Is there a "Late Converger Stall" in Economic Development? Can India Escape it?

*My dear, here we must run as fast as we can, just to stay in place.
And if you wish to go anywhere you must run twice as fast as that*

Lewis Carol, Alice in Wonderland

The first order fact about the developing world today is that this is an era of unprecedented prosperity. And that is true about India too which has been one of the most dynamic economic performers in the world. A major driver of these good times, is "economic convergence," whereby poorer countries have grown faster than richer countries and closed the gap in standards of living. The convergence process has been broadening and accelerating for the last 20-30 years. However, while fears of a middle-income trap are overblown, could there be a slowdown in this process for lower-middle-income countries such as India.? The possibility of such a "Late Converger Stall" arises because of four possible headwinds in the post-Global Financial Crisis era that were largely absent for the early convergers such as Japan and Korea. These headwinds include: the backlash against globalization which reduces exporting opportunities, the difficulties of transferring resources from low productivity to higher productivity sectors (structural transformation), the challenge of upgrading human capital to the demands of a technology-intensive workplace, and coping with climate change-induced agricultural stress. India has so far defied these headwinds but can continue to do so only if the challenges are decisively addressed.

INTRODUCTION

5.1 For all the gloom pervading the world, these are the best of economic times for humanity and especially for those living in poorer countries. The global "bads" – war, violence, deprivation and poverty – are at unprecedentedly low levels (Pinker & Goldstein, 2016; Gates & Gates, 2014). Meanwhile, the global "goods" – standards of living, access to essential services, and material well-being more generally – have improved at a historically unprecedented pace to reach levels never witnessed in humanity's history. This is particularly true of India, which has been one of the world's most dynamic performers since 1980.

5.2 Economic convergence, the process of poorer countries "catching-up" with richer countries and closing gaps in standards of living, has been a big driver of some of these developments. Since the mid-1980s, the process of catch-up has broadened, as the number of poor countries growing faster than advanced economies has substantially increased. Furthermore, the rate of catch-up has also accelerated. In other words, there has been "convergence with a vengeance" (Subramanian, 2011).

5.3 To see this, compare the number of countries that have grown faster than the United States (a proxy for the "frontier country")

between 1960 -1980 and 1980-2017. The exercise also allows comparisons of how much faster these converging countries have grown in the two periods (Table 1).

Table 1. Convergence With a Vengeance; Catch-Up with the United States

Period	1960 and 1980	1980 and 2017
Broadening: % of countries growing faster than US	43.7%	68.6%
Acceleration: Average excess growth rate over the US	1.4%	1.7%
Countries in sample	112	153

Source: Maddison Project; IMF World Economic Outlook.
Notes: Sample excludes oil exporters and small countries (defined as population< 1 mn. in 2010).

5.4 India's own move up the development ranks is instructive to track. In 1960, India was a low-income country with a per capita income (in 2011 purchasing power parity (PPP) terms) of $1,033. This was equivalent to about 6 percent of U.S. per capita income at the time. However, India attained lower middle-income status in 2008 and today has a per capita income of $6,538, which is 12 percent of the U.S.. If per capita income in India grows at 6.5 percent per year, India would reach upper-middle income status by the mid -to-late 2020s.

5.5 But, recently doubts about the convergence process have been articulated around the notion of a "middle income trap." Definitions can themselves be traps so it is important to be careful about them. There was a genuine low-income "trap." For a long time, many poor countries were not catching up at all; they were growing more slowly than richer countries, which Pritchett (1997) termed as "Divergence Big Time."

5.6 Similarly, the middle income trap should, strictly speaking, have connoted that middle income countries would grow more slowly than what would be expected given their level of income (i.e., slower than richer countries), impeding the transition from middle income to high income status.

5.7 The reasons for the trap/stall were supposed to be twofold, operating as a kind of pincer. On the one hand, as countries attained middle income status, they would be squeezed out of manufacturing and other dynamic sectors by poorer, lower-cost competitors. On the other hand, they would lack the institutional, human, and technological capital to carve out niches higher up the value-added chain. Thus, pushed from below and unable to grasp the top, they would find themselves doomed to, well, middle-income status.

5.8 As it turned out, there was neither a middle income trap nor stall. Middle income countries as a group continued to grow as fast or faster than the convergence standard demanded (Aiyar, Duval, Puy, Wu, & Zhang, 2013; Pritchett & Summers, 2014; Roy, Kessler, & Subramanian, 2016). Indeed, some of them–for example, Korea, Portugal, Poland, and Latvia–graduated to high-income status. The convergence process remained strong even in the last decade.

5.9 This is shown in figure 1. The years from 1980 to 2017 are divided into three periods:

- 1980 to 1997, the era of divergence in which low-income countries fell further behind;

- 1998 to 2007, an early period of convergence running from the East Asian financial crisis until the Global Financial Crisis; and

- 2008 to 2017, the most recent period of "late convergence."

5.10 In each period, growth rates for low-, lower middle-, upper middle-, and high-income countries are compared. Consistent with the focus on convergence to the rich-country frontier, these income groups are defined in terms of their relative position at the beginning of each period. Low-income countries are those with real per

Figure 1. Convergence in log per capita GDP over three time periods: convergence continues, but growth is decelerating since the Global Financial Crisis
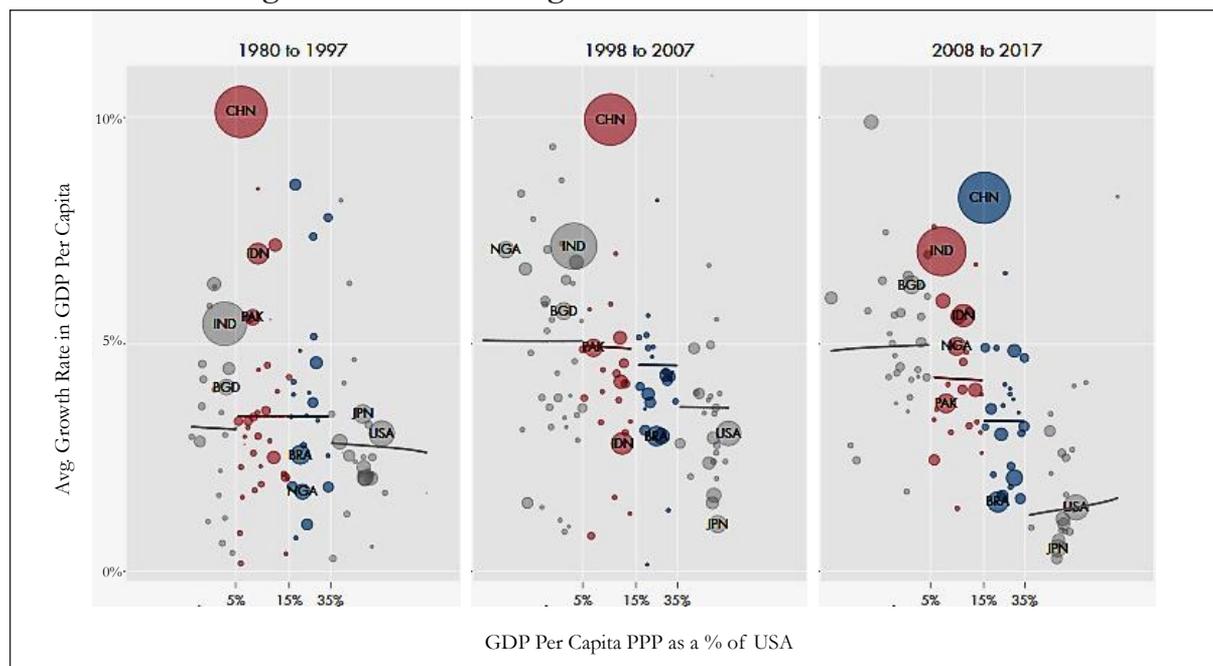
Source: WEO; Penn World Tables.
Note: Lines show a local polynomial regression (i.e., the average relationship within groups of countries). Bubbles are proportional to initial population, but regressions and averages are unweighted.

