

Dynamism with Incommensurate Development: The Distinctive Indian Model

Rohit Lamba and Arvind Subramanian

Constituting one-seventh of humanity, fissured horizontally by region, religion and language, and ossified vertically by caste and patriarchy, India is as much a subcontinent of quasi-sovereign states as a unitary country. Against this background, the paper explores some of the puzzles and anomalies that have characterized India's development, with a focus on the period since 1980. Its theme is the contrast between India's growth dynamism—notably rapid, long, and consistent—and its social and structural transformations, which although tangible and substantial, have not matched its overall growth.

When India gained independence in 1947, it was a poor country with per capita GDP of \$820 (in constant 2011 US dollars at the purchasing-power parity exchange rate). More than 70 years later, India's per capita GDP is approximately \$6,500, making it a lower middle-income country. Concomitantly, the poverty rate has declined from about 70 percent to 21 percent (in the most recent official statistics in 2011), and the child mortality rate has fallen from 30 percent to 5 percent. Meanwhile, life expectancy has increased from 32 years to nearly 70 years and the primary school completion rate from 40 percent in 1971 to nearly 100 percent today (based on data from the World Bank, Ministry of Finance 2017, and the Maddison Project). In this essay, we begin with a brief overview of India's economic growth since independence. In particular, three phases of steady market-friendly reforms in the 1980s,

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1990s, and 2000s have helped create a rare growth dynamism. We show that in the post-World War II period, India belongs to a small group of countries that have grown considerably and sustainably for a long period of time. But India's macroeconomic road has not been without bumps, including a conventional balance-of-payments crisis in 1991 and an exposure of macroeconomic vulnerabilities in the wake of the "taper tantrum" in 2013. The 2010s have been marked by the "twin balance sheet" crisis—an overindebted corporate sector and a public sector-dominated banking system laden with non-performing assets—which has slowly if undramatically corroded the dynamism in growth.

We then turn to India's unusual sequencing of economic and political development. In India, democratization preceded development, which is a pattern unlike the successful economic models of the East Asian countries or of the West. With rapid growth over the last four decades and a long-standing democratic political system, one would expect that key indicators of India's development ought to improve appreciably. For example, India would be expected to structurally transform its economy from one reliant on agriculture to one reliant on high-wage, high-productivity manufacturing; to reduce regional disparities as the fruits of growth spread from richer to poorer geographies; to narrow differences across social and religious groups; to reduce discrimination against women and facilitate the entry of women into the workforce; to solve chronic malnutrition amongst children; and to improve the environment. But as we will discuss, such improvements have either not occurred or at least not in proportion to India's apparent dynamism.

One possible explanation of why India's overall economic dynamism has been accompanied by incommensurate development is that India's GDP growth has been overestimated. There are a number of signs that when India revamped its methods of measuring GDP in 2011, it may have done so in ways that led GDP growth to be overestimated by about 2.5 percentage points per year. However, given that India's annual estimate growth rates of per capita GDP have exceeded 6 percent since 2002, even subtracting a couple of percentage points would still mean that India's growth was quite rapid over the last four decades. In the conclusion, we offer some reflections on the future of this distinctive Indian model of economic growth and its development consequences.

Growth Dynamism

For the first few decades after India gained independence from British rule in 1947, its public sector seized the "commanding heights" of the economy, while the private sector was allowed to operate in "nonessential" sectors.¹ Import-substituting industrialization was pursued through sweeping controls on imports, foreign direct investment, and foreign technology. In a distinctively Indian twist, and offsetting these

¹A timeline of India's major economic policy choices is presented in the online Appendix available with this paper at the *Journal of Economic Perspectives* website.

protectionist policies which targeted foreign supplies and firms, homegrown entrepreneurship was “taxed” through extensive controls on domestic private production and capacity, and in 1969, domestic private sector banks were nationalized (Bhagwati and Desai 1970; Joshi and Little 1996). The British raj had been exchanged for a “license-quota-permit raj.” This Kafkaesque maze of controls contributed to India’s unexceptional “Hindu rate of growth” (as it was often called) of 1.4 percent per capita between 1950 and 1980.

In the 1980s, in its first phase of economic reforms, India started moving away from this model by implementing modest pro-business reforms (Kohli 2010). The changes favored domestic producers and incumbents by relaxing constraints on them and easing their access to capital, inputs, and technology, but without exposing them to greater competitive threat. To use a phrase from Qian (2017) in the context of China, it was a model of “reforms without losers.” The early modest reforms elicited a large productivity response, perhaps in part because they signaled an attitudinal shift from the government, and in part because India was so far from its income-possibility frontier (Rodrik and Subramanian 2005). India’s GDP growth more than doubled in the 1980s to a new trajectory of about 3.5 percent per capita a year. However, macroeconomic profligacy ensued as India’s public expenditure and fiscal deficit rose substantially, culminating in a major balance-of-payments crisis in 1991. The crisis was “Hirschmanian” in that it was deep enough to legitimize sweeping and politically costly reforms but not so deep as to wipe out the fiscal or political means to make them (see Adelman 2013 for a description of this idea by Albert Hirschman).

Thus, in the second and perhaps the most decisive phase of reforms in the early 1990s, India responded by repudiating the dirigiste past: it introduced pro-market, pro-competition policies, liberalizing foreign trade, exchange rate, capital and investment controls, as well as domestic private-production regimes (for discussion and details, useful starting points are Bhagwati and Srinivasan 1995; in this journal, Ahluwalia 2002; DeLong 2003; Bhandari and Lamba 2016; Mohan 2018; Sitapati 2018).

A third phase of reforms followed in the early 2000s as more sectors were opened to competition, and financial liberalization and other tax and regulatory reforms were undertaken (Panagariya 2008). These changes, combined with favorable external conditions, propelled India into a boom phase, wherein per capita growth has averaged 6.2 percent since 2002.

The mid-2000s also witnessed a surge in redistribution through rights and entitlements to food, rural employment, and education. This reflected both increased fiscal ability as revenues surged with growth and a desire to spread the benefits of growth, especially when the capacity for provision of public goods such as health remained weak (Dréze and Sen 2013). As a result of economic growth and these policy changes, millions of Indians have been pulled out of poverty, and a sizable middle class has emerged.²

²See Roy (2011) for an overview of Indian economic history under British rule and Basu (2018) for a summary post-Independence. See also Bardhan (1999) on the political and social constraints on development in India in the twentieth century.

Table 1

Countries Matching or Surpassing India's Pace, Duration, and Stability of Growth

Country	Average growth rate (%)	Duration (years)	Maximum 38-year growth rate (%)	Takeoff year	Average Polity score
Botswana	6.4	59	6.6	1959	7.0
Singapore	6.3	60	6.4	1958	2.6
Republic of Korea	6.2	60	6.9	1957	4.2
Taiwan	6.2	66	6.7	1951	3.6
Malta	5.5	60	6.0	1958	N/A
Hong Kong (SAR)	5.4	60	5.4	1952	N/A
China	5.4	49	6.2	1969	0
Thailand	4.8	43	5.4	1955	2.8
India	4.6	38	4.6	1980	8.6
Malaysia	4.5	39	4.5	1959	6.1

Source: Maddison Project Database (2018) and the Polity IV dataset.

No discussion of India is complete without a comparison to China, its equally large and complex neighbor. While both countries have done remarkably well in pulling hundreds of millions out of poverty over the last four decades, China has done so at a brisker pace and attained a much higher level of per capita GDP, thereby spawning a bigger middle class. Even so, the dynamism of the Indian growth story puts it in a small group of post-World War II economies, which have sustained a comparable level and pace for a significant period of time.³

Since its growth takeoff in 1980, India's growth of GDP per capita has averaged 4.6 percent for 38 years from 1980–2018, with no decadal average during this 38-year period falling below nearly 3 percent. In Table 1, we report all countries since 1950 that (1) have grown at 4.5 percent or more for at least 38 years in this period and (2) during which any consecutive 10-year average has not fallen below 2.9 percent. Only nine countries make the cut. Seven of those are in East Asia and one each in sub-Saharan Africa and Europe. Among these countries, India is the outlier in terms of political freedom, with only Botswana coming close to being a persistent democracy in this period of high growth.

