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COVID-19 and India's Macroeconomy: Pre-existing Conditions, Performance, and Prospects[§]

ABSTRACT This paper seeks to undertake a holistic assessment of the pandemic's impact on India's macroeconomy. It does so by posing and answering four questions:

First, what was the state of the economy coming into COVID-19, and what contributed to the pre-pandemic slowdown? This will have an important bearing on the post-pandemic outlook.

Second, how complete is the economic recovery from COVID-19 expected to be and where are the most visible divergences? More generally, what are the steady-state macroeconomic implications of a K-shaped recovery?

Third, where is growth likely to come from in the aftermath of the pandemic? Household Consumption? Private Investment? Government Capex? Exports? Which growth drivers have the potential to fire and which may be dormant for a while?

Fourth, what do we know about potential growth coming into the pandemic? To what extent has the slowdown of total factor productivity (TFP) growth impacted potential growth since the global financial crisis? What are the macro determinants of TFP growth and what are the reform implications going forward?

Keywords: India, Growth, COVID, Consumption, Investment, Exports, Total Factor Productivity

JEL Classification: D14, D15, E21, E22, E24, E62, F10

1. Introduction and Motivation

This paper seeks to undertake a holistic assessment of the pandemic's impact on India's macroeconomy and, more importantly, what it portends for the future. The need for a framework to understand performance and prospects

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is made more urgent by the several cross-currents and contradictions that have characterized the economy over the last year, including:

- A sharper-than-expected economic contraction in the April-June quarter in 2020 juxtaposed with a stronger-than-expected rebound in subsequent quarters raising questions about the cumulative impact of COVID-19 on the economy.
- An initial presumption in some quarters that consumption had led the rebound juxtaposed with subsequent data confirming that consumption, in fact, had been the slowest to recover; instead the second-half recovery was led, in part, by strong government spending.
- A nominal GDP contraction in 2020–2021 but juxtaposed with surging listed company profits followed by strong corporate tax collections.
- Lower-than-expected gross Non-Performing Assets (NPAs) for large corporates but juxtaposed with muted real credit growth in the banking system.
- Ostensibly large output gaps juxtaposed with sticky and elevated core inflation, raising questions about the shock to the supply side and the sources of inflation.
- Strong export growth juxtaposed with adverse terms-of-trade shock from higher crude prices, raising questions about how beneficial, on net, the global economy will end up being.

This paper, therefore, attempts to put together a framework to rationalize these moving parts, arrive at a more holistic assessment, and generate appropriate policy implications. It seeks to do so by posing and answering the following four questions:

1. What was the state of India's economy coming into COVID? What contributed to slowing growth in the years before the pandemic?
2. What has the cumulative macroeconomic impact of COVID been? Where are the divergences most visible and what are the steady-state macroeconomic implications of a K-shaped recovery?
3. Where is growth likely to come from in the aftermath of the pandemic? Household Consumption? Private Investment? Government Capex? Exports? Which growth drivers have the potential to fire and which may be dormant for some time post-pandemic?
4. What do we know about India's potential growth prospects? To what extent has slowing Total Factor Productivity (TFP) growth contributed to any downshift? What, in turn, are the macroeconomic determinants of TFP and necessary policy implications?

In effect, this paper takes a funnel approach, starting near and narrow before broadening out. Section 2 gives an overview of the main findings and Sections 3 to 6 seek to answer each of the four questions raised above in detail.

2. Main Findings

1. In contrast to the previous decade when exports and investment drove growth, consumption was the main driver of growth between 2012 and 2019, but was increasingly financed by households running down savings and running up debt. Incipient balance sheet concerns began to emerge by 2018—before the Non-Banking Financial Company (NBFC) shock, causing households to retrench and private consumption to slow down coming into the pandemic.
2. Strong government spending was, therefore, the key to propping up growth in the years before COVID. This, however, meant that a meaningful quantum of fiscal space had been used up before COVID, likely impacting the fiscal response during the pandemic year.
3. If GDP grows at about 9 percent in FY22—in line with advance estimates—the quarterly level of activity by end-FY22 will be about 7 percent below India’s pre-pandemic path, consistent with discernable scarring in the labor market.
4. Contrary to common presumption, neither household consumption nor private investment necessarily appear poised to drive growth in the immediate aftermath of the pandemic:
 - a. Income scarring from the pandemic will simply accentuate balance sheet pressures that households perceived pre-pandemic, and these “income” effects are likely to dominate “price” effects from lower real interest rates; this explains why households remain very cautious about future spending in surveys.
 - b. The binding constraint on private investment for large firms has shifted from leverage to weak demand; even as large firms have progressively deleveraged in recent years, manufacturing utilization rates have fallen to the mid-60s levels, which are unlikely to spark a broad-based investment cycle until demand recovers.
 - c. Furthermore, balance sheet pressures are likely to increase for Small and Medium Enterprises (SMEs) from the pandemic.
5. Exogenous demand drivers will, therefore, be needed to break the sub-optimal equilibrium that private consumption and private investment had entered even pre-pandemic.
6. Exports and sustained government capex have the potential to serve as those demand drivers.
 - a. A strong demand revival in developed markets in 2021 induced strong export growth, before the Delta variant-driven COVID wave slowed global growth.
 - b. One demand driver, however, may not be enough. Exports will need to be supplemented by continued government capex; this has been the government’s strategy with the Centre budgeting large capex increases since the pandemic commenced.

- c. In the meantime, sustained privatization, expenditure re-orientation, and tax reforms will have to create the fiscal space to finance public investment, given the fiscal consolidation imperative in the coming years.
 - d. All told, exports and government capex will need to create a growth bridge till private investment and consumption recover.
7. The imperative for higher trend growth to make up pandemic-induced income losses and ensure public debt sustainability has increased dramatically post-COVID.
 8. While much attention has been focused on factor accumulation (investment and labor force participation), slowing TFP growth has shaved off about 250 basis points from trend growth since its peak before the Global Financial Crisis of 2008; put more starkly, its contribution to potential output has halved over the last 15 years.
 9. Empirically, we find three important macro determinants of TFP: trade openness, a healthy financial sector, and strong public investment.
 10. All told, reforming the financial sector and resolution mechanisms, creating fiscal space through privatization and asset sales to sustain and ramp up public investment, and creating an export-conducive environment constitute a synergistic package of interventions that will be crucial for boosting India's medium-term prospects.

3. Looking Forward by Looking Back

In order to evaluate India's prospects in a post-COVID world, one must start by appreciating the state of the economy coming into COVID. That the economy was slowing discernably is well known. There is, however, much less clarity and agreement on what contributed to that slowdown. To answer that, we must first understand what was driving growth in recent years and, in what ways, these growth drivers were different from previous episodes.

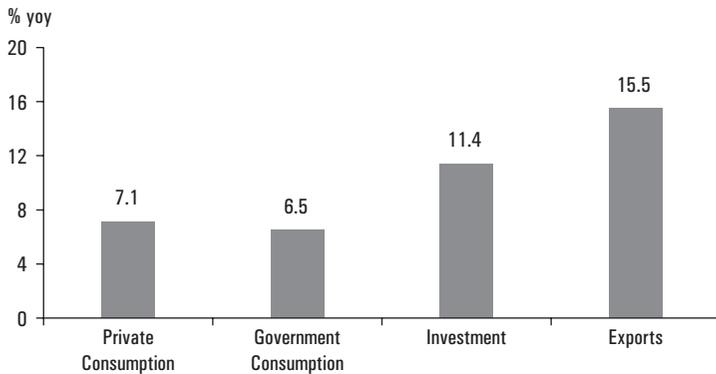
3.1. 2002–2010—India Temporarily Becomes Asian

As a starting point, therefore, it is instructive to compare growth in the years leading up to COVID with that of the early 2000s. Strong growth between 2002 and 2010 was underpinned by an unprecedented export boom (Chinoy and Jain 2018). Exports averaged 15 percent in real terms during that period—a performance that has not been repeated—as Indian firms plugged into global markets and the economy took advantage of the hyper-globalization which characterized that era (Figure 1). While India's export strength is always identified with the Information Technology (IT) sector, what is less appreciated is the strength and growing diversification of manufacturing exports that was visible at the time (Chinoy and Aziz 2010). Manufacturing exports, for instance, grew at

a 20 percent annual average pace during that period—though still lower than booming IT and services exports—and were propelled by India’s new-economy exports (engineering goods including automobiles) which progressively replaced the more traditional exports such as textile and gems and jewelry (Chinoy and Jain 2018). All told, Exports as a percentage of GDP more than doubled from 11 percent of GDP to 24 percent of GDP between 2000 and 2010.

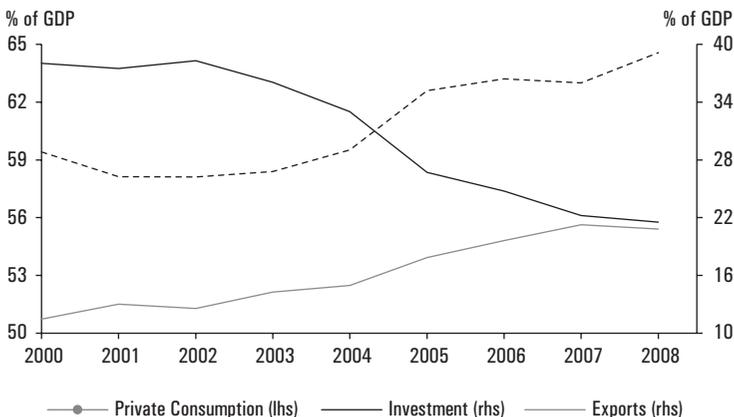
Strong and sustained export growth, in turn, generated the pre-conditions for a domestic private investment cycle as capacities had to be created to service external demand. Private investment, therefore, grew at a double-digit pace across those seven years. India had temporarily become Asian, with growth being driven by the Siamese Twins of exports and investment. In contrast, Consumption to GDP—though still the largest share of GDP—continued its secular decline, with consumption growing less than the overall pie (Figure 2).

FIGURE 1. Growth Drivers (2002–2010)



Source: Ministry of Statistics and Programme Implementation.

FIGURE 2. Real GDP Share

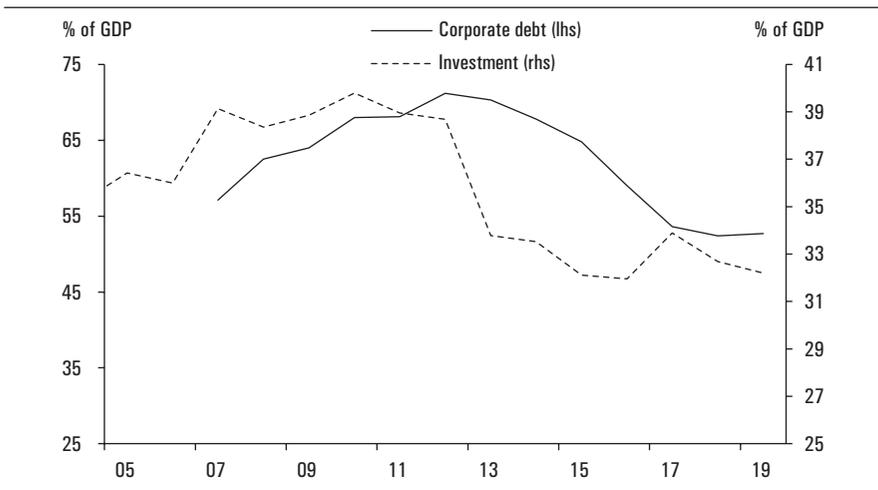


Source: Ministry of Statistics and Programme Implementation.

Note: “lhs” is left-hand-side axis, and “rhs” is right-hand-side axis.

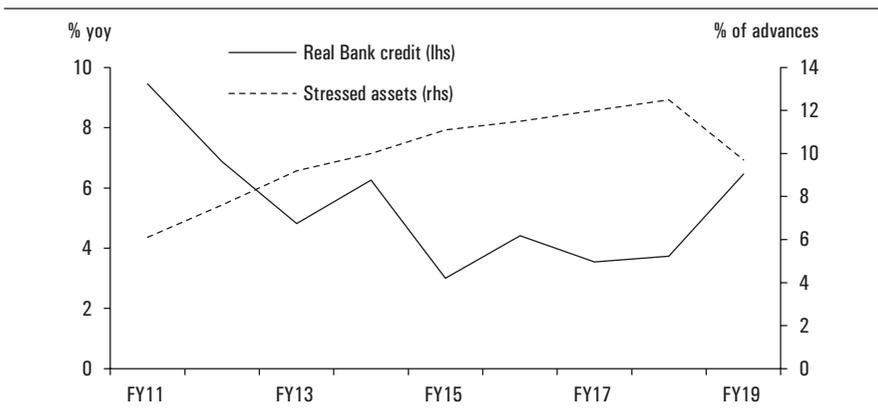
By 2012, however, this model had run its course. Global growth and exports had begun to slow down in the aftermath of the Global Financial Crisis. Meanwhile, domestic investment began to suffer both on account of over-capacity in some sectors (reflected in falling utilization rates) and implementation bottlenecks in others (reflected in rising stalled projects). As projects increasingly became uneconomic on the ground, this began to get reflected in rising NPAs on bank balance sheets creating the conditions for India’s much-analyzed “twin balance-sheet” problem. The subsequent pressure on corporates to de-leverage and banks to recognize and resolve stressed assets began to weigh on growth in the following years (Figures 3 and 4). Less appreciated is the fact that these dynamics laid the groundwork for what was to drive growth in the years to come.

FIGURE 3. Investment and Corporate Debt



Source: Bank for International Settlements, Ministry of Statistics and Programme Implementation.
 Note: “lhs” is left-hand-side axis, and “rhs” is right-hand-side axis.

FIGURE 4. Real Bank Credit and Stressed Assets

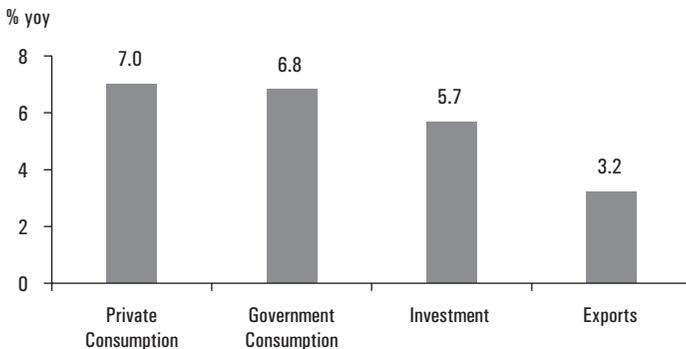


Source: Reserve Bank of India.

3.2. 2012–2019—The Baton Moves to Consumption

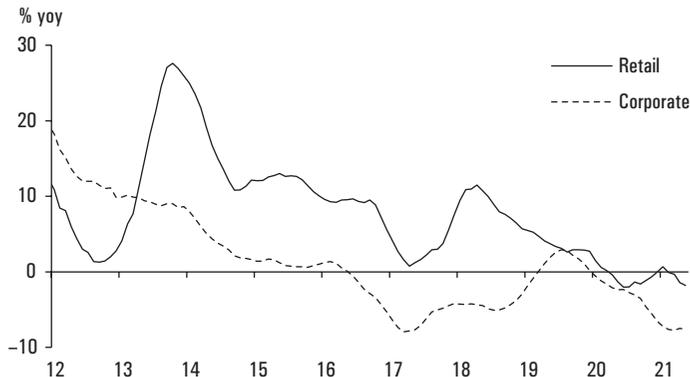
In contrast to the earlier episode, growth between 2012 and 2019 was driven largely by consumption, both private and public (Figure 5). While the former was visible and celebrated, the latter was less known or appreciated. At some level, the pivot to private consumption was an inevitable consequence of circumstances. Globally, slowing growth and increased protectionism had dampened export performance, with India's exports growing at just 3.2 percent year-on-year between 2012 and 2019. Domestically, the manner in which the previous growth cycle ended was also responsible for triggering a consumption cycle. As large-corporate NPAs rose and these firms began to de-leverage, bank credit was forced to turn away from large corporates, and banks turned their attention to the one sector of the economy that had been under-saturated: households. What came next was a retail credit boom as banks progressively shifted their exposure from over-levered corporates to under-levered households (Figure 6).

FIGURE 5. Growth Drivers (2012–2019)



Source: Ministry of Statistics and Programme Implementation.

FIGURE 6. Credit to Large Industry versus Retail (Real)



Source: Reserve Bank of India.

