PANEL on EMERGING MARKET CHALLENGES

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India at 75: Replete with Contradictions, Brimming with Opportunities, Saddled with Challenges

ABSTRACT I present a perspective on where the Indian economy stands right now. I acknowledge the contradictions that have arisen given the divergent growth path of urban, formal or (stock-market) listed India relative to rural, informal or unlisted India. I also focus on the country's immense opportunities in expanding the digital footprint of finance to last-mile borrowers. I present novel facts on the rising industrial concentration, drawing out its historical evolution, the channels that have caused it to rise recently, and its implications for product price markups and inflation. I recommend that to restore industrial balance, India increase overall competition by reducing import tariffs and reduce the pricing power of its largest conglomerates. I also propose that to restore macroeconomic balance, India reduce fiscal deficit and public sector borrowing requirements as well as rein in inflation, address gaps in skills and education, and restore female labor force participation.

I. Replete with Contradictions

India is complex and can be hard to fathom. To illustrate this enduring fact, I start by presenting four contradictions—or just counterintuitive or not so obvious juxtapositions of phenomena—currently at play in the Indian economy.

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I.A. Stock Market versus Real Economic Performance

Perhaps the most salient contradiction around India concerns its staggering post-COVID-19 stock price run-up relative to the strength of its economic recovery, both in an absolute sense as well as relative to other emerging market (EM) economies. For instance, the large plus mid-cap Indian stock market (MSCI World) index has risen since January and April 2020 by 75 percent and 100 percent respectively (until March 2023), whereas the corresponding MSCI EM ASEAN index has been flat and risen by 50 percent only (see figure 1 in the online appendix).

This *financial* outperformance stands in stark contrast to India's *real* economic underperformance since the pandemic: its GDP level is still 6 percent below that implied by the pre-pandemic trend applied to January 2020 GDP, and the employment-to-population ratio has stayed just above 50 percent in the last three years as per data from the Periodic Labor Force Survey (PLFS) but has fallen from around 40 percent prior to the pandemic to 37 percent as per data from the Centre for Monitoring Indian Economy (Chinoy, Jain, and Sood 2022).[1] The private consumption path remains below the pre-COVID-19 potential path as per data from the Ministry of Statistics and Programme Implementation (MoSPI), and household spending plans—though improving—still remain below pre-COVID-19 levels in the Reserve Bank of India's (RBI) consumer confidence surveys (Chinoy, Jain, and Sood 2022).[2]

This scarring, even three years after the pandemic, has occurred in spite of the services exports boom in the post-pandemic recovery and pent-up consumer demand having now played out fully. The weak economic performance reflects the so-called *K*-shaped nature of the recovery wherein urban and formal India recovered particularly well but rural and informal India lagged behind (as explained below). It likely also reveals pre-pandemic weaknesses.

Contrasting this, however, is the fact that India is projected to be a bright spot in the world economy going forward (together with China). For example,

1. India's GDP (current prices) in 2023 is US$3.74 trillion; International Monetary Fund, "GDP, Current Prices," https://www.imf.org/external/datamapper/NGDPD@WEO/GBR/IND. In 2020, the GDP (current US$) was US$2.67 trillion. In 2019, India's GDP was US$2.8 trillion; World Bank, "GDP (Current US$)—India," https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2021&locations=IN&start=2019. See also Centre for Monitoring Indian Economy Pvt. Ltd., https://www.cmie.com/.

2. https://www.mospi.gov.in/; https://m.rbi.org.in/scripts/BimonthlyPublications.aspx?head=Consumer%20Confidence%20Survey%20-%20Bi-monthly.

the International Monetary Fund's projections in April 2023 for the year 2023 and 2024 for India are respectively 5.9 percent and 6.3 percent (5.2 percent and 4.5 percent for China).[3] Importantly, even if on a lower post-pandemic base as explained above, India is projected to accelerate, while advanced economies (and even China) decelerate.

I.B. Urban versus Rural and Formal versus Informal India

Depending on which part of India one talks about, it is either booming (urban and formal sector) or it still remains scarred from the pandemic (rural and informal sector). Since the pandemic, the operating profit-to-sales gap has opened up widely between large firms (+1.5 percent) versus small firms (–0.5 percent), the latter being defined as having less than 50 million Indian rupees (INR) or $60,000 in capital (Bhandari and Chaudhary 2022). Besides the direct effect of lockdowns, smaller firms have been hit thereafter by rising commodity prices having an adverse impact on their (large) share of raw material to sales.[4] As a result, while large manufacturing firms have been able to retain their size, small manufacturing firms have contracted by 14 percent (Bhandari and Chaudhary 2022). Correspondingly, the performance of the listed large companies has been stellar, and they have been able to grow significantly, in part at the expense of smaller firms, further explaining the lack of congruence in financial versus real performance of the Indian economy.

Why does this divergence matter? Small firms and establishments are important in India for employment. In fact, as is the case in many other countries, like the United States, they contribute to over 40 percent of overall labor in India. Separately, 40 percent of labor in India is also in agriculture (Bhandari and Chaudhary 2022). Both small firms and agriculture tend to have a greater presence in rural India than in urban India. Hence, the divergent performance of large and small firms has immediate implications for urban and rural demand. In particular, weak rural demand is seen notably in (1) rural unemployment insurance demand (demand for work under the Mahatma Gandhi National Rural Employment Guarantee Act) doubling at the onset of the pandemic and remaining elevated for more than two years thereafter before gradually normalizing to pre-pandemic levels (Chinoy, Jain, and Sood 2022), and (2) sales of two-wheelers significantly

3. International Monetary Fund, "Real GDP Growth," https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/FLERRC/FXERRC/CHN/IND.

4. See, for instance, Mohommad and others (2023).

underperforming those of passenger vehicles and ultra-premium bikes.[5] In turn, while wages in urban India remain elevated far in excess of the inflation rate, rural wages, even if increasing nominally, have been outpaced by inflation for most of 2022 (Chakraborty and Baqar 2023). This fall in real rural wages has interacted with shocks to commodity prices and weather to create a weak rural, informal, small-firm economy.

I.C. Goods Inflation in India

Bhandari and Chaudhary (2022) also point out that demand for goods in India has remained weak after the pandemic, even as services demand has grown; however, goods prices in India have remained elevated, even after global goods inflation softened in 2022 as supply chain issues eased. Indeed, goods inflation momentum in India is positive whereas its global counterpart is negative. What explains this lack of congruence between demand and prices, and between India and the rest of the world? It is argued that goods inflation in India is in fact likely to persist as margins of manufacturers in India are substantially high due to their protection via tariffs (Chatterjee and Subramanian 2020) and their market power from rising industrial concentration (Chakraborty and Baqar 2023). In contrast, tariffs and margins in services sectors are smaller, even though there are emerging signs of concentration in some services sectors too, such as in telecommunications.

I.D. Fewer Defaults, but Under-Recovering, Bankruptcy Resolution Process

Depending on who you speak to, the Insolvency and Bankruptcy Code (IBC), enacted in 2016 and operational since 2017, has been yet another failure in corporate insolvency resolution or a resounding success.

The critical view of the IBC stems from the facts that, first, debt in India continues to perform closer to equity as lamented by Vishwanathan (2018), recovering only 39 percent for resolutions under the IBC (Gupta and others 2021). The recovery rate comes down to only 24 percent if the largest nine IBC cases are excluded. This makes recoveries for bank loans in India virtually half of the global average. Second, average time from filing of a case to resolution has been 561 days, about twice what was originally envisaged under the IBC. And third, a phenomenal 45 percent of the cases under the

5. Society of Indian Automobile Manufacturers, "Performance of Auto Industry in 2022–23," https://www.siam.in/statistics.aspx?mpgid=8&pgidtrail=9.

IBC get liquidated. Further, several cases are filed without resolution plans and liquidations recover only 7 percent for creditors. Unsurprisingly, several aspects of IBC remain under continued legal scrutiny and revision.[6]

The salubrious view of the IBC arises from the observations that the Indian banking sector has now brought down its nonperforming assets ratio significantly by resolving cases under the IBC, recognizing losses, recapitalizing balance sheets, and now being ready to provide credit for growth at healthy rates and quantities (see II.E). As a result of the banking sector cleanup, capacity utilization of distressed sectors has improved and overall risen to close to 75 percent at present from a low of 60 percent prior to 2017, when there was an oversupply of zombie firms in these sectors (see figure 2 in the online appendix).[7] Fresh slippages into nonperforming loans have declined due to an important deterrence effect of the IBC and decisive regulatory actions by the Reserve Bank of India (RBI), whereby loss of control for business owners and individual promoters has led to a de-leveraging of the Indian corporate sector. The debt-to-GDP ratio of the Indian corporate sector has declined over a decade from 78 percent to 50 percent (Chinoy, Jain, and Sood 2022).

In sum, while creditor recoveries have not been much healthier under the IBC compared to prior bankruptcy codes in India, there has been a meaningful loss of control for asset owners and this has facilitated a healthier credit economy. Grievances around IBC nevertheless abound.

II. Brimming with Opportunities

Notwithstanding these contradictions or puzzling facts, there is an unmistakable entrepreneurial spirit feverishly at work in India. It has taken hold over the past decade on the back of India's digital plumbing and equity market deepening. Furthermore, the restoration of banking (and nonbanking) sector health to adequate capital standards, along with the advances in digital and fintech lending, augurs particularly well for credit to small firms.

6. The pandemic itself raised difficulties around the IBC resolution path for investors. The government suspended any fresh applications to the IBC for a year after the March 25, 2020, lockdown. Further, the RBI, along with a slew of rate cuts and effective liquidity measures, also introduced debt moratoria on payment on term loans and deferment of interest on working capital (Mohan 2021).

7. Kulkarni and others (2019) report that the percentage of zombie firms in the RBI's CRILC (Central Repository of Information on Large Credits) bank-borrower credit data was 21.6 percent during March 2016 to March 2019.

II.A. Start-up India

Top candidates from the Indian Institutes of Management or Technology are no longer keen to do a PhD in finance or economics. It is more likely that they want to be entrepreneurs and start something of their own, typically related to information technology (IT) services. India is busy churning out unicorns (start-ups with market valuations above $1 billion) aplenty. This spell has been steady over the past two decades but has accelerated since the foundations of "Digital India" have been put in place over the past decade, and its canvas has gradually become diverse across a range of sectors but predominantly within services. India now ranks fourth behind the United States, China, and Europe when it comes to the number of unicorns (Mishra and others 2021a, 2021b). Over time, market capitalization and the proportion of unicorns listed on the stock market has grown.

When the first generation of modern Indian entrepreneurs was born following the liberalization of the 1990s, it featured companies that primarily customized, installed, managed, and maintained software such as SAP for the rest of the world or that engaged in outsourcing, taking over the world's back-office operations, telemarketing, or customer services. Out of this original set grew the giants of today, such as Infosys, Tata Consultancy Services, Wipro, and Tech Mahindra. Once this set of entrepreneurs and their employees figured out what the rest of the world wanted, they grew in confidence and acquired software development capabilities which led to the second generation of entrepreneurs in India. This generation designs programs and solves problems for the rest of the world. However, there is now a third generation of entrepreneurs in India that is catering not to the rest of the world but to the Indian consumer. This set of companies is focused on e-commerce, fintech, edtech, and all forms of digital services, and has exploded since the pandemic, on the back of India Stack. Given the size of the Indian consumer base, the sky appears to be the limit for this third generation, at least for the near future.

II.B. Digital India

India, by most objective standards, has the world's best digital plumbing, which has evolved modularly. It is designed around Aadhaar, the unique identity number rolled out starting in September 2010, which has now been provided to over 1.2 billion Indians with several scores of millions of authentications occurring daily (Totty 2022). This has enabled, after early digital payment mechanisms, the setting up of the Unified Payments Interface (UPI), a public utility that provides a common payments and settlements platform between any two Indian entities (individuals or businesses) with unique identifiers, enabling seamless portability between their respective banking solutions at the back end. Combining this with the deep penetration of mobile technology in India has then led to the delivery of digital payments–based solutions, e-commerce, e-KYC (Know Your Customer), e-signing of documents, and the like. This public-utility approach adopted by India has differed from the mostly private but concentrated model of digitization in China and the private but heavily fragmented and seemingly inefficient model of digitization in the United States.

The net result is that digital payments in India are rising in share at the expense of cash, which since 2020 is declining in its overall share of payments for the first time in India, representing a substantial turning point for the economy (see figure 5 in the online appendix). While the ill-conceived demonetization of 2016 failed to create a definitive transformation from cash to digital payments, the well-intended even if botched rollout of the goods and services tax (GST) has moved even smaller businesses onto digital platforms such as GST Network and the Government e-Marketplace (GeM). Post pandemic, however, the transformation has finally touched Indian households decisively. There are now more than two hundred million active users of digital payments, with Google Pay and PhonePe making over 80 percent of the transactions (Mishra and others 2021a, 2021b). What is even more impressive is that India continues to push ahead along this guiding principle of viewing payments- and settlements-related services as a public good that many observers contend indeed ought to be provided publicly. India Stack, in particular, provides a set of application programming interfaces (APIs) that are standardized to ensure encrypted trustworthy pipes connecting various first-order and higher-order platforms for customer or business interfaces, developed with the support of India's tech think-tank iSPIRT (Indian Software Product Industry Round Table). Thinkers who have made Digital India such a success deserve an Olympic gold medal, even if digitally delivered!

II.C. FinTech in MSME Lending

Historically, India's micro, small, and medium-sized enterprises (MSMEs) have struggled to receive formal financing.[8] While the financial system has been creative with microfinance to improve access to credit, the report

8. See, for example, the 2019 UK Sinha Committee report of the RBI.

assessed that there remains a formal financing gap in MSME credit of over $3.5 trillion. It seems, however, that the situation is now changing on the ground.

First, from only 44 percent of Indian male citizens and 26 percent of Indian female citizens having a bank account in 2011, the proportion in 2021 grew to 78 percent each.[9] Second, there is now a data layer being added to India Stack, and the access to an "account aggregator" enables an entity to pool a digital view of all its financial holdings data, based on India Stack's secure consent architecture, for enabling algorithmic credit scoring. Third, MSME transactions are now captured electronically on private or government e-commerce platforms, making them readily collateralizable for account receivables financing. This has helped alleviate their liquidity risks. Finally, as India Stack has created an open credit enablement network (OCEN) that provides portable pipes between banks, sharing economy platforms, and end borrowers, entry barriers are low, and payment companies that are springing up at a fast rate are keen to evolve into fintech lenders to individuals and MSMEs by joining forces with e-commerce platforms that are eager to provide loan assistance.

This overall formalization of the MSMEs and the financial lending technology, built around India's rich and robust digital plumbing architecture, has implied that (1) credit access for MSMEs has substantially eased, consistent with new business and income growth in Indian districts where the adoption of cashless payments has been more intense since 2016 (Dubey and Purnanandam 2023); (2) fintech lending share in credit has grown with the fintech sector valuation at over $20 billion (Gupta and Shah 2021); and (3) private equity and venture capital funding to this sector is over $10 billion and represents the second-largest investment in the economy after the e-commerce sector (Gupta and Shah 2021). These developments have raised the possibility of reaching the last mile on the road to providing banking services for the 60 million plus MSMEs and more than a billion citizens of India over the next decade.

II.D. Financial Backbone of Start-up and Digital India

What attracts the private equity and venture capital, as well as angels—foreign and domestic—that invest in India's entrepreneurial economy? Besides the potential of the young Digital India firms, it is the relatively

9. Statista, "Gender-Wise Distribution of Bank Accounts in India from 2011 to 2021," https://www.statista.com/statistics/942795/india-financial-institution-account-ownership-rate/#:~:text=In%202021%2C%20about%2078%20percent,less%20educated%20and%20the%20poor.

vibrant, easy-to-exit primary and secondary market for equities. The development and deepening of equity markets has been aided by the relatively high, even if gradually declining, household savings rate and the financialization of savings away from real estate and gold.[10] This financialization occurred at a rapid pace over the past decade through the advent of mutual fund schemes and their penetration in second- and third-tier cities in India, and was induced to an extent by the tepid pace of the rise in real estate valuation as well as by the decline in inflation relative to the prior decade.

Reflecting this, India remains a large recipient of foreign direct investment (FDI) within emerging market countries, in absolute flows next only to China and Brazil, even though there has been some decline of late (Chinoy, Jain, and Sood 2022). Clearly, relaxing some more sectors for FDI is a natural way to ensure further penetration of FDI and the financing and value-add that these investors bring to the economy. Even at current levels, however, FDI has joined remittances in creating a stable inflow of foreign capital relative to the volatile foreign portfolio investment flows. A further potential stems from the global pivot toward the China Plus One strategy, which could bode well for FDI in manufacturing in India (Apple and Foxconn shifting part of their manufacturing of phones to India to diversify supply chains, for instance), but it remains to be seen if this potential will be fully realized or not.