Of course, one can tweak this comparison in a number of ways. For example, if we relax the second criterion of ten-year averages, we notice that Japan's growth turns out to be volatile in the 1970s (2.26 percent for ten years starting in 1974) and Vietnam just misses the growth criterion because it grew at –3.5 percent in the year 1979–1980 (2.29 percent for ten years starting in 1980). One should also

³In this journal, Bosworth and Collins (2008) provide a comparative analysis of the China-India growth story.

note that countries that start poorer have a greater ability to grow faster. But whatever precise metric is chosen, India's growth performance since 1980 has been unusual in pace, duration, and nonvolatility, facilitating a fourfold increase in average living standards.

As India's economy moved to a faster rate of growth, the state could not step up its regulatory role. Major corruption scandals erupted in the allocation of natural resources such as spectrum, coal, and land, a "rents-raj" emerged as the twenty-first century analogue of the earlier "licence-quota-permit raj" (Rajan 2012). India's infrastructure boom of the 2000s came to be associated with dubious lending from public sector banks to private corporate houses (Crabtree 2018). The accumulated experience of corrosive links between the state and private capital has led to "stigmatized capitalism," which undermines the legitimacy of both actors (Subramanian 2018).

This overexuberant and tainted financing has also bequeathed a toxic legacy of fragile, overindebted corporate sector balance sheets and counterpart nonperforming assets in the financial system, especially the public sector banks—the "twin balance sheet" problem (Ministry of Finance 2015, 2017 in chapter 1 and chapter 4, respectively; Rajan 2018). A new bankruptcy code has been adopted in an attempt to facilitate the resolution of bad assets, but it is still too early to evaluate its effectiveness.

Since 2014, India's government has embarked on a "new basic needs welfarism." Its affirmative agenda involves the state providing essential private goods and services to the poor such as bank accounts, cooking gas, housing, toilets, power, and emergency medical insurance. This welfarism leverages financial inclusion, biometrics, and mobile technology (referred to as the "JAM" trinity in India) to build state capacity, which in turn can more effectively deliver the benefits (George and Subramanian 2015). It is unusual in its scope because it still excludes effective provision of public goods such as health and education—a longstanding failing of Indian polity and society.

A major fiscal and efficiency-enhancing reform was the implementation in 2017 of a national Goods and Services Tax. Its likely benefits are threefold: eliminating the multiplicity of taxes across the Indian states and creating a simple, common indirect tax system; reducing the transaction costs of trading across states and transforming India into a common market; and exploiting the self-policing nature of the valued-added tax to reduce evasion, improve compliance, and strengthen governance (Adhia and Subramanian 2016).

On the other side, a controversial demonetization policy in November 2016 withdrew 86 percent of the currency in circulation, a monetary shock that imposed large costs especially on the informal sector reflected in the increased take-up of the employment-guarantee scheme (Ministry of Finance 2017, chapter 1). Puzzlingly, the impact of demonetization on the formal economy has been less adverse than anticipated (for discussions on demonetization, see Chodorow et al. 2018 and the article by Lahiri in this symposium).

Politics and Economics: India's Unusual Sequence

Political institutions and economic development are strongly correlated. One direction of causation owes to the “modernization hypothesis” of political science: the empirical regularity that countries start democratizing as their incomes grow and sustain democracy only at higher levels of income.⁴ India has famously defied this hypothesis. Political scientists often describe as an anomaly how India has managed to sustain a democracy under inhospitable conditions of low income and literacy, a predominant rural economy, and major social cleavages—especially once the factor of caste is taken into account. Varshney (1998) provides a thoughtful analysis of democracy in India as a puzzle for most standard theories of political economy. Figure 1 plots a score of democracy on the y -axis and GDP per capita at independence and ethnic fractionalization on the right and left panels of the x -axis, respectively. It is striking how few uninterrupted democracies there are in the post-World War II period, and India stands out for having sustained democracy despite being poorer, more fractionalized, and of course much larger.

The other direction of causation is associated with the work of North (1990), Acemoglu and Robinson (2012), and Acemoglu et al. (2019), among others. This suggests that democratic political institutions causally affect growth by creating a conducive climate for investment and absorption of new technology and by helping to prevent the stifling entrenchment of vested interests and monopolies.

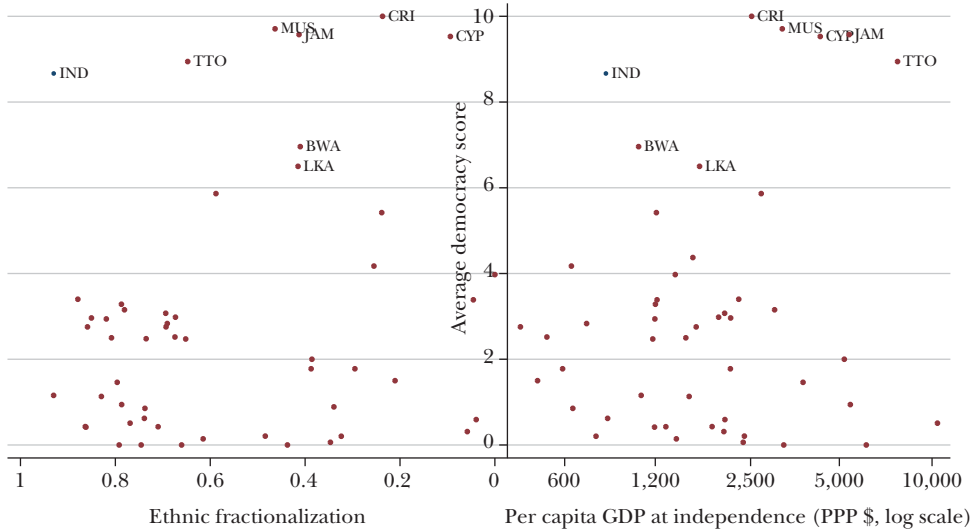
Before we delve deeper into these links for India, we first establish the common empirical patterns of the sequencing of economic and political development. Historically, if one looks at successful economic transitions, there are really two models in terms of the pace and sequencing of economic and political development. In the first model, comprising Europe and North America and starting with the Industrial Revolution, the economic transition occurs gradually over time with political development, especially suffrage, evolving alongside (Engerman and Sokoloff 2005). The combination, in other words, is one of steady economic growth (about 1.5 percent for nearly 200 years) along with steady political development.

This model of development is exemplified by the United States and the United Kingdom in Figure 2. It plots a democratic index against per capita GDP in the time period 1810–2015. The number in square brackets indicates the average growth rate over that entire time. The big dots for the United States and United Kingdom show the “development time” (that is, the path taken by a variable as the underlying per capita GDP changes) at which the country completed its path to universal suffrage, defined here for practical purposes as the date that the right to vote was granted to women. By this definition, the United States provided its citizens with universal

⁴Lipset (1959) first characterized the modernization hypothesis, and Huntington (1969) and Fukuyama (1989) built on these ideas: the latter proclaiming its much-cited apogee, the so-called “end of history.” There is now some evidence that the regularity has been weakening over time, such that “the link between economic development and what is generally called liberal democracy is actually quite weak and may even be getting weaker” (de Mesquita and Downs 2005). Acemoglu et al. (2009) question the empirical validity of the modernization hypothesis.