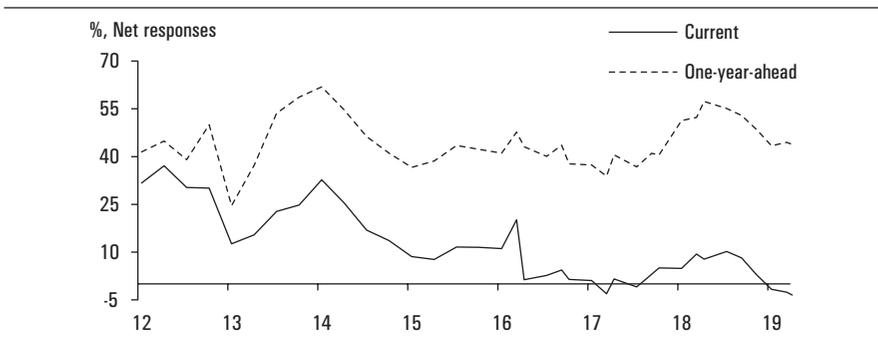
Note: The graph in this figure shows six-month moving averages of year-on-year growth (% yoy).

On their part, households were happy to (finally) have access to formal, and therefore cheaper, sources of institutional credit. For a young aspirational population, this seemed like an opportunity to smooth consumption across their lifetimes, borrowing now to repay later, a manifestation of the permanent-income hypothesis.

What was worrying, however, is that under the radar, income perceptions had begun to deteriorate. As the Reserve Bank of India’s (RBI’s) consumer confidence surveys reveal, urban income perceptions had been declining since 2012; though households held on hope about the future, reflected in future income perceptions holding steady (Figure 7). Similarly, these surveys revealed that spending perceptions consistently exceeded income perceptions after 2015 (Figure 8). All this is consistent with the hard data. Between 2012 and 2019, household disposable income fell by 2 percent of GDP and yet private consumption rose by 4 percent of GDP (Figure 9).

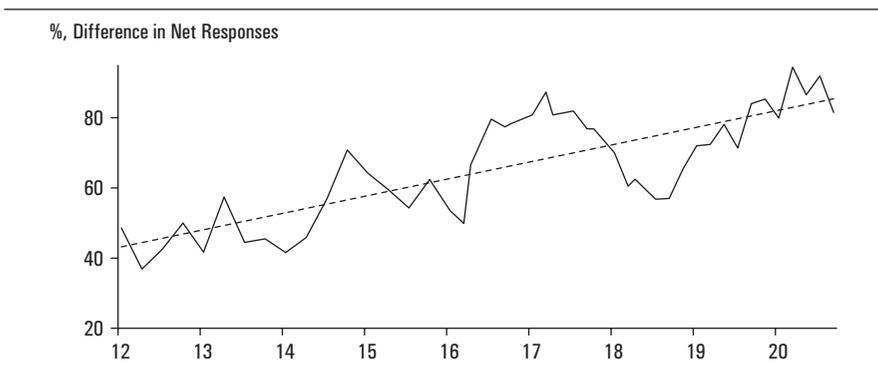
In effect, household consumption was increasingly being financed by households running down savings and running up debt, albeit off modest

FIGURE 7. Household Income Perceptions

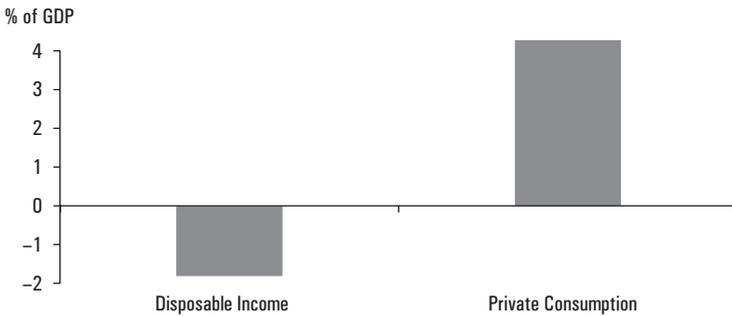


Source: Reserve Bank of India, J.P. Morgan.

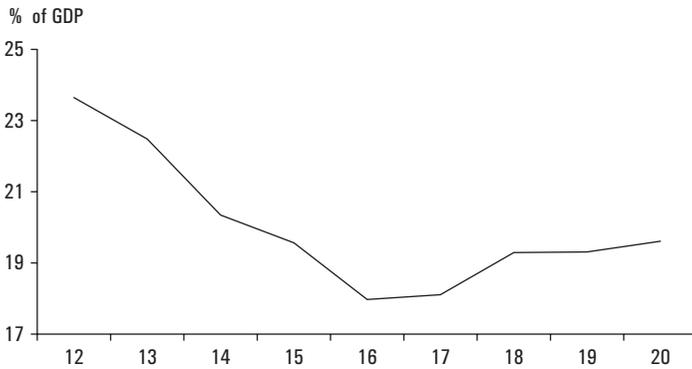
FIGURE 8. Difference between Spending and Income Perceptions



Source: Reserve Bank of India, J.P. Morgan.

FIGURE 9. Disposable Income versus Private Consumption: Change between 2011 and 2019

Source: Ministry of Statistics and Programme Implementation.

FIGURE 10. Household Savings

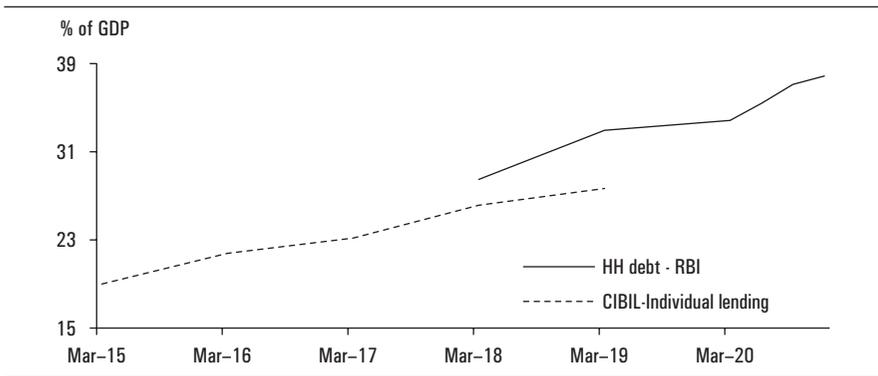
Source: Ministry of Statistics and Programme Implementation.

levels—a phenomenon that we had previously flagged (Chinoy and Jain 2019). As Figures 10 and 11 reveal, household savings fell sharply between 2012 and 2016 while household debt, though off a low base, more than doubled between 2015 and 2020.

3.3. Reality Catches Up

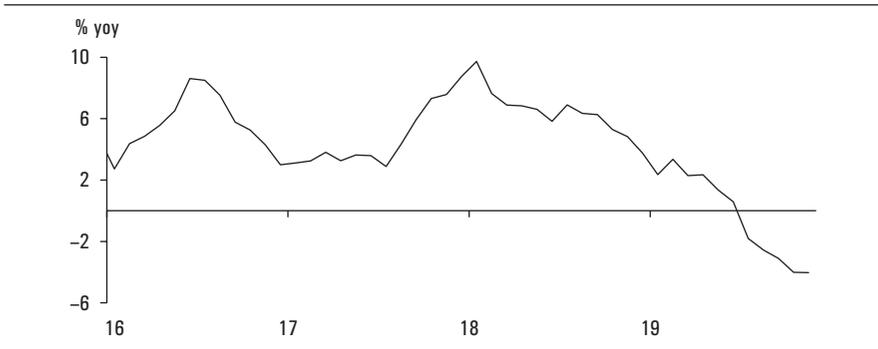
Borrowing to consume may be sustainable in the good times but becomes much less tenable during a slowdown. By 2017–2018, growth had slowed to 6.8 per cent, more than a 100 basis points below the average of the previous three years. Perceptions of contemporaneous income by urban households had dampened further. It is not surprising, therefore, that private consumption began to show some cracks. As Figure 12 reveals, consumer goods within the Index of Industrial Production (IIP) began to slow from 2018 itself. Surveys corroborated this with

FIGURE 11. Household Debt



Source: Reserve Bank of India, TransUnion.

FIGURE 12. Consumption Goods (Industrial Production)

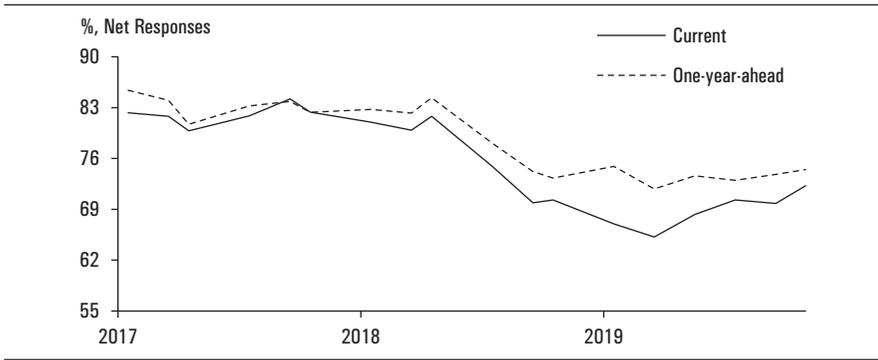


Source: Ministry of Statistics and Programme Implementation.

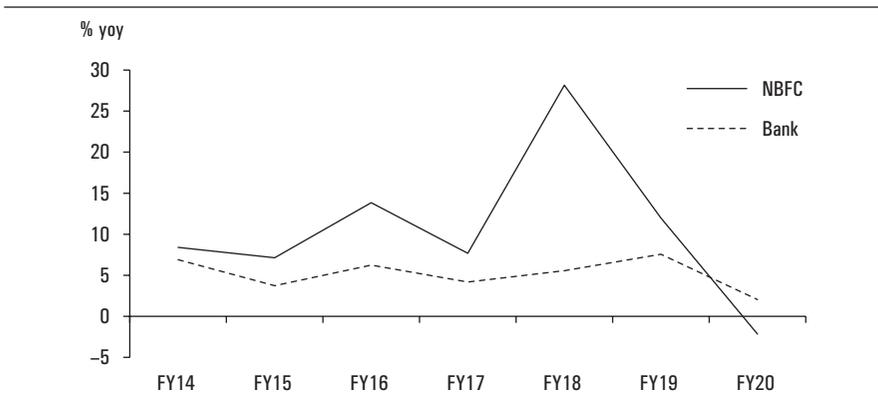
Note: The graph in this figure shows the six-month moving average of year-on-year growth (% yoy).

household perceptions of spending also beginning to slow from mid-2018 (Figure 13). This is consistent with household savings stabilizing at lower levels and then gradually picking back up from 2018, reflective of rising precautionary savings. To be sure, private consumption growth in GDP data began to slow a year later, suggesting that the initial slowing was led by more lumpy goods consumption (reflected in the IIP data) before broadening into services later.

The key identification here is that private goods consumption had begun to slow in 2018 even before the NBFC shock later that year, on incipient balance sheet concerns. These pressures were exacerbated in the aftermath of the incident pertaining to Infrastructure Leasing & Financial Services Limited (IL&FS) in late 2018, as lending standards tightened meaningfully, and a risk-averse banking sector retrenched sharply. This is reflected most starkly in the sharp slowdown of NBFC credit, which was a key source of consumption financing until then (Figure 14). However, as demonstrated above, the start of the consumption slowdown had pre-dated the IL&FS incident. Diagnosing the

FIGURE 13. Household Spending Perceptions

Source: Reserve Bank of India, J.P. Morgan.

FIGURE 14. Real Credit Growth

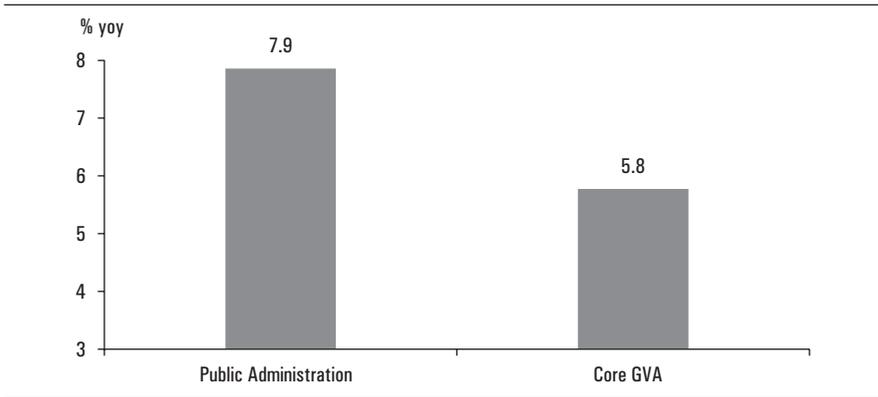
Source: Reserve Bank of India.

reasons for the pre-COVID-19 consumption slowdown—whether it was balance sheet issues or just tighter lending standards in the aftermath of the late-2018 NBFC shock—is crucial because it will inform consumption’s prospects in the aftermath of the COVID-19 shock.

3.4. Government Consumption Does the Heavy Lifting

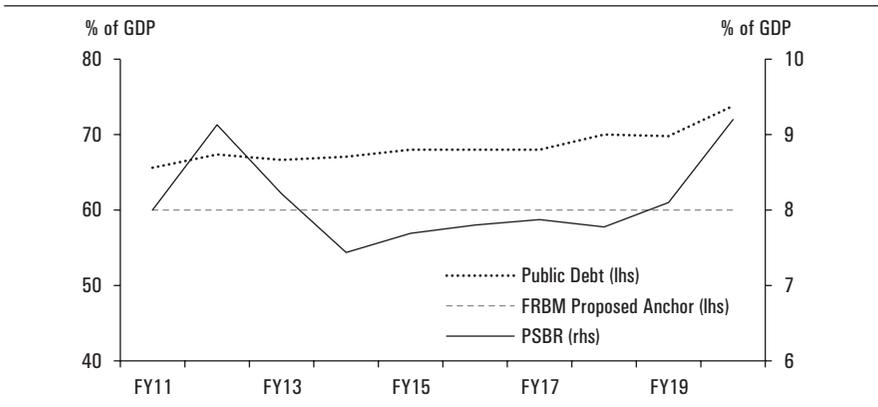
While the contribution of private consumption to driving growth pre-COVID is well recognized, that of the public sector is much less so. Public consumption grew at an average of almost 8 percent year-on-year during 2016 to 2019—two percentage points above private sector growth—as the government tried to mount a countercyclical response to slowing growth (Figure 15). In the year leading to COVID-19 (2019–2020), for example, government spending grew twice as fast as the private sector.

FIGURE 15. Government Spending Versus Private Sector (average 2016–2019)



Source: Ministry of Statistics and Programme Implementation; J.P. Morgan.

FIGURE 16. Public Debt and Public Sector Borrowing Requirement (PSBR)



Source: Reserve Bank of India, Ministry of Finance.

The flip side of this was that the combination of slowing tax revenues and strong government spending meant India’s total public sector borrowing requirements increased discernably, and surpassed 9 percent of GDP pre-COVID. This also meant the Public debt, which was targeted to be reduced to 60 percent by 2024, instead continued inching up and breached 70 percent, in the years before COVID (Figure 16). These factors likely had a bearing on fiscal space and the fiscal response during the pandemic.

3.5. A Risk Averse Financial Sector

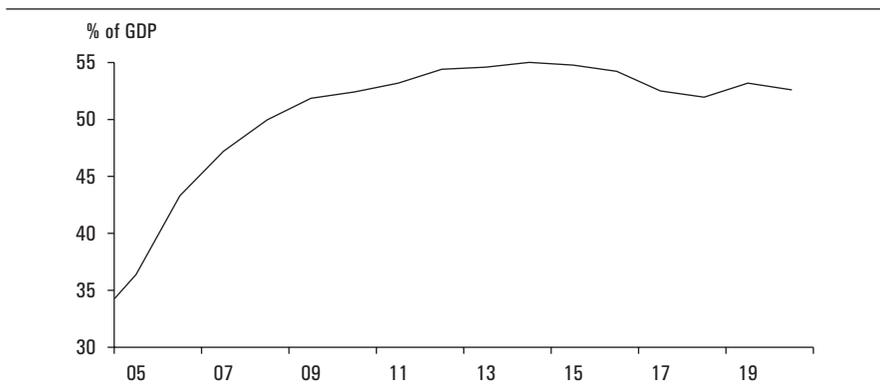
Finally, a third characteristic of India’s pre-COVID economy was an increasingly risk-averse financial system after the IL&FS default. More generally, however, India’s financial system in recent years has been characterized by the following three features:

First, credit deepening has stalled and partially reversed over the last decade, reflected in the plateauing and subsequent dip of Credit/GDP ratio (Figure 17)—as banks had to contend with stressed balance sheets. This likely reflected both capital constraints on bank balance sheets at various times as well as tighter lending standards.

Second, a wedge has opened up across private sector and public sector banks. Credit offtake of the latter has meaningfully lagged the private sector, suggesting that incentive-compatibility may have become a binding constraint there (Figure 18).