capita GDP less than 5 percent of that in the U.S. in purchasing power parity terms; lower-middle income countries, those with per capita incomes 5-15 percent of the U.S.; and upper-middle income countries, 15-35 percent. High-income countries are all those above that line – including some above the United States' income level.[1]

5.11 In these panels, the lines indicate the average growth rate during the period for each of the four income groups. First, the good news. In the two periods after 1997 (the middle and right panels) the average poor, lower-middle income, and upper middle-income country all grew faster than their high-income counterpart. In that strict sense, there is no middle income trap in any period.

5.12 Furthermore, there is a general downward slope of the lines from around 1997 onward, with

the convergence process actually accelerating after 2008. The poorest have been growing faster than lower middle income countries, who have been growing faster than upper middle income countries who in turn have been growing faster than the richest.

5.13 The developing world continues to catch up, so rapidly that one could call the process "convergence with a vengeance".[2]

THE BUT …

5.14 The focus of this chapter is on the convergence process of lower middle income countries such as India that are attempting to make the transition to middle income status. And late convergence refers to those attempting to do so after the watershed event of the global financial crisis (GFC).

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[1] These lines, defined in relative terms, correspond roughly to the original divisions used by the World Bank to define country groups using Gross National Income (GNI) at market exchange rates in 1987.

[2] An unconditional convergence equation for the decade 1997-2007 and then 2007-2016, yield a convergence coefficient that is insignificant for the first period (sample of 143 countries) and strongly significant and negatively signed for the second (sample of 148 countries).

5.15 So, could gathering global trends adversely affect countries such as India that joined the convergence club later in the process? In other words, could there be a "late converger stall" in the process of economic development?

5.16 Prima facie evidence for this comes from comparing the convergence process in the periods before and after the Global Financial Crisis (GFC). The GFC represented a watershed event, marked by a sharp decline in rates of growth across the world. For example, world growth declined from 4.3 percent in the ten-year period prior to the GFC to 2.9 percent in the decade after the GFC. The corresponding numbers for the four major groups of countries were from 3.6 percent down to 1.4 percent for advanced economies, 4.5 to 3.3 percent for upper-middle income countries, 4.9 to 4.2 percent for lower-middle income countries and 5 percent per annum for low-income countries.

5.17 Note the growth declines in upper-middle income countries, by 1.2 percentage points between 1998-2007 and 2008-2017 and by .7 percentage points in lower-middle-income countries over the same period (middle and right panels in Figure 1). Underlying these slowdowns are some major developments that could not only damage growth over the long term, but eventually

even slow the process of convergence. To these developments we now turn.

THE FOUR HEADWINDS ("HORSEMEN")

5.18 Even without succumbing to apocalyptic pessimism, the risk of a Late Convergence Stall needs to be taken seriously because of four headwinds: the hyper-globalization repudiation, thwarted/impeded structural transformation, human capital regression induced by technological progress, and climate change-induced agricultural stress.

A. Hyperglobalization repudiation

5.19 Developing countries that came late to convergence now face a very different global trading environment from their predecessors. Early convergers benefited from the process of rapid globalization or hyper-globalization, reflected in dramatic increases in the world trade-GDP ratio. As a result, Japan, South Korea and China were all able to post average export growth rates of over 15 percent for the thirty years of their convergence periods.

5.20 But this globalization has led to a backlash in advanced countries reflected in the decline in world trade-GDP ratios since 2011 (see figure 2). This means that the trading opportunities

Figure 2. World Exports of Goods & Services, 1980-2016 (in per cent of GDP)
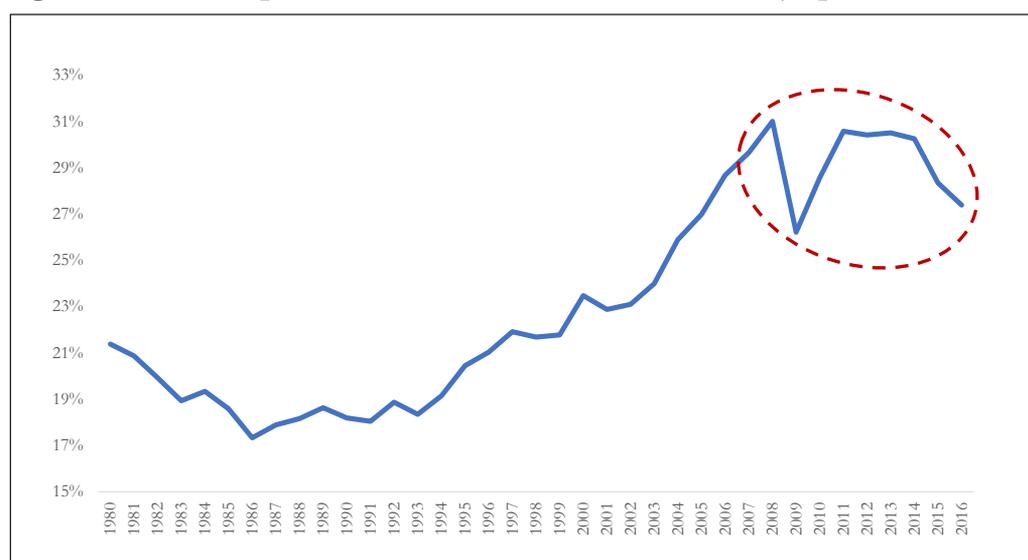
Source: World Bank.

available to the early convergers, specifically the ability to export at double digit rates of growth for three to four decades consistently, may no longer be available.