II.E. Health of the Banking System

Finally, capitalizing on the IBC, a range of initiatives has been undertaken by the RBI since 2017 to resolve the nonperforming assets of the Indian banking system.[11] The efforts have now come to fruition in that gross and net nonperforming assets of scheduled commercial banks were down in September 2022 to 5 percent and 1.3 percent, respectively, having fallen from peaks of 11.5 percent and approximately 6 percent in 2018 (RBI 2018, 2022). Importantly, the provision coverage ratio for Indian banks now exceeds 70 percent, and fresh slippage ratios remain low given the deterrence effect of the IBC (see section I.D) and the de-leveraging of most large and listed companies (RBI 2022). It has taken more than ten years for this cleanup to materialize following the credit boom and bust of

10. The hoarding of gold by Indian households, mostly in the form of jewelry that serves the purpose of inheritance transfers and wedding gifts, dates back to ancient times. It was only entrenched by high inflation until the last decade's disinflation succeeded in inducing an aggregate switch toward financialization of savings. Nevertheless, the Indian demand for gold remains sensitive to fluctuations in inflation.

11. See Acharya (2020) for background.

2011–2013, especially in sectors such as infrastructure, power, ports, and steel. The good news from all this is that if private capital expenditures in India were to pick up, banks are in a position to meet the credit demand. The bad news is that this hasn't yet occurred.

III. Saddled with Challenges

A key question is, given India's opportunities are vast, will it be able to register higher growth and output levels consistent with its potential and expectations, create jobs at a pace and of a quality that its growing population requires, and become a greater part of the global economy? I wish to highlight several structural—industrial and macroeconomic—issues that India remains saddled with and which present daunting but surmountable challenges for the future.

III.A. Tariffs

India is undoubtedly a contender for being the "tariff king" of the world. As per World Trade Organization (WTO) records, India's average present tariff rate of greater than 15 percent (18.3 percent in 2021) is the fourth-highest behind Sudan, Egypt, and Venezuela, on par with Brazil, and substantially higher than China and Mexico (Chan 2019; Sinha 2023).[12] While India's tariff rate has no doubt come down from being above 50 percent prior to 1991, it has had no substantial decline since the global financial crisis of 2007–2009, and has in fact increased by about 5 percent since 2013.[13] As Aiyar (2018) notes, the present Indian government which came to power in 2014 with the slogan "Minimum government, maximum governance," has, however, reversed the liberalizing trend of its earlier term during 1998 to 2004. It has instead adopted protectionism, for example, via its budget in February 2018 which raised import duties significantly and across the board "in order to protect uncompetitive small businesses and create jobs in labor-intensive industries" (Aiyar 2018, 1).[14] Chatterjee

12. The World Bank, "Tariff Rate, Most Favored Nation, Simple Mean, All Products (%)," https://data.worldbank.org/indicator/TM.TAX.MRCH.SM.FN.ZS.

13. Macrotrends, "India Tariff Rates 1990–2023," https://www.macrotrends.net/countries/IND/india/tariff-rates.

14. Aiyar (2018, 1) notes: "Modi's Bharatiya Janata Party (BJP) is not a conventional right-wing party. It rejects both socialism and Western capitalism and seeks a homegrown solution called Integral Humanism. It supports private enterprise but also runs India's biggest trade union and believes in a wide-ranging welfare state. It has highly protectionist affiliates that have always been wary of multinational corporations and international institutions. It believes in government intervention to create national champions, increase employment, and protect small businesses."

and Subramanian (2020) document the time-series and sectoral patterns of India's tariffs and argue that this has instead hurt India's exports in labor-intensive sectors such as apparel, textiles, leather, and footwear, where India has ceded much ground to its neighbors. In other words, India is protectionist in precisely those sectors, namely, goods manufacturing, where the global opportunity has arisen from the Chinese slowdown and the China Plus One pivot of the global economy.

There are several harmful consequences. First, while India has become more self-reliant on agricultural output, tariffs in this sector remain close to 35 percent (Chatterjee and Subramanian 2020). At the same time, its efficiency remains low. For employing more than 40 percent of India's work force, agriculture generates approximately 16.8 percent of the GDP.[15] This prevents a market-based rotation of jobs in India from low-skilled agricultural labor to high-skilled services labor. Second, India exports to the rest of the world by processing and adding value to imported raw materials and goods. As a result, high tariffs—by increasing the cost of imports—have made exported goods by Indian firms costly and globally uncompetitive, lowering India's goods exports and in turn its share in global goods trade. It is hard, therefore, to find many products outside India that are manufactured by Indian firms. There are few, if any, global Indian brands. Third, high tariffs imply that Indians pay much more for many imported items (such as iPhones) than foreign consumers do, and in many cases have to simply put up with weaker-quality, higher-priced domestic substitutes. In turn, price levels in the economy are kept artificially high in spite of global efficiency gains that could aid disinflation. Finally, tariffs have created protectionism in several Indian industries, disincentivizing investments in efficiency by cozy incumbents and allowing them to steadily garner market power by building up concentrated positions.[16] There are, however, other factors besides tariffs that have contributed to this market power, for

15. The World Bank, "Agriculture, Forestry, and Fishing, Value Added (% of GDP)—India," https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=IN; "Employment in Agriculture (% of Total Employment) (Modeled ILO Estimate)," https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS.

16. The political economy of why the declining trend in tariffs has reversed is interesting to explore. It is consistent with the populist messaging of making India self-reliant (*atmanirbhar* in Hindi), while also convenient for large domestic incumbent firms, who remain protected from foreign competition. It may, however, also be reflective of an inability to create adequate jobs given China's dominant role in goods exports and the threat of automation. Affected sectors, especially their MSMEs, have been regularly offered forbearance on their bank credit, so the real economic cost appears to be borne by the society at large via inflation, low presence in global trade, and a lack of investment and jobs. These generalized costs are difficult to pinpoint specifically to tariffs.

which I present next—to the best of my knowledge—a novel set of facts and analysis.

III.B. Concentration of Power in Indian Industry

India was effectively a closed economy until 1991 and industrial concentration was high due to state-owned monopolies.[17] Post-1991 liberalization had a dramatic impact on concentration as industries were de-reserved for the private sector and public sector enterprises were privatized or divested. As a result, industrial concentration, measured using the share of the top five industrial firms or groups across the nonfinancial sector by the highest sales or assets *in a given year*, fell dramatically to start with (see figure 1, panel A, for the share of the top five by assets, and the online appendix for all results based on share by sales). Essentially, public sector firms gave up their share to private entrants.

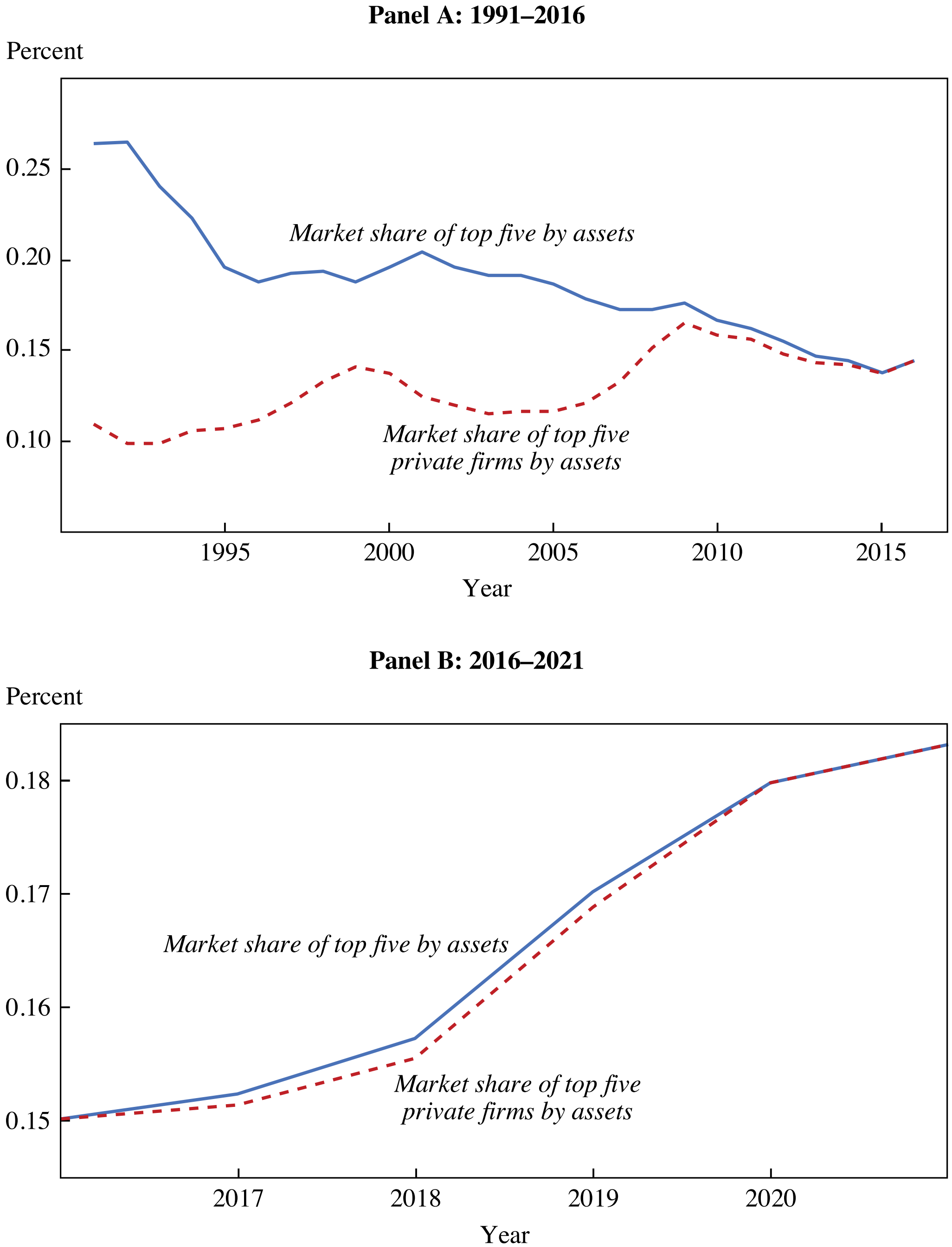
In other words, overall concentration fell, and even though concentration within the top five private firms gradually rose, it was low to start with. By 2010, the concentration of market power in the top five private firms had caught up with the concentration of overall top five firms (including public sector firms), but both fell during 2010–2015. Next, a close inspection shows that concentration started rising again from 2015 onward, overall as well as just within the set of private top five firms (figure 1, panel B). Put another way, private top five groups evolved into the overall top five across many nonfinancial sectors. At a disaggregated sectoral level, too, the notable shift occurs around 2015–2016 in several sectors, mostly traditional or capital-intensive (e.g., civil engineering; metals; nonmetal minerals; chemical, petroleum, and wood products and retail trade), but recently, also in newer sectors such as telecommunications.[18]

A striking feature of this rise in industrial concentration by private companies is that it has been in part due to the growing footprint of the "Big-5" industrial conglomerates, based on the highest overall share of assets in

17. The analysis that follows on India's industrial concentration is based on joint work with Rahul Singh Chauhan of the University of Chicago and uses the Prowess Dx database at the Centre for Monitoring Indian Economy (CMIE).

18. By way of specific examples, the share of the top five groups by sales in civil engineering and construction rose from 31 percent in 2016 to 42 percent in 2021, in telecommunications from 65 percent to over 84 percent, and in the retail trade sector from under 44 percent to over 65 percent. Similarly, the share of the top five groups by assets rose sharply by 2021 to 68 percent in the manufacturing of basic metals, 26 percent in the manufacturing of chemicals, 90 percent in the manufacturing of refined petroleum and coke, and 47 percent in the manufacturing of nonmetallic mineral products (including cement and other building materials).

Figure 1. Falling Industrial Concentration since 1991, but Recent Rise (Assets)



Sources: Centre for Monitoring Indian Economy (CMIE) Prowess Dx database and author's joint work with Rahul Singh Chauhan of the University of Chicago.

nonfinancial sectors in 2021.[19] Data from the CMIE show the following patterns. First, until 2010, the Big-5 increased their footprint in more and more industrial sectors, broadening their reach to forty NIC two-digit nonfinancial sectors (figure 2, panel A). After this breadth-first strategy came the depth-next strategy. Starting in 2015, the Big-5 started acquiring larger and larger share within the sectors where they were present (see figure 2, panel B). In particular, their share in total assets of the nonfinancial sectors rose from close to 10 percent in 1991 to nearly 18 percent in 2021, whereas the share of the next biggest five business groups fell from 18 percent in 1992 to less than 9 percent. In other words, the Big-5 grew not just at the expense of the smallest firms but also of the next-largest firms.[20] It is possible that some of this growth in share of the Big-5 is due to their ability to acquire relatively large defaulted companies that filed to the IBC following the RBI-initiated cleanup of the banking sector in 2017–2018. However, figure 2, panel B, reveals the growth in share of the Big-5 starts earlier, in 2015 and not in 2018 when the first IBC cases started being resolved.

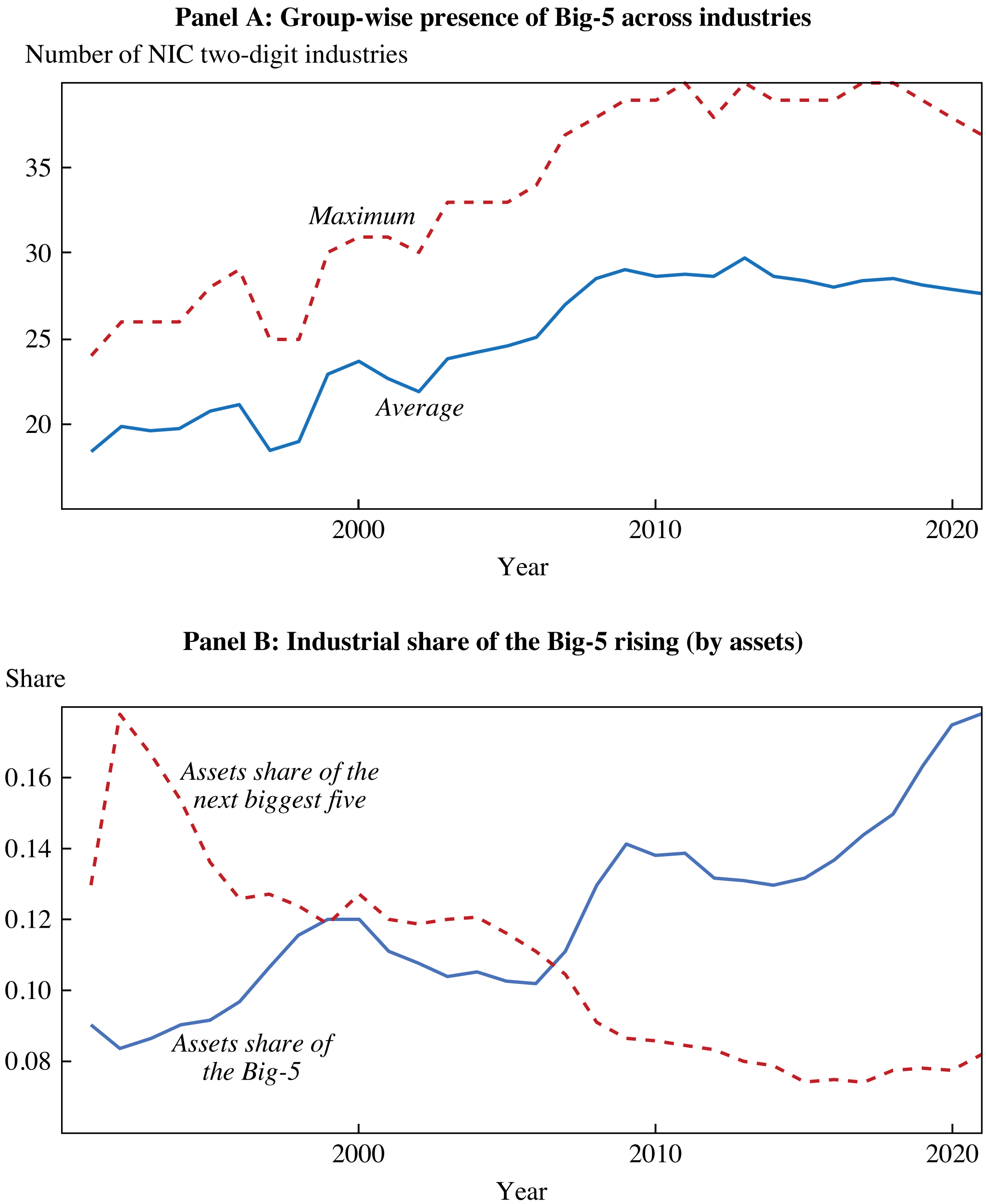
Next, this growth of the Big-5 appears to be driven in part by their growing share of overall mergers and acquisitions activity. Even though the aggregate number of merger and acquisition deals has dropped since 2011, the share of deals by the Big-5 has doubled from under 3 percent in 2015 to 6 percent in 2021, without such an increase being seen in the next five biggest groups (see figure 10 in the online appendix). Arguably, this growth has also been supported by a conscious industrial policy of creating "national champions" via preferential allocation of projects and, in some cases, regulatory agencies turning a blind eye to predatory pricing. Equally importantly, given the high tariffs, the Big-5 groups derive most of their revenues domestically as they do not have to compete with international peers in many sectors where they are present.