Figure 1

Democracy and Initial Conditions: Income and Fractionalization



Source: The measure for ethnic fractionalization is taken from Alesina et al. (2003). The number for India is updated using Banerjee and Somanathan (2007). The year of independence for countries comes from ICOW Colonial History data, version 1.1. The average democracy score is calculated using Polity IV from the year of independence to 2015. Costa Rica gained independence in 1821, but the income data is available from 1920, so we use numbers from 1920.

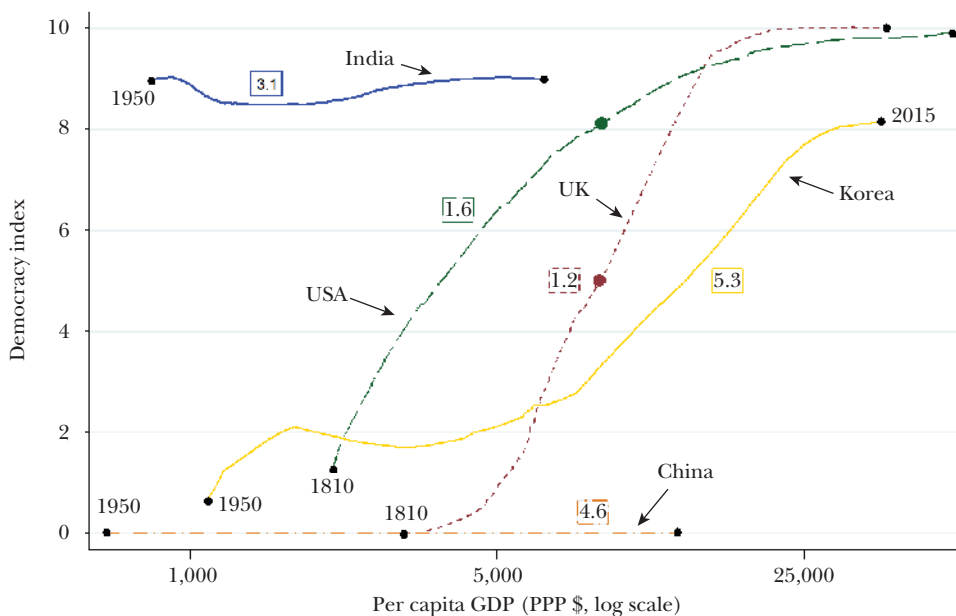
Note: The figure plots an average democracy score since the time of independence (y-axis) against a measure of ethnic fractionalization on the left panel and per capita GDP on the right panel (x-axis).

suffrage in 1920, the United Kingdom in 1928, France in 1944, and Switzerland in 1971.

The other model of successful transition to upper middle-income and high-income status is represented mostly by East Asian countries, which started off as authoritarian political regimes controlled by the military (South Korea), party (China and Taiwan), monarchy (Thailand), or an individual (Indonesia). In such cases, economic growth has been more rapid during the post-World War II period (an average annual rate of more than 4.5 percent for both China and Korea), while political openness has either sluggishly followed economic development (as in South Korea) or still remains limited (as in China). Again, Figure 2 plots the comovement of democracy and growth for South Korea, China, and India from 1950–2015: South Korea reached the level of economic development of the United Kingdom in half the calendar time, and China is catching up fast in economic terms without much expansion in political freedom.

India's story has been different from both these models in both respects. First, India's pace of economic growth since World War II (an average annual rate of

Figure 2

Patterns of Sequencing of Economic and Political Development

Source: For India, China, and Korea, the democracy score is directly reported from Polity IV; the same is true for the United States and United Kingdom after universal suffrage. Before suffrage for the United States and United Kingdom, the weighted democracy score in year t is Democracy score \times Voter participation in year t /Voter participation just after universal suffrage. For this latter construction, voter participation is recorded from the Polyarchy dataset. For computing the weighted democracy score before suffrage, ideally, we would want the fraction of population who has voting rights, but since that information is not available, the voter-participation rate is used as a proxy. Finally, LOWESS (Locally Weighted Scatterplot Smoothing) is used to generate the curve of moving averages.

Note: The figure plots a democracy score (y-axis) against per capita GDP (x-axis).

3.1 percent) has been more rapid than the steady pace of North America and Western Europe, but less so than the dynamic East Asian economies. More strikingly, India's political development has not proceeded alongside or after economic growth, but instead, preceded the economic transition, reflected in the grant of universal franchise in one stroke immediately after independence (Guha 2007). In Figure 2, India stands out for starting with a high democratic score that was only achieved much later in "development time" by the United States and United Kingdom and that remains elusive for the East Asian economic successes, especially China.

In short, combining Figures 1 and 2, we see that India has defied the modernization hypothesis with democratization occurring before development and despite deep ethnic cleavages, while China defies the modernization hypothesis in the

other direction by rapidly striding towards development with little progress on democratization.

Incommensurate Development

Rapid overall growth in GDP and a sustained democracy should be accompanied by development across a number of dimensions. However, India's broader pattern of development has not matched its overall economic growth along a number of dimensions discussed in this section: sectoral composition of growth and employment, distribution across geography and by caste and religion, progress on gender equality and children's nutrition, and mitigation of rising environmental risks.

Premature Deindustrialization and Precocious "Servicification"

India's growth dynamism has been associated with an unusual structural transformation, as first discussed in Kochhar et al. (2006). Herrendorf, Rogerson, and Valentinyi (2014) provide a detailed theoretical and empirical overview of the current thinking on structural transformations. In their spirit, we present four facts.

First, India has, atypically, skipped the low-skilled manufacturing stage and proceeded straight to services; we call this "premature deindustrialization, precocious servicification." Second, this pattern reflects and is perhaps caused by a deeper misallocation of factors of production, based on exploiting comparative advantage in scarce skilled labor rather than abundant unskilled labor. Third, despite unusual specialization and a history of restrictive trade policy, India is a fairly open economy, much more than expected given its level of development and size.⁵ Fourth, the misallocation of physical and human capital entails significant distributional costs. As a result, many people in India are not sharing the fruits of its growth.

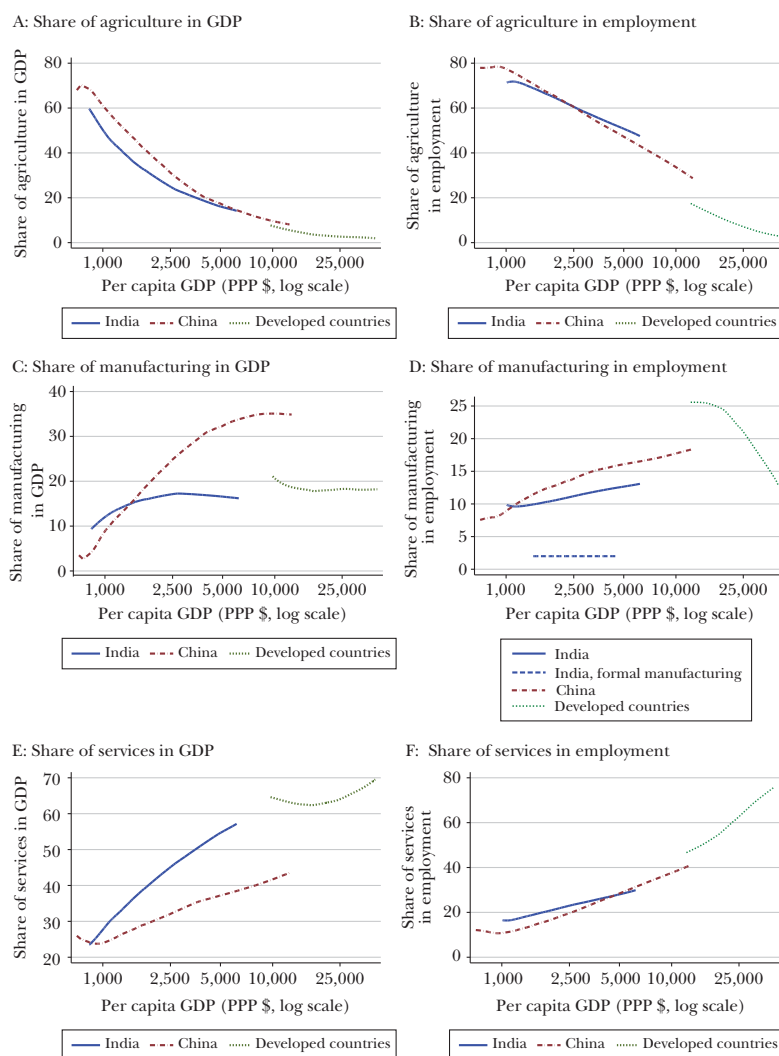
Figure 3 plots in development time the share of agriculture, manufacturing, and services in total output (left-hand panels: A, C, and E) and in total employment (right-hand panels: B, D, and F) for India, China, and developed countries as a group. The period covered is 1950–2017.