5.21 One way of understanding the potential impact of the hyperglobalization repudiation is to seek recourse to the gravity model of trade. Basic gravity theory implies that smaller countries tend to trade more than larger ones. A world made up of two equal-size countries will experience more trade than a world in which the larger country accounts for 95 percent of world output. Over time, the world is becoming more equal in the distribution of the underlying output.[3] That is the consequence of convergence. Therefore, if there is convergence, the gravity model suggests there will also be increased trade.

5.22 For example, between 1970 and 2000 the world was constituted by about 7.0–7.5 country equivalents. In other words, during this time, it was as if there were 7.0 – 7.5 equally sized countries trading with each other according to the gravity model. Since 2000, as more countries have started catching up with the rich, world output has become more dispersed. Taking the list of top 50 countries (excluding oil exporters) and calculating the distribution of world output suggests that in 2016 there are about 9.6 country-equivalents in the world. During the period of hyperglobalization world trade-GDP rose by about 14 percentage points, from about 17 percent of world GDP to about 31 percent. About one-third could have been due to the process of economic convergence.

5.23 Going forward, it is illustrative to estimate what further convergence would imply for world trade and whether there will be political carrying capacity not just in advanced economies but also in countries such as China to sustain such globalization.

5.24 Now, for one or a few countries such as India, there need not be such an external

constraint on growth going forward but for lower and middle income countries as a whole as a whole there may well be.

5.25 A back-of-the-envelope calculation gives a sense of the challenge. If the current process of convergence continues and adds another country equivalent, the distribution of world output will become even more dispersed, resulting in an additional increase in the world's trade-GDP ratio of 1 percentage point. The question is whether politics, especially in advanced economies and China, might be able to sustain such an increase in trade. Recall that politics in advanced countries is moving defacto in the direction of seeking and forcing lower trade-GDP ratios.

B. Thwarted structural transformation: good growth and sustainable growth

5.26 Successful development requires two kinds of structural transformations: 1) a shift of resources from low productivity to high productivity sectors (as highlighted by Sir Arthur Lewis); and 2) a larger share of resources devoted to sectors that have the potential for rapid productivity *growth*. In many cases, however, resources do not shift in this way. They shift instead from informal, low productivity sectors to ones that are marginally less informal/more productive. These are cases of "thwarted structural transformation".

5.27 Rodrik (2015) identifies manufacturing as a critically important sector for ensuring successful transformations. This sector exhibits unconditional convergence toward the world frontier, so that it can become an escalator for rapid growth – if countries manage to get on to it. This is why "premature de-industrialization," the tendency for manufacturing in late convergers to peak at lower levels of activity and earlier in the development process, is such a cause for concern.

5.28 Figure 3, below, from Rodrik (2015) plots the income level at which the manufacturing share of employment peaks (x-axis) against

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[3]   As (Anderson, 2011) shows, in a world without trade frictions, the share of trade in world output is given by $1 - \sum (b_j)^2$, where bj is the share of a country in world output. Inverting the expression gives the number of country-equivalents in the world, which increases with convergence. Baier and Bergstrand (2001) find a statistically significant effect of convergence on trade.

Figure 3. Premature De-Industrialization

income at which manufacturing employment peaks (logs)
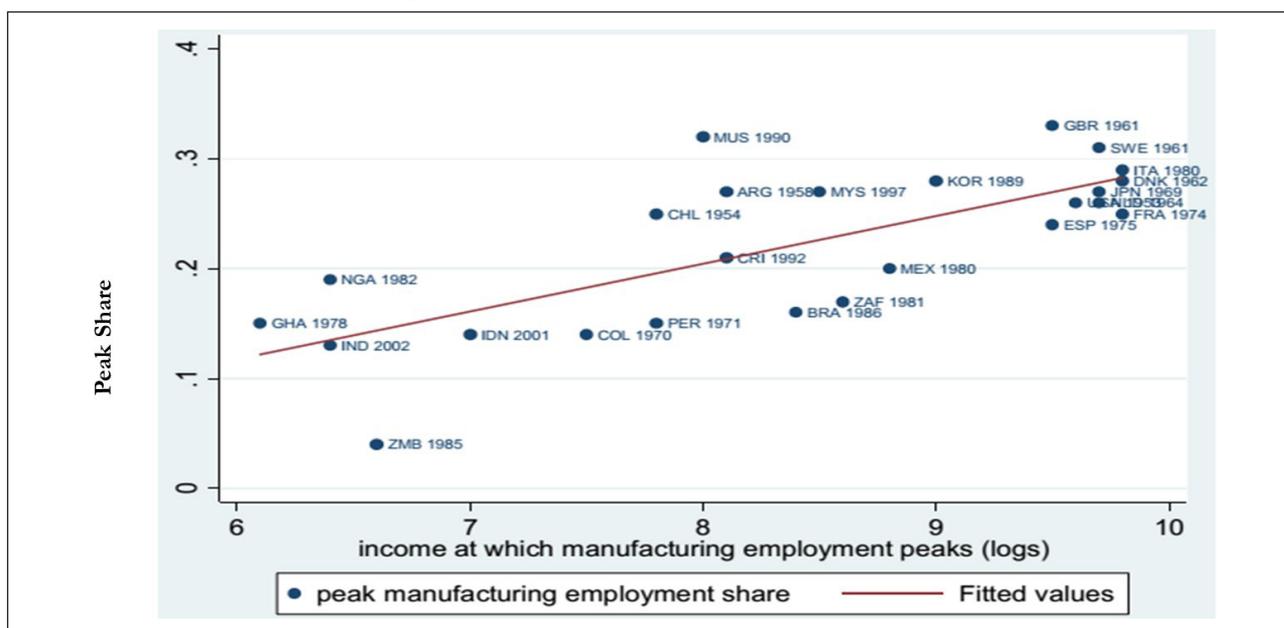
Source: Rodrik (2015).