Such growth of conglomerates raises several concerns, such as the risk of crony capitalism, that is, political connections and inefficient project allocations, related party transactions within their byzantine corporate organization charts, over-leveraging due to an implicit perception that they are "too big to fail," key men or women (or key family) risk in their operational efficiency, and a lack of creative destruction by crowding out

19. The Big-5 are Reliance Group (Mukesh Ambani), Tata Group, Aditya Birla Group, Adani Group, and Bharti Telecom Group.

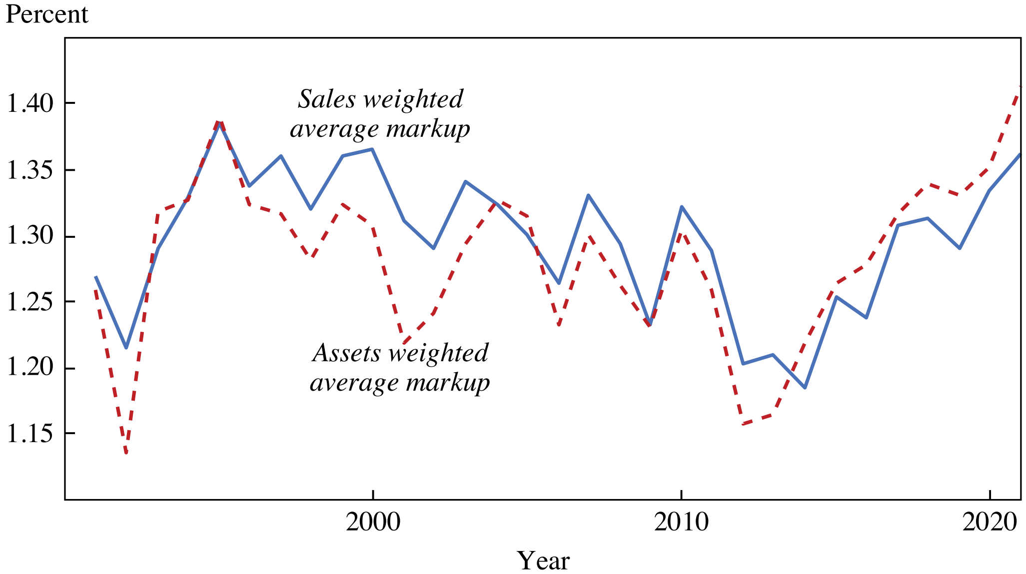
20. The largest contributing sectors to Big-5 sales are manufacturing of metals, manufacturing of coke and refined petroleum products, retail trade, and telecommunications. Prowess Dx data also confirm that, consistent with the rising market concentration, the Big-5 are receiving a greater percentage of their sales revenue from these sectors.

Figure 2. Rising Concentration of Big-5 by Presence across Industries and by Assets



Sources: Centre for Monitoring Indian Economy (CMIE) Prowess Dx database and author's joint work with Rahul Singh Chauhan of the University of Chicago.

Figure 3. Reversal in Markups



Sources: Centre for Monitoring Indian Economy (CMIE) Prowess Dx database and author's joint work with Rahul Singh Chauhan of the University of Chicago, using replication code from De Loecker, Eeckhout, and Unger (2020).

of entrants. The importance of these issues notwithstanding, I limit my attention below to how the rising market power of conglomerates affects product markups.[21]

Figure 3 shows that the rising industrial market power is indeed coincident with rising firm-wise markups since 2016. Specifically, we are interested in a measure of the markup which answers the question: If input cost of a firm changes by 1 percent, by how much does the product price change? Using the replication code provided by De Loecker, Eeckhout, and Unger (2020) for estimating firm-wise markups based on data from firm balance sheets, Rahul Singh Chauhan and I estimate firm-wise markups for Indian firms in the Prowess Dx database. Figure 3 illustrates the rise in aggregate sales-weighted and assets-weighted markups, which are barometers of market power in the nonfinancial industries. Markups fell gradually from the early 1990s until 2013 but have been rising significantly thereafter, even when capacity utilization in Indian industry was low during the pandemic

21. See, for example, the discussion in Philippon (2019) comparing and evaluating concentration trends between the United States and Europe and highlighting that "the great reversal" in the United States in industrial competition is raising firm markups and prices. This is an underappreciated—perhaps even easily dismissed—phenomenon by many economists.

due to collapse of aggregate demand and scaling in 2021 the high level of 1.4 seen in the 1990s.

While a deeper and fuller inquiry is warranted, we find that there is a potentially causal link from market power to markups. To illustrate the econometric results visually, figure 4, panel A, shows the industry-adjusted markups of the Big-5 and the rest of the firms, establishing a persistent and substantial 0.1–0.3 (i.e., 10–30 percentage points) markup gap between the two groups over the past two decades. Interestingly, there is no such robust pattern in figure 4, panel B, for the top five firms in each industry in a given year (as explained earlier, the top five in a given year overlap but do not fully coincide with the Big-5 as of 2021). In other words, it is the Big-5 that are able to exert extraordinary pricing power and capture economic rents relative to other firms in the industry, whereas the top five firms within an industry that are not in the Big-5 are not associated with such an outcome in markups.[22] By way of a concrete example, figure 18 in the online appendix shows the industry-adjusted markups of the Big-5 and the rest of the firms in manufacturing of nonmetallic minerals and basic metals. Since the 2000s, the Big-5 markup has been higher than the rest for nonmetallic minerals by 10–60 percentage points (a leading example being cement) and for basic metals by 10–20 percentage points. A similar wedge is observed in calculations for chemicals and chemical products.

In summary, creating national champions, which is considered by many as the industrial policy of "new India," appears to be feeding directly into keeping prices at a high level, with the possibility that it is in turn feeding the persistent high level of India's core inflation (see III.D).

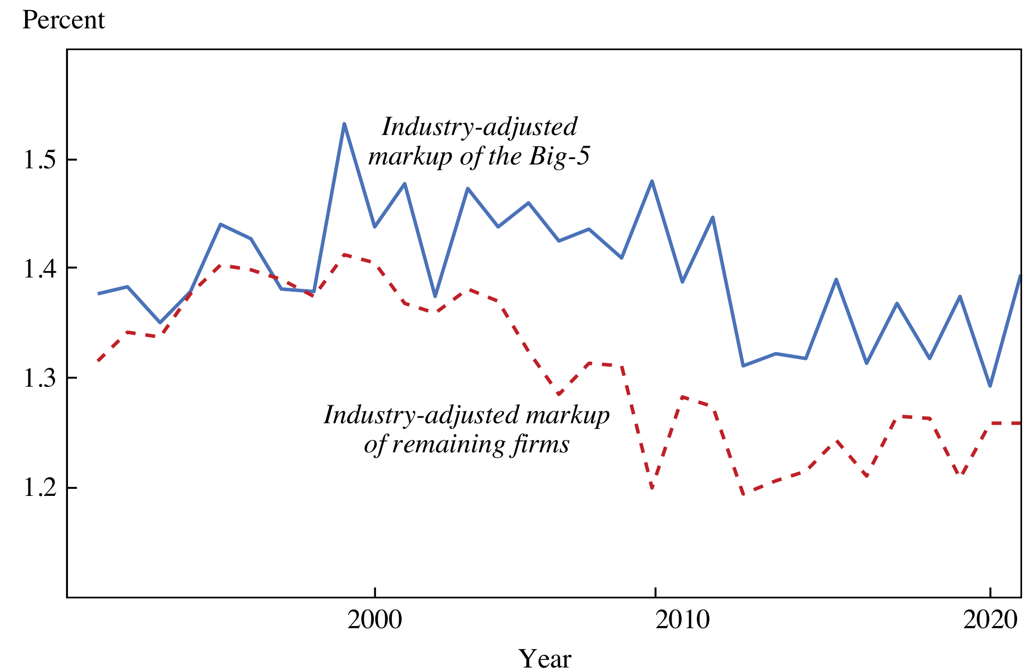
A natural question that arises is whether India is simply emulating the national champion policy of countries such as Korea, where large conglomerate groups (*chaebols*) such as Hyundai and Samsung have become significant international players in several sectors. There are at least two critical differences.

First, these countries did not protect their conglomerates with sky-high tariffs as India does. That is, their conglomerates were competing on a much greater level playing field with international peers, especially in the tradable sector, which likely explains their global competitiveness and the global brand status of several of their products. In contrast, barring

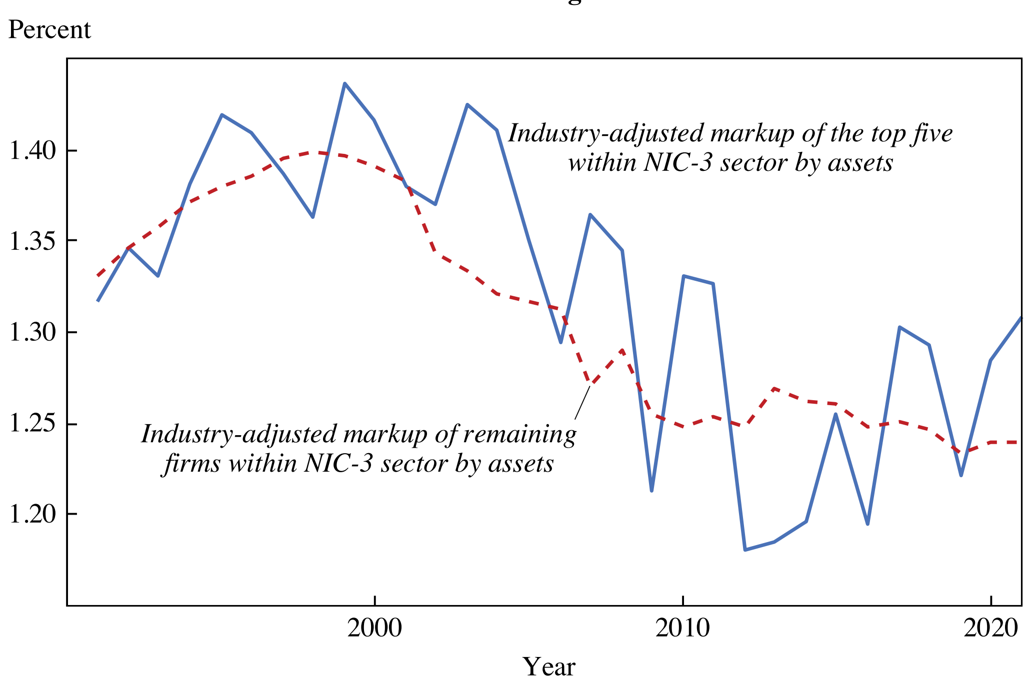
22. This differential pattern may be due to market power being driven by (1) the overall size of the group rather than the size of the industry-specific subsidiary, (2) larger size leading to better access to finance, (3) horizontally integrated position of the group in input-output matrices or supply chains, and (4) political patronage which may give credible comfort over future market share even while not lowering prices to compete for current share.

Figure 4. Divergence in Markups between Big-5, Top Five, and Other Firms

Panel A: Divergence in industry-adjusted markups of Big-5 versus remaining firms



Panel B: Divergence in industry-adjusted markups of the top five versus remaining firms



Sources: Centre for Monitoring Indian Economy (CMIE) Prowess Dx database and author's joint work with Rahul Singh Chauhan of the University of Chicago.

the exception of tech service exports, most of the revenues of India's Big-5 are domestically sourced, and barring the exception of e-commerce, without much foreign competition.

Second, these countries undertook a series of supply-side or factor-market reforms in land, labor, power, and financial sectors, among others.[23] These reforms made domestic competition vibrant. While India's financial sector has been restored to reasonable stability, critical reforms in land, labor, and power are either wanting or far from maturity. At present, the rising industrial concentration in India is safeguarded from both external competition via tariffs and domestic competition via poor access to factors of production. I contend, therefore, that the rising industrial concentration in India presents more of a risk or a dark side through the various distortions and inefficiencies flagged above rather than an opportunity or the bright side that could lead to the creation of globally competitive international giants.

III.C. Twin Deficits

India's stock of foreign exchange reserves is presently (March 2023) over $550 billion, which is more than twice the level at the time of the "taper tantrum" in 2013 and represents between eight and ten months of cover relative to its imports.[24] This has enabled the RBI to manage pretty well the exchange rate volatility in rupees since 2022 when the Federal Reserve embarked on a tightening of its monetary policy. Nevertheless, India's twin deficit metrics remain in what might be considered a less than comfortable zone.

The fiscal deficit, measured appropriately as a public sector borrowing requirement, that is, consolidating the center, the states, and their public sector enterprises, remains above 9 percent of GDP, and it has remained so for the past several years, reaching a peak of over 14 percent of GDP during 2020–2021 (Chinoy, Jain, and Sood 2022). In terms of outstanding stock, sovereign debt-to-GDP increased by 20 percent post-2020 and is presently close to 85 percent. Flow measures suggest an even greater concern as annual interest payments for the center are now over 30 percent of revenues and over 20 percent of expenditures (Mishra and Patel 2022), while real interest rates are rising in India and the rest of the world.

This has occurred in part because the targets set for fiscal deficit by the Fiscal Responsibility and Budget Management Act (FRBMA) of 2003

23. See Park (2002) on the East Asian model of economic development.

24. Reserve Bank of India, "Weekly Statistical Supplement," https://www.rbi.org.in/scripts/WSSViewDetail.aspx?PARAM1=2&TYPE=Section.

(reviewed by the NK Singh Committee set up in 2016) have been steadily missed under one pretext or another. The central government has done this in part to deliver on welfare, besides dealing with a weak economy, including during COVID-19. The state governments have contributed as well. Evaluated in a holistic sense, the states face severe hidden losses from the power sector, amounting to close to $40 billion annually, or 1.5 percent of GDP (Anand, Sharma, and Subramanian 2022) as power gets distributed at politically attractive prices rather than market prices, including and especially as a subsidy to agriculture. The resulting losses are perpetuated through state government balance sheets and national special purpose vehicles for the financing of the power sector—Power Finance Corporation (PFC) and REC (formerly Rural Electrification Corporation Limited). The debts of PFC and REC are generally not consolidated federally, requiring a focus on India's public sector borrowing requirement rather than just on balance sheet deficits. These statistics raise two significant risks.

One risk is that the fiscal dominance continues to hang like the sword of Damocles over the inflation-targeting and liquidity frameworks of the RBI, especially in politically important years. In turn, that makes inflation expectations hard to budge from post-COVID-19 highs. Historically, inflation has played a principal role in liquidating India's debts (Das and Ghate 2022), but it can take several years, even a decade, to do so. An equally unattractive or perhaps even worse alternative is that of financial repression, in which government-owned banks and insurance companies roll over national and subnational debts under moral suasion or under the guise of aggressive prudential norms. This crowds out private sector growth. One hopes that such repression will be harder to implement in a more market-dominated economy that India has now evolved into since 1990s. Fiscal dominance and financial repression nevertheless remain a threat.

Second, with such high fiscal deficits, there is a risk of crowding out long-term public expenditures in education and health. The Indian government deserves much credit for rationalizing subsidy (revenue) expenditures year after year toward public infrastructure (capital) expenditures and delivering welfare—including basic health services—more efficiently on the back of India's digital plumbing. However, this efficiency needs to be weighed against a crowding out of states from the tax base by the center, which has made the center's welfarism drive effective but reduced states' ability to incur capital expenditures, and which some view as a potent threat to the country's cooperative federalist structure.

Now, let us turn to India's current account deficit (CAD). While a sharp fall in commodity prices and a surge in tech and non-tech services exports has brought the expected value of CAD to about 2 percent of GDP for 2023–2024, it averaged close to 3 percent for the period of March 2021 to September 2022 with several reported prints of the statistic in excess of 3 percent (Chinoy, Jain, and Sood 2022). This reflects India's poor share of goods exports in spite of excellence in services exports, its consumption being lopsided toward the urban households who consume several imported goods, and the sticky core inflation inducing greater gold imports. A corollary is that without broad-based consumption growth, India seems unable to grow at or close to its potential level. Every time it seeks to do so, it experiences merchandise trade deficits that raise the current account deficit, inducing exchange rate weakness and imported inflation (especially when oil prices rise). These spillovers, in turn, necessitate that the RBI has to raise interest rates to rein in inflation, creating an unavoidable dampener on any nascent investment cycle.

III.D. Persistent (Core) Inflation

Core inflation, that is, headline consumer price inflation excluding food and fuel components, has been persistent in India at around 6 percent during 2020–2022. Headline inflation has by and large hovered around the core—even gravitated toward it (Chinoy, Jain, and Sood 2022)—and steadfastly moved away from the inflation targeting mandate of 4 percent (±2 percent) while paying attention to growth. Alternative definitions of "core"—trimmed means and diffusion indexes—all suggest broad-based inflation is underway, reflecting in part the demand effect of post-COVID-19 stimulus, particularly in urban segments.

This may, however, not be the entire picture. There seems to be an urban wage spiral in the fastest growing sectors such as IT services where export demand remains high. Formally available statistics on listed company wage growth also appear in double digits, that is, definitively in excess of the inflation rate. Concomitantly and consequently, household and business inflation expectations have risen. As some analysts have noted (Chakraborty and Baqar 2023), the rise of core inflation and its persistence, as well as the urban wage spiral, are puzzling given the increasing slack in the overall employment scenario. Effectively, India's Phillips curve seems to have moved up or steepened as it seeks to close the post-pandemic output gap, reflecting lack of adequate skilled labor for the formal sector, which is outperforming the informal sector but which is unable to penetrate or upgrade the labor force.

Another reason why core inflation is persistently rising is that consumers do not seem to be fully benefiting from input price declines, which may be due to greater pricing power in increasingly concentrated industrial organization structures (see III.B). What lends some credibility to this thesis is the observation that, in contrast to the rest of the world, India's core inflation is rising more in goods, where its industrial sectors are increasingly concentrated, than in services, though there are early signs of pricing power rising in the services sector too.