The trajectory of agriculture for all three is fairly similar, though for manufacturing and services there is a sharp contrast between India and the others. India's share of manufacturing in GDP is always well below that of China at comparable levels of development. India's share peaks at 19.2 percent at a per capita GDP of \$2,177 in the year 1996; in contrast, China's share of manufacturing in GDP peaks at 36.5 percent at a per capita GDP of \$9,555 in the year 2010 (at constant US dollar prices). The share of manufacturing of today's advanced countries has always been greater than India's and had also peaked at a higher level in their development process. Moreover, even within manufacturing, the share of formal manufacturing

⁵ This "trade puzzle" is discussed in detail in the online Appendix.

Figure 3

Share of Different Sectors in GDP and Employment over Development Time for India, China, and the Developed Countries



Source: The share of the respective sectors is taken from the GGDC 10-Sector Database. Since the GGDC data ends in 2011–2012, it is augmented till 2017 using the WDI database for India and China. To make two datasets comparable, the mean values for the share of agriculture, manufacturing, and services for years 2006–2012 from both datasets are computed and then the WDI numbers after 2012 are updated by dividing them with the WDI mean and multiplying by the GGDC mean. The developed-country average for the share in agriculture, manufacturing, and service is constructed using the GGDC dataset by taking the simple average for the United States, West Germany, Spain, France, the United Kingdom, Italy, the Netherlands, Sweden, and Japan. If the data is not reported for some country in a given year, it is removed from the simple average.

Note: As in Figure 2, we use the LOWESS method to smoothen the curves. The figure plots the share of agriculture, manufacturing, and services in GDP and employment (y-axis) against per capita GDP (x-axis).

in India is extremely small, as shown in Figure 3, panel D. Overall, India is now a classic case of “premature deindustrialization” (Rodrik 2016).

For India, the flip side of premature deindustrialization is precocious servicification of its economy, as Figure 3, panel E shows. India’s services share is consistently greater than China’s and is on pace to reach that of advanced countries, but at much lower levels of per capita GDP (Amirapu and Subramanian 2015). Traditional theories have placed a hierarchy on the “natural” order of economic development: first a structural transformation from agriculture to low-skilled manufacturing, then the next transformation to high-skilled manufacturing, and eventually services.⁶ India has turned this theory on its head by leapfrogging manufacturing and adopting a low and high skill-intensive services transformation. India has thus grown by defying, rather than deifying, its comparative advantage in abundant unskilled labor.

These domestic patterns of specialization and the revealed comparative advantage have trade counterparts. Premature deindustrialization and precocious servicification reflect weak and strong international competitiveness of the respective sectors. In a comparison with countries that have had a growth rate of at least 4.5 percent over 30 years in the post-World War II era, India’s manufacturing exports/GDP ratio peaked at 10.5 percent compared to 32.5 percent for China, 71.2 percent for Vietnam, and 18.1 percent for Bangladesh. In contrast, India is amongst the best performers in this group on the metric of peak skill-intensive exports to GDP ratio (at 7 percent), bested only by Singapore and Hong Kong. In this peer group of fast growers, India has failed to exhibit competitiveness in manufacturing while displaying it in skill-intensive services.

Could India’s premature deindustrialization be explained by bad timing? The answer seems to be negative because India does worse on manufacturing than all three vintages of growth stars: Singapore, Hong Kong, and Thailand, which started accelerating in the 1960s and 1970s before India; China, whose growth acceleration was contemporaneous with India’s; and Indonesia and Vietnam, whose growth acceleration started about a decade after India. For all these countries, both manufacturing shares in GDP and manufacturing export shares have been greater.

Accounting for India’s unusual pattern is a combination of policy and chance, which de facto converted a country physically abundant in unskilled labor into one that was competitively scarce in it. The “license raj” created a web of incentives and disincentives that not only raised the cost of unskilled labor but militated against entry of new firms and employment expansion (Kochhar et al. 2006; Hsieh and Klenow 2009). Formal manufacturing suffered and export opportunities were thwarted. When the information technology revolution came along in advanced countries in the 1990s, India was well situated to exploit the opportunities because of its pool of skilled, English-speaking labor, which in turn was a legacy of the early

⁶ Clark (1940) and Kuznets (1957) are some of the early references here. Ray (2010, in this journal) emphasizes the role of structural change more generally through the interaction of sectoral shifts in allocation of labor and capital with technological progress and its consequences for the distribution of income.

Nehruvian emphasis on higher education. It was also crucial that the new service sectors escaped the stifling reach of the license raj, echoing the famous quip by Gurcharan Das (2012) that India grows at night when the government sleeps.

India's unusual specialization-cum-transformation has had distributional consequences captured in Figure 3, panels B, D, and F, which show sectoral employment shares for India, China, and developed economies. At the extensive margin, a reallocation of labor from low- to high-productivity sectors increases growth and improves distribution in the economy (McMillan, Rodrik, and Verduzco-Gallo 2014). At the intensive margin, if initially more productive sectors have a higher growth rate of productivity than the initially low-productive ones and there is no reallocation of labor, distributional costs are exacerbated. These individual effects and their interaction determines whether the growth is equitable or uneven.

The contrast between India and other countries in their divergent structural transformations is striking. India's employment share of manufacturing and services (Figure 3, panels D and F) is much lower at a comparable income level; worse, high-productive formal manufacturing is even smaller (dotted line at bottom of Figure 3, panel D). Thus, India's dynamic and high-productivity activities have benefited a small fraction of the workforce.⁷ The counterpart of this is the continuing high share of labor still employed in agriculture characterized by anemic growth in productivity. The Lewis (1954)-style transformation of labor moving out of low-productivity agriculture in large quantities has still not happened in India, with adverse consequences for income distribution.

In short, India's path of specialization has been unusual: premature deindustrialization and precocious servicification, combined with weak agricultural productivity and a lack of reallocation of employment away from low- to high-productivity sectors. This path carries the risk that patterns of inequality will persist and may even worsen over time.

Spatial Divergence and Inequality

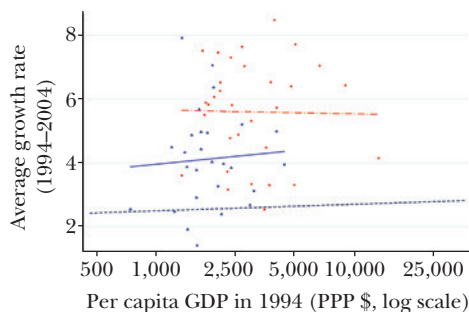
As a large and diverse country, achieving balanced regional and spatial growth has been a long-standing policy goal of the Indian state. In the era of relatively modest growth before 1980, disparities in growth were also muted. But when growth took off, it was highly unequal across the country, aggravating inequalities in standards of living, especially between the peninsular states and the hinterland and northeastern states (Kochhar et al. 2006). In Aravind Adiga's (2008) Booker Prize-winning novel, *The White Tiger*, the protagonist describes the geography-based explanation of India's development thus: "Please understand, Your Excellency that India is two countries: an India of Light, and an India of Darkness. The ocean brings

⁷The *World Inequality Report* compares the distributional implications of the structural transformation paths chosen by India and China and how the paths followed by the two countries are mirrored in the evidence on the distribution of personal income (Alvaredo et al. 2018).