Figure 4. How Much of Growth is Explained by Structural Transformation? More in China Than in India
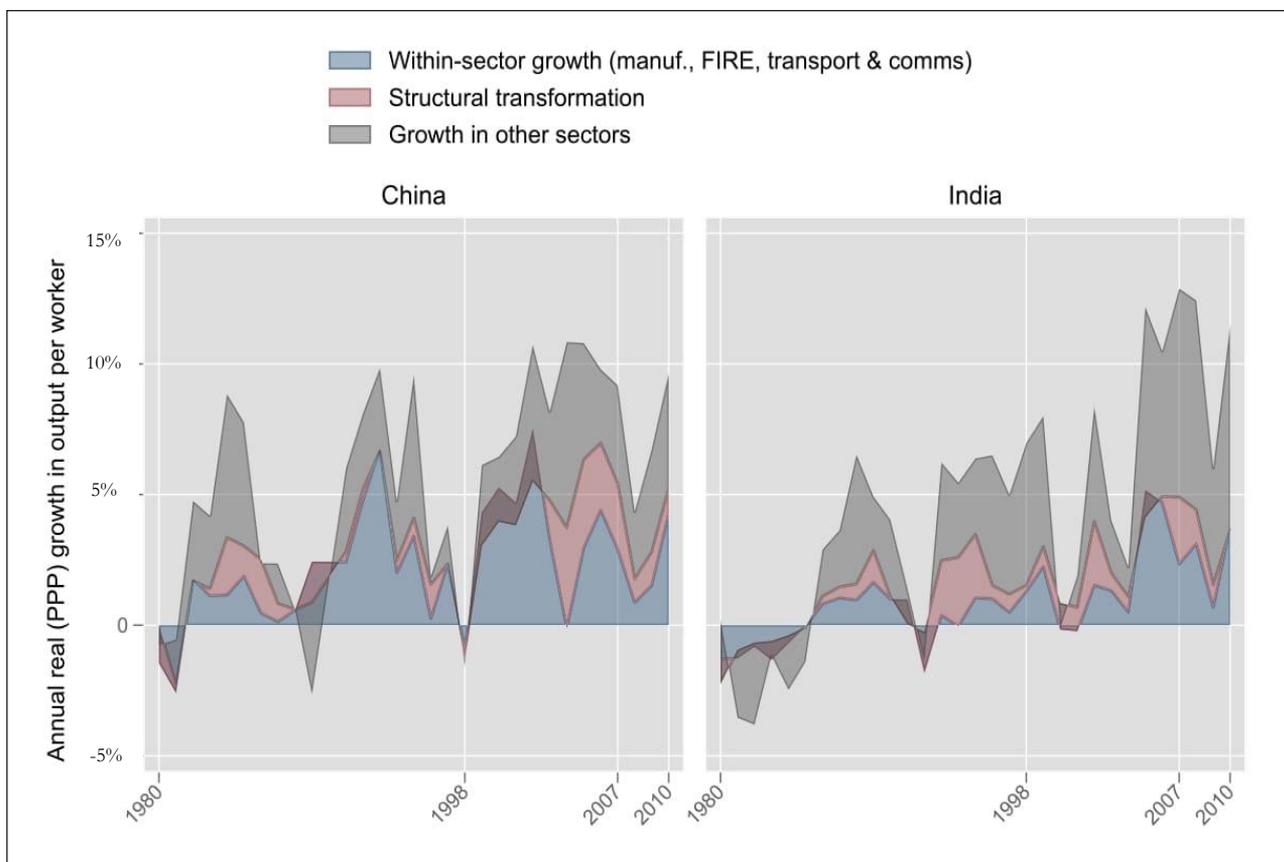
Source: Timmer et al (2014); GGDC database.

that peak share (y-axis). There is a solid positive relationship, suggesting that richer countries attained higher levels of peak manufacturing and earlier in the development process. Cain, Hassan and Mitra (2010) and Amirapu and Subramanian (2014) have documented this phenomenon for the states within India.

5.29 Are late convergers particularly vulnerable to thwarted transformation? To assess this, Rodrik's identification of structural transformation with manufacturing is broadened. In particular, based on the detailed study of India by Amirapu and Subramanian, dynamic sectors are those with high levels of productivity and potential for unconditional convergence. Such a list comprises manufacturing, finance, telecommunications, and professional services. The Groningen database (Timmer, de Vries, & de Vries, 2014) is then used to do the shift-share analysis of Rodrik and decompose overall productivity growth into "good" (i.e., involving desirable structural transformation) and "less good" growth (e.g., in hotels, restaurants, transport, etc.).[4] Therefore, good growth comprises growth accounted for by labor share shifts into these good sectors and their productivity growth. We then compute the share of this good growth in the total. See Annex for a description of this analysis.

5.30 Therefore, good growth comprises growth accounted for by labor share shifts into these good sectors and their productivity growth. See Annex for a description of this analysis.

5.31 To motivate the argument before presenting the broader stylized facts, we compare good and less good growth in China and India since 1980.

5.32 In figure 4, the sum of the blue and red areas comprises good growth and the grey area the less good growth. For China, the average

share of good growth over the entire period is 53 percent while India's is 37 percent, falling to about 32 percent since the Global Financial Crisis.

5.33 Next, to check whether there is a difference

Figure 5. Correlation Between the Share of "Good Growth" and Total Growth: The Share of Good Growth is Falling and the Correlation is Getting Weaker
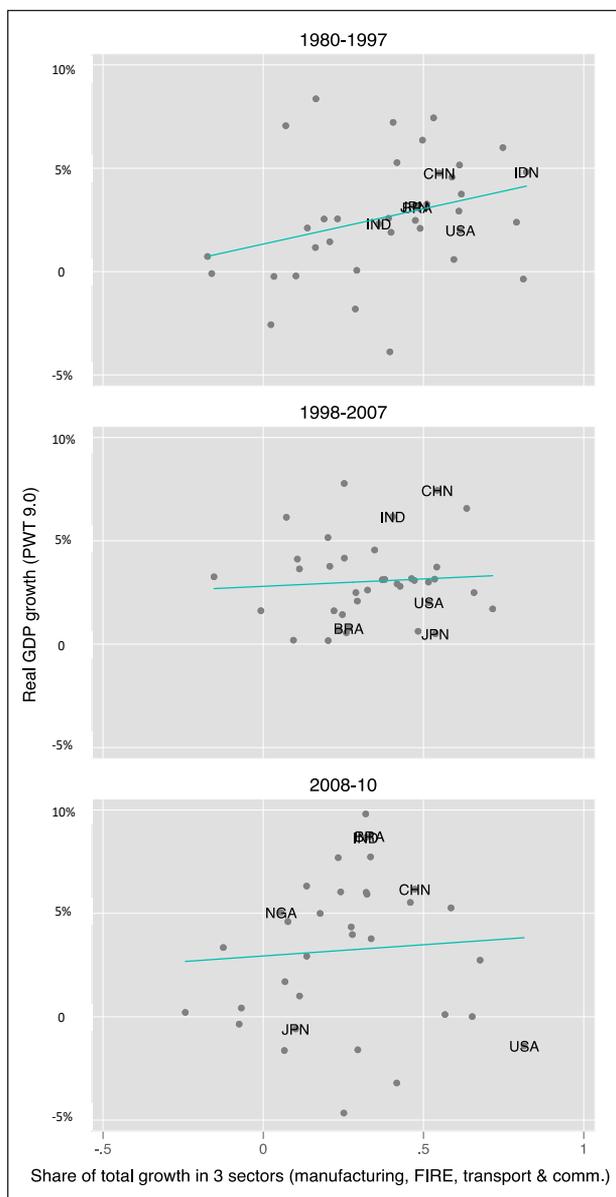
Source: Penn World Tables.