III.E. Education Gaps, Declining Female Labor Participation, and Too Few Jobs

Finally, the substantial subsidization of input factors (electricity, fertilizers, water, credit) to the agricultural sector keeps the sector artificially large. As per data from the World Bank, while India's agricultural labor force share has shrunk from 64 percent in 1991 to 44 percent in 2020, it remains way too large in an absolute sense given that the share of agriculture in GDP during 2015–2020 has been in the 16–18 percent range (compared to just 4 percent for the rest of the world).[25] Further, the sector operates at low efficiency in that the value-add per Indian agricultural worker is only 8 percent on a unit of investment.[26] Overall, this has kept the distribution of workers low-skilled and unfavorable for India being able to grow services exports to their full potential without immediately inducing a wage spiral.

The chicken-and-egg problem is hard to resolve, but labor persisting in low-skilled jobs is consistent with substantial education gaps for the development of high-skilled labor. This is in spite of a steady improvement in school enrollments in India since 2006 (as per the *Annual Status of Education Reports*), including for girls. In particular, literacy levels have dropped steadily over the past decade: reading ability is presently below the pre-2012 levels, in both government and private schools and for both boys and girls; arithmetic levels have dropped less steeply but are presently at lower levels than in 2018 (ASER Centre 2023).

While some of the education gaps are undoubtedly due to extended school closures during the COVID-19 lockdowns and beyond, perhaps the biggest impact of the pandemic years has been on India's female labor

25. The World Bank, "Agriculture, Forestry, and Fishing, Value Added (% of GDP)—India," https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=IN; "Employment in Agriculture (% of Total Employment) (Modeled ILO Estimate)," https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS.

26. Statista, "Gross Value Added (GVA) per Worker in Agriculture in India from Financial Year 2016 to 2023," https://www.statista.com/statistics/1131117/india-gross-value-added-in-agriculture-per-worker/.

force participation. As per survey data from the CMIE, it has declined from 18 percent in 2016 to under 11 percent in 2022, and somewhat unexpectedly, to under 7 percent in urban areas.[27] These trends hint strongly at the lack of adequate job creation in the aggregate, seen for instance in the CMIE survey data.

Finally, formal job creation measured using Employees' Provident Fund Organisation data (pension fund enrollment data) showed a decline of 15.5 percent in November–December 2022 in the 18–25 age group of typically new subscribers (Kaul 2021; Rajora 2023). Consistently, the survey statistics of the CMIE show that the unemployment rate has risen from 3.37 percent in July 2017 to 6.9 percent in January 2021 (it being greater than 20 percent for graduates and postgraduates) to 7.5 percent in March 2023. In response, the labor participation rate has also declined from 49 percent in July 2016 to 41 percent in January 2021. This scarcity of jobs in the patriarchal Indian society has left women effectively out of the labor force. Unsurprisingly, there has also been a substantial reduction in salaries of women who are in the labor force and employed.

Overall, India seems to be creating too few jobs relative to its labor force needs, there are too many low-skilled laborers (especially in agriculture), primary education gaps are mounting, and the female labor force is bearing the brunt of many of these developments.

IV. Proposals

The challenges India is presently saddled with provide a natural blueprint of some structural reforms that can be initiated immediately for reaping rewards over the next decade.

IV.A. De-tariff

India's import tariffs are way too high and protectionist in favor of its incumbents. India needs to bring tariffs in line at least with those of China and perhaps, to have an advantage over its key competitors, make them even lower. If a onetime sharp drop in high tariff rates is difficult, for example, for managing the re-skilling of displaced labor, then policy can announce a calibrated reduction plan over, say, a three-year period. Such clarity of purpose and forward guidance would in itself facilitate the

27. Even data from the Periodic Labor Force Survey (PLFS) show that female labor force participation was at 27 percent in 2021–2022, which is low in an absolute sense as well as relative to most peer countries.

expansion of goods trade, induce a much-needed global competitiveness in its manufacturing firms, and likely also encourage an uptick in investment.

I stress here that tariffs in agriculture need to be reduced too, given their much higher levels than in other sectors. The reductions will have to be sharper to start with but persisted with in order to enable this sector to downsize in its labor share and upgrade in its efficiency. Further, India being more in line with international tariff rates might facilitate its greater participation in trade agreements, serving in turn as a pre-commitment not to raise tariffs again.[28]

IV.B. Dismantle or Reduce the Market Power of Indian Conglomerates

How should India move away from the rising industrial concentration? Several risks have materialized in a rather short period of time during 2023 in the case of one of the largest (Big-5) conglomerates, and de-leveraging may slow down medium-term investments by this conglomerate. Given this experience, it is worthwhile to entertain mechanisms for reducing the market power of the largest conglomerates.

As seen in figure 2, panel A, the Big-5 conglomerates are in more than forty NIC two-digit sectors. Hence, one way out of their breadth of presence is the good old Theodore Roosevelt or William Howard Taft style trustbuster strategy of simply breaking up large industrial firms and their monopolies or oligopolies by regulatory fiat or via competition commission diktat. This has been done repeatedly in the United States when the concentration of corporate power has risen nationally in a sector or across different product lines. One advantage of this approach is that it would require various resulting subgroups to have separate—and likely more transparent—balance sheets as well as ownership, management, and governance structures. Such trustbusting may, however, be awkward for the current government given it has—by revealed preference—adopted an industrial policy favoring national champions.

An alternative route would be to throw sand in the wheels of rising industrial concentration by making it economically unattractive to remain a large conglomerate unless productivity gains are truly large. As discussed earlier, the Big-5 have grown their market share over the past decade by increasing their footprint in mergers and acquisitions. It could be required

28. India's public food stockpiling program, for example, is intended as a food-price security system, acts to support agricultural income in normal times but depresses it when prices rise, leads to routine restrictions on imports and exports of specific agricultural items, and causes India to disrupt WTO negotiations even in areas ostensibly unrelated to agriculture and food security.

that they own more equity of the companies they acquire, for example, 80 percent or higher as in the United States (Morck 2005; Kandel and others 2019), in order to get benefits that group companies enjoy. These benefits typically include tax exemption on dividends from subsidiaries to parents, consolidation of income between subsidiaries and parents for tax purposes (generally beneficial due to offsetting of losses against profits), and tax exemption on the spin-off of subsidiary shares to parent shareholders. In essence, by increasing the extent of subsidiary ownership required for earning the benefits of being a conglomerate, some of the conglomerates may spin off existing subsidiaries where gains do not justify such an increase.

Whether done by brute force as a competition commission diktat or more gracefully, it would be to India's advantage to become more competition-friendly and less incumbent-friendly, especially less conglomerate-friendly. A significant benefit would be that even if the subgroups remain among the largest companies (say, the top five) in their respective sectors, they may lack the pricing power commanded by the Big-5 (an important difference illustrated in figure 4).

IV.C. Get Insolvency and Bankruptcy Code (IBC) Back on Track

While the deterrence effect of IBC is well at work in the form of lower incidence of defaults, the progress in resolving cases through bankruptcy is slow, which adds to the substantial erosion of asset and franchise values of defaulted companies. The legal benches handling the cases and the intermediate steps leading to the eventual reorganization, sale, or liquidation of the defaulted companies could be subject to a tighter timeline, closer to that originally envisaged under the IBC. The present average of resolution times, which is nearly eighteen to twenty-four months, seems appropriate only for the largest of the cases and in difficult economic times. Most other cases should be resolved much faster. One possibility is that many small and frivolous bankruptcies can be resolved privately outside of the IBC to prevent choking the pipeline of cases. The Indian Banks' Association could consider templates for bank-loan trip-wire covenants that can trigger such early resolution via prepackaged bankruptcies.

Separately, a true stress test for the IBC would be whether it can handle well a large conglomerate's default, either at the group level or at one or more of its subsidiaries. Going by the market credit spreads on the internationally issued bonds of some of these conglomerates, this is not at all outside the realm of reasonable probability. Resolution of such entities is not entirely unlike resolving a large, complex financial institution or a systemically important one. Should India's large conglomerates be subject to a living will or resolution planning requirement, as required of the systemically important financial institutions in many parts of the world? Design of such living wills may also lay bare their complex web of related party transactions and create an indirect tax on being large for rent-seeking rather than productivity gains.

IV.D. Deliver on the FRBMA (Fiscal Deficit) Targets

Over the past decade, the fiscal deficit targets were first missed slowly and then simply kept in abeyance. A credible glide path needs to be provided to bring realized deficits in line with these targets. Clearly, higher growth from rationalization of revenue (subsidy) expenditures toward capital expenditures is one way to achieve this, but as this transition tends to be slow, will it be sufficient? The central government can use the presently buoyant tax collection phase to glide faster to targets. What matters in the end though is the overall public sector borrowing requirement. On this front, power sector and distribution companies' woes seem important to address. As mentioned earlier, their losses seem to be on the order of 1.5 percent of GDP on an annual basis. A first step would be to create a national grid for the power market to allow efficient use of capacity and market pricing based on that. A second step could be to create a time-bound transition to rationalizing the highest of the subsidies and leakages (such as for rural electrification and in agriculture) that result in substantive losses. Finally, some states will gain and others lose in the process, and the central government could create a burden-sharing mechanism to redistribute gains and losses across states. Implementing such a step successfully requires visionary leadership and can help restore confidence in India's cooperative federalism compact between center and states.

IV.E. Deliver on the Inflation Mandate

The RBI—even if reluctantly, and in all likelihood induced by the Federal Reserve's tightening actions—has shown commitment since May 2022 to bringing headline inflation in line with the mandated target of 4 percent and not simply at or above the upper band limit of 6 percent. However, the RBI's task has been rendered difficult by the persistence of elevated core inflation, which as of March 2023 hovered around 6 percent (Chinoy, Jain, and Sood 2022). It is a reasonable assumption that headline inflation will eventually veer toward the core. Surprises in food prices, due to uncertain monsoons (e.g., the risk from El Niño), and in the price of oil, if the Russian invasion of Ukraine remains unresolved, are likely to hike inflation up further. Hence, in my view, the best the RBI can do is to invest extra in inflation-targeting credibility by raising real rates further and sacrificing some growth in the short term (I stress *only* in the short term). Such sacrifice seems crucial to bring investor and business inflation expectations down and arrest the upward wage spiral in the formal sector on a durable basis. Gains from inflation targeting in terms of lowering inflation expectations durably might never get fully realized if the central bank is seen as routinely sacrificing its inflation target for supporting growth, as was necessary at the time of COVID-19, but is not seen as determined in the other direction.

IV.F. Address Skill and Education Gaps

There are three critical steps I suggest India undertake on this front.

First, the share of low-earning agricultural labor needs to be reduced over time and be transformed into better-skilled, higher-earning manufacturing and services labor. While that requires creating more jobs in the non-agricultural sectors, it also requires a willingness on the part of young labor to leave the agricultural sector. One way is to raise the sector's presently subsidized costs of inputs to market levels over a period of time, allow foreign entry into the sector and lift its productivity by lowering tariffs, and have a plan to retrain a part of the labor force—effectively lowering entry rate into the sector by training the youth—for vocational skills in manufacturing and services. This could be taken on as a flagship project by the ministry dedicated to skills development in partnership with private firms.

Second, the huge primary education gaps created in children's learning all over India during the pandemic need to be addressed in a decisive manner. While there are many initiatives that could do the needful, one option is to deliver a grade-by-grade national curriculum for a thirty-day remedial summer program and another enriched thirty-day start-of-the-year boot camp for reinforcement. Municipal schools can be required to adopt the programs mandatorily. Private schools may join voluntarily if the curriculum is attractive. ASER-style surveys could be conducted pre-summer, end-of-summer, and on completion of boot camp to assess success, identify where gaps remain, and plan next steps accordingly for further remedial action.

Related to general education, it has always struck me that India does not have charter or magnet public schools providing the highest-quality science, technology, engineering, and mathematics (STEM) education at middle school and high school levels. Such schools could be set up in each state, with screening based on entrance tests, in order to create an aspirational learning path among most of India's less privileged children who go to average or below-average municipal schools. Essentially, this can be modeled along the lines of the Indian Institutes of Technology but for primary and secondary education. Long-term payoffs would be substantial. The experience of similar programs in New York and Massachusetts in the United States offers a possible role model for execution (Angrist, Pathak, and Walters 2013).

Finally, it is important to make it easier for women to join the labor force, especially in urban areas where the fall in their participation rate has been the highest. Given that Indian companies are required to contribute a minimum of 2 percent of their net profits over the previous three years for corporate social responsibility, the following could be made qualifying for such expense: (1) support for entities—not-for-profit or otherwise—that invest in education of girls and skill development of the young female population, including companies' own initiatives; (2) suitable leaves for maternity and paternity that can be substituted between spouses, so as to increase the flexibility women have in resuming work after bearing children; and (3) setting up of quality childcare facilities on company premises or in neighborhoods to reduce the domestic burdens of working women. Similar schemes can be worked out for rural areas with partner organizations and with some public, multilateral, or large NGO financial support.[29]

While this is a tall order, it may be the imperative to fully realize India's demographic dividend.

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29. This may also support attitudinal shifts away from India's patriarchal past, which are crucial to ensure that trade liberalization promotes gender equality rather than hurting it, as was the case with the 1991 reforms (Gupta 2021).

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Challenges to Disinflation: The Brazilian Experience

ABSTRACT We review two previous bouts of high inflation and disinflation since Brazil adopted inflation targeting. In both episodes, fiscal sustainability concerns were present and inflation expectations became unanchored despite substantial monetary policy tightening. Disinflation and the reanchoring of expectations took time and proved costly, as both episodes entailed a recession. They required tight monetary policy combined with critical shifts toward structural economic reforms and sound fiscal policy. The ongoing episode features the same fiscal concerns and unanchored inflation expectations. This suggests the path ahead for disinflation will be challenging, unless policies change direction. We also speculate whether the Brazilian experience can provide insights for other countries.

In response to the COVID-19 pandemic, governments around the world pursued unprecedented public health, fiscal, and monetary policies. To varying degrees, such policies contributed to supply and demand imbalances that led to a sharp increase in inflation worldwide. While the rise of inflation was initially concentrated in a few sectors, such as food and energy, various measures of core inflation show it has become more widespread

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over time. The war in Ukraine was an additional inflationary shock, with particularly acute effects in Europe.

The unique nature of the pandemic and associated policy responses made it challenging to anticipate how economies would behave. Sectoral demand shifts, supply disruptions, and the dynamics of social distancing or lockdowns and subsequent reopening made it particularly hard to anticipate inflation developments. While a few commentators got it more right than wrong, it is fair to say most market participants and policymakers failed to foresee how high and persistent inflation would become.

Now that many central banks have done the lion's share of policy tightening, economies show some signs of slowing, and inflation may have peaked, attention has turned to the awaited disinflation process. How fast is it going to be? How costly will it be in terms of output? At the time of writing, financial markets in the United States seem to reflect a benign view, whereby inflation will exhibit low persistence and fall with little cost in terms of foregone output—that is, a low sacrifice ratio. How likely is that outcome? The academic literature suggests such a benign, "soft landing" scenario is not very likely, although by no means impossible.[1]

The fact that the United States and other advanced economies have not experienced such high levels of inflation in decades, however, adds to the difficulties in drawing conclusions from historical experience. Especially to the point, most available estimates of the costs of disinflation in advanced economies pertain to periods prior to the adoption of modern inflation targeting regimes currently in place in many countries.

In contrast, some emerging economies have experienced more frequent episodes with comparably high levels of inflation, including episodes since they adopted inflation targeting. For those countries at least, perhaps their experiences can offer some insight about current disinflation challenges. Certainly subject to many additional caveats, they can complement the (also

1. Friedman and Schwartz (1963) and Romer and Romer (1989) provide a historical account of disinflation episodes in the United States and output costs of contractionary monetary policies. In an effort to quantify the output costs of disinflation, Ball (1991) discusses the roles of price rigidity and credibility problems, while Ball (1994) finds the sacrifice ratio is decreasing in the speed of disinflation and in the degree of wage flexibility. Sargent (1982, 2013) discusses the role of policy credibility in determining the costs of disinflation. Tetlow (2022) relies on dynamic general equilibrium models to provide a range of estimates of the costs of disinflation. More recently, Cecchetti and others (2023) rely on US and international evidence to conclude that sizable central bank–induced disinflation episodes are, more frequently than not, associated with economic downturns. Finally, Blinder (2023) offers a more optimistic view on the Federal Reserve's ability to achieve a soft landing.

imperfect) lessons about disinflation in advanced economies one can draw from the academic literature.

In this paper, we explore the case of Brazil, which adopted inflation targeting in 1999, after the collapse of its managed exchange rate regime (Bacha 2003). The current bout of high inflation is the third episode since then in which inflation reached levels significantly above target, and the Banco Central do Brasil (BCB) had to tighten policy significantly to rein in inflation.

The two previous episodes have a few features in common. In both cases, heightened fiscal concerns were present, the Brazilian currency depreciated significantly, inflation increased way above target, inflation expectations became or were already unanchored, and the BCB had to tighten policy significantly.

The two episodes ended with a sizable, albeit costly, disinflation. Both reversals involved many ingredients. Crucially, the course of fiscal policy was a positive surprise, the currency reversed its depreciation, and inflation expectations reanchored. Both episodes, however, produced a recession.