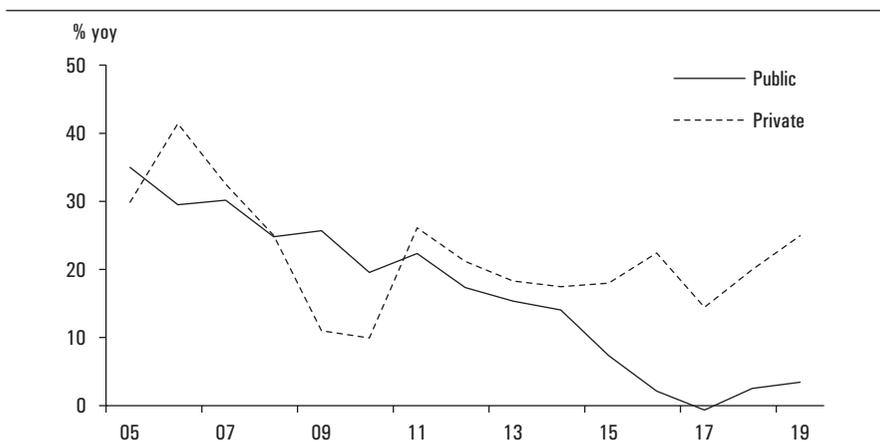
Third, pressures likely got magnified after the IL&FS default with a sharp retrenchment of credit. Incremental credit was being driven largely by NBFCs and small private banks but their balance sheets came into question in the months

FIGURE 17. Bank Credit



Source: Reserve Bank of India.

FIGURE 18. Bank Credit—Public versus Private Banks



Source: Reserve Bank of India.

before COVID-19, culminating with the Yes Bank resolution occurring just days before India's first lockdown. Slowing growth had also tightened lending standards. These three features combined to weigh on credit growth.

To understand the opportunities and challenges for India's economy post-COVID, one must, therefore, examine these three characteristics with India's performance during the pandemic—a topic to which we turn next.

4. Performance during the Pandemic

4.1. A Framework to Quantify Scarring

Our focus in this section is not to predict the exact pace of the recovery in the aftermath of the second or third wave. Instead, it is to understand more holistically the cumulative macroeconomic impact across two years.

GDP contracted a meaningful 6.6 percent in 2020–2021, though less than the contraction feared after the first quarter's out-turn. On that lower base, the Government's Advance Estimates forecast that GDP will grow by about 9.2 percent in 2021–2022.

In isolation, however, it is hard to make sense of a large contraction followed by a near double-digit rebound. It is not clear what this tells us about cumulative performance. Instead, we need to anchor these out-turns to some counter-factual baseline. The most economically meaningful baseline would be to use the forecasted pre-pandemic path of the level of GDP. This tells us what the level of GDP would have been absent COVID (i.e., the counterfactual). To assess the damage from COVID, we can then compare the actual (or forecasted) level of output with this pre-pandemic path.

Most economies have experienced large output loss during the pandemic. But this should be construed as a one-time income loss (akin to a wealth shock) and again, by itself, does not tell us much about any lasting impacts. Instead, what matters is where the level of activity is when an economy is exiting the COVID-crisis, and how that compares to a pre-pandemic path. Has the level of output gone back to the pre-pandemic path? To the extent that it has, as is the case in the U.S. and China, the recovery can be deemed to be relatively complete, in that there are no permanent output losses, though even in those cases employment will take some time to return to pre-pandemic levels.

But to the extent that activity does not converge back to its pre-pandemic path, as is the case with almost all emerging markets, it reflects permanent scarring inflicted by the pandemic. To be sure, scarring can manifest both in levels and growth rates (though these are likely to be strongly correlated). If an economy exits the pandemic some percentage points below its pre-pandemic path, but there is no scarring to trend growth, there will still be recurrent and permanent income losses compared to a pre-pandemic path.

Furthermore, if trend growth is also adversely impacted, losses will simply mount over time. To make up for the losses, therefore, emerging markets will have to push up trend growth to rates that surpass pre-pandemic levels.

4.2. Contextualizing India's Recovery

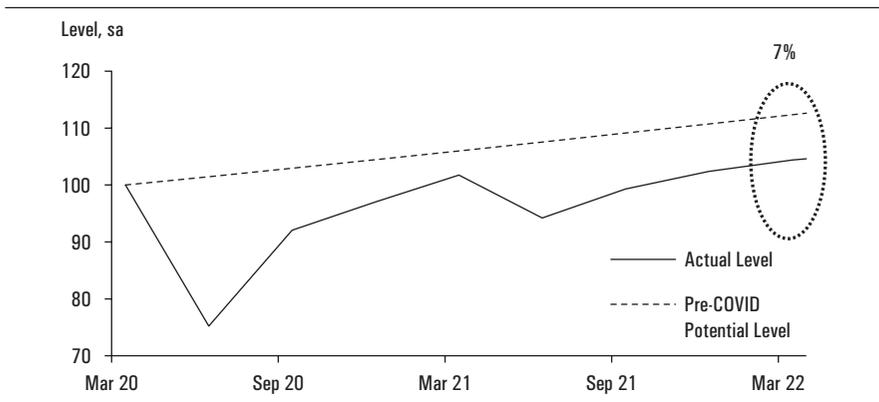
Against this backdrop, how should one think about India's performance?

- To construct the pre-COVID path, we remain conservative by using GDP growth rates of 6 percent for FY21 and FY22, consistent with India's 3-year average growth before the pandemic.
- The post-COVID path is based on advance estimates of FY22 growth of 9.2 percent. The key messages from this section do not change if the actual out-turn in FY22 is slightly different in either direction.

We find that if India grows at 9.2 percent in FY22, the level of output will be about 7 percent below the pre-pandemic path by the fourth quarter of the fiscal year (1Q22).¹ Prima facie, this is a meaningful gap with the pre-pandemic path. If one thinks about the pre-pandemic path as one that is consistent with stabilizing the labor market or one that was used to make investment and borrowing decisions, a 7 percent gap is a non-trivial shortfall (Figure 19).

India, however, will not be unique. Barring the United States and China, almost all economies will be below their pre-pandemic paths, albeit to differing

FIGURE 19. GDP Levels



Source: J.P. Morgan.

Note: IQ 2020 GDP level is considered as 100. "sa" stands for seasonally adjusted.

1. This presumes that the economy has opened up by March 2022 and there are no restrictions; to the extent that some restrictions still exist (i.e., tourism) temporarily pushing up growth above the new trend, the gap will be commensurately smaller.

degrees. Furthermore, one could argue that to compare shortfalls across countries, one must normalize for trend growth. As an example, a 6 percent shortfall for an economy with 6 percent trend growth is very different than for an economy with 2 percent trend growth. In the former's case, the economy has to grow at twice its potential to make up for the gap, say, over the next year. In the latter's case, the economy must grow 4 times its potential, to make up for the losses in the same time period.

We therefore normalize absolute shortfalls by trend growth to assess relative performance across countries. Once we do this, we can reflect any shortfall by “number of quarters of growth lost” to make it comparable across countries.

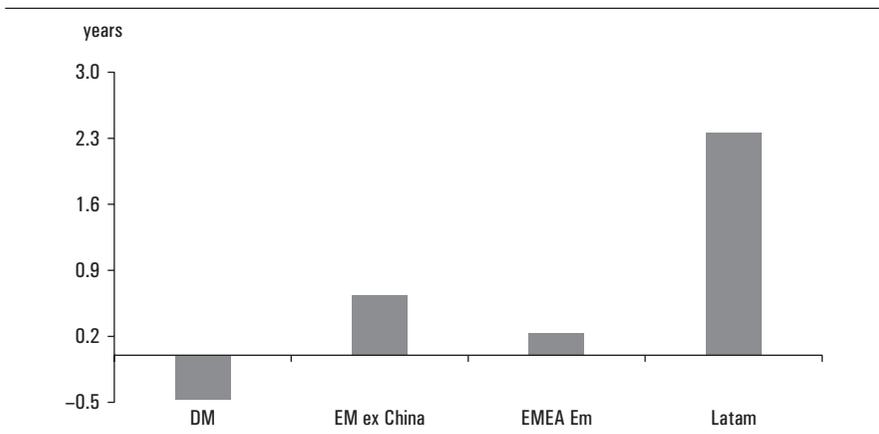
We find that, first, there is no shortfall among developed markets, given the sheer quantum of the stimulus. Second, within emerging markets, Latin America's undershoot swamps those of other regions (Figure 20).

Even adjusting for trend growth, India's shortfall is meaningful (Figure 21), comparable to Indonesia. These findings increase the imperative for stronger growth post-pandemic.

4.3. Consistent with Labor Market Scarring

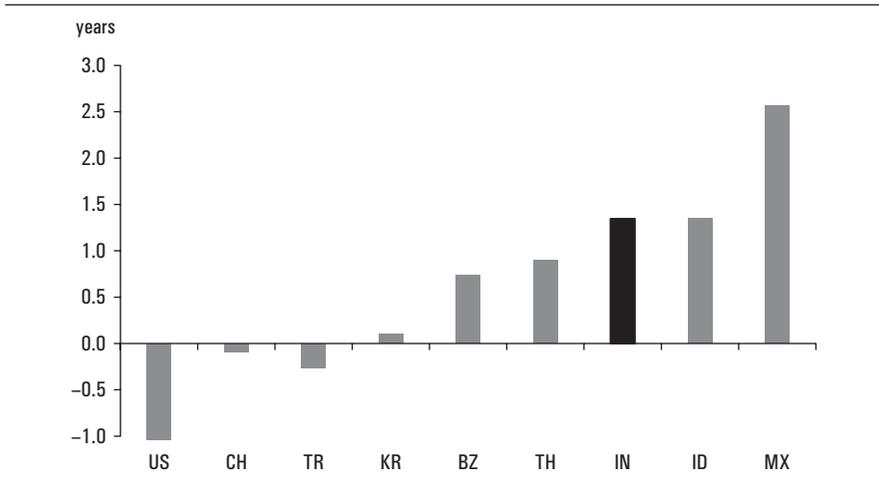
The aforementioned GDP shortfall is consistent with scarring in the labor market. For example, Centre for Monitoring Indian Economy's (CMIE's) household labor force surveys find that both labor force participation rates have fallen and unemployment rates have risen, in concert. Consequently, the employment to population ratio declined from 39.5 percent pre-pandemic and appears to have stabilized at about 37–37.5 percent (Figure 22). These data points translate

FIGURE 20. Region-wise Output Lost from the Coronavirus Pandemic (in years)



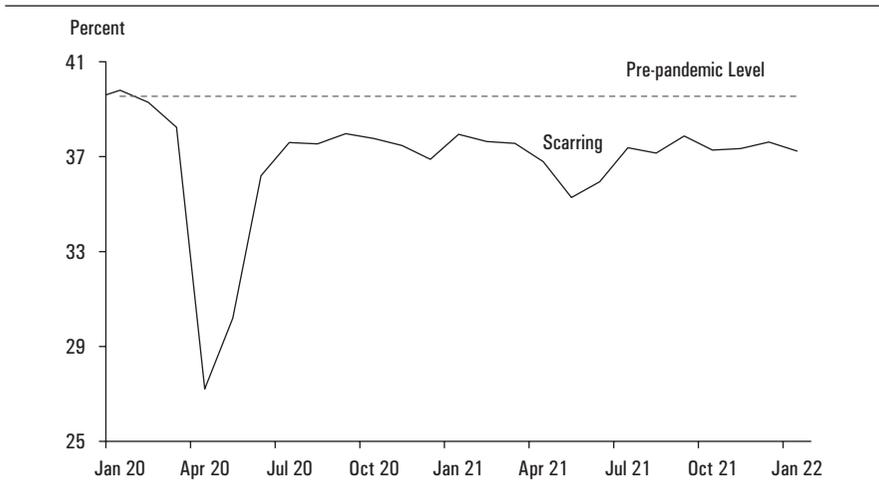
Source: J.P. Morgan.

Note: Computation based on end-2022 GDP levels; DM: Developed Markets; EM ex China: Emerging Markets excluding China; EMEA Em: Europe, Middle East and Africa Emerging Markets; Latam: Latin America.

FIGURE 21. Country-wise Output Lost from the Coronavirus Pandemic (in years)

Source: J.P. Morgan.

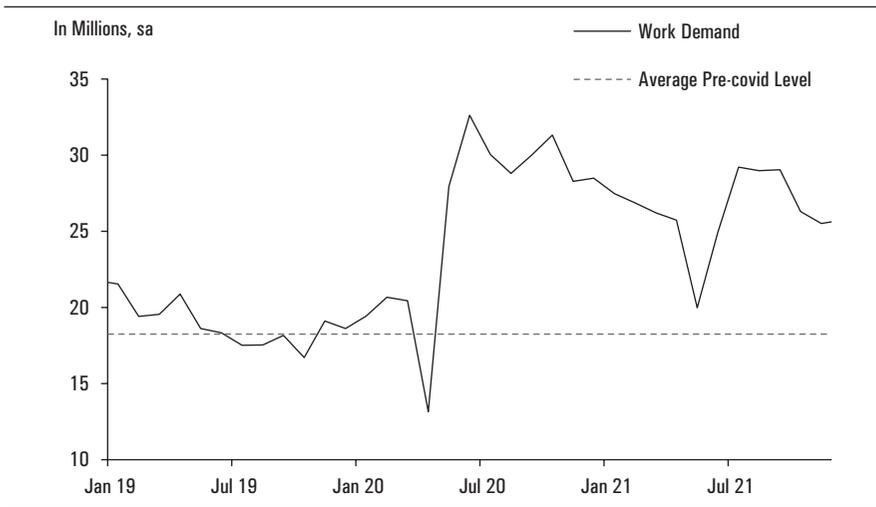
Note: Computation based on end-2022 GDP levels; US: United States of America; CH: China; TR: Turkey; KR: Korea; BZ: Brazil; TH: Thailand; IN: India; ID: Indonesia; MX: Mexico.

FIGURE 22. Employment-Population Ratio

Source: Centre for Monitoring Indian Economy.

into an “effective unemployment rate”² of about 7.5 percent pre-COVID, and 12 percent before the second wave, with the prospect that the second wave could weigh on these further.

2. To collapse both lower labor force participation and higher unemployment into one dimension, we hold labor force participation constant at pre-COVID levels and reflect the reduced employment rate into the unemployment rate—for ease of exposition.

FIGURE 23. MGNREGS Household Work Demand

Source: Centre for Monitoring Indian Economy.

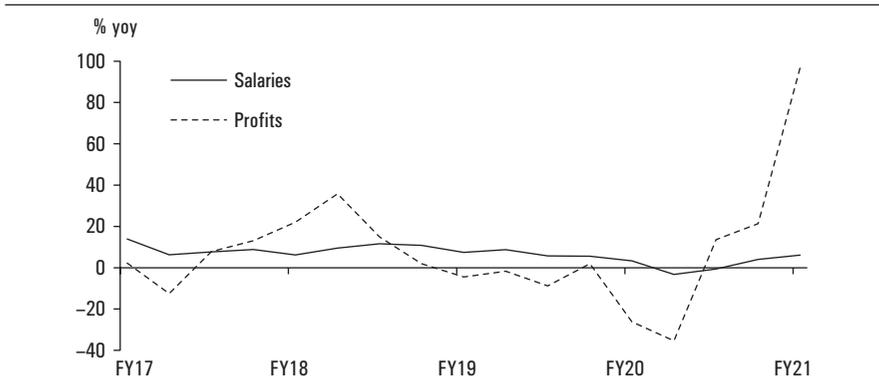
Note: "sa" stands for seasonally adjusted.

These labor market pressures are also reflected in higher demand for employment provided by the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), which serves as India's automatic stabilizer in the rural economy. Even by the end of 2021, demand for MGNREGS was about 30 percent higher than normal, consistent with labor market pressures (Figure 23).

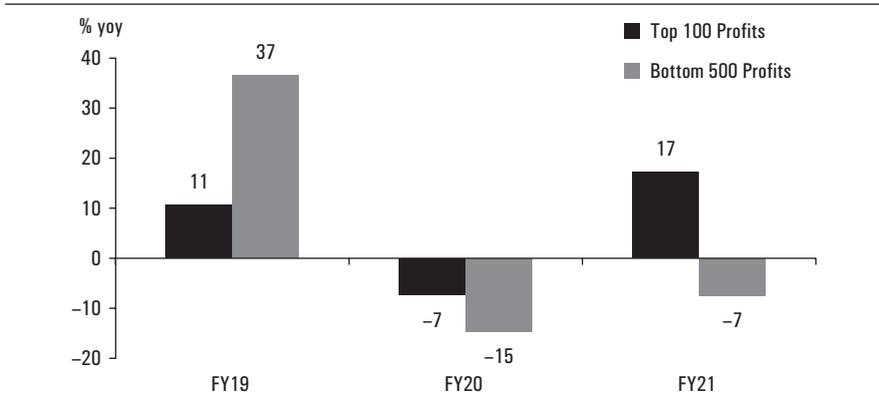
4.4. A K-shaped Recovery

A defining feature of economies emerging out of COVID—particularly emerging markets—are divergences across multiple dimensions. In India's case, divergences are visible across factors of production, firm size, and income decile:

- Profits versus Wages:** India's recovery appears to be driven disproportionately by profits rather than wages, as we had first discussed last year (Chinoy 2020). A sample of about 2000 listed non-financial firms reveals that earnings grew by 17 percent in FY21 against a wage bill which barely grew (Figure 24). For much of the year, profits were achieved, in part, by aggressive cost rationalization, reflective in the 12 percent cut in operating expenses in FY21. When revenues finally grew in the last quarter of the fiscal year, a disproportionate quantum seems to have accrued to capital rather than labor.
- Large Firms versus Small Firms:** Furthermore, profit distribution appears to have been skewed in favor of larger firms. For example, earnings of the top 100 listed firms (by market cap) grew at a buoyant 17 percent in FY21 in stark contrast to the 7 percent contraction witnessed by the bottom 500 firms (Figure 25). A similar disconnect is visible in

FIGURE 24. Listed Corporate Profits versus Salaries

Source: 2000 listed non-financial companies' data and J.P. Morgan.