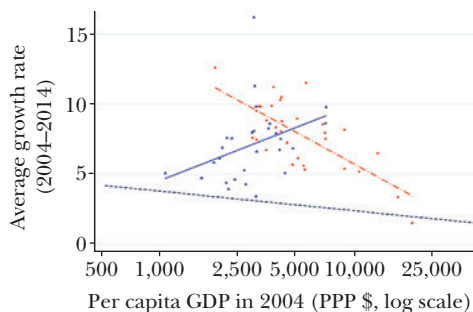
Figure 4

Income Convergence/Divergence: India, China, and the World

A: 1994–2004



B: 2004–2014



— World — India - - - China

Source: Per capita GDP for Indian states comes from Handbook of India Statistics by the Reserve Bank of India. Since no data for state level PPP is available, the state level per capita GDP in rupee is normalized with India per capita GDP in PPP US\$/India per capita GDP in rupee. GDP for Chinese provinces is taken from the National Bureau of Statistics of China, these numbers are also converted into PPP US\$. For all other countries, the Maddison dataset is used.

Note: The figure is a scatter plot of average growth rate for Indian states, Chinese provinces, and nation states for two ten-year periods, 1994–2004 and 2004–2014 (y-axis), against per capita GDP in the start of the respective ten-year period, 1994 and 2004 (x-axis).

light to my country. Every place on the map of India near the ocean is well off. But the river brings darkness to India.”⁸

The natural framework for assessing this theory is a simple test for convergence (Barro and Sala-i Martin 1992).⁹ Consider the per capita GDP across the states of India, and then look at the average per capita GDP growth rate for these states. If regions with lower per capita income grow faster on average, convergence occurs; conversely, if those with higher per capita income grow faster, divergence results.

Figure 4 plots the initial per capita GDP against the average growth rate over the next ten years for three different categories: states in India, provinces in China, and all the countries of the world, with Figure 4, panel A showing the period 1994–2004 and Figure 4, panel B the period from 2004–2014. In the first period, provinces in

⁸The considerable heterogeneity of growth outcomes makes India a crucible for illustrating and understanding the many patterns and theories of economic development: Punjab and Haryana were centers of the boom in agriculture during the Green Revolution; Gujarat and Maharashtra are manufacturing successes; Karnataka and Tamil Nadu and many cities across the country have fueled growth through skilled services; Kerala’s growth owes to remittances from its large export of labor to the Middle East; central and eastern India exhibit many of the pathologies associated with the natural resources curse; and poorer states as well as those in the northeast are susceptible to an aid curse (Ministry of Finance 2017, chapter 13).

⁹Technically, this is called beta-convergence, which is distinct from sigma-convergence; the latter refers to a decline in the dispersion of real per capita income (Quah 1996).

China do not show a strong trend and neither do countries of the world, but states in India show clear signs of divergence (upward-sloping blue line). In the second period, provinces in China and countries of the world start converging (downward-sloping red and green lines), but states in India now start diverging more rapidly.

Therefore, the evidence so far suggests that in India, regional/spatial catch-up remains elusive. The striking contrast between the results in India versus those in China and internationally poses an important puzzle. If a state/country is capital-scarce and poor, then it seems as if returns to capital should be high and the area should be able to attract capital and technology, thereby raising its productivity and enabling catch-up with richer states/countries. Within India, where borders are porous, this process of convergence has failed. But across countries where borders are much thicker (because of restrictions on trade, capital, labor, and technology), convergence has occurred. That pattern is not easy to explain.

One possible explanation is that convergence fails to occur because of traps relating to governance and state capacity. Poor governance could make the risk-adjusted returns on capital low, even in capital-scarce states. Moreover, greater labor mobility or exit from these areas, especially of the higher skilled, could further worsen governance, creating a vicious cycle. Another possible explanation relates back to India's structural pattern of growth. If growth has been skill-intensive, there is no reason why labor productivity would necessarily be high in capital-scarce states. Unless the less developed regions are able to generate skills (in addition to good governance), convergence may not occur.

Chauvin et al. (2016) argue that India is both underurbanized and has too few large cities (violating Zipf's law). So, if India is still realizing agglomeration economies from early urbanization, larger, richer regions will benefit at the expense of smaller, poorer ones. Somewhat unexpectedly, the Indian pattern of divergence is coming to resemble the more recent emergence of divergence amongst the cities and regions in the United States and the nations of Europe and for similar reasons of a rising importance of agglomeration and skills (Krugman 1991; Hendrickson, Muro, and Galston 2018; Redding and Rossi-Hansberg 2017). A skill-based technical bias in labor demand emerges, and its persistence manifests in uneven growth (Card and DiNardo 2002; Giannone 2019).

Caste and Religion

Caste and religion are distinctive markers of Indian society, a perennial source of cleavage and conflict before and after independence. (A famous quip is that "Indians don't cast their votes, they vote their castes.")

The five largest social groups in India are Hindu Upper Castes, the historically most privileged category, together with "Scheduled Castes," "Scheduled Tribes," "Other Backwards Castes," and Muslims. India's constitution granted special status for the so-called Scheduled Castes that were deemed "untouchable" because of being outside the caste hierarchy. Such status was also granted for a group called Scheduled Tribes, indigenous inhabitants of regions in central and eastern India as well as in the northeast. This status took the form of guaranteed minimum political

representation, admission to public sector educational institutions, and employment in the public sector. This special status was extended in the 1990s to Other Backwards Castes. About 80 percent of India's population is Hindu, 15 percent is Muslim, with the rest being a mixture of Christian, Sikh, and other religious groups. However, no special status has been awarded to minority religious groups, like Muslims.

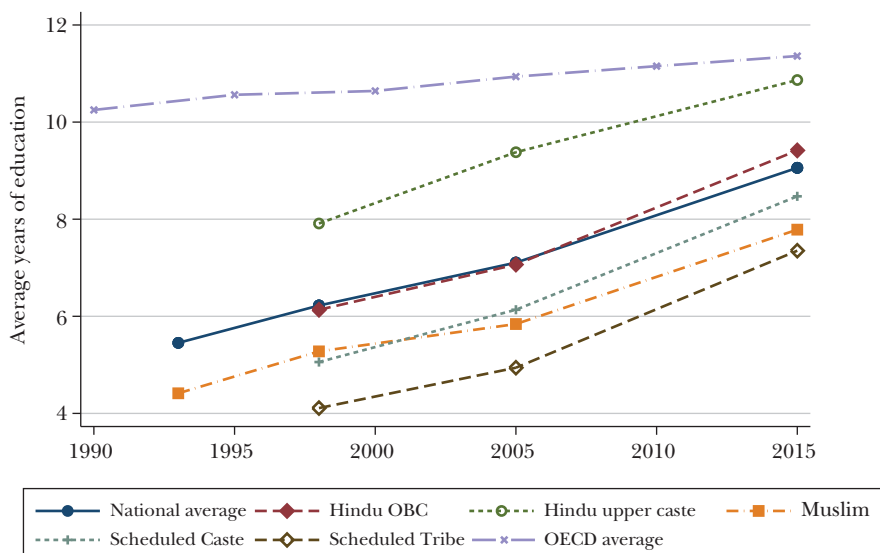
On one side, economic growth could help to mitigate these traditional divisions. This hope is evoked by Suketu Mehta's (2005) description in the book *Maximum City* of a hand extending to help a passenger get in the local train in Mumbai: "And at the moment of contact, they do not know if the hand that is reaching for theirs belongs to a Hindu or Muslim or Christian or Brahmin or untouchable or whether you were born in this city or arrived only this morning. All they know is that you're trying to get to the city of gold, and that's enough. Come on board, they say. We'll adjust."