The current challenges for disinflation in Brazil feature the same credibility concerns regarding fiscal and monetary policies observed in the previous episodes. Analysts and market participants fear lack of fiscal discipline and inflation expectations have become unanchored. These similarities strongly suggest a successful disinflation will require a change of direction in economic policies going forward.

The Brazilian experience may be informative for challenges faced by other emerging economies where fiscal sustainability is a concern and where inflation expectations suggest monetary policy credibility is at stake. When it comes to advanced economies, analogies are much more imperfect. These countries have stronger fundamentals, much larger fiscal space, and a longer history of low and stable inflation and macroeconomic stability. Nevertheless, the behavior of long-run inflation expectations in the United States in the aftermath of the global financial crisis and during the recent confidence scare in the United Kingdom suggests policy credibility may be challenged even in advanced economies.

The rest of the paper is organized as follows. Section I describes the adoption of the inflation targeting regime in Brazil and identifies three periods of high inflation and unanchoring of inflation expectations since then. Section II provides an account of the first two high-inflation episodes. In section III we describe the current bout of high inflation and highlight lessons from the two previous episodes for current disinflationary efforts. Section IV concludes.

I. The Inflation Targeting Regime in Brazil

After a decade battling extremely high or hyperinflation, the Real Plan was successful in bringing down inflation in 1994.[2] At first, between 1994 and 1999, the country introduced a managed exchange rate regime that helped stabilize inflation. Fiscal policy remained loose, however, which eventually led to a confidence crisis by the end of 1998.

After abandoning the currency peg in January 1999, Brazil transitioned to an inflation targeting regime. Under this framework, the BCB sets the main policy rate (the Selic rate) aiming to maintain annual national consumer price inflation (as measured by the IPCA, the Extended National Consumer Price Index) on target. A tolerance band allows the BCB to accommodate shocks. The target and tolerance band are set three years in advance by the National Monetary Council, which is currently composed of the minister of finance, the minister of planning, and the BCB governor.

After an initial period with declining targets that were revised twice in response to the first bout of high inflation, the target remained at 4.5 percent between 2005 and 2018. Since 2019, the target was reduced by a quarter of a percentage point each year, until it reached 3 percent, currently in place for 2024 and 2025. Figure 1 highlights three instances in which inflation rose significantly above the tolerance band—around 2002, 2015, and, more recently, since 2021.

Of course, a proper assessment of an inflation targeting regime and the costs associated with bringing inflation back to target must take into account the dynamics of inflation expectations. When expectations are well anchored, high inflation episodes are more easily reversed, as agents continue to make their economic decisions assuming inflation will fall back to "normal" levels (i.e., around target). In contrast, when expectations are unanchored, agents anticipate that inflationary shocks will propagate and change their behavior accordingly.

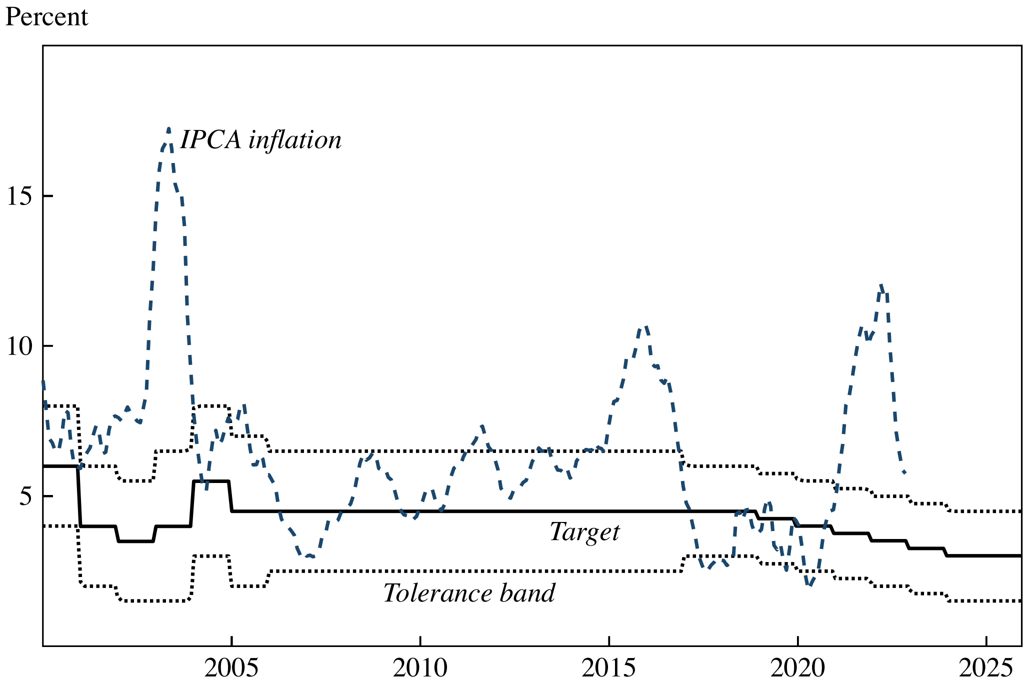
Therefore, before turning to an account of the first two high inflation episodes, we discuss the dynamics of expectations and their degree of anchoring since Brazil adopted inflation targeting.

I.A. Inflation Expectations and the Degree of Anchoring

To closely follow market participants' views on economic conditions, in 2002 the BCB started a survey of professional forecasters, known as the

2. For a detailed account of the Real Plan, see Bacha (2003).

Figure 1. Inflation Targeting Regime in Brazil



Source: Banco Central do Brasil.

Focus Survey.[3] Currently, it has around 140 participants, of which 100 provide forecasts frequently. The survey covers a range of macroeconomic variables, such as inflation, the Selic policy rate, the exchange rate, various fiscal variables, economic activity, and balance of payments. Participants can update their forecasts for various horizons daily if they so wish. In order to provide incentives for participants to report frequently and carefully, the BCB runs a few forecasting contests and publishes the five most accurate forecasters. The BCB also releases aggregate survey statistics, such as means, medians, and dispersion measures.

Abib and others (2023) use the Focus Survey to construct a measure of the degree of expectations unanchoring in Brazil, based on the credibility index introduced by Cecchetti and Krause (2002).[4] They measure the degree of expectations unanchoring by taking deviations from

3. Banco Central do Brasil, "Market Expectations—Focus Survey," https://www.bcb.gov.br/en/monetarypolicy/marketexpectations.

4. For a discussion of inflation and central bank credibility in emerging economies, see Ha, Kose, and Ohnsorge (2019) and references therein.

target of twelve-month inflation expectations between two and three years ahead and converting them into an index with values between zero and one. Since the BCB considers its relevant monetary policy horizon to be around eighteen months ahead, the chosen horizon is arguably long enough to reflect policy credibility considerations rather than the delayed effects of ongoing shocks.[5] The authors validate this measure of the degree of unanchoring by looking at other measures the literature has proposed, such as the cross-sectional dispersion of expectations and variation in the extent of pass-through of short-run to long-run inflation expectations. In addition, using Brazilian Producer Price Index (PPI) micro price data, they find exchange rate pass-through into prices increases substantially when expectations are unanchored. We update their index and use data from January 2, 2002, to January 18, 2023.

The degree of unanchoring of inflation expectations, U_t, is given by:

$$U_t = \begin{cases} 1 & \textit{if } \pi^e_{t+2,3} > \pi^{\max}_{t+2,3} \\ \dfrac{\pi^e_{t+2,3} - \pi^*_{t+2,3}}{\pi^{\max}_{t+2,3} - \pi^*_{t+2,3}} & \textit{if } \pi^*_{t+2,3} \le \pi^e_{t+2,3} \le \pi^{\max}_{t+2,3}, \\ 0 & \textit{if } \pi^e_{t+2,3} < \pi^*_{t+2,3}, \end{cases} \tag{1}$$

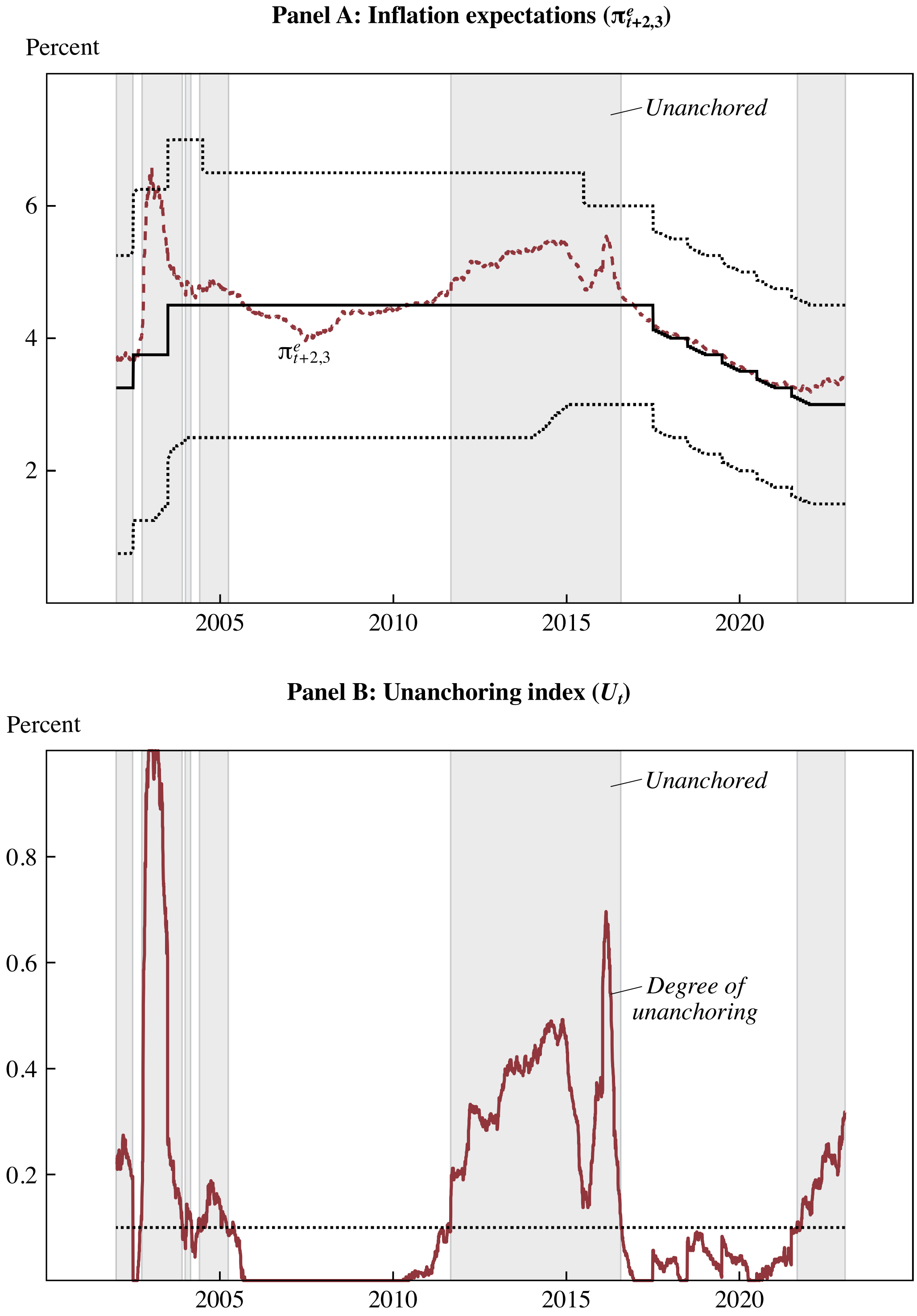
where $\pi^e_{t+2,3}$ is the cross-sectional mean of twelve-month inflation expectations between two and three years ahead, $\pi^*_{t+2,3}$ is the corresponding inflation target, and $\pi^{max}_{t+2,3}$ is the upper limit of the tolerance band.[6] Inflation expectations are deemed unanchored whenever $U_t > 0.1$.[7] Panel A in figure 2 shows inflation expectations ($\pi^e_{t+2,3}$), target, and tolerance band since 2002. Panel B shows the measure of unanchoring. It points to three clear instances of unanchoring of expectations, which we indicate with the shaded areas: in the early 2000s, around the mid-2010s, and, more recently, since 2021.

5. Banco Central do Brasil, "Minutes of the Monetary Policy Committee—Copom," https://www.bcb.gov.br/en/publications/copomminutes/26102022. Results are essentially unchanged if one uses expectations between three and four years ahead.

6. Results are essentially unchanged if we use median expectations. Mean expectations more quickly reflect movements present in the micro data.

7. The 0.1 cutoff accommodates small deviations of expectations from target that arise after 2017 due to announcements of lower targets. In addition, Abib and others (2023) show that a classification of anchored/unanchored regimes based on such a cutoff perfectly lines up with a narrative approach to defining such regimes.

Figure 2. Inflation Expectations and the Unanchoring Index



Sources: Banco Central do Brasil and authors' calculations.

Note: Panel A reports expectations for twelve-month inflation between two and three years ahead, calculated as in Abib and others (2023). Panel B reports the daily unanchoring index U_t, as described in equation (1). Shaded areas correspond to dates in which $U_t > 0.1$.

II. Two Previous Bouts of Inflation and Disinflation

In this section we review two bouts of inflation and disinflation Brazil experienced prior to the pandemic. We focus on domestic developments only, emphasizing aspects related to fiscal and monetary policies. We acknowledge, however, that global and other domestic factors also played a role in both episodes. For brevity, we focus our descriptions on the dynamics of inflation expectations, nominal exchange rates, and the policy rate, abstracting from other potentially informative indicators, such as government bond yields and inflation compensation (also known as "breakeven inflation").

II.A. Episode 1—2002–2005

The first episode was associated with the first time Brazil's current president, Luiz Inácio Lula da Silva, known as Lula, won a presidential election, in 2002. Historically, Lula and the Workers' Party—to which he has always been affiliated—had spoken frequently in favor of voluntarily defaulting on external debt and "auditing" domestic debt.

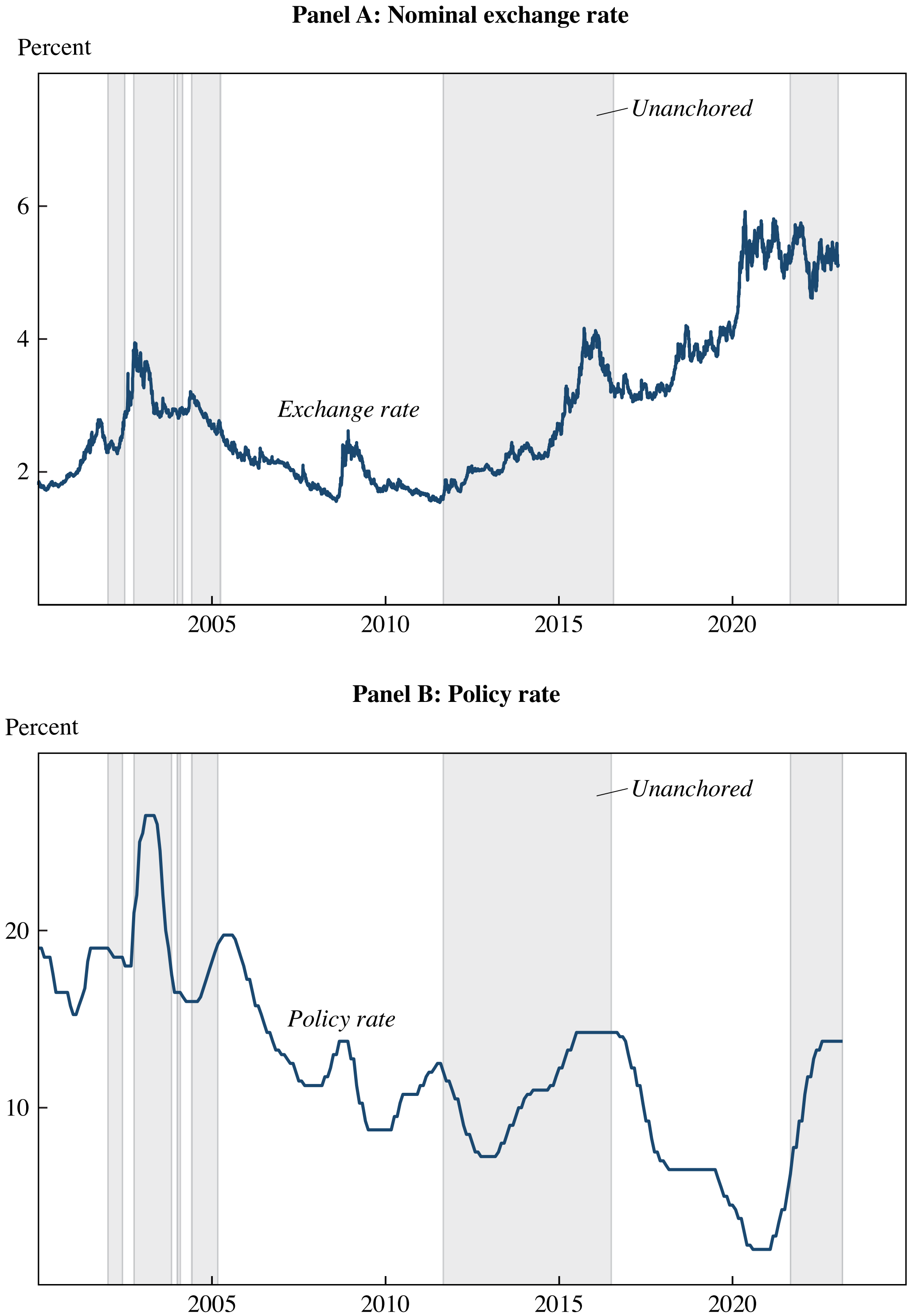
Needless to say, when Lula showed up ahead in the polls over the course of 2002, foreign and local investors dumped Brazilian assets, fearful that existing market-friendly economic policies would be overturned.[8] The currency depreciated dramatically (panel A in figure 3), inflation increased sharply (see figure 1), inflation expectations became unhinged (see figure 2), and the BCB had to tighten policy significantly (panel B in figure 3).[9]

In the first few months of 2002, the BCB had started an easing cycle, after having kept the policy rate constant for about half a year. Between April and September of that year, as concerns about the upcoming election increased, the currency depreciated continuously. Initially, inflation and expectations remained relatively stable. Shortly after Lula won the first election round on October 6 and advanced to a runoff vote to take place later in that month, inflation expectations jumped, inflation picked up, and the currency depreciated sharply.