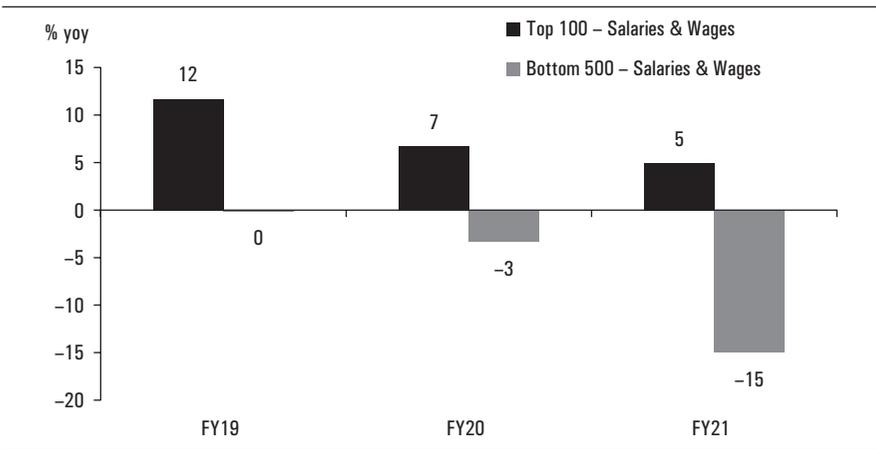
FIGURE 25. Listed Corporate Profits—Large versus Small Firms

Source: 2000 listed non-financial companies' data and J.P. Morgan.

the salary bill. The top 100 salary bill increased by 5 percent in contrast to the 15 percent contraction witnessed at the bottom (Figure 26). This suggests that large firms were able to withstand the shock better and grow market share while smaller firms were forced to retrench.

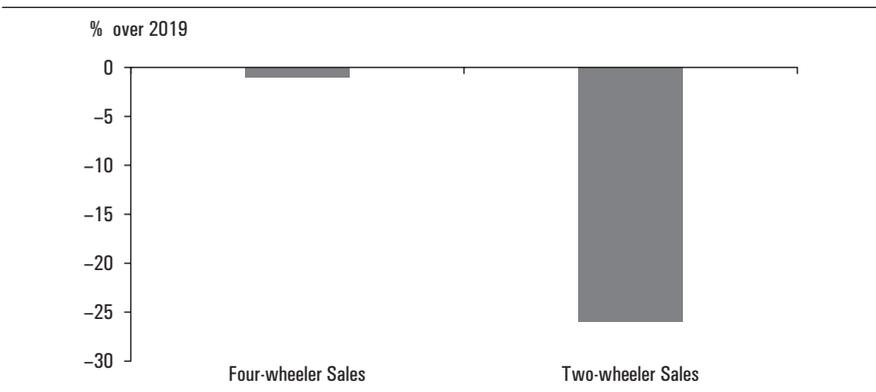
- **Upper Income versus Lower Income:** Consumption patterns reveal a similar skew between the top and the bottom of the pyramid, with the latter having borne the brunt of the shock.
 - Four-wheeler sales—which proxy for consumption at the upper end—contracted 1 percent between January and November 2021 over the corresponding period in 2019; in contrast, two-wheeler sales—proxying for lower-end consumption—contracted by about 26 percent, revealing a wide gulf (Figure 27).
 - Scooters (proxying for urban consumption) appear to have consistently undershot motorcycle purchases (proxying for rural consumption), pointing to relatively greater urban stress, at least before the second wave.

FIGURE 26. Salaries and Wages—Large versus Small Firms



Source: 2000 listed non-financial companies’ data and J.P. Morgan.

FIGURE 27. Auto Registrations (January to November 2021)



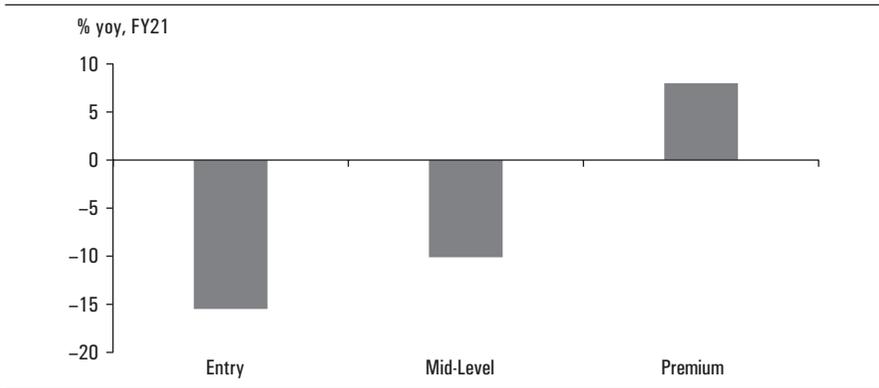
Source: VAHAAN.

- Even within motorcycles, the premium segment grew 8 percent, the mid-level segment contracted 10 percent, and the entry segment contracted 15 percent in FY21, reinforcing a divergent recovery (Figure 28).

This analysis suggests that incomes at the top have been more protected than at the bottom, with attendant implications for savings and consumption at the bottom of the pyramid.

4.5. Reflected in the Financial Sector and GDP Composition

These real economy divergences are also becoming visible in financial sector performance. Financial institutions that are more geared to the bottom of the pyramid (NBFCs, small banks, Microfinance Institutions (MFIs)) have

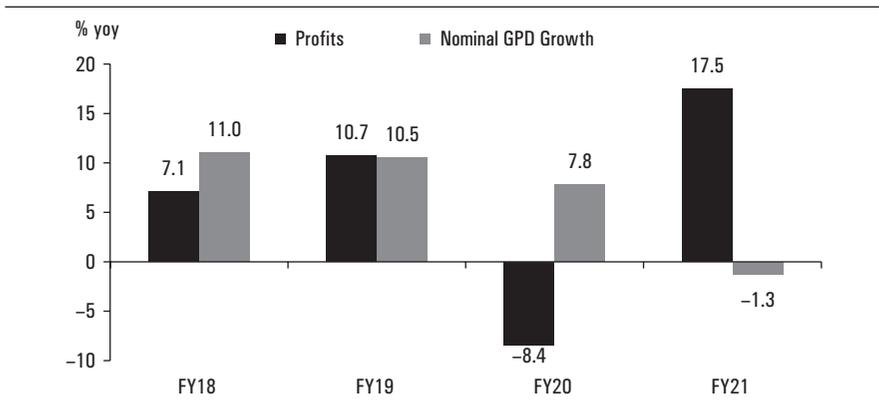
FIGURE 28. Motorcycle Segmentation

Source: Company data.

witnessed much higher gross NPAs and restructured loans compared to larger banks that cater to the salaried class and larger firms, reflecting the divergent nature of the recovery.

Finally, at the broadest level, a divergent recovery is reflected in the composition of GDP itself, when viewed from the income side. Indian GDP is reported in two ways: the sectoral, production side (agriculture, manufacturing, services) and the functional, expenditure side (consumption, investment, net exports). But there is a third way to slice the pie: the income side. Value addition must ultimately accrue to the different factors of production. On the income side, therefore, GDP is simply the sum of operating profits, the wage bill, and indirect taxes.

India's nominal GDP contracted by one percent in FY21. Yet, listed company profits for the year grew by 17 percent over the same period (Figure 29). By construction, this suggests a meaningful contraction of profits of unlisted firms

FIGURE 29. Earnings and Profits

Source: J.P. Morgan.

(SMEs) and also suggests that the wage bill of listed firms may likely overstate the out-turn of informal wages.

To be sure, the dramatic acceleration of technological adoption during COVID, and the differential productivity impacts it is likely to have on capital, skilled and unskilled labor, can have profound impacts on the future capital-labor mix, and potentially accentuate existing cleavages and inequities.

4.6. Macroeconomic Implications of a K-shaped Recovery

What are the macroeconomic implications of a divergent recovery?

- To the extent that the bottom of the pyramid has borne a disproportionately large share of the burden vis-à-vis the top of the pyramid, this is effectively equivalent to an income transfer from the poor to the rich. From a macro perspective, however, this will be demand-impeding in the steady-state, because the marginal propensity to consume at the bottom is higher than that at the top, just as the marginal propensity to import at the top is likely higher than at the bottom.
- On the firm side, increased profitability of the larger listed firms helps balance sheets, aids with de-leveraging where needed, and therefore, puts those larger firms in a better position to invest, when utilization rates begin to recover.
- To the extent that COVID has further dented SME balance sheets—firms that tend to be more labor intensive—this creates more headwinds for SME investment, which has been one of the sources of the investment decline in recent years.
- To the extent that activity has migrated from the informal sector to the formal sector, both direct and indirect tax collections should get a boost, already being witnessed in very strong tax collections.
- To the extent that the market share of the large firms has increased as a consequence, the pricing power of the larger firms could rise in tandem.

4.7. Putting the Pieces Together

India is not alone in experiencing either an incomplete or divergent recovery. Most emerging markets will be in the same boat, to different degrees. This dramatically increases the growth imperative in the coming years to close the gap with the pre-pandemic path and generate the jobs needed to ameliorate pandemic-induced scarring.

Where can this growth come from in the coming years? Sections 3 and 4 address this issue at two different horizons. Section 3 takes a more near-term view examining the components of GDP on the expenditure side (consumption, investment, government capex, exports) to evaluate which growth drivers will be available in the aftermath of the pandemic. Section 4 takes a longer view by discussing potential growth prospects in India, but specifically honing in on

the contribution of TFP to slowing potential growth over the last 15 years and identifying the macro forces that drive TFP growth.

5. Identifying Growth Drivers

The imperative for strong growth in the post-pandemic period is self-evident. The real question is where it can come from. Given the nature of India's slowdown pre-pandemic and the manner in which the COVID shock has played out, this section asks which growth engines can be expected to fire, and which engines can be expected to remain dormant, at least temporarily. Distinguishing between the two will be crucial in allocating political capital and state capacity, appropriately.

To evaluate this, we analyze the different components of GDP on the expenditure side:

$$\text{GDP: Consumption (C) + Investment (I) + Government Spending (G)} \\ + \text{Net Exports (X-M)}$$

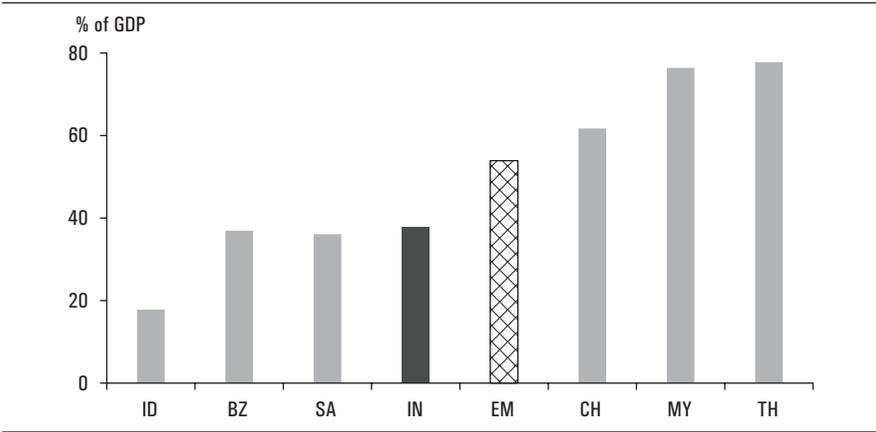
5.1. Consumption: Income versus Price Effects

Perhaps the elephant-in-the-room question is whether consumption can again become the flag-bearer of India's growth in a post-pandemic world? The strength of pent-up demand generated much excitement in the aftermath of the first wave and, in conjunction with very accommodative monetary conditions (lower real interest rates, a deluge of liquidity), created an expectation in some quarters that consumption could again drive growth once the dust from the pandemic has settled.

We remain wary of this hypothesis. As Section 1 described, consumption was already slowing in the run-up to the pandemic on household balance sheet concerns. These pressures have only been accentuated during the pandemic, manifested in visible signs of labor market scarring, wage pressures, and increased income uncertainty. To be sure, India's level of Household Debt to GDP ratio is not excessive by emerging market standards (Figure 30). But the sharp debt ramp-up in recent years juxtaposed with heightened income uncertainty from the pandemic is likely to keep households cautious in the near-term. Recall, household precautionary savings were already rising in the run-up to COVID-19. Furthermore, distributionally, COVID-19 can be thought of as generating an income transfer from the poor to rich, whose marginal propensity to consume is lower in the steady state, once pent-up demand is exhausted.

There are some offsets. Monetary conditions have eased meaningfully (lower real lending rates and a deluge of liquidity), and this should provide some tailwinds for consumption. But these beneficial "price effects" are likely to be dominated by adverse "income effects" (Figure 36) as balance sheet concerns have been accentuated, particularly at the bottom of the pyramid. Furthermore, easier monetary conditions may have to contend with tighter lending standards,

FIGURE 30. Emerging Markets Household Debt

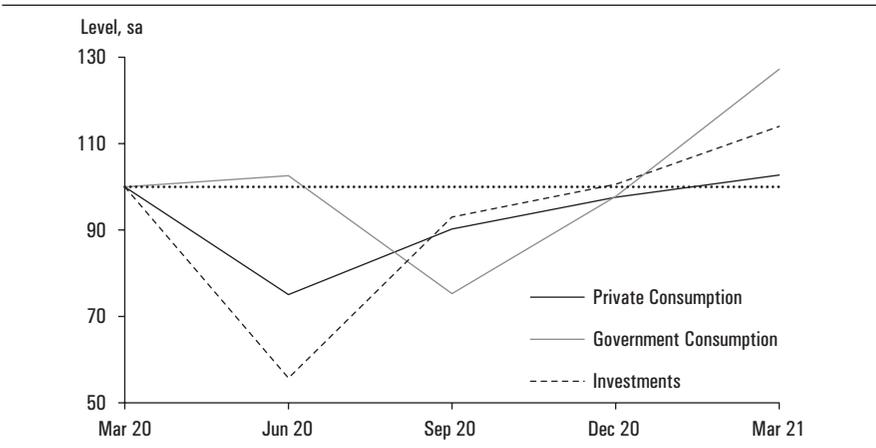


Source: Bank for International Settlements, Reserve Bank of India.
 Note: India data is from the Reserve Bank of India. ID: Indonesia; BZ: Brazil; SA: South Africa; IN: India; EM: Emerging Markets; CH: China; MY: Malaysia; TH: Thailand.

particularly to the retail sector. Financial institutions that are more exposed to retail credit (NBFCs, smaller private banks, MFIs) have witnessed higher gross NPAs and may be more wary about lending aggressively to the retail segment.

It is, therefore, hard to see these forces serving as pre-conditions for a consumption boom. Hard data and surveys have begun to lend credence to this view. There was much excitement about consumption driving the recovery after the first wave. But consumption has been the slowest to recover to pre-pandemic levels, vis-à-vis other components of demand (Figure 31). Instead, the recovery

FIGURE 31. GDP Components

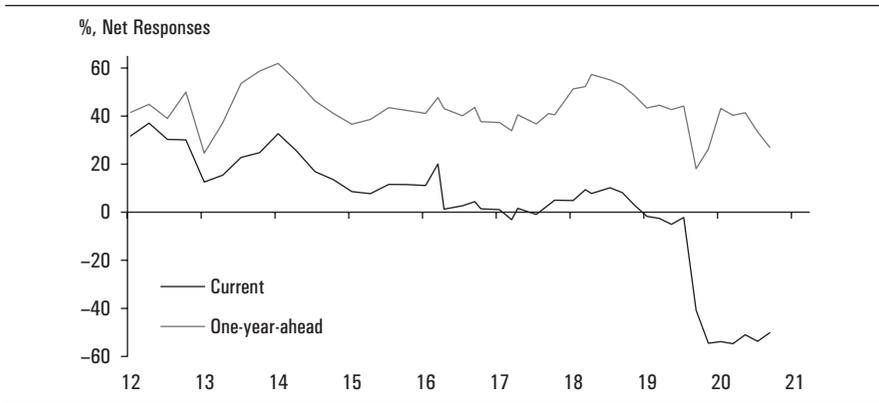


Source: Ministry of Statistics and Programme Implementation, J.P. Morgan.
 Note: IQ 2020 GDP level is considered as 100. "sa" stands for seasonally adjusted.

in the second half of the year was driven largely by exports, public investment, and government spending.