On the other side, economic growth also interacts with traditional cleavages of caste and religion to reinforce existing hierarchies. The dominance of Hindu upper castes in private sector jobs, academia, and civil services is a case in point. Electoral politics along caste lines though has helped to some extent in pushing resources towards the marginalized. What has been the culmination of these competing forces in terms of measurable outcomes for the various communities?

There is evidence that economic growth has indeed played an important part in diminishing cleavages of caste and religion, especially in urban India. For example, Varshney (2002) analyzes three pairs of cities with a history of Hindu-Muslim violence and argues that civic engagement, such as integrated business organizations, trade unions, political parties, and professional associations, are able to control outbreaks of ethnic violence. Kapur et al. (2010) surveyed Dalit (untouchable) households in Uttar Pradesh (a poor state) and found enormous changes in social norms between 1990 and 2010. A combination of economic growth, migration, and the acquisition of political power has meant that previous social taboos on co-dining and co-mingling as well as rigid caste occupation links were breaking down. Relatedly, Kapur et al. (2014) document the stories of a number of "Dalit entrepreneurs" who have been able to build mid-sized businesses.

Using the National Family Health Surveys, which have so far conducted four rounds—1992, 1998, 2005, and 2015—we assess progress on the key indicator of education (similar analysis can be conducted for wealth and height). Figure 5 plots educational outcomes of 15–29 year-olds, measured as average years of schooling for the five largest social groups. There are two clear findings. At least in terms of educational quantities (not necessarily in terms of quality), India's most privileged groups are converging to the global frontier. Within India, however, there is more limited convergence. The gap with the Hindu Upper Castes has shrunk somewhat for the Other Backwards Castes (from 1.8 years in 1998 to 1.4 years in 2015), for the Scheduled Castes (from 2.9 years in 1998 to 2.4 years in 2015), and Scheduled Tribes (from 3.8 years in 1998 to 3.5 years in 2015), but has widened for the Muslims (from 2.6 years in 1998 to 3.1 years in 2015). There is catch-up, but it is slow for many groups

Figure 5

Educational Attainment of Age Group 15–29 across Social and Religious Groups, 1992–2015

Source: For each social group in India, the data source is four rounds of National Family Health Survey (all four rounds), which can be obtained by applying for the Demographic and Health Survey. For the OECD countries, the Barro-Lee dataset is used. Since the Barro-Lee dataset ends in 2010, we extrapolate it to 2015 using the average slopes previously.

Note: The figure plots the average years of education of adults aged 15–29 years for various social groups (y-axis) over time (x-axis).

and absent for Muslims.¹⁰ The broad pattern of continuing inequality in educational outcomes across social and religious groups is consistent with theories that emphasize unequal access to learning as an instrument of elite dominance (for commentary on India, see Weiner 1997; for a general argument, see Fukuyama 2011).

Relatedly, using various data sources, Asher, Novosad, and Rafkin (2018) document rising intergenerational mobility for Scheduled Castes and declining mobility for Muslims. Since the two population sizes are approximately the same, these two effects cancel each other to produce almost no intergenerational mobility in the aggregate over the last few decades. Banerjee, Gethin, and Piketty (2019) analyze electoral data to conclude that the traditional cleavages may actually be on the rise.

¹⁰ In 2009, India adopted the Right to Education wherein every child was granted the fundamental right to (free) education. Its impact on educational attainment is not yet well documented, but India has attained universal enrollment in primary education.

Gender and Children

Although some part of the reduction in gender inequality can be explained by the process of economic development, society-specific factors play a big role (Jayachandran 2015). In India, in particular, a number of cultural factors may cause gender development to lag growth dynamism. Examples include patrilocality (women moving after marriage to live with the husband's parents), patrilineality (titles and property passing on to sons), rituals performed by oldest sons, dowry system, old-age support provided by sons, and strong notions of cultural purity of women.

India has made progress on a number of gender-related measurables. The 2018 *Economic Survey of India* (Ministry of Finance 2018, chapter 7) showed improvements in 14 out of 17 indicators, relating to agency, attitudes, and outcomes. For example, India's score improved on agency for women in decision-making regarding household purchases and visiting family and relatives, on the experience of physical and sexual violence, and on educational attainment.

But two other striking outcomes paint a disappointing picture: contraception and female labor force participation. Nearly 47 percent of Indian women do not use any contraception, and of those who do, less than one-third use female-controlled reversible contraception. In 2015, India was an outlier by more than 50 percentage points in the use of sterilization for women as means of contraception amongst a group of low- and middle-income countries.

Female labor force participation in India has been declining from about 35 percent in 1990 to about 28 percent in 2015. For perspective, the female labor force participation rate in Indonesia in 2015 was almost 50 percent; in China, it was above 60 percent. In addition, the gap between India's labor force participation rate and the rate of countries with similar per capita GDP is widening, not narrowing.

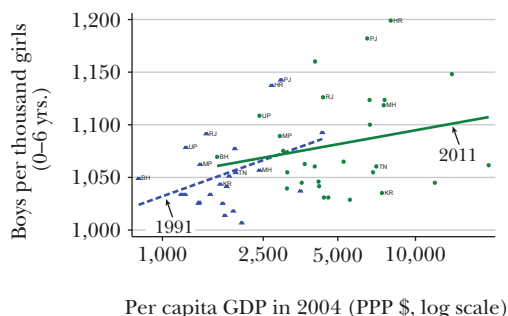
India's gender problems are perhaps steeped in a deeper form of discrimination—a strong preference for male children, documented in Figure 6. A malign version of this preference, facilitated by the now-banned ultrasound technology, involves selective sex abortion and female foeticide (Sen 1990; Anderson and Ray 2010). India's sex ratio at birth increased from 1,060 boys born for every 1,000 girls in 1970 to 1,106 in 2014, widening its gap from the biological norm of 1,050. The usual pattern around the world is that countries with higher income levels have sex ratios at birth closer to the expected biological norm (Jayachandran 2015). But within India, states with a higher per capita GDP tend to have more unbalanced sex ratios at birth, and this perverse relationship has not changed between 1991 and 2011 (as shown in Figure 6, panel A). This suggests ominously that future economic growth may not necessarily reduce this imbalance.

The less malign but no less important version of son preference relates to fertility choices. Even without selective sex abortion and female foeticide, parents may choose to keep having children until they get the desired number of sons. Such a meta-preference for a son manifests itself in sex ratios depending on birth order (shown in Figure 6, panel B). If the child is not the last (lower dotted line), the sex ratio is skewed in favor of girls (850 boys per 1,000 girls) and below the ideal sex

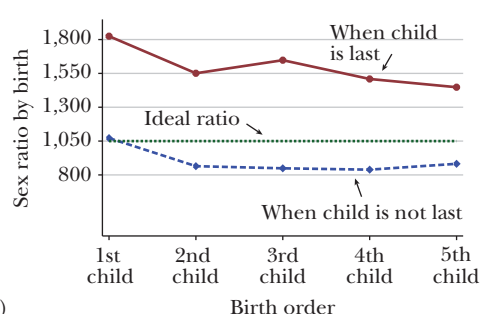
Figure 6

“Missing Women” and “Unwanted Girls”

A: Gender ratio and income per capita across states of India, 1991 and 2011



B: Sex ratio by birth order, 2015



Source: The per capita GDP for each state is calculated in the same way as Figure 4. The data on sex ratio for 1991 and 2011 comes from the Census of India. The sex ratio at birth given birth order comes from the National Family Health Survey.

Note: Panel A plots the number of boys per thousand girls aged 0–6 years (y-axis) against per capita GDP (x-axis). Panel B plots the sex ratio (y-axis) against the order of birth (x-axis).

ratio (horizontal line). In contrast, if the child (at any birth order) is the last child (top line), the sex ratio is massively skewed in favor of boys (1,500 to 1,000).