8. Jensen and Schmith (2005) provide evidence that volatility in the Brazilian stock market increased when election poll results favored Lula. Andrade and Kohlscheen (2010) show evidence that foreign investors became relatively more pessimistic about the prospects for Brazilian risky assets around the 2002 presidential election.

9. In our brief accounts of the high inflation episodes in Brazil, we focus on changes to the policy rate by the BCB. This leaves aside the issue of high real interest rates in Brazil. For discussions pertaining to the level of policy rates, see, for example, Segura-Ubiergo (2012) and Favero and Giavazzi (2005).

Figure 3. Exchange Rate and Policy Rate



Sources: FRED and Banco Central do Brasil.

Note: Panel A shows monthly nominal exchange rate in Brazilian reais per US dollar. Panel B reports the main policy rate (Selic) in percentage points per year. Shaded areas in both panels correspond to the unanchored periods as defined in section I.A.

The BCB responded by raising the policy rate by 300 basis points in an extraordinary meeting on October 14. In its following meetings, the BCB continued to raise the policy rate aggressively, but inflation readings and expectations continued to deteriorate. The concomitant increase of policy rates, inflation, and expectations raised concerns about fiscal dominance. Blanchard (2004) argues that Brazil flirted with a form of fiscal dominance during this period, whereby higher interest rates raised fears of default and led to a depreciation of the Brazilian currency and higher inflation.[10]

Toward the end of 2002, and only after the new government announced a market-friendly economic team (including a new BCB governor), the currency reversed its depreciation trend. In 2003, already under the new government, the BCB continued to increase its policy rate until February. It started a new easing cycle by June 2003, after inflation and expectations had started to decline. The new government announced a series of reforms and fiscal consolidation policies, including higher primary surplus objectives. The adoption of prudent fiscal policies helped calm markets (Werneck 2006; IMF 2007; Paiva Abreu and Werneck 2005).[11]

The whole episode lasted for approximately three years. The BCB increased its policy rate by a total of 850 basis points between October 2002 and February 2003. The economy experienced a brief recession in the first two quarters of 2003, when GDP fell by a total of 1.3 percent.[12] It took until mid-2005 for inflation to return to within the tolerance band and for expectations to reanchor.[13]

II.B. Episode 2—2015–2016

The second episode coincided with the beginning of President Dilma Rousseff's second term, in 2015. Her first term was marked by unsustainable fiscal and quasi-fiscal policies that had been initiated during President Lula's second term. In addition, an abrupt U-turn in monetary policy in 2011, which many commentators associated with political pressure

10. See Loyo (2005) for a discussion.

11. While election years can increase the degree of uncertainty regarding future fiscal and monetary policies, historically they have not necessarily led to unanchoring of expectations. Figure 2 shows that inflation expectations remained well anchored during the 2006 and 2018 elections.

12. Brazilian Business Cycle Dating Committee at FGV IBRE, "CODACE," https://portalibre.fgv.br/en/codace#:~:text=The%20purpose%20of%20the%20Brazilian,business%20cycles%20from%201980%20on.

13. See Bevilaqua, Mesquita, and Minella (2007) for a more detailed account of this episode.

on the BCB, led to unanchoring of inflation expectations (Abib and others 2023).

Following the global financial crisis, still during President Lula's second term, Brazil implemented countercyclical fiscal policies to help alleviate the impact of the ensuing credit crunch. As a result, the country experienced only a mild recession and a strong recovery resumed in the following year.

By mid-2012, the government announced a new set of tax breaks and spending increases to further stimulate the economy. Moreover, the government continued to provide substantial quasi-fiscal stimuli, significantly increasing credit provision through state-owned banks and Brazilian Development Bank (BNDES). This expansion was directly supported by transfers from the Treasury and off-budget measures (Matheson and Pereira 2016). The government also introduced policies aimed at keeping energy and fuel prices artificially low. The large amounts of fiscal and quasi-fiscal support did not help stimulate economic activity (IMF 2013) and resulted in a continuous worsening of the country's fiscal position and the government's credibility (Bloomberg 2016; Spilimbergo and Srinivasan 2019).[14]

Regarding monetary policy, after lowering the policy rate in response to the 2008–2009 credit crunch, the BCB had started a tightening cycle in April 2010, as the economy was growing strongly and inflation edged higher. In the first half of 2011, already under a new governor, the BCB continued to raise rates as inflation moved toward the top of the tolerance band. In its August 31 meeting, however, despite the readings on realized and expected inflation, the BCB surprised markets and cut the policy rate by 50 basis points (Lima 2011). The day after that decision, and in subsequent days, inflation expectations ($\pi^e_{t+2,3}$) rose significantly and became unanchored, as shown in figure 2.[15] The BCB doubled down with a sequence of rate cuts, deepening the deterioration of inflation expectations. It was only in April 2013 that the BCB reversed its path and started to raise rates again. By then, inflation had approached 7 percent and inflation expectations were 50 basis points above target.

After being reelected at the end of 2014, President Rousseff started her second term with signs of a possible change in the direction of economic policy. She appointed a market-friendly finance minister, which hinted at a return to a more responsible fiscal policy. She also allowed a reversal of

14. Online appendix A provides a brief account of Brazil's structural fiscal problems since the late 1980s.

15. Abib and others (2023) offer a detailed account of this abrupt monetary policy reversal and provide evidence that it led to the unanchoring of inflation expectations.

policies that had kept energy and fuel prices artificially low, which resulted in a sizable increase in inflation. Despite this increase, prospects of a return to appropriate macroeconomic policies—including responsible fiscal policy and a tighter monetary policy stance—led inflation expectations to improve meaningfully (panel A in figure 2).

The change in fiscal policy, however, did not last. By the second half of 2015, inflation was way above target, expectations had worsened considerably, and the Brazilian real kept depreciating—following a trend that had started in September 2014 (Soto and Cascione 2016). After years of deteriorating fiscal position, the country lost its investment grade and was downgraded to junk status by the end of 2015 (IMF 2015). Once again, fears of unsustainable fiscal policies amid high inflation, unanchored inflation expectations, and tight monetary policy raised the specter of fiscal dominance (Pearson 2016; *Economist* 2016).

A political crisis also ensued, and as time passed, it became increasingly likely Congress would start a process to impeach President Rousseff for running afoul of federal fiscal responsibility laws. Formally, the impeachment process started in December 2015. In May 2016, then vice-president Michel Temer took office. President Rousseff was formally impeached in August 2016 (IMF 2016; Bloomberg 2016).[16]

The prospect of impeachment was associated with the possibility of yet another change in the direction of economic policies. In anticipation of that change, the Brazilian real appreciated and inflation expectations started to move back toward target. President Temer appointed a new economic team, including a new finance minister and a new BCB governor. The new team introduced an ambitious reform agenda and fiscal consolidation policies, which we detail in the next section. The BCB kept a tight monetary policy stance, which also contributed to reanchoring inflation expectations and bringing inflation back to target.

Overall, inflation expectations remained unanchored for five years (between September 2011 and August 2016). Inflation hovered around the top of the tolerance band for most of 2011–2014 and increased significantly above target in 2015, to reach 10.7 percent. Brazilian GDP contracted for eleven consecutive quarters, for a total drop of 8.1 percent.[17]

16. For an account of that period, see Cuevas, Spilimbergo, and Srinivasan (2019).

17. Brazilian Business Cycle Dating Committee at FGV IBRE, "CODACE," https://portalibre.fgv.br/en/codace#:~:text=The%20purpose%20of%20the%20Brazilian,business%20cycles%20from%201980%20on.

Once again, reanchoring and disinflating entailed substantial shifts in economic policy, including the pursuit of sound fiscal policy and significantly tight monetary policy.

III. The Current Disinflation Challenge

III.A. Pre-pandemic Context (2017–2019)

Between 2016 and the start of the pandemic, Brazil underwent a significant effort to address its chronic fiscal challenges through a series of economic reforms and fiscal consolidation measures. While the effects of many of these measures were back-loaded, and hence did little to improve fiscal figures in the short run, they were credible and contributed to an improved perception regarding the course of fiscal policy.

One important reform was the introduction of a cap on public spending by means of a constitutional amendment. With a few exceptions, the cap limited public spending to an amount that increased annually with past inflation.[18] The introduction of such cap stabilized and reduced central government's primary spending.[19] This change was mostly driven by a decline in real public sector compensation and spending items indexed to the minimum wage and cuts to discretionary spending and public investment. Most importantly, the spending cap effectively led society to discuss the trade-offs of any additional public spending, most likely for the first time in the country's history.

Another important measure was the reform of the framework for provision of subsidized and earmarked credit by public institutions. Prior to that reform, public banks and regional development funds were used to provide large amounts of credit at rates that involved substantial subsidies and that were little sensitive to market rates—and hence to monetary policy.[20] The reform created a new set of rates that were linked to the yield curve of government bonds and either eliminated or reduced the implied subsidies. The most emblematic case was the reform of the interest rate on the main

18. The amendment included a few exceptions to this rule. For example, the cap could be violated temporarily in case of calamities, such as a pandemic or war. Moreover, it established a minimum level of spending on education and public health, to prevent these items from being squeezed by other components.

19. See online appendix figure A.1, panel (a).

20. See Bonomo and others (2022) on earmarked credit and monetary policy transmission in Brazil.

funding sources of Brazil's leading national development bank, BNDES.[21] The reform also changed earmarked credit for agriculture and for initiatives aimed at reducing regional inequalities.

Congress also approved a comprehensive pension reform, raising the retirement age, changing the profile of benefits after retirement, and implying significant government savings over time (IMF 2020).[22] Moreover, the country also underwent a divesting program focused on the sale of minority stakes in state-owned enterprises and real estate assets and on efforts to privatize state-owned companies.[23]

III.B. Since the Pandemic

These positive developments, however, were interrupted in early 2020 with the arrival of the COVID-19 pandemic. As in other developed and emerging economies, the pandemic drove a large share of the Brazilian economy to a near complete halt by the second quarter of 2020. In response, large and unprecedented fiscal and monetary policies were quickly put in place. While the responses to the crisis were similar in nature to those implemented elsewhere, policy actions taken by the monetary and fiscal authorities were tailored to Brazil's economic characteristics, its population needs, and the mandates of responding institutions.

Actions by the fiscal authority aimed at low-income households and small and medium-sized firms. Fiscal measures included income transfers, health spending, and loan guarantees, among others (see the online appendix, figure A.2). The federal government implemented one of the largest direct income transfer programs in the world, with an initial disbursement of about 4.5 percent of GDP, reaching more than 60 million people, about a third of the population (McGeever 2021). The sizable fiscal package also included measures to facilitate and subsidize credit to small and medium-sized firms, as well as programs aimed at retaining workers,

21. By 2015, total earmarked credit corresponded to about 50 percent of total credit (about 25 percent of GDP). This large-scale credit provision with subsidized rates hampered the development and deepening of capital markets, in addition to imposing significant costs to the central government budget (Nechio and Serra Fernandes 2022). BNDES accounted for the bulk of earmarked credit to firms. Its subsidized loans, however, were frequently directed to large, unconstrained corporations instead of targeting firms with more difficulties accessing credit through private channels (Bonomo, Brito, and Martins 2015), among other allocation inefficiencies (Carvalho 2013).

22. For details on retirement benefits, see OECD (2021).

23. During that short period, Congress approved other important reforms, including historic labor market reform and the establishment of a credit registry bureau system.

postponing loan payments, and others.[24] The Treasury also played an important role during the crisis by adjusting its bond issuance and repurchasing a record amount of government bonds in moments of distress.

The BCB relied on conventional monetary policy, liquidity provision, and temporary adjustments to its regulatory framework. The monetary authority announced sizable liquidity and credit support programs and adopted measures to temporarily alleviate capital requirements of financial institutions.[25] It also lowered the policy rate to 2 percent, a historically low level (see the online appendix, figure A.2). Finally, the timely and strong response of advanced economies' central banks was also key to restoring market confidence and reversing risk-off attitudes toward emerging economies. As a result of all these unprecedented measures, markets in Brazil stabilized and the financial system was able to withstand the most stressful period of the crisis.

Reflecting the strong response from monetary and fiscal authorities, and the gradual reversal of mobility restrictions, Brazil started to recover by the second half of 2020. The economic rebound was initially concentrated in a few sectors, such as manufacturing and agriculture, and led by consumption of durables. As in other countries, the recovery continued during 2021 and 2022, albeit unevenly due to new waves of COVID-19 and partial shutdowns.

These dynamics were reflected in diverging sectoral price trends, which contributed to the rise of inflation. Similar to other countries, inflationary pressures resulted from supply and demand imbalances brought about by the pandemic, such as supply chain disruptions and the extraordinary monetary and fiscal policies put in place. The relative contributions of these factors varied across countries, as the recent literature has shown (Faria-e-Castro 2021; Cavallo and Kryvtsov 2021; Jordà and Nechio 2023; Hale, Leer, and Nechio 2022). While inflationary pressures were initially concentrated in a few sectors, over time they became more widespread, as revealed by various core inflation measures.

Figure 1 shows the significant rise in headline inflation since mid-2020. It started to reverse its course by mid-2022 as a result of aggressive tax cuts that reduced energy prices, improvements in supply chains, and possibly the first effects of contractionary monetary policy. As figure 2 shows, inflation expectations eventually became unanchored around September 2021.

24. A detailed list of these programs is available on the government's website.

25. Detailed accounts of these and other measures by the BCB are provided in Banco Central do Brasil (2020).

An interesting fact about this high inflation episode is that by the time expectations became unhinged, inflation had already been running high for quite some time. In fact, at that point inflation was close to the peak level it would eventually reach in 2022.[26] Also importantly, by September 2021 the BCB had already done a non-negligible amount of monetary policy tightening, having raised the policy rate from 2 percent in February 2021 to 6.25 percent in September 2021, and market participants expected tightening to continue. Nevertheless, the deterioration of expectations continued, and the BCB further tightened monetary policy by continuously raising the policy rate up to 13.75 percent by August 2022.[27]

The continuing rise of inflation expectations despite inflation having apparently peaked and monetary policy having reached restrictive territory suggests other factors likely played a role in unanchoring expectations. It is noteworthy that heightened fiscal concerns had been present since July 2021, when the government was entertaining new exceptions to the spending cap.[28] As the October 2022 election neared, a range of populist spending measures were unveiled in an attempt by then president Jair Bolsonaro to win votes. During the campaign, the two main candidates, Bolsonaro and Lula, promised considerable fiscal expansion. This contributed to further unanchoring of inflation expectations over the course of 2022.

After the election of Lula da Silva in October 2022 for his third presidential term, the degree of unanchoring started to increase at a faster pace. Since his campaign, but especially since the election, President Lula has been vocal about changing the direction of economic policies. In particular, his government aims to reverse measures and reforms that contributed to fiscal consolidation since 2016. The perception that the country's fiscal position has deteriorated since the election was picked up by several news articles.[29]

26. In August 2021, inflation was at 9.7 percent, whereas the 2022 inflation peak, reached in April 2022, was 12.1 percent.

27. Banco Central do Brasil, "Interest Rate Policy Decisions," https://www.bcb.gov.br/en/monetarypolicy/interestrates.

28. More specifically, a new constitutional amendment to exclude payments due to court-mandated debt from the spending cap was proposed. The proposal was sent to Congress in August and was approved in December 2021.

29. See, for example, Andrade (2022). In addition, around mid-January 2023, President Lula started attacking the BCB's independence and calling for a higher inflation target. Historically, the BCB acted with de facto independence, but it was only in February 2021 that its formal independence was approved by Congress. Lula's attack contributed to further unanchoring of inflation expectations (Harris 2022). For that reason, our sample ends on January 18, 2023.

Table 1. Correlations between Inflation and Gross Debt Projections

	$\rho(\pi^e_{t+2,3} - \pi^*_{t+2,3}, D_{t+5} - D_{t+1})$		$\rho(\pi^e_{t+2,3} - \pi^*_{t+2,3}, D_{t+8} - D_{t+1})$	
	Level	*Δ 30-day*	*Level*	*Δ 30-day*
Before unanchored (Dec. 1, 2018 to Aug. 31, 2021)	0.4***	0.03	0.28***	0.09*
Since unanchored (Sept. 1, 2021 to Jan. 18, 2023)	0.68***	0.34***	0.74***	0.28***
Since first round (Oct. 3, 2022 to Jan. 18, 2023)	0.78***	0.68***	0.73***	0.39**

Sources: Banco Central do Brasil and authors' calculations.