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[4] The GGDC data distinguishes 10 sectors. For the purposes of this analysis, we associate structural transformation with three of those ten: (i) manufacturing; (ii) transport, storage and communication; and (iii) finance, insurance, real estate and business services.

[5] The figures include 38, 37, and 34 countries for the three time periods shown, respectively. The coefficient on the 'share of good growth' in the regression lines shown is about 0.4 in the first period, and falls to roughly 0.1 in the latter periods (and statistically indistinguishable from zero).

in the correlation between overall growth and "good growth" between the early and late convergers, figure 5 plots these relationships.

5.34 Two features are noteworthy. There is a general leftward shift in the share of good growth over time. This in a sense captures the more general version of the premature deindustrialization point. Second, in the early period of divergence, there was a positive correlation between growth and good growth; this association has weakened over time. Bear in mind, however, these data on sectoral employment are only available for a few dozen countries, and most developing countries are omitted from the sample.[5]

5.35 So, there is something to the thwarted structural transformation hypothesis. Interestingly, China's good growth persists in both periods; India's share of good growth declines in the second period. Both are of course positive outliers to the relationship itself, raising the possibility that while the general pattern

is that good growth is necessary for sustained growth, China and India might defy this pattern. However, it would more prudent not to rely on permanent exceptionalism.

C. Human capital regression

5.36 In some ways, there is one key difference between early convergence based on manufacturing and late convergence against the strong headwinds of automation and the globalization backlash. And that relates to human capital. In early convergence, it was the alignment of human capital endowment (educated but relatively unskilled labour) with the sector associated with structural transformation, namely manufacturing, that allowed for the percolation and spread of dynamism to the rest of the economy. Shifts in labor, the so-called Lewisian transformation from farm to factory, were possible because of this co-incidence: growth and structural transformation based on comparative advantage.

Figure 6. Learning levels of secondary students, by country income group and time period: middle-income countries are further behind today than in earlier periods.
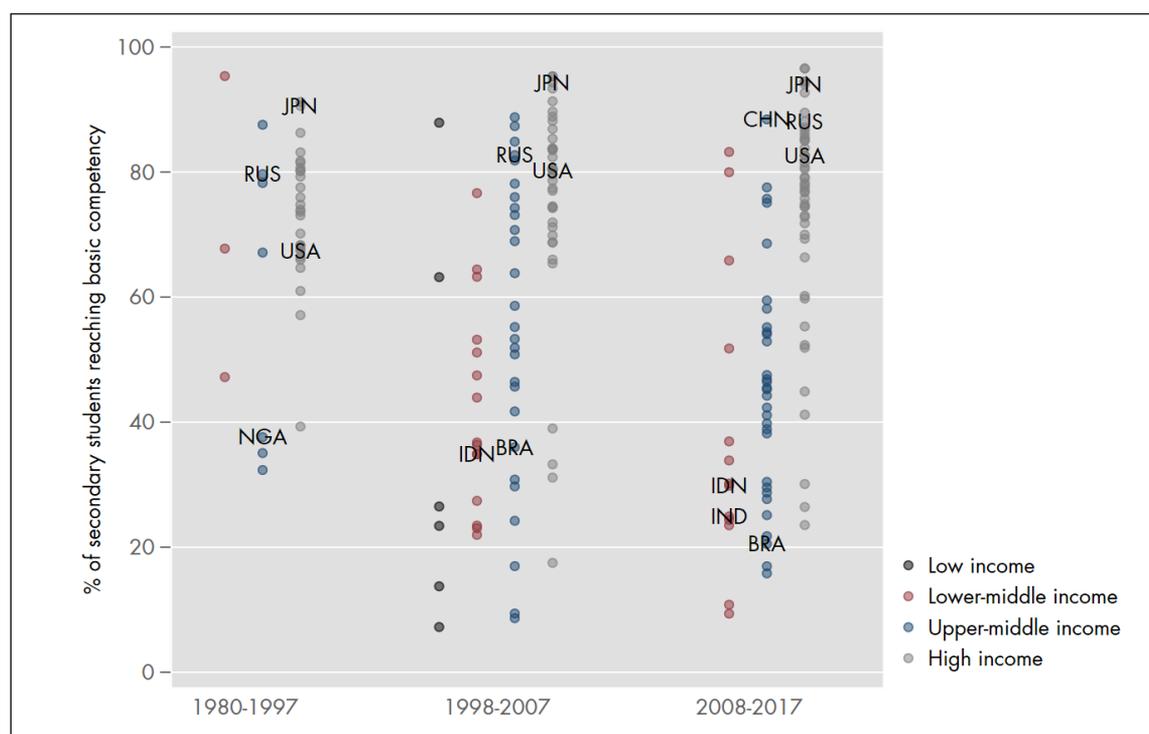
Source: Altinok et al. (2016).

5.37 The late convergers are doubly challenged. Not only have they failed to provide even the basic education necessary for some structural transformation, that failure will prove increasingly costly because the human capital frontier for the new structural transformation has probably shifted further away. Technology will increasingly favor skilled human capital, where the requisite skills will include adaptability and the ability to learn continually. One might argue that growth itself will be based less on comparative advantage and more on some absolute human capital attainment.

5.38 Figure 6 captures some of these observations. It plots the available data on learning outcomes for a group of advanced and emerging economies, drawing from Altinok *et al* (2016) who pool data from a variety of regional and international learning assessments. During the 1980s and 1990s, educational attainment of the middle income countries was below that of advanced economies. But the gap was smaller for them then than it is for the lower middle income countries in the more recent period. If this gap persists or widens the kind of transformation enjoyed by the late convergers might prove more difficult for the late convergers, including India.