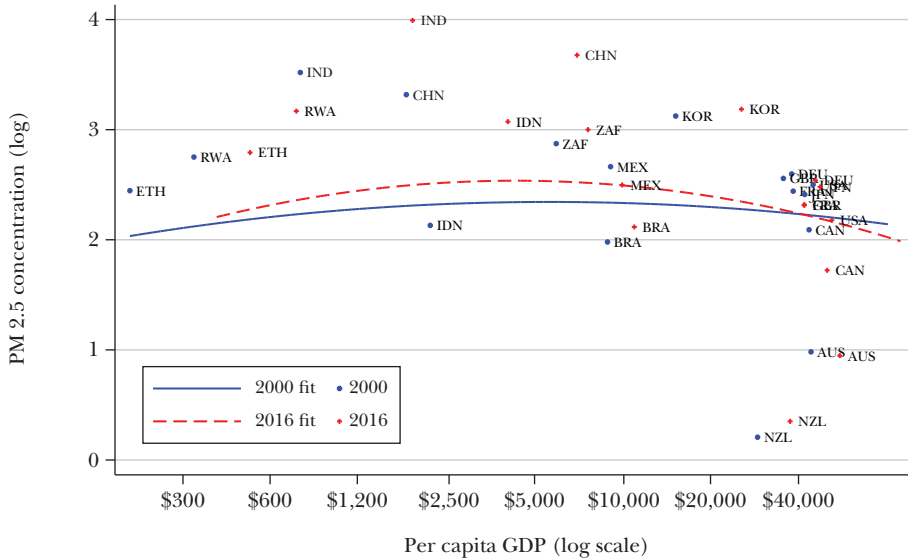
We can quantify both forms of son preference. Because the sex ratio at birth is so skewed, about 40 million women are “missing,” to use Sen’s (1990) famously evocative term. Similarly, because Indians seem to stop having children as soon as a son is born, as reflected in sex ratio as a function of the gender of the last-born child, over 20 million “unwanted girls” are born in India (Ministry of Finance 2018). The twin phenomena of missing women and unwanted girls—malign and meta-son preference, respectively—reflect Indian society’s deepest gender discrimination.

This bias in favor of sons, especially the eldest one, can be detrimental to the resources available to other children and to female children in particular. Jayachandran and Pande (2017) show how favoring resources devoted to eldest sons reduces the investments in other children, especially girls, contributing to the phenomenon of “stunting,” which refers to a situation in which malnourishment leads to children whose height-for-age is two standard deviations below the medians calculated by the World Health Organization. Gender discrimination begets child neglect.

In addition to the preference for the first-born male, another main cause of stunting is that a large majority of people—especially in the rural areas—defecate in the open, which leads to diarrhea and less absorption of nutrients amongst children (Coffey and Spears 2017). According to the Demographic and Health Survey, 52 percent of children in India were stunted in 1998, and although the number dropped to 38 percent in 2015, India remains a distinct outlier in the extent of stunting for its level of per capita income.

Figure 7

Pollution and Development, 2000 and 2016



Source: The PM 2.5 concentration comes from the WDI.

Note: The figure is a scatter plot of the PM 2.5 concentration of nation states (y-axis) against their per capita GDP (x-axis).

Environment

As measured by particulate matter of 2.5 microns or more in the air, the so-called PM 2.5 index, 22 of the top 30 most polluted cities in the world are in India (according to the World Health Organization Global Ambient Air Quality Database as of 2018). Greenstone et al. (2015) estimate that around 660 million people, over half of India's population, live in areas that exceed the Indian National Ambient Air Quality Standard for fine particulate pollution. In 2017 alone, 1.24 million deaths (12.4 percent of all deaths) in India were attributable to air pollution (India State-Level Disease Burden Initiative Air Pollution Collaborators 2019).

The environmental "Kuznets curve" suggests that environmental quality may first decline and then rise with capita GDP (Shafik and Bandyopadhyay 1992; Grossman and Krueger 1995; for an overview in this journal, see Dasgupta et al. 2002). Although the theory is controversial, the intuition is that in the initial stages of development, growth will lead to greater output and consumption, and especially if accompanied by a move toward energy-intensive manufacturing, also to greater pollution. But at some point, a combination of consumer preference for a better environment, a shift toward less resource-intensive services, and the availability of greener technology should lead to a positive impact of growth on environmental quality.

Figure 7 plots the population-weighted PM 2.5 index against per capita GDP for the broad cross section of countries for 2000 and 2016. It is hard to detect any

pattern in the data, let alone a Kuznets curve relationship. But what is unmistakable is that India (along with China) is a striking outlier and would be so even if there were a U-shaped relationship. In addition, India has over time become more of an outlier both compared to the average country (represented by the two lines of best fit) and even compared to China. Levels of pollution in India have risen sharply, more so than should be warranted by economic activity, despite services and not manufacturing being the primary driver of growth. Such high levels of pollution reflect weak regulation and enforcement and are symptomatic of weak state capacity.

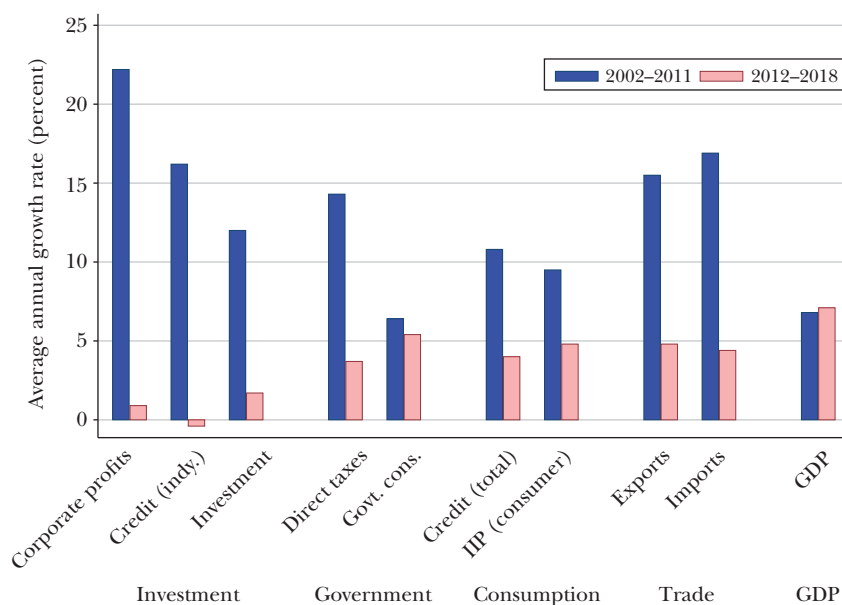
India faces other environmental problems as well. For example, rapid urbanization and indiscriminate use of water for irrigation purposes in agriculture have created a severe groundwater problem over the last two decades. A complex web of input and output subsidies in farming lead to overexploitation of groundwater (Badiani-Magnusson and Jessoe 2019; Chatterjee, Lamba, and Zaveri 2017). Groundwater levels have dropped from 8 meters below ground level to 16 meters below ground level in northwestern India and from 1 to 8 meters below ground level in the rest of the country. For perspective, the groundwater loss in India is orders of magnitude larger than water depletion in California's Central Valley during the same period (Zaveri et al. 2016). Globally speaking, the problem of accelerated groundwater depletion is the most severe in South Asia in general, and in India in particular (Aeschbach-Hertig and Gleeson 2012, figure 2).

Data Issues: Is India's Recent Dynamism Overstated?