Note: Correlations between deviations of inflation expectations from target ($\pi^e_{t+2,3} - \pi^*_{t+2,3}$) and gross debt/GDP forecast slopes for five ($D_{t+5} - D_{t+1}$) and eight ($D_{t+8} - D_{t+1}$) years ahead.

* 90 percent confidence level, ** 95 percent confidence level, *** 99 percent confidence level, based on Newey-West standard errors

This is the third episode in which unanchoring of inflation expectations seems to be associated with fiscal concerns. Fortunately, this time around we can explore daily expectations data from the Focus Survey for the path of gross public debt (percentage of GDP), available since 2018. Table 1 reports correlations between deviations of inflation expectations from target ($\pi^e_{t+2,3} - \pi^*_{t+2,3}$) and projected increases in debt/GDP between one and five and one and eight years ahead (i.e., slopes of debt/GDP forecasts).[30] We report correlations for projections in levels and in overlapping thirty-day changes and consider three time periods; prior and since the unanchoring of inflation expectations and since the first election round.

The table shows an increase in the correlation between inflation expectations and debt forecast slopes since unanchoring began, and an additional increase since the election, especially for thirty-day changes in the five-year horizon. This evidence gives credence to our conjecture that unanchoring of inflation expectations and fiscal concerns are once again related in the ongoing episode.

The combination of fiscal concerns and unanchored expectations in a high inflation environment is all too familiar to Brazil. The previous episodes show a range of factors were needed to bring back confidence and reanchor inflation expectations. The BCB had to act strongly. Importantly, actions and expectations of sound fiscal policy were key to restoring market

30. We limit projections to eight years ahead because the number of respondents for the last horizon (nine years) is limited. We work with forecast slopes to eliminate the effects of innovations to debt/GDP and thus isolate perceptions about Brazil's structural fiscal position.

confidence and bringing inflation expectations back to target. In both episodes, disinflation was lengthy and costly in terms of foregone output.

The similarities between the current and the two previous episodes suggest the path ahead for disinflation will be extremely challenging, unless policies change direction.

III.C. Insights for Other Countries?

Perhaps the Brazilian experience can help inform the disinflation challenges faced by other countries. Of course, when it comes to cross-country comparisons, making analogies is difficult. It is particularly so when it comes to advanced economies, which have a longer history of low and stable inflation and macroeconomic stability. Nevertheless, two relatively recent episodes in the United States and in the United Kingdom suggest policy credibility can be challenged even in advanced economies.

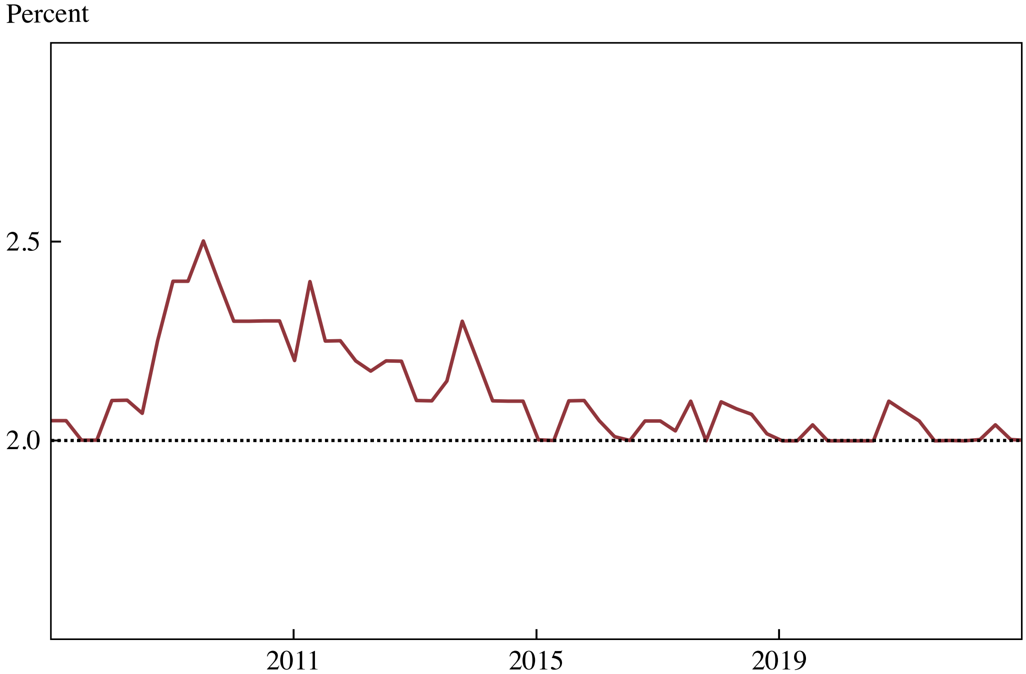
Panel A of figure 4 shows long-term inflation expectations from US professional forecasters. In particular, we focus on the Survey of Professional Forecasters' median PCE projections for the next five years and five years in the future, a common measure used by the Federal Reserve and market participants to assess inflation expectations (Federal Reserve Board 2022).[31] The series is available from 2007:Q1 to 2023:Q1. The panel shows that long-term inflation expectations in the United States have remained well anchored near the 2 percent inflation target since the pandemic (despite the significant increase in inflation and short-term expectations). Interestingly, the picture also shows a meaningful deviation of long-term inflation expectations from target in the aftermath of the global financial crisis.

Aiming to understand the reasons behind this increase, the Federal Reserve Bank of Philadelphia included a special question in its 2012:Q2 survey, inquiring of participants about the reasons behind their long-term inflation views. In their responses, panelists cited several reasons behind their above-target inflation forecasts. Some worried about the Federal Open Market Committee (FOMC) being too slow to tighten monetary policy at the appropriate time; others worried about the political pressures the FOMC would face, and its willingness to respond to the extraordinarily accommodative fiscal measures introduced in response to the global financial crisis. Finally, participants questioned FOMC members' biases toward

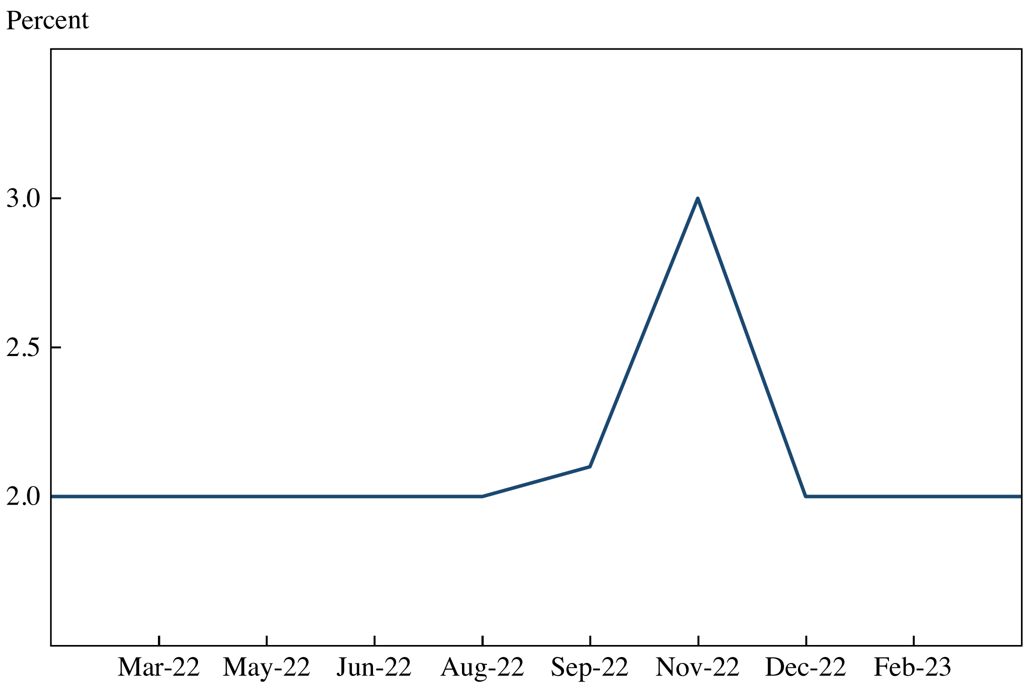
31. The Survey of Professional Forecasters is conducted quarterly by the Federal Reserve Bank of Philadelphia and asks some forty professionals about their views on inflation (among many other variables).

Figure 4. Professionals' Inflation Expectations: United States and United Kingdom

Panel A: US inflation expectations ($E_t\pi_{t+5,\ t+10}$)



Panel B: UK inflation expectations ($E_t\pi_{t+5}$)



Sources: Federal Reserve Bank of Philadelphia and Bank of England.

Note: Panel A reports inflation expectations from the Survey of Professional Forecasters for five years and five years ahead in the United States. Panel B reports median five-years-ahead inflation expectations from the Bank of England's Market Participants Survey.

higher inflation and reluctance to vote for tighter monetary policy in face of adverse supply shocks.[32]

Turning to the United Kingdom, since 2021 inflation has been persistently elevated and significantly above the Bank of England's 2 percent target. As in other economies, the rise in inflation can be associated with supply and demand imbalances brought about by the pandemic, but also with the energy shock produced by the war in Ukraine (Bank of England 2022). The monetary authority has responded by unwinding its pandemic-related policies and by raising its policy rate from near zero to 4 percent, as of February 2023 (Bank of England 2023).

Against this backdrop, in September 2022 the government announced a fiscal package which, among other measures, lowered (or delayed predicted hikes in) taxes (HM Treasury 2022a). The plan was badly received by markets, which questioned the funding sources and the plan's implications for public debt and inflation (Mackintosh 2022). The weeks that followed saw a sharp increase in bond yields and a depreciation of the British pound. The episode led to the resignation of the prime minister and a nearly complete reversal of the announced policies to "provide confidence in the government's commitment to fiscal discipline" (HM Treasury 2022b, par. 1).

During the process, the Bank of England had to intervene in the bond market due to financial stability concerns. Moreover, as panel B of figure 4 shows, median five-years-ahead inflation expectations from professionals increased from 2 percent to 3 percent in the September and November surveys. Before the announcement and after the policy reversal, long-term expectations were on target. During the time in which inflation expectations rose above target, survey participants revealed concerns with domestic factors as a main driver of their views.[33]

These two episodes and the Brazilian experience share an important component, namely, challenges to policy credibility. While such episodes are somewhat frequent in the case of Brazil, they are rarer when it comes to advanced economies. Nevertheless, the US experience after the global financial crisis and the recent UK episode show central bank credibility can be questioned and long-run inflation expectations can move meaningfully above target. In addition, fiscal concerns were present in both cases, albeit

32. Federal Reserve Bank of Philadelphia, "Long-Run Inflation Forecasts and the FOMC's Longer-Run Goal for Inflation," Survey of Professional Forecasters, https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/survey-of-professional-forecasters.

33. The survey was introduced in February 2022 with the number of participants ranging between thirty and sixty. Results are available on the Bank of England's website.

to different degrees. While we focus on episodes in which inflation expectations moved above target, following the global financial crisis many advanced economies faced risks of downward unanchoring of inflation expectations (Ehrmann 2015). Finally, recent bank failures in the United States have raised the specter of "financial dominance," whereby fears of a broader banking crisis may constrain monetary policy and hamper the Federal Reserve's ability to fight inflation (Summers 2023).

IV. Conclusion

Inflation has risen above target in many countries since the pandemic. In Brazil, together with the rise in inflation, inflation expectations became unanchored. Previous bouts of high inflation in Brazil show policy credibility is frequently challenged, and disinflation is lengthy, economically costly, and requires a combination of factors, which include tight monetary policy and the credible announcement and implementation of sound fiscal policies. Recent developments in the United Kingdom and in the United States show policy credibility can be challenged even in advanced economies.

Empirical evidence from advanced economies available in the literature shows disinflation is usually costly, and more so when policy lacks credibility. While most episodes underlying these conclusions predate the adoption of inflation targeting, the Brazilian episodes we describe in this paper corroborate them. It remains to be seen whether the current disinflation will prove to be as costly as some of the literature for advanced economies and the recent episodes in Brazil suggests.

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Has China's Growth Gone from Miracle to Malady?

ABSTRACT China's remarkable run of persistently high growth in recent decades is all the more stunning in light of the country's low levels of financial and institutional development, state-dominated economy, and nondemocratic government. Notwithstanding the inefficient and risky growth model, the government has maneuvered the economy around various stresses without any major financial or economic crash. With a shrinking labor force and declining efficiency of investment, raising productivity growth is key to maintaining reasonable GDP growth. Unbalanced reforms, a schizophrenic approach to the role of the market versus the state, and strains in financial and property markets could result in significant volatility but a financial or economic collapse is not in the cards.

Several unprecedented economic, financial, and political events have occurred in recent decades, many of them short-lived and most of them unfavorable in some form or another. Then there is China's growth over the last few decades, which stands out as a positive historical (and persistent) anomaly by any measure. Mean reversion, the middle income trap, or any number of formal, informal, and statistical models have for many years now been used to predict an imminent sharp decline, if not collapse, in China's growth. China's low levels of financial and institutional development, state-dominated economy, nondemocratic government, and manifold other inadequacies should have dragged down growth. And yet,

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until the COVID-19 pandemic rocked it back on its heels, the Chinese economy powered through periods of domestic and global turmoil seemingly unscathed. Is the much anticipated and long-foretold day of reckoning finally at hand?

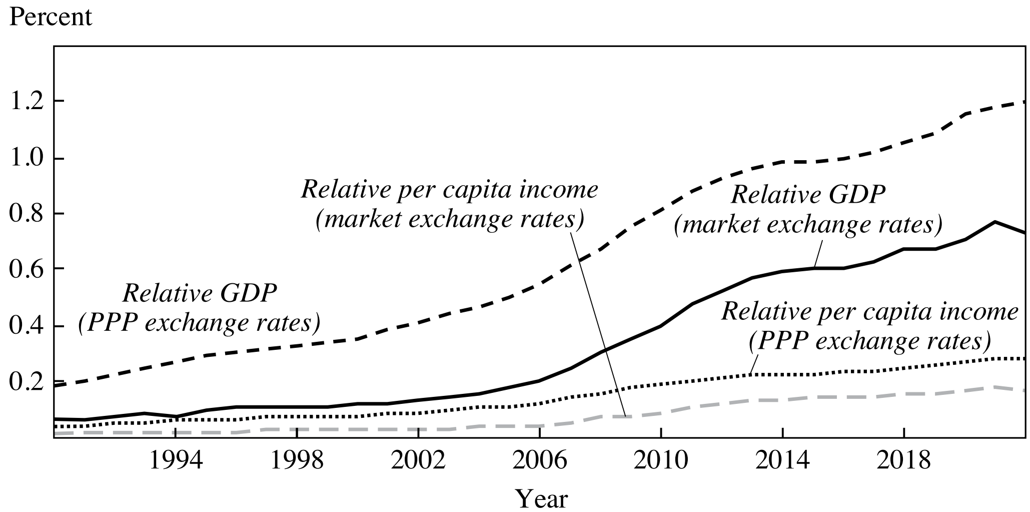
China has had a remarkable run of growth, lofting it from low income status three decades ago to upper middle income status now. China's GDP was $18.3 trillion in 2022 (at market exchange rates), 73 percent that of the United States and ten times more than the comparable ratio of 7 percent in 1990 (figure 1). The gap in per capita incomes is larger. China's per capita income is now roughly $13,000, approximately 17 percent that of the United States, compared to less than 2 percent in 1990. In purchasing power parity (PPP) exchange rate terms, China's economy is now 1.2 times the size of the United States. Over the period 2007–2022, China accounted for 35 percent of global nominal GDP growth (at market exchange rates), compared to 27 percent for the United States (IMF 2022).[1]

China's GDP growth in the last three decades has been reliant on investment growth financed by an inefficient banking system and has occurred against the backdrop of a bloated state sector, authoritarian government, and weak institutional framework. A striking aspect of China's economic performance has been the government's ability to manage the severe economic and financial stresses that have built up as a result of the highly inefficient and risky growth model it has embraced. The government has maneuvered the economy around the seemingly inevitable prospects, at various points, of a banking crisis, massive currency devaluation, housing market meltdown, and economic collapse. Notwithstanding numerous ructions in financial and housing markets and in GDP growth, these plausible doomsday scenarios have yet to materialize.

Yet, each of these near misses has exacted a toll. The huge buildup in domestic debt, the loss of $1 trillion in reserves during 2015–2016, and the highly volatile prices of stocks, property, and other assets are emblematic of the challenges the economy has had to contend with (Setser 2018).

1. The growth contribution figures are based on nominal GDP in US dollars measured at market exchange rates. Measured in PPP exchange rates, China and the United States accounted for 26 percent and 13 percent, respectively, of global GDP growth over this period. While China's GDP is larger in PPP terms, over the period 2007–2022 the renminbi appreciated relative to the US dollar by 12 percent at market exchange rates but *depreciated* by 34 percent at PPP exchange rates (end-of-year exchange rates). China's nominal GDP in US dollars at market exchange rates was 5.1 times larger in 2022 than in 2007. At PPP exchange rates, China's 2022 GDP was 3.4 times its 2007 level. When measured using GDP at constant prices and PPP exchange rates, China accounts for 36 percent of global growth from 2007 to 2022.