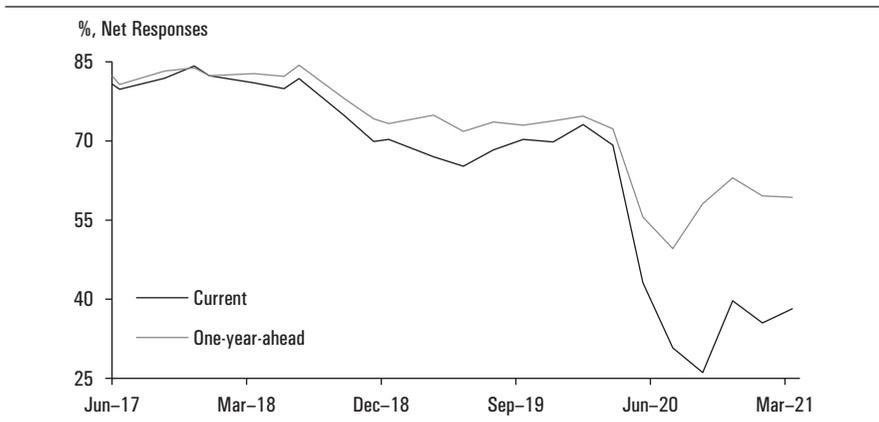
Forward-looking surveys also point to consumer diffidence. As shown earlier, the RBI's consumer confidence survey revealed that households had already begun to downgrade future income and spending expectations in the quarters before COVID. Those downgrades have become much more dramatic after the first and second waves of COVID, suggesting income scarring (Figure 32). Unsurprisingly, therefore, the survey results suggest that future household spending—particularly on discretionary items—could remain relatively depressed (Figures 33 to 36). All told, a consumption recovery is likely to lag a jobs and income recovery that first helps heal household balance sheets.

FIGURE 32. Household Income Perceptions



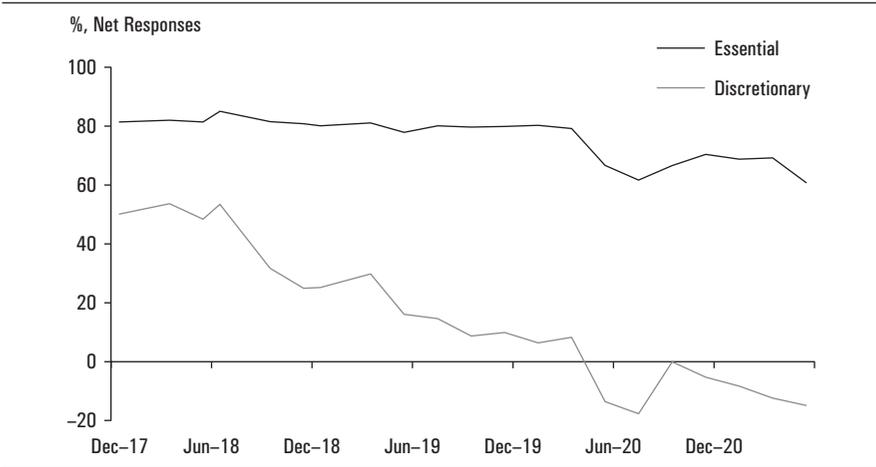
Source: Reserve Bank of India, J.P. Morgan.

FIGURE 33. Household Spending Perceptions



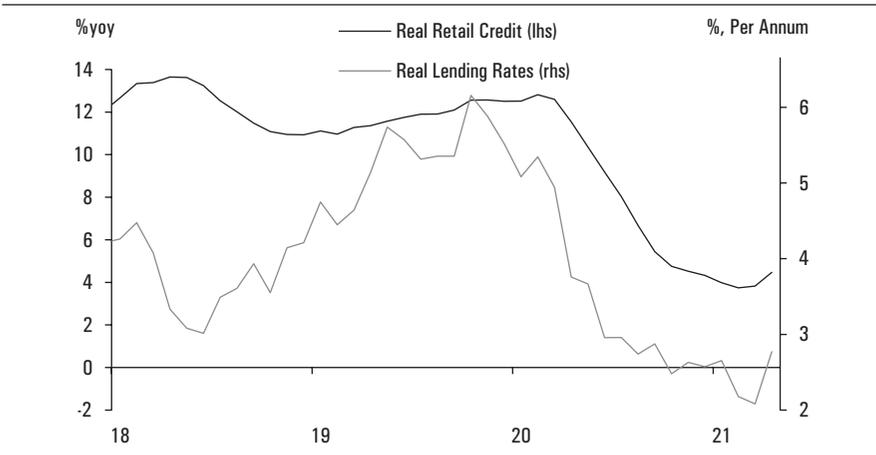
Source: Reserve Bank of India, J.P. Morgan.

FIGURE 34. Household Spending Patterns



Source: Reserve Bank of India, J.P. Morgan.

FIGURE 35. Real Retail Credit and Lending Rates



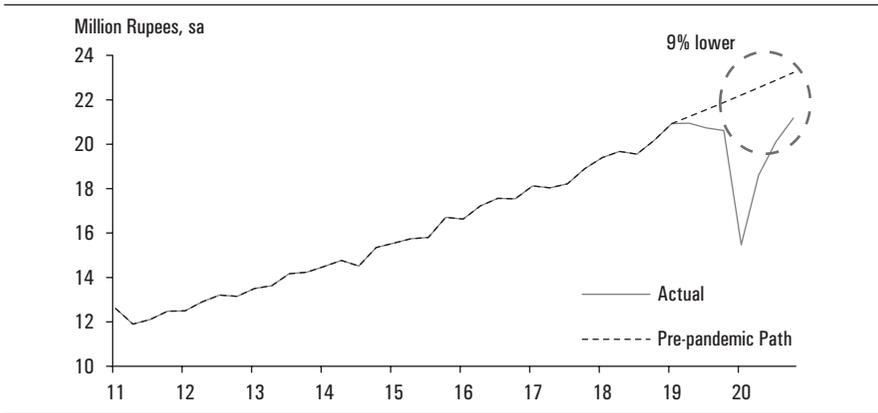
Source: Reserve Bank of India, J.P. Morgan.

Note: Six-month moving averages of year-on-year growth (% yoy) are shown for real retail credit. “lhs” is left-hand-side axis, and “rhs” is right-hand-side axis.

5.2. Investment: From Balance Sheets to Demand

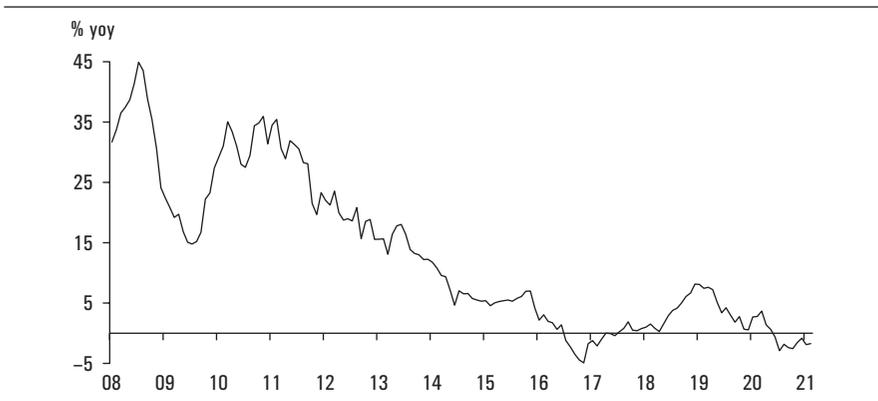
The key to a consumption recovery therefore is a jobs recovery. But the key to a job recovery is an investment recovery.³ And the key to an investment recovery is likely to be a demand recovery, creating a worrying circularity.

3. This is consistent with the RBI’s findings that investment drives consumption, through employment and income creation, and therefore investment is key to a sustainable post-COVID recovery.

FIGURE 36. Private Consumption

Source: Ministry of Statistics and Programme Implementation, J.P. Morgan.

Note: “sa” stands for seasonally adjusted.

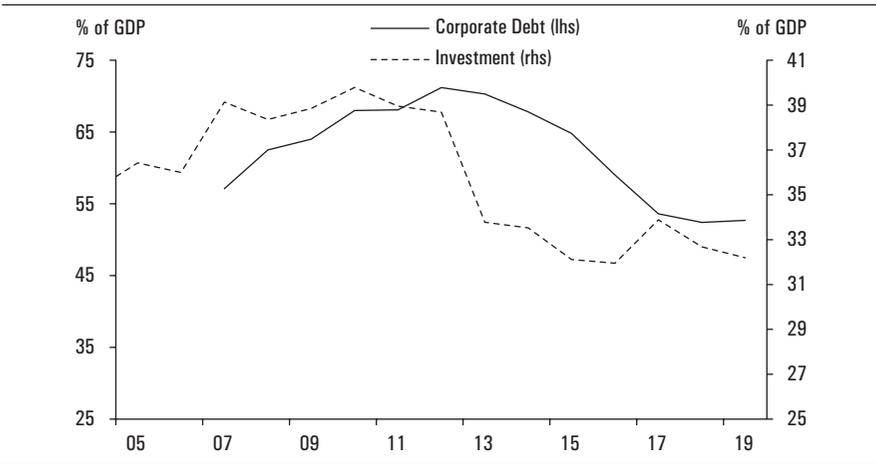
FIGURE 37. Large Industry Credit Growth

Source: Reserve Bank of India.

For several years, private investment was being held back by the “twin balance sheet” problem wherein unsustainable levels of debt on some corporate balance sheets and correspondingly high NPAs on bank balance sheets, constrained credit, investment, and growth. But after years of deleveraging—reflected in muted credit growth to corporates (Figure 37)—leverage has become much less of a binding constraint for large corporates (Figure 38).

The current binding constraint for the larger corporates, therefore, is not leverage. Instead, it is demand. Even as balance sheets have improved, capacity utilization has continued to fall in the run-up to COVID. Manufacturing utilization fell below 70 percent for three consecutive quarters pre-COVID in the RBI’s Order Books, Inventories and Capacity Utilisation Survey—the first time this has happened since the Survey started in 2008—reflecting weak demand.

FIGURE 38. Corporate Deleveraging and Investment Growth

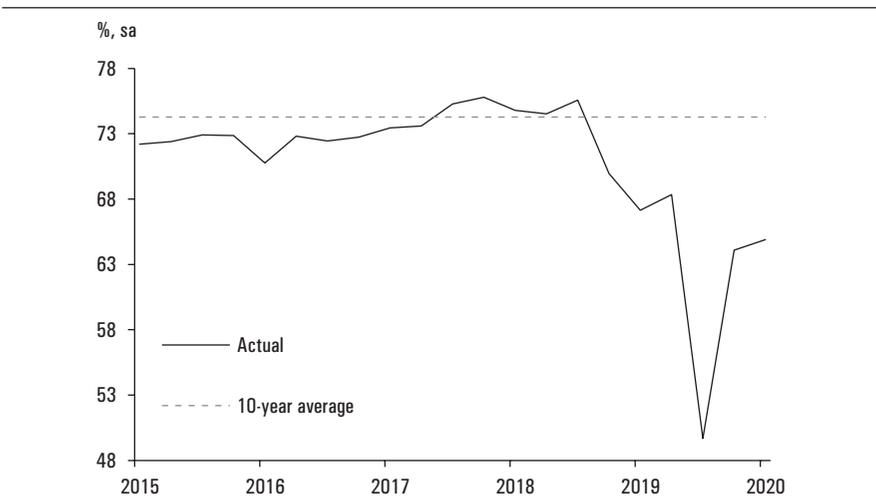


Source: Bank for International Settlements, Ministry of Statistics and Programme Implementation.
 Note: “lhs” is left-hand-side axis, and “rhs” is right-hand-side axis.

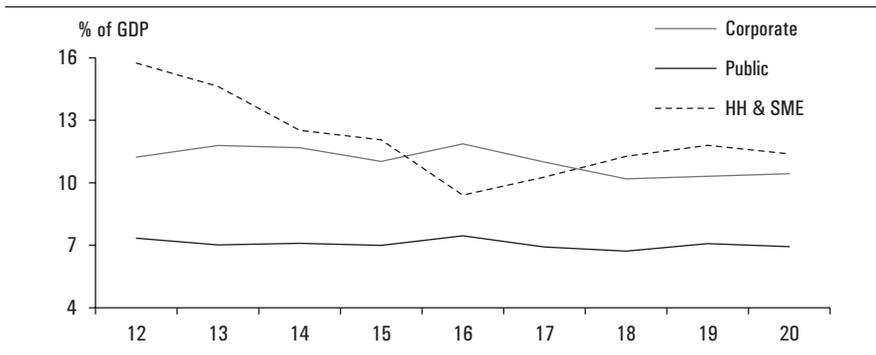
Utilization fell further to 45 percent during the pandemic but recovered back to just 65 percent by the end of calendar 2021 (Figure 39, RBI Annual Report, 2020–21). Therefore, a broader private investment cycle is unlikely to pick-up until utilization rates first go up meaningfully. The binding constraint on investment is currently demand.

Large corporates apart, what about other potential sources of investment? To be sure, much of the decline in investment rates in recent years is on account of lower “household” investment, reflecting both lower residential real estate

FIGURE 39. Capacity Utilization



Source: Reserve Bank of India.
 Note: “sa” stands for seasonally adjusted.

FIGURE 40. Drivers of Investment

Source: Ministry of Statistics and Programme Implementation.

Note: "HH" stands for Households, and "SME" stands for Small and Medium Enterprises.

and SME investment (Figure 40). Lower real interest rates could help top-end residential real estate, where balance sheets have not been impacted meaningfully, but SME investment is likely to face headwinds post COVID on balance sheet concerns.

Finally, if and when investment demand does pick-up, will financing become a constraint? Unlikely to be so in the case of large corporates. They are sitting on internal reserves, have access to international sources of financing, and banks are likely to be very willing to lend to the most credit-worthy borrowers. It is when one goes down the credit curve that financing is likely to become a constraint.

For now, however, consumption and private investment are, by themselves, unlikely to result in a virtuous cycle. Consumption is unlikely to pick up until investment and job creation picks up, but the latter is unlikely to lift if consumption and utilization levels remain weak. This was evident in the three quarters before the pandemic, when both consumption and investment growth slowed in tandem. Therefore, an exogenous demand driver will be needed to break this equilibrium.

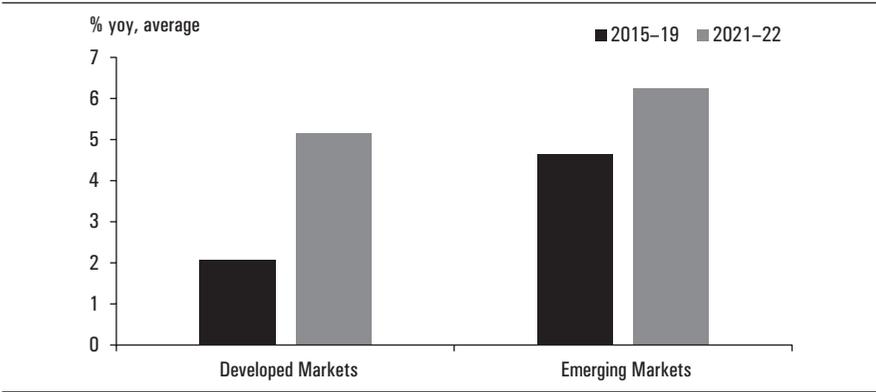
5.3. Exports Provide a (Potentially Thick) Silver Lining

What could these exogenous drivers be? With global growth expected to stay much above trend in 2022, exports could remain an important tailwind of growth (Figure 41).

We have previously found that India's merchandise and service exports are very elastic to global growth (Figure 42) (Chinoy and Jain 2018). Therefore, sustained above-trend demand growth bodes well for India's export outlook. Recent months bear testimony to this. Both manufacturing and service exports have witnessed very strong growth since the start of 2021, with total (goods and services) exports 23 percent above its pre-pandemic level by September 2021 (Figures 43 and 44).