5.39 Sample selection explains part of this result. Poor and lower-middle income countries today are more likely to participate in international learning assessments – and more of the population is likely to go to school – than in the 1960 to 1997 period. Perhaps the early adopters of learning metrics were already on a path to growth. But the basic pattern is fairly stark. Middle-income countries who do participate in learning assessments today are further behind the rich world than they were in the first part of the 21st century, and much further behind than they were in the 20th century.

5.40 There is another India-specific perspective on the human capital challenge highlighted in the Box below.

Box 1 : The Learning Poverty Count (LPC) and Learning Poverty Gap (LPG) in Rural Primary Education

Great strides have been made in India's primary school enrollment, which is now nearly universal for both boys and girls at elementary level. Yet, both cross-country evidence and evidence from India suggests that educational outcomes are incommensurate with years of schooling: learning lags attending, as it were (Pritchett, 2013; Das and Zajonc, 2010; Singh, 2014).

Here we present estimates of learning outcomes drawing parallels from the poverty measurement literature. Specifically, we estimate a learning poverty headcount (LPC) as well as a learning poverty gap (LPG). The LPC simply measures the number of children who do not meet the basic learning benchmark, whereas the LPG additionally takes into account *how far* each student is from the benchmark. In other words, the LPG measures the gap between the the basic learning benchmark and the average scores of those students who did not meet the benchmark.[a]

Such estimates are rendered possible by the Annual Survey of Education Reports (ASER) that have over time tested a sample of children between the ages of 5 and 16, residing in rural India. Students are tested in terms of a set of tasks in reading and arithmetic, which have remained constant over time. In a sense, these tests amount to an absolutely minimal or basic level of educational attainment–akin to the poverty or subsistence line. Specifically, we chose this line as being able to read a simple story (in the local language), and being able to do subtraction – roughly meeting the passing standard for grade 3. For the present analysis, we focus on children between in grades 3 through 8.

Figures 1 and 2 illustrate how India has fared on these two metrics. The findings are stark. On math and reading, India's absolute LPC is between 40 and 50 percent: in other words, roughly 40-50 percent of children in rural India in grades 3 to 8 cannot meet the fairly basic learning standard (Figure 1). Discouragingly, this poverty count score rises over time, substantially in the case of math. There is some consolation that since 2014 has the trend started to show some improvement; and also consolation that at least there are no significant differences in the LPC for boys and girls.

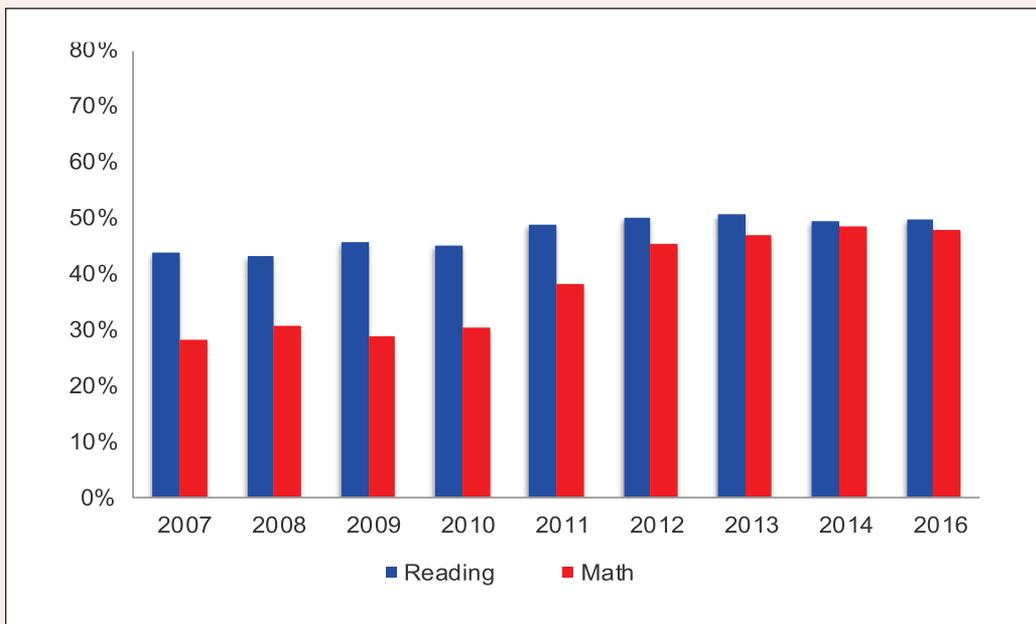**Figure 1. Learning Poverty Count, 2007-2016**

