to extraordinary levels close to 50 percent, prompting questions about whether so much fixed investment in such a short period could be undertaken efficiently. Prognosticators of bearish temperament tell tales of vacant airports, empty bullet trains, ghost cities, and highways to nowhere.<sup>16</sup> They point to the creation of excess capacity in the cement, steel, aluminum and automobile industries. They question the viability of much recent Chinese investment in high-end commercial and residential real estate.

It could be that, as with U.S. railways in the 19th century, this is simply building ahead of demand.<sup>17</sup> It still could be that the rate of return on these investments will be high because the demand for their services will materialize eventually and because China, until very recently, has still had a low capital/labor ratio and a dearth of infrastructure. Or it could be that these investments are poorly designed and will depress the rate of TFP growth going forward. If the first view is correct, then they will translate into problems for the banks that lend to construction companies and local government authorities. Some observers are already warning of such problems.<sup>18</sup> The central government can of course recapitalize the banks, but doing so will leave fewer resources for other purposes, such as building a social safety net, or else result in inflation, which history shows is not good for growth. It will add to a debt burden that, when one sums the obligations of local governments with the explicit and implicit liabilities of the central authorities, already raises some questions.<sup>19</sup>

Then there is China's reluctance to abandon its commitment to an undervalued exchange rate and the tension this creates with its desire to move into the production of goods with higher skilled labor and technology content, as well as to encourage innovation. The rhetoric

of rebalancing notwithstanding, abandoning undervaluation is hard. Undervaluation protects state-owned enterprises (SOE) from import competition and benefits powerful export interests. There is an incentive for the authorities to continue supporting export growth because of limits on how fast consumption can be raised to substitute for the decline in investment and net exports. But that philosophy of exporting at any cost, with the support of an undervalued exchange rate, could slow China's climb up the technology ladder and ultimately lead to an even sharper slowdown.

Which scenario is more likely: gradual slowdown or crash? Your guess is as good as mine. That said, our results suggest that further rebalancing of the Chinese economy away from fixed investment in favor of consumption, and normalization of the real exchange rate to encourage the shift away from low-value-added assembly operations, will greatly increase the likelihood of a smooth landing.



## Endnotes

<sup>1</sup>See Eichengreen, Park and Shin (2011).

<sup>2</sup>By construction, this rules out the advanced economies that define the technological frontier, which never grow this fast on a per capita basis for an extended period.

<sup>3</sup>I refer you to the paper for details.

<sup>4</sup>That's the mean; the median is \$15,100.

<sup>5</sup>See Bloom and Williamson (1998).

<sup>6</sup>Lewis (1954).

<sup>7</sup>This excludes oil-exporting countries, which are a special case.

<sup>8</sup>Note that the contribution of human capital works in the opposite direction, reflecting the impact of past growth on spending on education and the lagged entry of young people into the labor force.

<sup>9</sup>It is tempting also to place Israel in this camp.

<sup>10</sup>This according to our Table 6.2. Of course, this is not to argue that less investment is always better for growth (or, precisely, for avoiding a growth slowdown), since there is also a negative and statistically significant coefficient on investment squared in many of our equations.

<sup>11</sup>We define the real exchange rate as the nominal exchange rate relative to the purchasing power parity price level as computed by PWT. We then compute the "normal" or "equilibrium" real exchange rate for a large sample of countries by regressing the real exchange rate on per capita GDP, a vector of demographic controls, and a vector of time dummies. The extent of real over- or undervaluation is the difference between the actual real exchange rate and the fitted value.

<sup>12</sup>The reference is to Gerschenkron (1964).

<sup>13</sup>This and other statements about Korea in this paragraph are documented in Eichengreen, Perkins and Shin (forthcoming).

<sup>14</sup>See Kuijs (2011). Note that this constitutes a growth slowdown according to the Eichengreen-Park-Shin criterion and moreover that the timing is consistent with our empirics.

<sup>15</sup>Of course, the last plan also had growth-slowing, in that case to 7.5 percent, something that hardly came to pass.

<sup>16</sup>For example Roubini (2011).

<sup>17</sup>On this building-ahead-of-demand phenomenon in 19th century America, see Harley (1982).

<sup>18</sup>Credit Suisse is an example of an institution that has done so: see <http://ftalphaville.ft.com/blog/2011/06/21/601051/credit-suisse-slashes-chinese-banks/>.

<sup>19</sup>“If you take a very broad view of the Chinese government’s contingent liabilities rather than explicit debt on the books then the number comes to well over 150 percent of China’s GDP in 2010,” according to Victor Shih, a political economist at Northwestern University. The United States has a debt-to-GDP ratio of 93 percent, while Japan’s ratio is over 225 percent. Barred from borrowing money, Chinese local governments have created arms-length financing vehicles in record numbers to circumvent rules. The national audit office said there were 6,576 such vehicles, holding debts of Rmb4,971bn but previous estimates put the total debt load at closer to Rmb14,000bn.” Quoted from Rabinovitch and Anderlini (2011).

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