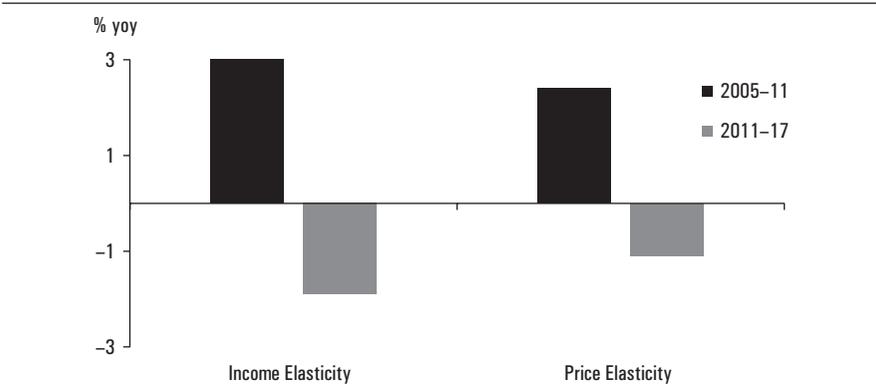
These dynamics are likely being aided by the sectoral shift that has characterized India's manufactured basket, as alluded to earlier. Within the export

FIGURE 41. Global Growth Forecasts



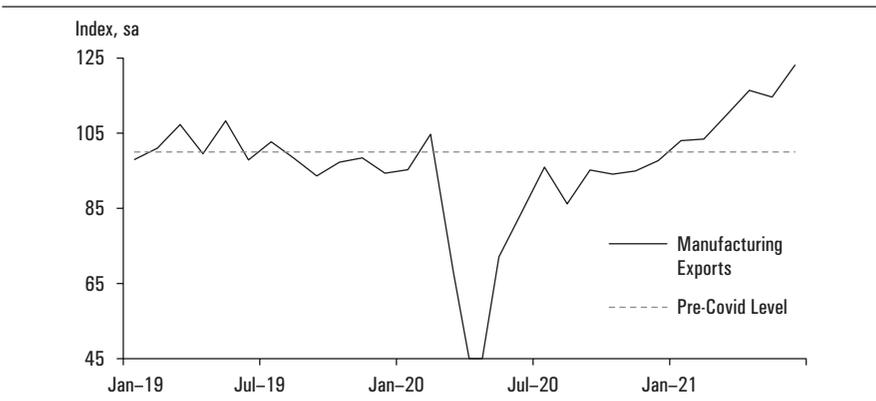
Source: J.P. Morgan.

FIGURE 42. Export Elasticities



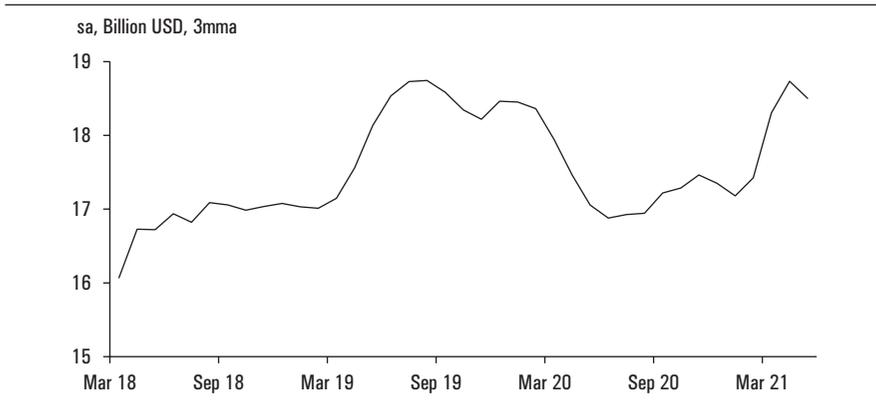
Source: Chinoy and Jain 2018, J.P. Morgan.

FIGURE 43. Manufacturing Exports



Source: Ministry of Commerce, J.P. Morgan.

Note: "sa" stands for seasonally adjusted; the average of manufacturing exports values for January and February 2020 is set to 100 for indexing.

FIGURE 44. Service Exports

Source: Reserve Bank of India, J.P. Morgan.

Note: The graph in this figure shows seasonally adjusted (sa), three-month moving averages (3mma).

basket, the share of new-economy exports (IT and business services, engineering goods, chemicals, and pharmaceuticals) has grown sharply at the expense of old-economy exports (agriculture, textiles, gems, and jewelry) and, as we have previously found, the former are more elastic to global demand than the latter (Chinoy and Jain 2018).

To be sure, these relationships are estimated during “normal times” and the unique nature of the recovery from COVID—where re-openings across the world are likely to result in disposable income being directed disproportionately towards contact-intensive domestic (non-tradable) services—could partially interfere with these relationships.

That said, COVID-19 has dramatically boosted technological adoption around the world and that bodes promisingly for India’s IT exports. Already, India’s share in global service exports has increased from 3 percent in 2014 to 4.2 percent in 2020, and the aftermath of the pandemic creates fresh opportunities for IT and service exports.

What are the associated policy implications? To harbor an ecosystem conducive to export growth would entail avoiding tariff increases that make exports uncompetitive (an import tariff is equivalent to an export tax), continued focus on attracting multinational corporations (particularly those diversifying from China) to help integrate into global value chains, and keeping the real effective exchange rate anchored (by containing inflation and avoiding undue nominal appreciation) to preserve competitiveness.

5.4. Government Capex: Execution is the Key

The larger question, however, is whether export growth, by itself, will be able to crowd-in a private investment cycle. This was certainly the case in the first decade of the millennium, but that was a period of hyper-globalization with

exports growing at 15 percent a year for almost a decade. It is unlikely that we will see such a level of sustained buoyancy this time around.

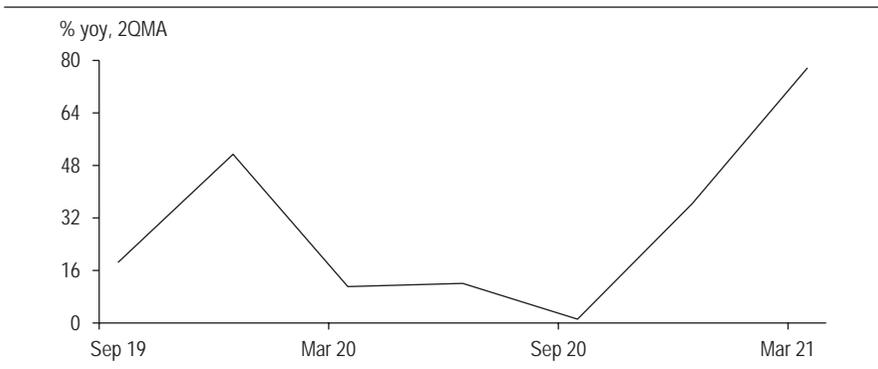
Growth will, therefore, need a second demand driver. In our view, that would need to be a sustained public investment push. The case for more physical and social infrastructure is self-evident. First, it will support near-term demand and its large multiplicative effects on activity should eventually crowd-in private investment. Second, infrastructure spend will create jobs for the bottom of the pyramid to alleviate pandemic-induced scarring. Third, sustained public investment boosts the economy's internal and external competitiveness and thereby helps trend growth, a topic to which we turn in the final section.

To policymakers' credit, a public investment push appears central to the government's strategy.⁴ From the second half of last year, Central and State governments have been pushing hard on capex. In particular, Central Government capex grew a staggering 75 percent year-on-year in the second half of last fiscal and was key to the second-half recovery (Figure 45 and 46).

Both Central and State budgets have also budgeted strong capex growth in FY22, which will be key to the recovery. To be sure, at the aggregate level, there is a large swing in the fiscal thrust between FY21 (+4.5 percent of GDP) and FY22 (-1.7 percent of GDP), as shown in Table 1. To combat this tightening, it is crucial that the planned capex, with its large multipliers, be delivered in FY 22 (Table 2).

But boosting public investment will need to be a multi-year strategy that extends beyond FY22. The question therefore is: How will that be financed

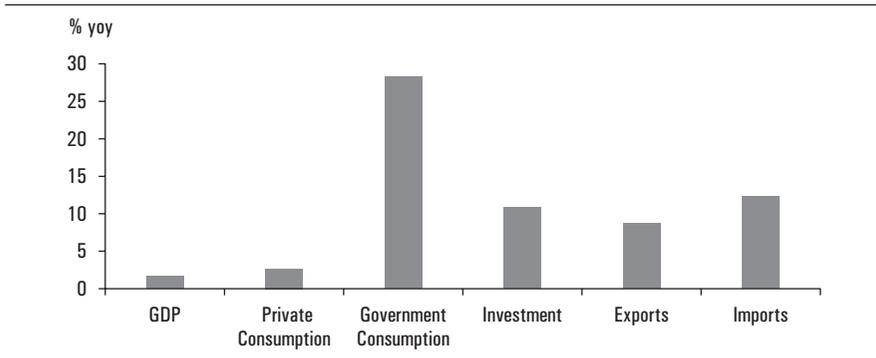
FIGURE 45. Central Government Capex



Source: Controller General of Accounts.

Note: Two-quarter moving averages (2QMA) of year-on-year growth (% yoy) are shown for Central Government capex.

4. Public investment here refers to spending directly off the budget, and potentially monetized by downstream asset sales. This does not refer to the PPP model wherein the private sector takes on upstream risk (land acquisition, regulatory clearances).

FIGURE 46. Growth Rates in 2021 Q1 GDP

Source: Ministry of Statistics and Programme Implementation, J.P. Morgan.

TABLE 1. Combined Fiscal Arithmetic (% of GDP)

	FY20	FY21	FY22RE
Central Fiscal Deficit	4.7	9.2	6.9
Adjusted Central deficit (net of asset sales and arrear payment)	5.4	8.5	7.3
Estimated State fiscal deficit	2.8	4.2	3.7
Combined fiscal deficit (adjusted)	8.2	12.7	11.0
Fiscal Thrust		4.5	-1.7

Source: Budget document, J.P. Morgan.

Note: FY 22 States deficit is an estimate.

TABLE 2. Center and State Government Capex (% of GDP)

	FY19	FY20	FY21	FY22*
Center	1.6	1.6	2.2	2.4**
State	2.3	2.1	2.3	2.6
	3.9	3.7	4.5	5.0

Source: Budget docs, Reserve Bank of India.

Note: *Center is RE estimate and State is budget estimate, **adjusted for non-capex generating expenditure like Air India debt.

given that deficits and debt are already at expansive levels and credible fiscal consolidation will be needed from here on? The answer must be to: (i) double down on privatization and asset sales, (ii) improve the quality of expenditure (rationalize current expenditures to create more room for capex), and (iii) reform both direct taxes and the goods and services tax to eventually generate more revenue buoyancy (Chinoy and Jain 2021).

All told, exports and government capex will need to combine to create a growth bridge till private investment and consumption recover.

6. Stepping Back: Potential Growth and Total Factor Productivity

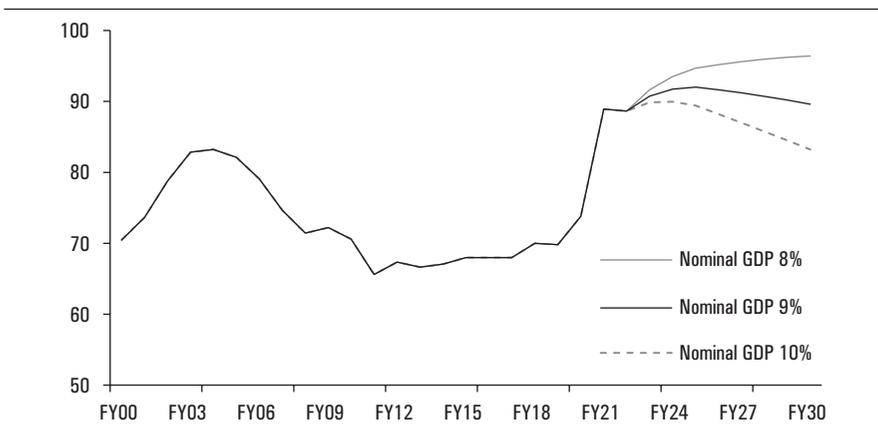
6.1. The Imperative

The previous section focused on the feasibility of using different growth drivers in the near-term. From a medium-term perspective, however, what really matters is the strength of India's underlying potential growth. What is the rate that India's economy can sustainably grow at without spawning internal or external imbalances post-COVID?

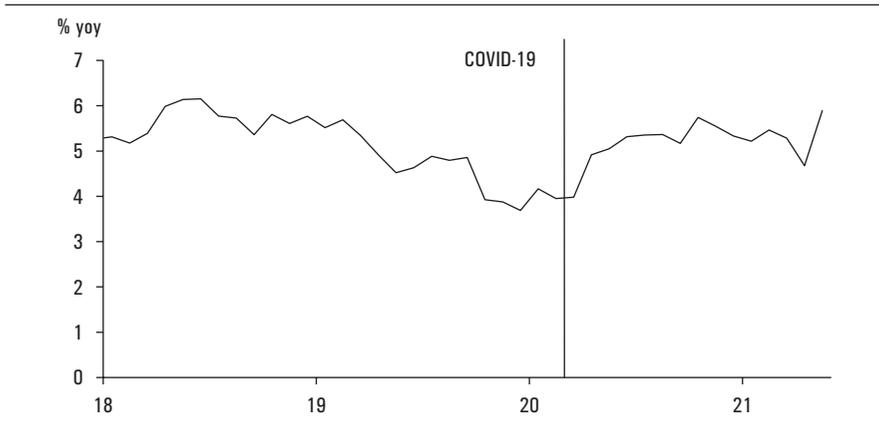
The motivation should be clear. Even before the Coronavirus pandemic, India's demographic profile necessitated strong trend growth just to create the jobs necessary for those entering the labor force over the next decade. That imperative has increased manifold, given the pandemic's impact on jobs, incomes, and public debt.

Take, debt sustainability, for instance. India's public debt is expected to remain close to 90 percent of GDP by the end of FY22. The key to sustainability will be the trajectory of the debt to GDP ratio thereafter: can the debt to GDP ratio be stabilized at these levels and gradually brought down or will it undergo a monotonic increase in the coming years, risking macroeconomic instability? Given India's post-pandemic starting points, the answer depends crucially on trend growth. If India's nominal GDP were to average about 10 percent over the coming years—corresponding to real GDP growth of 6.5 to 7 percent—debt to GDP ratio will stabilize while also allowing for a more gradual pace of fiscal consolidation. In contrast, if nominal GDP averages 8 percent in the coming years—corresponding to real GDP growth of about 5 percent—the debt to GDP ratio is expected to rise monotonically (Figure 47). In other words, trend growth will have a disproportionate influence on debt dynamics in the coming years (Chinoy and Jain 2020a, 2021).

FIGURE 47. Debt Dynamics under Different Growth Rates



Source: Reserve Bank of India, Budget documents, J.P. Morgan calculations.

FIGURE 48. Core-Core Inflation

Source: Ministry of Statistics and Programme Implementation.

6.2. Canary in the Coal Mine?

Another motivation to understand the pandemic's impact on potential output is to help solve the puzzle surrounding core inflation. Despite the economy registering its largest contraction ever, core inflation has stubbornly averaged 5 percent over the last 18 months (Figure 48). A large contraction should have generated substantial slack in the economy, manifested in lower utilization rates and lower employment-population ratios. Why has that slack not depressed core inflation? To be sure, supply disruptions from lockdowns and the surge in global commodity prices have contributed to inflationary pressures. In turn, given their adaptive nature, household inflation expectations have hardened, reinforcing inflation pressures. Yet, *prima facie*, these factors should not be enough to explain the stickiness of core inflation for 18 months given the quantum of perceived slack in the economy.

Or is the stickiness of core inflation telling us something about the supply side? Has the supply-side—particularly SMEs—been impacted more than believed such that output gaps are lower than thought? Has the increased market share of large firms through the pandemic increased pricing power? These concerns are tantamount to an adverse supply shock from the pandemic that could keep inflation sticky and complicates monetary policy. This makes an inquiry into the drivers of the supply-side even more urgent.

6.3. A Production Function Approach

Our focus, therefore, is to try to better understand the supply-side. To be sure, estimating potential growth in emerging markets is challenging at the best of times on account of the difficulty of separating cyclical from structural shocks in these economies (see, for instance, Aguiar and Gopinath 2004) compounded

by data challenges in these economies. A once-in-a-century pandemic makes the task truly daunting, and the dust will have to settle to get a more definitive handle on the enduring impacts of the COVID-shock on potential output.

For now, therefore, our scope is more limited. We try and understand the drivers of potential output, and how they have changed over the last 15 years. Their methodological shortcomings notwithstanding, empirical filters (Hodrick-Prescott, Christiano-Fitzgerald, Baxtor-King) provide a sense of how potential growth has evolved. But they are a black-box and don't tell us what's driving underlying changes.

We, therefore, use a production function approach to decompose output into its different constituents. As is standard in the literature, we use the canonical Cobb Douglas production function (Equation 1) to decompose output into contributions made by physical capital, labor, human capital, and TFP. This analytical separability allows us to measure the relative contribution of different factors and how they have evolved over time.

$$GDP = A K^\alpha (LH)^{(1-\alpha)} \quad (1)$$

Re-arranging terms and taking logs:

$$\ln(GDP) = \alpha \ln(K) + (1-\alpha) [\ln(H) + \ln(L)] + \ln(A) \quad (2)$$

Equation 2 lays out the different components of the production function. K represents the capital stock which is a function of the investment and depreciation rates. L represents the workforce, and H proxies human capital. A represents total factor productivity (TFP), reflecting economy-wide productivity and allocative efficiency. α and $1-\alpha$ represent, respectively, the capital and labor share of output which we parametrize at 0.35 and 0.65, respectively, in line with the standard followed in the literature.