Figure 2 presents the estimates for the learning poverty gap. The temporal patterns are similar to those of the LPC. The most recent level of the LPG is about 25 percent for reading and a little lower for math. One way of understanding this number is that on average, each child in grades 3 to 8 scores 2.2 compared to the score of 3 necessary to meet the second grade learning requirement.
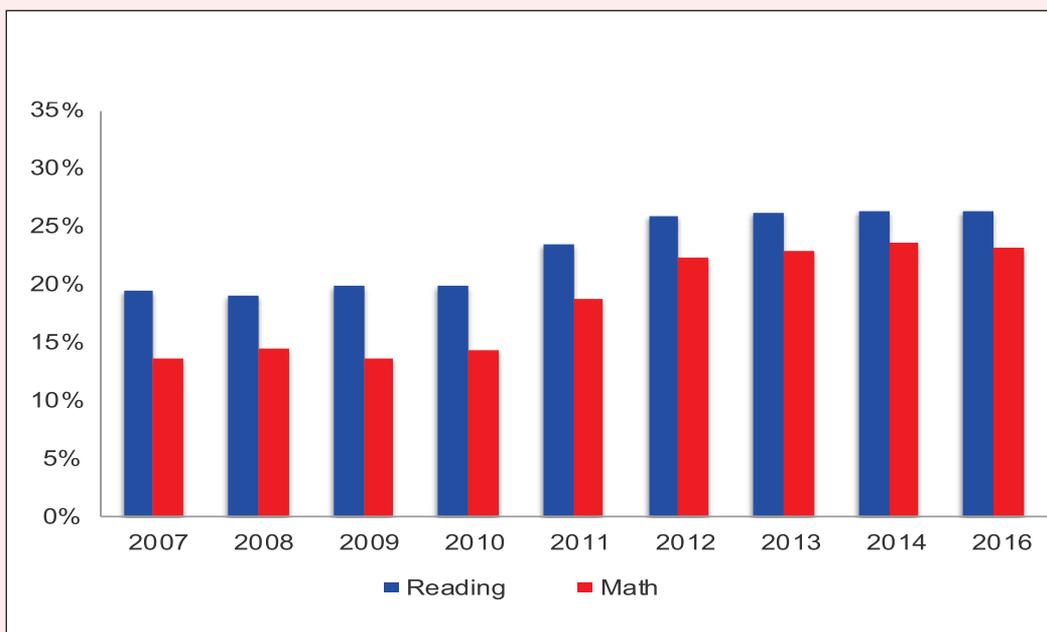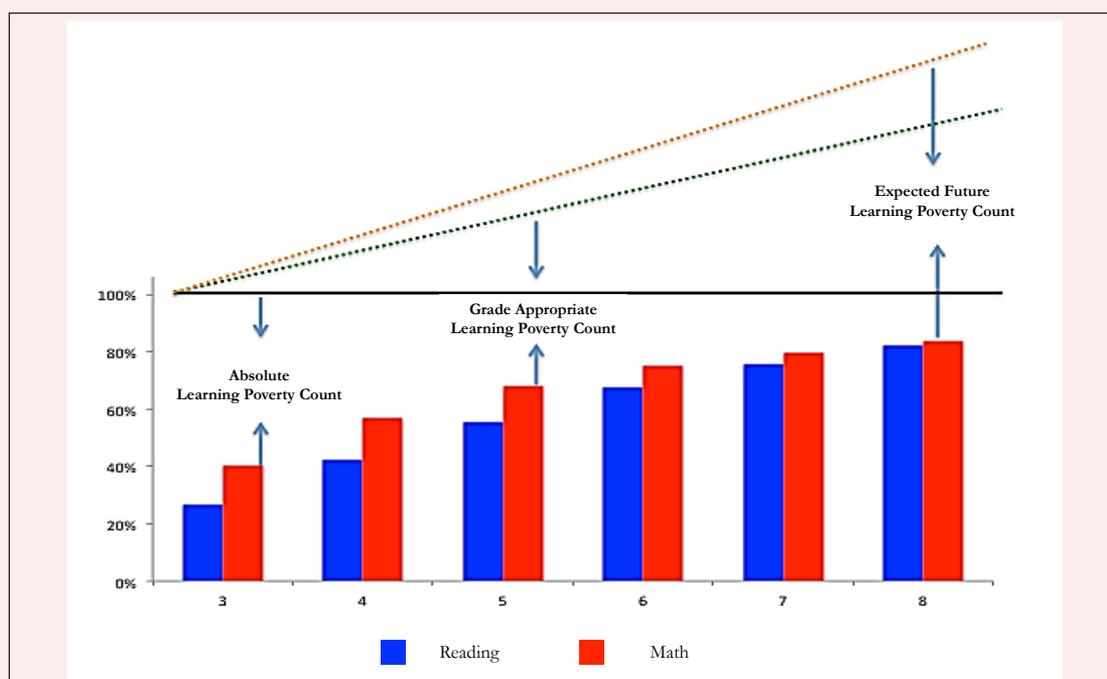
Figure 2. Learning Poverty Gap, 2007-2016

Figure 3. True Distance from Frontier

How do students perform as they progress through grades? Figure 3 plots the proportion of students in each grade who meet the grade 2 learning benchmark (the vertical distance from the horizontal black line). Unsurprisingly, in higher grades a larger proportion of students meet this basic benchmark. However, as students move to higher grades, the learning benchmark should also increase. While the ASER data does not allow us to directly compute it, the dashed green line is a hypothetical representation of the grade specific benchmark. Using this grade-appropriate poverty line, it is clear that learning levels of children in rural India are far below where they should be.

It is sobering enough that learning poverty counts are around 40 percent, roughly where India's consumption poverty numbers were in the 1970s. But if technology going forward is going to be even more human capital intensive as current trends suggest (dotted yellow line), the wedge between the opportunities offered to the future labour force and the capabilities to take advantage of them will widen even further. That is the true magnitude of India's human capital challenge.

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[a]We measure the Learning Poverty Count (LPC) as the proportion of children at any point in time who cannot meet this minimal level.

$LPC= \sum_g N^*_g / \sum_g N_g$

N^*_g denotes the number of children at grade g (where g goes from 3 to 8) who meet the test. N_g is the total number of children in grade g.

Analogously, the Learning Poverty Gap (LPG) is:

$LPG= 1/N[\sum_i ((PL -S_i)/PL]$

S_i is the score of child i and PL is the minimal learning standard, and is an indicator function, which takes the value 1 if a student does not meet the learning standard, and 0 otherwise.

Figure 7. Unlike GDP, agricultural productivity levels across countries are increasingly diverging, not converging
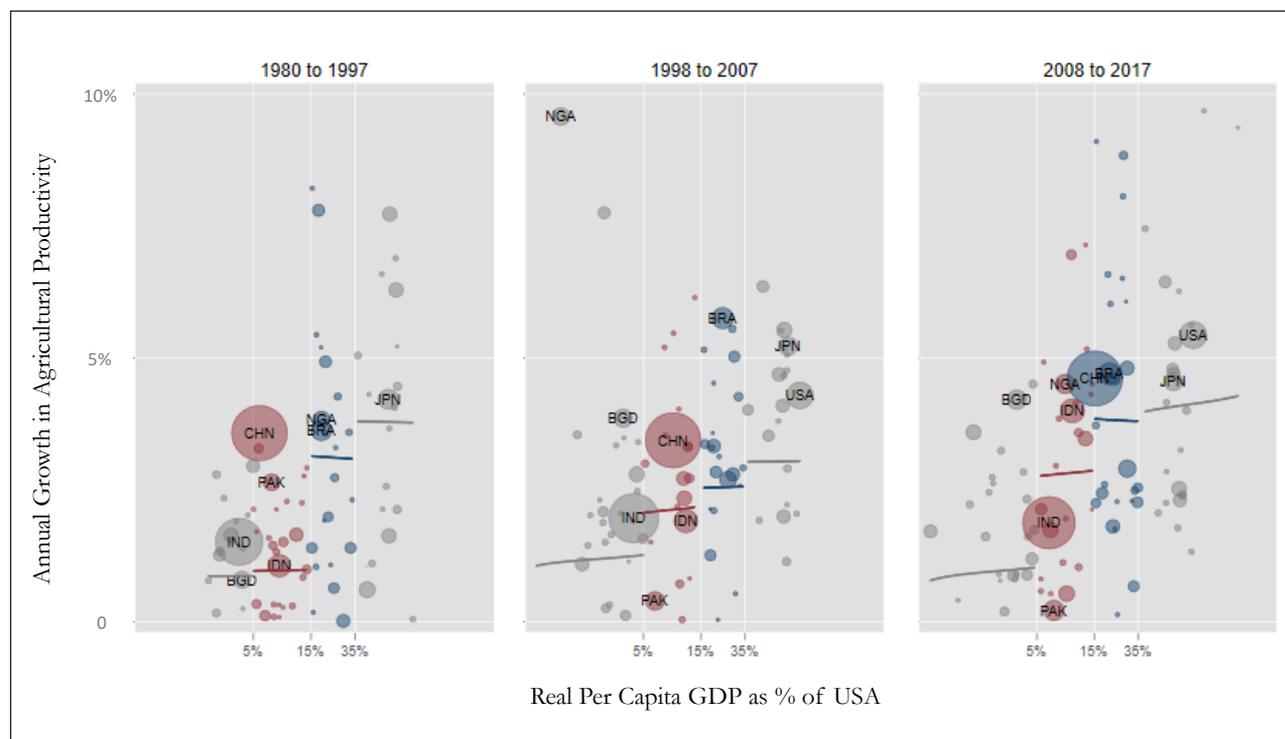
Source: World Bank; Penn World Tables.