One possible reconciliation of the development-lagging-dynamism hypothesis could be an overstatement of India's dynamism. Beginning in 2011–2012, as part of periodic revisions, India's government introduced a number of changes in estimating its National Income Accounts. For example, the base year was changed from 2004–2005 to 2011–2012, and the data sources were comprehensively expanded to use financial accounts of over 600,000 companies. As a result, calculations moved from predominantly volume-based estimates of gross value added to value-based estimates that potentially better capture economic changes in a modern, dynamic economy. A robust debate has since ensued on India's growth numbers (Bhattacharya 2019; Dholakia, Nagaraj, and Pandya 2018; Nagaraj and Srinivasan 2017; Ministry of Finance 2015, 2017).

Because India measures GDP from the production side, a natural question to ask is whether these production-side estimates can be validated by demand-side indicators such as investment, exports, imports, and credit, which are measured independently and arguably more reliable (Subramanian 2019a,b). In the decade preceding the methodological changes, India's measured GDP growth exhibits a strong correlation with other demand indicators: GDP growth of about 7.5 percent was accompanied by double-digit growth in investment (13 percent) and exports (15 percent), which are critical drivers of medium-term growth. But since 2011, the Indian economy experienced a series of shocks: exports declined after the global

Figure 8

Is India's Recent GDP Growth Overstated?

Source: Real investment, credit, and government consumption are obtained by deflating nominal values by the Consumer Price Inflation index. All these numbers and GDP growth are taken from WDI. Real exports and imports are also taken from WDI. Corporate profits come from the Prowess database. Credit to industry comes from the Reserve Bank of India's database of the Indian economy. The Index of Industrial Production (consumer goods) comes from the Ministry of Statistics and Programme Implementation, Government of India.

Note: The figure plots ten variables averaged over two different time periods: 2002–2011 and 2012–2018.

financial crisis; the “twin balance sheet” crises stifled credit and investment as described earlier; the “taper tantrum” affected macroeconomic stability; two successive agricultural droughts diminished rural demand; and a demonetization hit the informal labor market. During this time, the main positive shock was an improvement in India's terms of trade as oil prices declined.

Figure 8 plots a series of demand-side indicators (investment, exports, government consumption, and private consumption) and associated proxies, before and after the changed GDP measurement. The annual average growth of all these indicators declined by between 10 and 20 percentage points. For example, investment fell from an annual rate of 12 to 1.7 percent; credit to industry from 16.2 to -0.4 percent; exports from 15.5 to 4.8 percent; and perhaps most tellingly, imports from 16.9 to 4.4 percent. Despite these large declines in every component of demand, GDP growth, as measured by the revised production-side methodology, actually increased—which seems implausible.

Other pieces of evidence reinforce the puzzle. Comparisons to other emerging economies in the same time frame show that many of these countries experienced lesser shocks, but still saw a larger decline in growth. Also, correlations between different measures of manufacturing move together before the measurement change but decouple thereafter. Further, an estimation of India's wedge between the GDP deflator and consumer price index shows a very small discrepancy pre-2011 and large one (in fact the second largest in a sample of comparison countries) post-2011. The GDP deflator anomaly is consistent in timing, sign, and magnitude with real GDP growth anomaly (Subramanian 2019b).

In summary, data issues call into question India's growth dynamism of the current decade. But how seriously would these issues affect the underlying narrative of long-run economic growth? Suppose that the magnitude of overestimation is 2.5 percent per year since 2011 (Subramanian 2019a). In this case, India's 38-year annual average per capita growth rate would decline from 4.6 percent to 4.2 percent, which would still be exceptional performance and in fact would preserve India in the list of the top ten fastest and stable growing economies. Thus, the basic narrative of dynamism with incommensurate development would remain valid.

Looking Ahead: The Challenges of Development with Dynamism

The core argument of this paper is that although India has experienced rapid and stable economic growth for nearly four decades, the resulting development has been limited on a number of dimensions, including structural change, regional divergence, inadequate convergence across caste and religion, and underperformance on issues related to gender and children, and environmental outcomes. This pattern raises two obvious questions: How can the dynamism be sustained going forward? How can the concomitant development transformations be accelerated?

The sustainability of growth—which in late 2019 has cratered to a near-standstill—will be determined by structural factors salient amongst which is the “twin balance sheet challenge” initiated by the toxic legacy of the credit boom of the 2000s. Recently, the rot of stressed loans has spread from the public sector banks to the nonbank financial sector, and on the real side, from infrastructure companies to most notably the real estate sector with the latter threatening middle class savings. This contagion owes both to overall weak economic growth and slow progress in cleaning up bank and corporate balance sheets. A failure to resolve this challenge could mean a reprisal of the Japanese experience of nearly two decades of lost growth, but at a much lower level of per capita income. India's development experience could end up being a transition from socialism without entry to capitalism without exit because weak regulatory capacity and lack of social buy-in will have impeded the necessary creative destruction.

Over the longer run, India's unusual structural transformation will pose severe challenges. A high share of India's workforce is employed in low-productivity occupations—agriculture and informal manufacturing. For creating the jobs of the future, India can either try to rehabilitate the unskilled manufacturing sector or try to lay a groundwork for sustaining a more skill-intensive pattern of growth. Attempting the former would be a history-defying achievement because there are not many examples of durable reversals of premature deindustrialization. At minimum, this approach would involve enormous construction of infrastructure along with reforming the panoply of laws and regulations that disincentivize both firm expansion and exit. Moreover, the new international environment, especially the backlash against globalization and labor-saving technology, will make it difficult for India to sustain a policy of export-led growth based on low-skill manufacturing.

On the other hand, sustaining a skill-intensive pattern with a greater focus on education (and skills development) poses its own difficulties. This approach carries the risk that one or two generations of those who are currently unskilled will be left out. Another problem is that India's performance at building skills has been unsatisfactory. Learning outcomes in primary education are poor and stagnant, despite years of rapid economic growth which has increased the private returns to education (Muralidharan and Singh 2019). For example, the 2018 Annual Status of Education Report (ASER Center 2018) revealed that less than 30 percent of students in grade three were able to solve problems of reading and writing at the level of grade two, and less than 30 percent of students in grade five were able to do math problems associated with grade two. These learning gaps are high and rising (Ministry of Finance 2018, chapter 5). For India, building a skill-intensive model of growth on such tenuous foundations will be difficult. Why there has not been greater political salience for improving education is one of the deeper puzzles about Indian politics, deserving of extensive research.

One long-run perspective for dynamism and development in India relates back to the idea of political institutions as a cause for high and equitable growth (for example, North 1990; Acemoglu and Robinson 2012). India has long been a country where the institutions of democratic governance have been much more advanced than other aspects of development: a plot of average income over time against the strength of political institutions shows India to be an extreme outlier. The hopeful way to interpret this exceptionalism is to argue that the strength of India's democratic institutions can provide a basis for dramatic improvements in development: that is, India has been an economic underperformer relative to its political development, and there is considerable scope for mean reversion.

The pessimistic interpretation is that India's adoption of democracy at such an early stage of development may have created a situation of weak state capacity, which has become hardwired into the Indian development model (for discussion, see Mehta 2003 and the article by Kapur in this symposium): India being an outlier on the politics-economics relationship is then a feature, not a bug. A plausible mechanism is the following: a cleavaged, precocious democracy created early

pressures to redistribute and in inefficient ways. As a result, the Indian state never acquired the legitimacy stemming from effective provision of public goods such as health and education. Moreover, identity politics in a cleavaged society meant that democracy created greater pressures for excludable club goods rather than broader public goods. This engendered distrust and elicited exit, especially by the middle class, depriving the state of resources and further worsening state capacity.

The somber conclusion of this line of analysis is that Indian underperformance in broader categories of development is not an aberration that time will necessarily correct. India cannot afford to be complacent that its robust democracy will ensure economic dynamism and broader development. Restoring dynamism and accelerating structural transformation will require the industrious political work, in Weber's (1919) famous phrase, "of a strong and slow boring of hard boards."

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