We estimate potential output using annual data on each of these variables since the year 2000. We use the capital stock to GDP ratio data from the International Monetary Fund (IMF) and the Federal Reserve and build a capital stock time series using investment rates while assuming 6 percent annual depreciation rate. Labor force participation rates are taken from the National Statistical Office data while the human capital index is taken from the Penn World Tables.

6.4. Honing in on Total Factor Productivity

Our focus, however, is mainly on teasing out the contribution of TFP growth and how its contribution has changed over time. This is primarily because, quite apart from the fact that it is the key long-term driver of living standards, there has been much discussion on the role of factor inputs in impacting potential output. In particular, much has been written on how lower investment rates have hurt potential growth. Earlier sections focused on the binding constraints to investment, past and present. As regards the role of demographic changes, labor force participation and human capital acquisition are crucial but relatively sluggish variables that evolve

slowly over time. Labor force participation—and particularly female labor force participation—has been trending down for some time, and needs to be the subject of a more thorough inquiry, beyond the scope of this paper. Similarly, educational and human capital attainments have likely taken a dramatic hit during the pandemic with profound implications for the future. Again, these require a separate and thorough inquiry, beyond the scope of this paper.

Instead, our focus is more on the role, and determinants, of the much-ignored TFP growth, which captures economy-wide productivity growth and allocative efficiency. Why do we focus on TFP? Because a growth decomposition exercise reveals that there has been a sharp and sustained slowdown in TFP growth, nearly 200 basis points, since its peak in 2007. Put more starkly, its contribution to potential output has halved over the last 15 years. It is, therefore, crucial that policy prevent any “TFP Hysteresis” from the pandemic—a durable TFP decline from a large but temporary shock—that was witnessed post the global financial crisis (IMF 2017).

6.5. Total Factor Productivity: Cyclical versus Underlying

Given the large, and unappreciated, role that slowing TFP growth has played in impacting potential growth over the last 15 years, the obvious next question, from a policy standpoint, is: What determines TFP growth?

Before trying to tease out the determinants of TFP growth, however, we must first confront a more conceptual issue. Recall that TFP is computed as the residual in the growth decomposition exercise. In theory, therefore, it is the growth that cannot be accounted for by accumulation of different factor inputs. However, because of data constraints in most emerging markets, we are typically unable to control for utilization rate of these factor inputs: labor and capital. The absence of average work-week hours and utilization rates of capital implies that any cyclical impulses, which would change utilization rates of factor inputs, inadvertently get absorbed into our computed TFP variable.

We, therefore, need to “cleanse” the computed TFP estimate of these cyclical forces to generate the “true” underlying TFP estimate. Therefore, even as our broad approach in establishing the determinants of TFP growth is consistent with the approach followed by Loko and Diouf (2009) and (Aziz and Jain, 2017), our innovation is that we control for the cyclical impulses that may be contaminating computed TFP growth.

6.6. What’s Driving TFP?

When modeling the determinants of TFP, we must control for cyclical influences so as to identify underlying structural drivers. To control for the former, we use global growth, world trade, terms of trade, and real interest rates as our cyclical proxies. Recall that we are looking for cyclical impulses that impact utilization rates. If the influence of any of the aforementioned variables is strong enough to impact investment or labor force participation rates more broadly, which

TABLE 3. Endogeneity Test

Null hypothesis: Real bank credit, Real government capex and trade openness are exogenous			
	<i>Value</i>	<i>df</i>	<i>Probability</i>
Difference in J-stats	3.4	4	0.4878

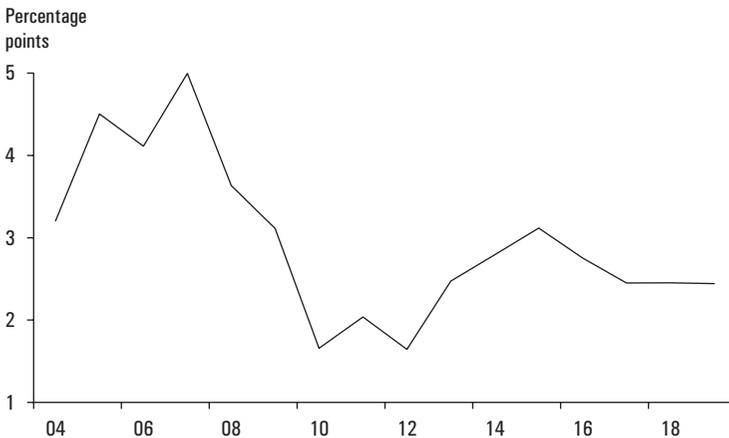
Source: Authors' calculations.

are already controlled for in the capital and labor stock variable, they will not contaminate the TFP variable. Having controlled for these cyclical influences, we run a horse race among a series of macro variables to understand which of these are correlated with TFP growth.

We use 20 years of annual data for each of the variables in our framework. Given the potential endogeneity of these macro variables, we use the Generalized Method of Moments (GMM) methodology. However, GMM endogeneity tests (Table 3) reveal an absence of endogeneity which then allows us to use ordinary least square for estimation. Furthermore, where necessary, we work in “differences” to avoid non-stationary concerns.

The results of our estimation—the baseline regression and robustness tests—are presented in Table 4. We find the following results:

1. India's “true TFP growth” has slowed sharply over the last 15 years (Figure 49). It contributed almost 5 percentage points to GDP growth at its peak just before the Global Financial Crisis in 2007, but then more than halved by 2012. It then rose briefly from 2012 to 2015 but has slowed again to about 2.5 percentage points since then. Its current contribution to trend growth is half of what it used to be in 2007.

FIGURE 49. Contribution of True Total Factor Productivity

Source: J.P. Morgan.

Note: This figure shows the three-year moving average for contribution of true Total Factor Productivity.

2. To be sure, emerging markets as a group saw TFP growth peak before the global financial crisis and slow thereafter, likely “reflecting the rapid and possibly unsustainable speed of technological catch-up in the years immediately preceding the global financial crisis,” as reported by the IMF (IMF 2017; 2015a; 2015b).
3. Furthermore, the decline in TFP is not completely independent from an investment slowdown because the latter may impact investment in intangible capital, such as research and development, which hurts TFP growth (Aghion et. al 2012).
4. That said, the decline in TFP growth in India is very meaningful and will need to be reversed to boost potential growth.
5. So, what impacts TFP? Empirically, we find that three macro factors seem correlated with TFP growth: trade openness, a healthy financial sector, and public investment (Table 4):
 - **Trade Openness:** Changes in openness (proxied by exports and imports as a share of GDP) are correlated with TFP growth. As mentioned earlier, TFP is constructed after controlling for investment. Therefore, changes in trade openness are not operating through the investment channel. Instead, they are likely picking up productivity gains that accrue from increased global integration and competition as also found in the literature (Ahn et al. Forthcoming; Dabla-Norris and Duval 2016; IMF 2017). At some level, the trade openness variable is

TABLE 4. Determinants of Total Factor Productivity

Dependent Variable: Total Factor Productivity
 Period: 2000 to 2019 (Annual)
 Method: Least Squares

Type	Variable	Baseline	Robustness test				
Macro determinants	Constant	1.05	0.68	0.70	1.06	1.08	0.76
	Trade openness	0.21*	0.23**	0.23*	0.21*	0.23*	0.23*
	Real govt. capex	0.05**	0.05**	0.05**	0.05**	0.05*	0.05*
	Real bank credit	0.11**	0.13*	0.10*	0.11*	0.11*	0.10*
	Demon and GST dummy		1.81				
Cyclical controls	Terms of trade	0.27***	0.28***	0.27***	0.27***	0.29***	0.27***
	Global growth			0.17			0.16
	World trade volume				0.01		
	Real repo rate					0.06	0.01
	Adjusted R-squared	0.50	0.52	0.48	0.46	0.47	0.43
	Durbin-Watson stat	2.12	1.62	2.09	2.11	2.16	2.10

Source: Authors' calculations.

Note: *, **, and *** indicate statistical significance at 10%, 5%, and 1% respectively.

likely reflecting the productivity pre-requisites that are forced upon open economies (larger firm size, improved infrastructure, nimble regulatory framework) to compete in global markets.

- **Government Capex (combined center and state):** Second, we find that public investment is strongly correlated with TFP growth. This should be non-controversial to the point of being tautological. The provision of physical, social, and digital infrastructure is crucial to an economy's competitiveness and productivity, by creating much-needed public goods that the private sector necessarily under-produces (IMF 2014, 2015c).
- **Financial Sector:** Third, we find that the financial sector—as proxied by real credit growth—is also correlated with TFP growth. Again, because investment is controlled for, credit is not just mimicking demand impulses. Instead, it is likely proxying for the efficient intermediation of an economy's savings and the associated allocative efficiency, or lack thereof, that a financial sector is expected to perform. In India's case, weak credit growth over the last decade has likely been underpinned, at least in part, by balance sheet and/or incentive incompatibility constraints. The former likely reflects challenges with stressed asset resolution that impedes creative destruction and therefore allocative efficiency.

We find that our baseline results remain robust to the presence of various control variables: terms of the trade, global growth, world trade volume, and real policy rates. Controlling for these, our baseline results suggest that trade openness, government capex, and bank credit are the key determinants of TFP (Table 4). While some of these macro determinants may seem intuitive, we are able to find empirical support for them to guide future reforms. That said, at least two caveats are in order. First, this is not to suggest that these are the only drivers of productivity growth. There are a myriad micro and macro influences that combine to shape productivity, which cannot be fully modelled here. Second, the dramatic technological adoption that COVID has spawned is likely to be productivity-enhancing (IMF 2021). All that said, reversing slowing TFP growth will be key to boosting trend growth in a post-pandemic world.

7. Conclusions and Policy Implications

With India emerging from the second COVID wave, the need to boost growth in a post-pandemic world is self-evident. There is a belief in some quarters that household consumption and private investment will lead the revival. However, the pandemic has inevitably accentuated household balance sheet concerns that emerged pre-COVID, and is likely to keep households cautious. Similarly,

manufacturing utilization levels in the mid-60s suggest that a broad-based private investment cycle will take time. Instead, growth will first need to be driven by public investment and exports to crowd-in private investment and consumption.

More generally, boosting trend growth will require reversing the sharp and sustained decline in TFP growth witnessed over the last 15 years. Our empirical analysis finds TFP to be influenced by open trade, a healthy financial sector and sustained public investment.

All this calls for a complementary package of interventions and reforms: sustained public investment, aggressive privatization and asset sales, fostering openness and creating a conducive environment to promote exports, and reforming the financial sector while strengthening resolution (Insolvency and Bankruptcy Code) mechanisms. The synergies are obvious. Infrastructure creation will contribute to export competitiveness. Asset sales will create fiscal space for public investment. Financial sector reforms can help fund and finance the resulting growth, while strengthening resolution mechanisms will facilitate the creative destruction from this crisis and help productivity growth. These interventions will be crucial to restoring growth potential in a post-pandemic world.

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Comments and Discussion*

Chair: **Shankar Acharya**

Former Chief Economic Adviser, Government of India

Ajit Pai

NITI Aayog

Thank you so much for the wonderful presentation. Overall, we found while going through the paper, there is much in common between the way we at NITI Aayog are thinking about things and the way the authors have presented it. So, I would focus on some of the areas which I want to stress a little bit more.

To begin with, the way we see the entire slowdown was largely linked to it being a banking sector issue. And the reason why I say that is not that other things were not going wrong in the Indian economy, but when you look at the impact on economic growth because of the banking sector itself, it explains about 400 basis points over the past seven years as compared to the average of the prior five years, and an impact of almost 900 basis points on growth rate from peak to trough. The second biggest impact where there is some overlap with the banking sector and credit is household investment, but primarily in real estate. So, almost all the drop in household investment was in real estate and there are some structural issues in the real estate industry. While there were governance issues, a large part of what drove the issues in the banking sector, and what the Asset Quality Report also revealed, is that a few industries got over-capitalized, including steel, power generation, and real estate.

Lastly, as has been rightly pointed out, the Indian system overall, not attributing blame to the government or private sector, responded very slowly to greater competition in the global merchandise trade post the Global Financial Crisis (GFC). Global trade itself as a percentage of GDP plateaued back and then started to decline slowly. So there was a peak in the GFC just prior, that was declining and in that environment, our merchandise exports declined even faster than those of the rest of the world because we did not keep pace with the competition. Lastly, when looking at these contributions, taking away these two impacts, even with an overlap between household investment and real estate, and also the overall financial situation, particularly banking, the Indian economy would have been growing in double digits.

* To preserve the sense of the discussions at the India Policy Forum, these discussants' comments reflect the views expressed at the IPF and do not necessarily take into account revisions to the conference version of the paper in response to these and other comments in preparing the final, revised version published in this volume. The original conference version of the paper is available on NCAER's website at the links provided at the end of this section.

The peak growth rate towards the end of 2010, at 24 percent, declined all the way down to 4.4 percent, and then started to re-accelerate in early 2017, and then decelerated again even prior to the pandemic. The later bit was catalyzed by the IL&FS and some of the Non-Banking Financial Company (NBFC) issues, but I think those were more the last straw—there were some structural issues and there was a change in the way people were thinking about things. But the way we would quantify the impact of this on overall economic growth is, very roughly, the overall scheduled commercial banks' total amount of credit outstanding, about half of the estimated size of GDP. So if it is growing faster than the GDP, it would aid GDP growth, and if it is growing slower than GDP at any point of time, it would be a drag on GDP growth. And since the quantum is half, the difference between nominal GDP growth and the real rate of growth would be the amount of acceleration or the amount of deceleration provided by the banking credit growth itself. So when you have a downdraft of almost 20 percent, that would be about a 10 percent relative downdraft, when you're going from peak to trough, in growth rates driven by the banking sector. It was thus a very material deceleration, given the size of the banking sector and the size of the numbers involved.

Indeed, it was the household sector that drove most of the slowdown all the way to fiscal year 2016. But a huge chunk of that, i.e., 550 basis points or higher, was due to the dwellings, other buildings and structures, and the investment by the household sector in these areas. The household sector was the one that drove a very significant decline, i.e., over 600 basis points of a slowdown in annual GDP. But the component that was highly correlated, which can be used to explain almost the entire decline, is the household sector's investment in real estate. The clean-up in the real estate sector was thus similar to the clean-up in banking; it was very essential but it had a fairly significant impact on the growth rates.

There is some overlap between credit and real estate. But given that the mortgage market penetration in India is very low, we know that a lot of the transactions are happening outside of the banking system as well. That should thus be viewed as an independent factor as well, which I think was the second largest contributor to the overall slowdown, going into the pandemic. And the third factor, of course, was exports. The paper explains really well how that was contributing as well.

Looking at the current scenario, based on what we are seeing and what the authors have pointed out, the profits of large corporates are growing faster relative to spending on labor. However, this is typical in a nascent and uncertain recovery, as employers are cautious about the sustainability of the trends that they are seeing. They are not going to be hiring anytime soon and they are also going to be postponing discretionary expenses. So, I would not read too much into this massive increase in early profitability as such a trajectory is not likely to be sustainable.

I would also agree with the analysis that despite being tighter, the smaller companies would be impacted more than others not only because of volatility, but also because this pandemic is unique in terms of its diverse geographical

impact in various locations. While some people would be significantly impacted in terms of their ability to do business, the large corporates, being more diversified, will suffer less impact.

Another issue that I would look at with some circumspection in this particular equation is consumption. This has been discussed relative to previous economic cycles and even over large periods of time. This time, three factors are responsible for a drop in consumption. These include *first*, the inability to spend as there is no access to liquidity. There is now a need to provide money to people in the bottom 80 percent or the bottom 40 percent of the income distribution. The *second* is caution in the face of uncertainty, and the *third* would be restricted mobility and opportunities to consume due to the pandemic. So even if people have the money and the confidence, they cannot go to the store and spend the money, either because the stores are not allowed to open, or people are not allowed to go to restaurants and hotels.

One evident trend is that the persistent caution among people is reflected in credit and deposit trends in Scheduled Commercial banks. Credit has been growing in low- to mid-single digits, and deposits have been growing in double digits. Even *Jan Dhan* deposits, which were growing much faster than overall credit, are in high-single digits right now.

As regards the issue of employment, schemes like the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) have actually compounded some of the unemployment issues because of the meaningful government support this time. MGNREGS has also been supplemented by the Public Distribution System (PDS) and distribution of free food. In the first wave, there were also actual direct transfers to select portions of the bottom of the pyramid. But when these two are combined, and there is no rent to pay, especially for migrant workers, it has resulted in an almost equivalent compensation. So, during the second COVID wave, particularly in May and June 2021, a large number of workers stayed behind in the rural areas because they were getting food and a cash payment of ₹200–250 per day, and they had no rent to pay, because they were ostensibly staying for free back home, as a result of which they had very little incentive to return. Hence, some of the supply constraints that we are facing today are actually because enterprises, particularly factories, are facing a shortage of workers at the base of the pyramid.