Note: Lines show a local polynomial regression. Bubbles are proportional to initial population, but regressions and averages are unweighted.

D. Climate change-induced agricultural stress

5.41 A final factor impeding late convergence relates to agriculture. It is often forgotten that Lewisian structural transformation required the release of resources into the modern sector under conditions of rising agricultural productivity. Part of the reason was the need to produce enough food to a growing population. That was only possible if agricultural labor productivity grew rapidly enough.

5.42 But has such growth characterized the convergence process? Figure 7 shows that there has been divergence big time on agricultural productivity. Growth rates for richer countries have been consistently greater than for developing countries (in each time period, the lines depicting average growth for country groups, increase in magnitude from poorest to richest groups).

5.43 For the poorest, these growth rates have even declined post-GFC. For example, Indian agricultural productivity growth has been stagnant, averaging roughly 3 percent over the last 30 years (see figure 8). A later chapter of this Survey shows that Indian agriculture is vulnerable to temperature increase and still heavily dependent on precipitation. The analysis there shows that if climate change raises temperatures and the variability of rainfall, farmer revenues could decline by up to 20 percent to 25 percent in non-irrigated areas. For the late convergers, agricultural productivity is critical not just for feeding people but for ensuring human capital accumulation in those who move from agriculture to the modern sectors. Agriculture could yet come back to haunt the structural transformation fortunes of the late convergers.

Figure 8. Indian Agricultural Productivity Growth
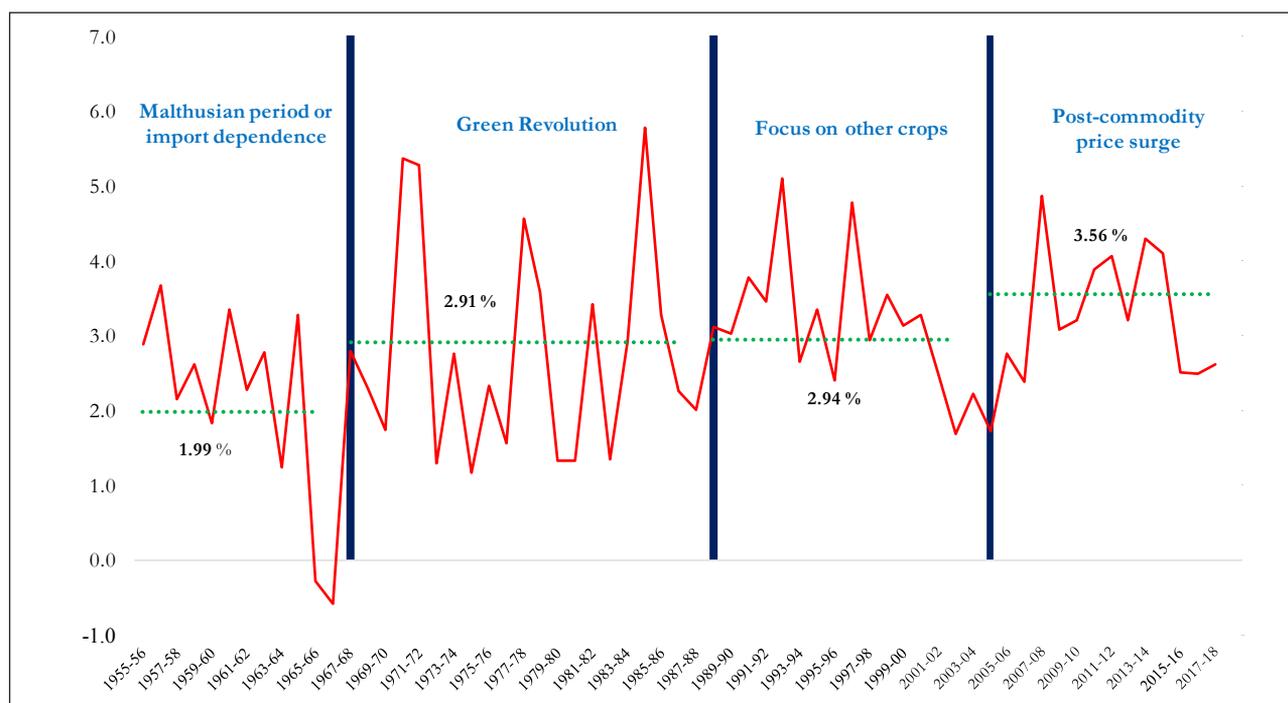
Source: Survey Calculations; numbers represent average growth for the relevant period in percent.

LESSONS FOR INDIA

5.44   Since 1980, India has been rapidly catching up, posting an average per capita GDP growth rate of 4.5 percent, a rate substantially greater than registered previously, which is in the top quartile of countries over that period, and amongst the highest for continuous democracies. But this fast growth has occurred with limited transfer of labour resources from low productivity to high productivity and dynamic sectors, and despite relatively modest agricultural growth. The risk for India–as for the other late convergers–is that resources (especially labour) will move from low productivity, informal sectors to other sectors that are marginally less formal and only marginally more productive. That is the "late converger stall" that India must avoid.

5.45   Rapidly improving human capital— healthy individuals, including all women, with the basic education to continually learn and adapt—will be key to sustaining India's dynamic growth trajectory. Rapidly improving agricultural productivity—against the headwinds of climate change and water scarcity—will be another key to achieving good growth and hence sustainable growth. And, of course, the hyperglobalization backlash in advanced countries, over which India has little control, must recede to create a favorable external climate to sustain rapid growth. There is no Late Converger Stall, as yet, but it would be wise to act to head it off.

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