Then, there are over-capitalization headwinds of some industries that are already behind us, i.e., steel and real estate. Things have stabilized over there, and consumer confidence and consumption will be the trailing indicators. We should thus not be spending too much time looking at them because those will start improving only after the economy.

We are thus proposing tweaks in the financial architecture that can reduce the cost of capital for the Indian economy and accelerate credit growth. The focus should shift from the cheapest form of debt, which is the sovereign, to driving private credit. One deviation that the paper focuses on, government capex, is that

we would instead strongly suggest looking at public infrastructure rather than at government capex, and also at crowding-in private investment because, as the authors rightly point out, the corporates have deleveraged. They have the capacity, the balance sheets of many players are actually much stronger, and the government's debt has ballooned to 90 percent debt to GDP. If one compares with other economies, in India we have it the other way around, as the government debt is very high and the private credit is very low, which significantly increases the cost of capital for the overall Indian economy. Our tenure is at 6 percent while China's tenure is at half that, at 3 percent. The other thing the government can do is provide guarantees where there is market failure, rather than assume all of this debt on its own accounts. So we are trying to be fiscally conscious while also looking at the absolute level of government debt. For example, there could be a first loss guarantee for a limited period on all A and triple B bonds, which are investment grade. Even if it is a 10 percent first loss guarantee, it would almost cover itself, but it would encourage growth in the bond market, in the corporate sector, and in investments as well. And the focus on investment in infrastructure will create the greatest bang for the buck with five times higher employment elasticity. And given that the bank deposit balances and transfers to citizens may not really have that much effect on increasing or accelerating spending, restoring confidence by increasing employment would be the way to look at it.

When you compare the incremental GDP growth, for USA, Japan, China, and India, what you are going to see is that in these countries (USA, Japan, and China) where the leverage is very high, with the overall global leverage at 370 percent of GDP, all the incremental debt has very limited impact on increasing the GDP. In contrast, when you look at India right now, because it is a capital-starved country and there is a significant shortage of credit, incremental debt in the Indian system actually translates into much higher growth and incremental GDP. Therefore, this is also an area that we should recognize in terms of how we prioritize, because if the cause was the financial sector, as pointed out by the authors, we should look at what the cause was even before the pandemic, and going forward, whether it would help if we alleviate some of these causes.

If we compare the government debt as a percentage of GDP for India, China, South Korea, and Vietnam, we observe that, historically, India has had a very high government debt relative to the other three countries. And that is how they have kept the cost of debt, their sovereign rating, very low and all the private credit is in reference to this. However, most of the growth in the past several years has been driven by their rise in private debt. And now, the government debt has had to catch up post the GFC, while India has actually been maintaining and pressuring its government debt. The GDP per capita, for a large part, in China, for example, has been driven by the rise in debt since the GFC rather than by the other factors that were having an impact earlier.

I will raise a couple of quick points on the Total Factor Productivity (TFP), not going into the classic components, but some of the other inputs that could potentially improve this rapidly. As regards capital plus labor plus knowhow,

I think one of the most significant factors that has been holding back India's per capita GDP, or even its overall TFP has been the issue of scale. For instance, agricultural farms across the world have been becoming larger and larger, and more productive. The average size is above 300 hectares and the size has been going up in North America, Ukraine, and Russia. In India, on the other hand, it has been shrinking. Similarly, a system has been set up to support the micro and small sectors and we have not been recalibrating that often. There was one last year, but the effects will take some time. But this factor of relative scale for a global environment and global competition has been impacting our competitiveness across too many sectors to name them individually. If we have the same size sector as another country, but we have 3000 players and they have three, it is very likely that the country with three players is going to be not just more profitable but also far more competitive, because they have the economies of scale and the relative ability to compete and invest in innovation.

There is also massive potential to grow TFP through improvement in logistics and infrastructure, all else being equal, and by reducing the compliance and regulatory burden. If you reduce this burden, all else being equal, things move faster, so that what is going to happen in a year would happen in six months. That is an immediate improvement both in growth rates as well as in TFP. And India's secular growth rate can explode into double digits, and consumption will follow just by focusing on credit directed towards investment and by supporting this private credit.

The government has been responding to this challenge of scale when competing internationally. Specifically on the Micro, Small and Medium Enterprises (MSMEs), in India, this redefinition was significantly much larger, almost an order of magnitude in some cases, which will hopefully provide some cushion because of factors like priority sector lending. We should also focus on production-linked incentives, which are very WTO-compatible, and try to bring some scale to key players so that we not only start operating for the domestic market, but also boost exports while being WTO-compliant.

Lei Lei Song

Asian Development Bank

I am very grateful to NCAER and its Director General, Poonam Gupta, for inviting me to this prominent forum on the Indian economy. Since coming to India in mid-2018, I have joined the IPF every year and this year is my fourth IPF. I have learnt a lot about India and its economy through the IPF and come to know many new friends. I met one of this paper's authors, Sajjid Z. Chinoy, during my first IPF in 2018, where he made a presentation on India's exports. I am going to move back to Manila to take up a new assignment at the Asian Development Bank, and hopefully I would be able to join the IPF from afar and learn about India and its economy.

I agree with Sajjid's assessment of the Indian economy in this paper. To evaluate India's economic prospects post-COVID-19, the paper looks at economic performance before the pandemic, from the early 2000s. The economy had severe pre-existing conditions and a slowdown in consumption credit with a shrinking fiscal state space even before the COVID-19 pandemic started hurting the economy badly. The pandemic has caused severe scarring effects, and as a result the prospects for consumption and investment also seem problematic. The economy may have to rely on exports and government expenditure to grow. The paper has also discussed Total Factor Productivity (TFP), and a regression analysis concluded that reform is critical to TFP growth.

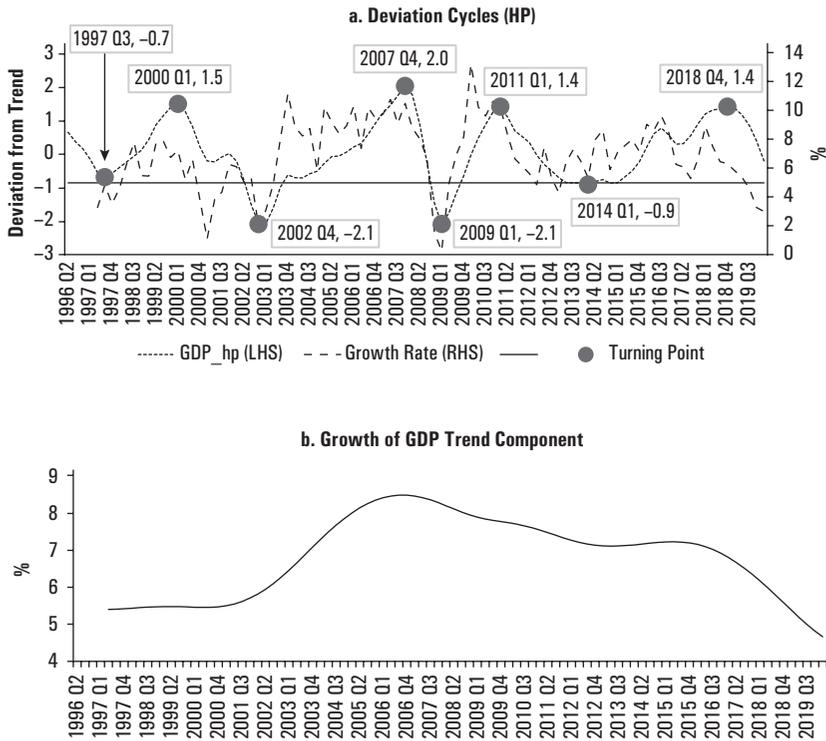
After the liquidity crunch led by NBFCs in late 2018, I became interested in India's business cycles. Business cycle analysis looks at cyclical movements of an economy as well as its underlying trend, and identifies the driving forces of those movements. Building upon a series of papers by Ila Patnaik and her colleagues at the National Institute of Public Finance and Policy, such as Pandey, Patnaik, and Shah (2018), Mittal and Song (2021) uses the latest GDP data and applies refined approaches of business cycle analysis. The level of GDP, after making seasonal adjustments and applying the Hodrick-Prescott filter, can be decomposed into trend and cyclical components, the latter of which are deviation cycles. The Quarterly Bry-Boschan (BBQ) approach developed by Harding and Pagan (2002) for identifying peaks and troughs can be used to date deviation cycles into phases of expansion and recession. Emerging economies, such as India, rarely experience recession—an absolute decline in GDP, and therefore the BBQ approach can be refined by utilizing whether GDP growth is below a threshold (a recession-like level as in advanced economies where economic activity falls in level), to date business cycles into phases of upswing (from trough to peak) and downswing (from peak to trough).

The cyclical components of India's GDP after the late 1990s until the pandemic are dated to four cycles (Table 1 and Figure 1a), with troughs and peaks being turning points, though the latest cycle has not reached a trough yet. The four cycles roughly match the periods in Chinoy and Jain (2021). The bottom panel of Figure 1 shows how trend growth in GDP performs during these cycles. Before the GFC, the trend GDP growth accelerated significantly, reaching 8.5 percent in

TABLE 1. Trend and GDP Components

<i>Cycle/Average Growth (%)</i>	<i>Trend</i>	<i>C</i>	<i>I</i>	<i>G</i>	<i>Exports</i>	<i>Imports</i>
1997 Q4–2002 Q4	5.6	4.8	8.1	8.1	14.7	10.0
2003 Q1–2009 Q1	7.9	7.1	13.2	7.0	20.9	20.1
2009 Q2–2014 Q1	7.4	7.6	6.9	6.1	9.3	6.8
2014 Q2–2020 Q1	6.4	7.0	6.5	8.2	2.6	4.2
2014 Q2–2018 Q4 (upswing)	6.8	7.3	7.5	8.2	3.3	5.4
2019 Q1–2020 Q1 (downswing)	5.0	5.8	3.0	8.1	–0.2	–0.4

Source: Author's calculations.

FIGURE 1. India's Business Cycles and Trend Growth

Source: Authors' calculations.

late 2006. After the GFC, trend growth started to decelerate but stayed above 7 percent until 2016 before demonetization. Following several successive shocks, including demonetization, the introduction of the Goods and Services Tax (GST), and the liquidity crunch by the NBFCs, trend growth fell from about 7 percent to below 5 percent.

The actual growth of GDP components can show driving forces of trend growth in GDP. Table 1 shows the average trend growth in GDP and the actual growth of GDP components during the four trough-to-trough cycles that include an upswing phase, followed by a downswing phase. The trend growth in GDP fell to 6.4 percent in the cycle from the second quarter of fiscal year 2014 (FY2014Q2), that is, the July-September quarter of 2014, to FY2020Q1, from 7.9 percent in the cycle FY2003Q1 to FY2009Q1. During the upswing phase of the last cycle FY2014Q2 to FY2018Q4, the GDP trend growth was still quite high, close to 7 percent, but the trend growth declined sharply in the downswing phase, starting from FY2019Q1. The average actual growth of GDP components clearly shows that investment growth is highly correlated with trend growth in GDP. In every upswing phase, investment grew fast, but decelerated sharply during the downswing phases. The data suggests that investment drove

GDP trend growth. This analysis corroborates the assessment and narrative in Chinoy and Jain (2021).

What factors were behind the significant decline in GDP trend growth since 2009? Consumption growth throughout the period was relatively stable at around 7 percent, though it fell to below 6 percent in the last cycle. Government consumption rose modestly over the period, but the growth of investment and exports fell sharply since 2009. As discussed in Chinoy and Jain (2021), it is clear that structural factors were behind the sharp fall in GDP trend growth, particularly from 2016.

The twin balance sheet problem—“unsustainable levels of debt on some corporate balance sheets and correspondingly high non-performing assets on bank balance sheets” has contributed to the poor performance of investment. Stalled financial sector reform and the NBFC crisis in late 2018 aggravated the problem and led to slowdown in growth. In addition, competitiveness issues discussed by the other discussant for this paper, Ajit Pai, slowed India’s export growth. Recent difficulties in globalization did not help either.

The structural weakness compounded by cyclical downswing led to a severe downturn from FY2019Q1 until the pandemic struck in March 2020, during which period GDP trend growth fell to 4.7 percent in FY2020Q1, the lowest since 1997. The liquidity crunch led by the NBFCs may have contributed the most to the slowdown.

I also have a comment on the TFP regression. Somehow, Figure 44 in Chinoy and Jain (2021), TFP and adjusted TFP, is similar to the cyclical components in Figure 1. Can this TFP be interpreted as de-trended GDP growth? If so, then it is interesting that growth cycles are associated with credit growth, the terms of trade (which is correlated with oil prices), trade (exports), and public investment. The authors can explain this more in a revised version.

The paper focuses on the scarring effects of the pandemic and tries to quantify them. The scarring effects discussed in the paper are on the supply side. The first is on human capital or labor market scarring in the paper. Human capital is possibly damaged by the pandemic, but probably not so much. The pandemic has affected education and led to learning loss because children could not go to schools. Yet, learning losses can be compensated over time in coming years. Physical capital might have also been damaged, but again probably not very much. Some business models might have changed. Certain capital stocks might have become obsolete and could not provide much productive services. But I believe that may not affect the TFP very much. In addition, rising inequality due to the K-shaped recovery would have an impact on productivity. Therefore, the pandemic has damaged the supply side of the economy, though the magnitude is not so clear cut.

The pandemic would also impact the demand side of the economy, but demand will pick up strongly once the pandemic retreats. The aggregate balance sheet of households might not have been damaged much, though the poor and

vulnerable were affected disproportionately and might have run down their savings. The K-shaped recovery might have led to income transfers from the poor to the rich. On the other hand, the balance sheet of corporates might have been repaired because of government supports, despite some initial damages. Contrary to what was expected initially, the non-performing assets of the financial sectors have not worsened, largely due to moratoriums imposed by the Reserve Bank of India and expansionary fiscal policy. Once the health crisis passes, private investment may pick up strongly because of loose financial conditions and fiscal incentives.

India will also benefit from strengthening global demand. A large monetary and fiscal stimulus will help advanced economies rebound and grow fast, particularly in the United States (US). The US is India's largest export market, accounting for close to a quarter of exports of goods and services. As a result, US recovery will help India to recover.

Having slowed down before the pandemic, India's trend growth might have been damaged further by the pandemic. To arrest the decline of the trend growth and to boost growth, structural reform is necessary and the only way to get India back to the fast growth path it experienced before 2016. Chinoy and Jain (2021) have covered structural reform well. Three areas are the key. The financial sector needs to improve allocation efficiency and bring down borrowing costs. Public sector undertakings (or State-owned enterprises) should be reformed, and tax and expenditure reforms are the key to creating fiscal space for expenditure on health, education, and infrastructure. Improving competitiveness is crucial to promote India's exports and boost growth prospects.

Let me conclude. It may be difficult for an economy to go back to the pre-pandemic output path, because almost two years were lost and the stock in human and physical capital could not have been accumulated. Therefore, efforts are needed to return India's trend growth to the pre-pandemic level of 6–7 percent. Further, structural reform can help boost the growth trend to 7–8 percent. As a fast-growing, emerging economy, domestic demand remains strong and confidence in the economy is key to recovery post-COVID. Thank you very much again for the opportunity of commenting on this insightful and thoughtful paper and participating in the IPF.

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General Discussion

Shankar Acharya, the chair, opened the discussion by asking why so little emphasis was placed in the Conference version of the paper on demonetization and the introduction of the 2016–17 Goods and Services Tax (GST), and their impact on consumption, in the run-up to the current economic situation.

Second, he argued that more attention could be given to risk aversion as it related to the health concerns of the pandemic. He noted that while the paper cogently lays out the various reasons for the decline in consumption and investment, the pandemic-related health and morbidity concerns could make ramping up vaccinations a significant economic policy tool, as they could play a critical role in economic recovery.

Third, he would have liked to see more discussion on the fiscal situation and the acceleration of inflation in response to various supply bottlenecks. He was worried about the sustained inflation problem of the kind seen after the 2008 Global Financial Crisis up till 2014.

H.K. Pradhan asked about the prospects for growth after the Coronavirus pandemic. He noted that interest rates were low, tax rates were lower and harmonized, inflation rates were moderate, rent levels had declined, and regulatory compliances were higher. All that pointed to a lower cost structure and he thought that the future prospects for growth, post-COVID, seemed strong. Sajjid Chinoy agreed that there had been some easing of financial pressures, but the banking sector remains reluctant to extend its balance sheet and there is a lot of risk aversion. Furthermore, without a pick-up in demand, large corporations are hesitant to expand their investment.

Augustine Balraj wondered about people who did not have any income during the crisis. How were they managing? Another question pertained to microfinance institutions and whether they would revise their survival strategies, and if the definition of sustainable finance would see a significant overhaul. Lei Lei Song suggested that it was a situation in which the government needed to step in and provide additional income support for the most vulnerable groups. He thought that the government had done well in providing such support during the first year of the pandemic, but that it had now stopped.

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