Figure 1. Relative GDP and Per Capita Income: China and the United States



Source: IMF *World Economic Outlook,* October 2022.
Note: This chart shows China's GDP and per capita GDP relative to the United States based on market and PPP exchange rates.

They also highlight erosions in the efficacy of macroeconomic policy tools and the government's shrinking capacity to respond effectively to adverse domestic and external circumstances.

Beijing now faces a number of policy dilemmas, some of which are of its own creation—how to continue deleveraging while maintaining growth; how to reduce energy-intensive production while the economy continues to rely on heavy industry; how to get markets to exert financial discipline even as Beijing tries to strengthen state control; how to restrain wealth inequality while relying on the private sector to generate more wealth; and how to encourage private sector innovation while cutting successful private enterprises down to size.

Beijing's attempts to resolve these inherently contradictory impulses in the guise of market-oriented socialism will inevitably lead to further stumbles and accidents. The government's policy approach, while driven by the right objectives, could generate more uncertainty and volatility in the short run, which in turn could reduce public support for much needed reforms to bolster long-term productivity and growth.

Even if no crises materialize and the government succeeds in steering the economy through murky waters, unfavorable demographics, high debt levels, and an inefficient financial system will increasingly constrain China's growth. This gloomy picture has to be offset by the recognition that, for an economy that now accounts for nearly one-fifth of global GDP at market exchange rates (IMF 2022), even a more restrained growth rate relative to its own historical standards will mean the continuation of an extraordinary growth streak.

I. Sources and Structure of Growth

China's official GDP data have become the focus of much attention and some controversy. Whether China's GDP is correctly measured remains a subject of debate, with some even arguing that growth might be understated in certain periods. By and large, scholars seem to agree that data on annual growth rates have become reasonably reliable in recent years, matching up with various other indicators of economic activity (while quarterly growth rates often seem too smooth to be realistic).[2]

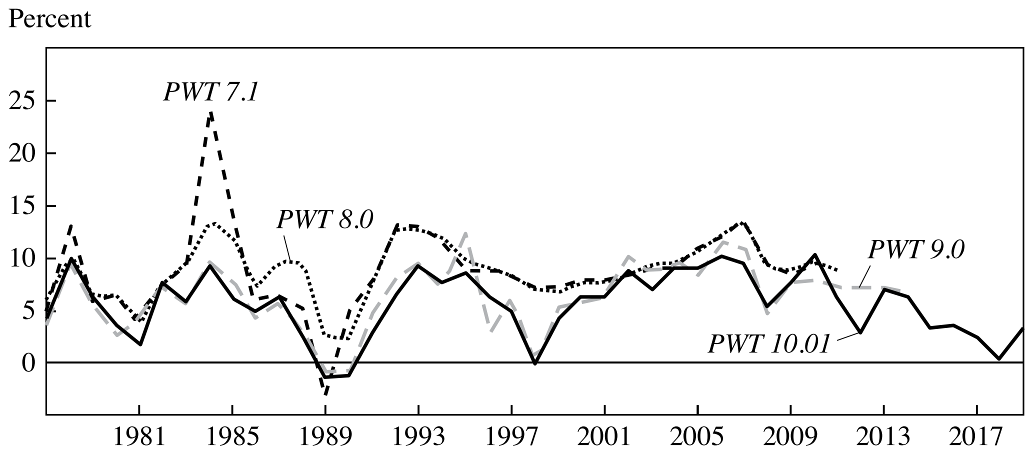
Among other sources of alternative data, the Penn World Table (PWT) is used widely in macroeconomic research since it provides a breakdown of GDP into different expenditure components, in both local currency and international prices, and on a consistent basis for a large number of countries (Feenstra, Inklaar, and Timmer 2015). Based on the then available PWT version 8.0 data, Pritchett and Summers (2014) highlight China's phenomenal run of per capita real GDP growth.[3] They note that "China's experience from 1977 to 2010 already holds the distinction of being the only instance, quite possibly in the history of mankind, but certainly in the data, with a sustained episode of super-rapid (> 6 ppa) growth for more than 32 years" (Pritchett and Summers 2014, 36). They point to Brazil, Japan, and Southeast Asian economies as having experienced periods of sustained high growth before shifting to long periods of low to zero growth, with China being a huge statistical outlier by any measure. Based on analysis of cross-country historical data, they make a strong statistical case for mean reversion pulling down China's growth.

In the latest version of the PWT (10.01), China's growth looks a little less remarkable. Figure 2 shows a comparison of China's growth based on

2. Chen and others (2019) argue that China's official statistics overstate GDP growth by about 1.8 percentage points per annum over the period 2010–2016. Clark, Pinkovskiy, and Sala-i-Martin (2020) reach the opposite conclusion for a longer sample, while Holz (2014) and Fernald, Hsu, and Spiegel (2021) conclude that the official data are mostly reasonable, if a tad too smooth.

3. In later sections of their paper, Pritchett and Summers (2014) use PWT 7.1 to project China's dollar GDP into the future in order to build on some earlier calculations using that version.

Figure 2. Per Capita Real GDP Growth across Different PWT Versions



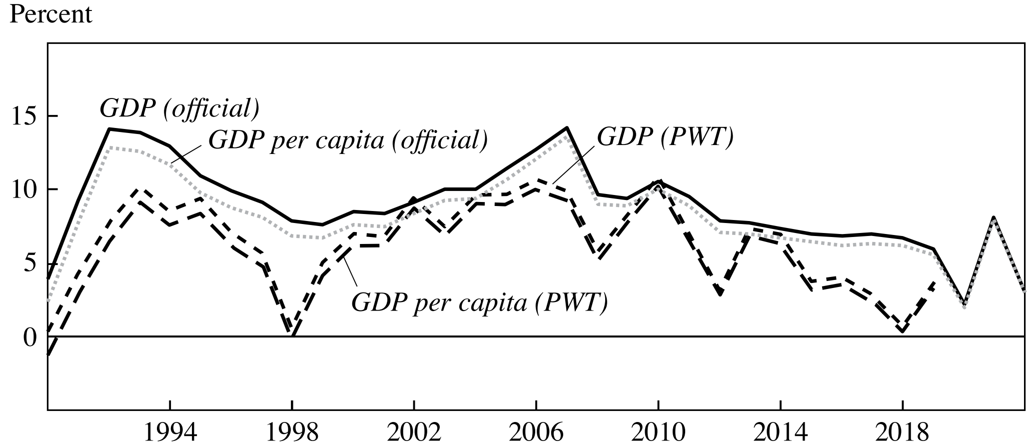
Sources: Penn World Table versions 7.1, 8.0, 9.0, and 10.01.

Note: Real GDP at constant 2005 national prices in PWT 7.1 and 8.0 data, real GDP at constant 2011 national prices in PWT 9.0 data, and real GDP at constant 2017 national prices in PWT 10.01 data. The specific variable used in these calculations is $RGDP^{NA}$, which is the best measure for evaluating the "growth performance of economies" (Feenstra, Inklar, and Timmer 2015).

data from different versions of the PWT. Average annual per capita GDP growth over 1977–2010—the sample in Pritchett and Summers (2014)—is 8.75 based on PWT 8.0 data and roughly 6 percent based on PWT 9.0 and 10.01 (which has data through 2019). China's per capita GDP growth rate was 3.9 percent from 2011 through 2019 per PWT 10.01 and 6 percent from 2011 through 2022 in the official data. Irrespective of which data source (and which version of that source) one chooses to use, Pritchett and Summers's substantive point stands—that China's growth over the last five decades has been spectacular and unique in recent history. And their point that China's growth would perforce slow down seems to be holding up as well, although average growth of 6 percent over a decade is slow only by China's own historical standards.

Figure 3 shows China's growth over the last three decades based on official data as well as data from the PWT 10.01. The trend decline in growth over the last decade and a half is apparent in the data. The pandemic-induced slowdown in 2020 was followed by a strong rebound in 2021, before the government's draconian COVID-19 lockdown policies pulled growth back down to 3 percent in 2022. In late 2022, the Chinese government's reversal of its increasingly untenable zero-COVID-19 policy briefly lifted domestic stock markets and buoyed optimism about China's short-term growth prospects. The government's volte-face can be taken as a sign

Figure 3. China: Annual Growth in Real GDP and Per Capita Real GDP



Sources: World Bank's World Development Indicators and Penn World Table 10.01.
Note: Real GDP in constant local currency units in World Bank data and real GDP at constant 2017 national prices in PWT data. The specific PWT variable used in these calculations is $RGDP^{NA}$, which is the best measure for evaluating the "growth performance of economies" (Feenstra, Inklar, and Timmer 2015).

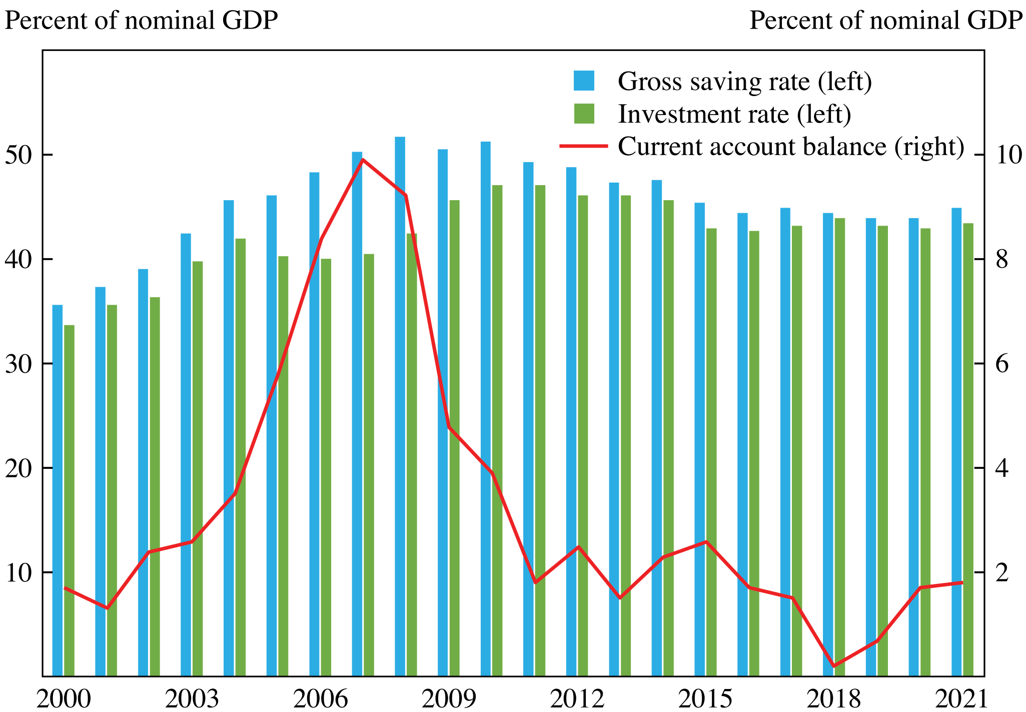
of flexibility or, less favorably, its dogged unwillingness to acknowledge policy errors and undertake a course correction until left with no choice. In any event, the economy seems set for a stronger performance during 2023 than in 2022, but growth beyond that will depend on how structural changes that have been underway in the economy play out.

I.A. Fixing Imbalances

For many years, the Chinese government has touted its goals of rebalancing the economy. This is taken to mean reducing the reliance on investment-heavy growth and getting household consumption to be the key contributor to GDP growth; generating more growth from the services sector rather than low-skill, low-wage manufacturing; and shifting away from capital-intensive growth in a manner that improves employment growth. These could be seen as different facets of the same objective.

In the decade between the Asian and global financial crises, China's large and rising current account surplus—which peaked at 10 percent of GDP in 2007—was seen as an important symptom of domestic imbalances (and as a major contributor to global imbalances). High investment and even higher saving were anomalies to be fixed. Figure 4 shows that some of this rebalancing did take place, with China's current account surplus falling to and remaining at around 2 percent of GDP since 2011. Both saving

Figure 4. Saving, Investment, and Current Account Balance



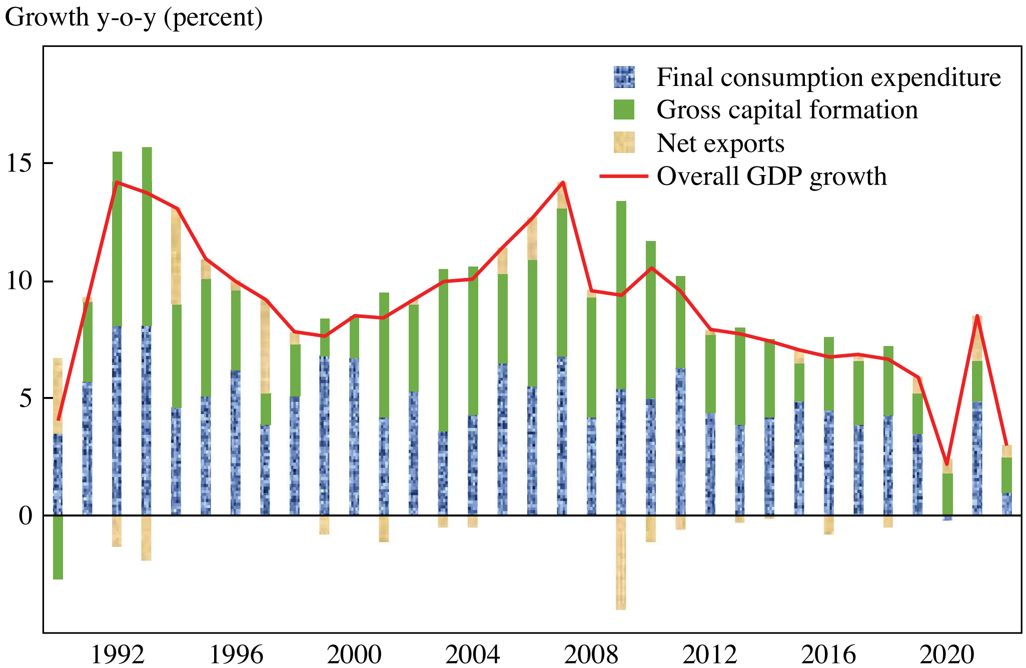
Source: CEIC.

and investment have fallen from their peaks but remain high by international standards. For instance, the investment-to-GDP ratio has declined by 4 percentage points from its 2010–2011 peak but still remains high at 43 percent.

Did the external rebalancing reflect internal rebalancing? Figure 5 shows the contributions of different expenditure components to real GDP growth. Domestic rebalancing initially lagged behind external rebalancing. For much of the last two decades, investment has been the key contributor to growth. This pattern intensified in the immediate aftermath of the global financial crisis, with investment growth accounting for about two-thirds of GDP growth during 2009–2010. Since then, household consumption has become the main contributor to growth. In 2020, with household consumption collapsing during the pandemic, investment again dominated growth. This pattern was reversed in 2021 as pent-up demand sent household consumption surging. It is worth noting that net exports have in general been a relatively modest contributor to China's overall growth.

Given that China has a capital-to-labor ratio that is much lower than that of advanced economies, one could argue that more rather than less

Figure 5. Growth Contributions of Demand Components



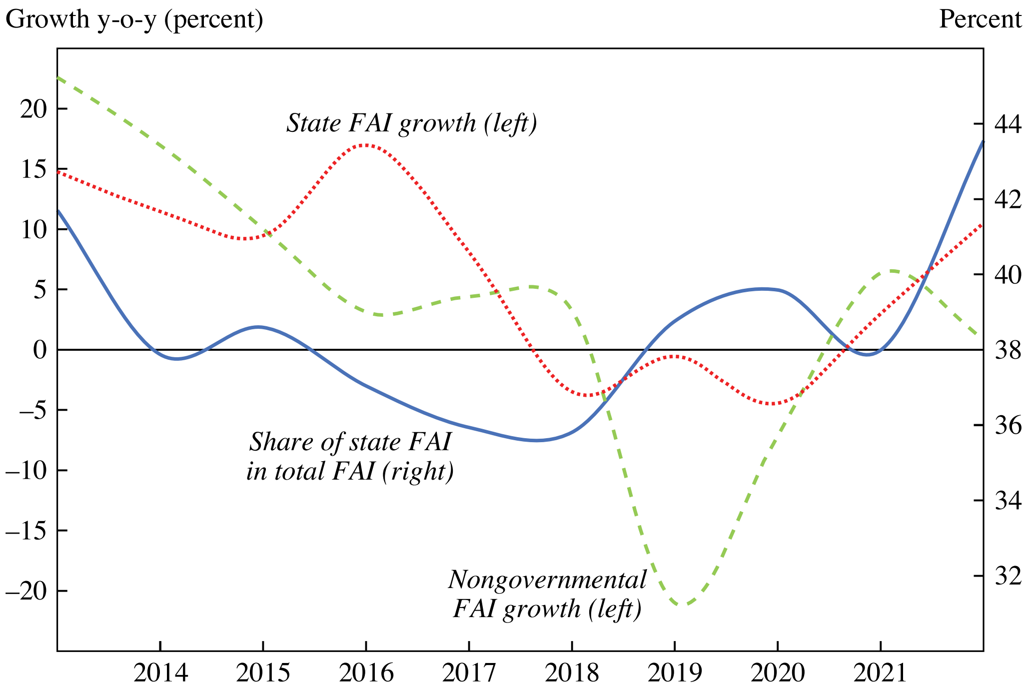
Sources: CEIC and National Bureau of Statistics, China.

investment is desirable.[4] For instance, China's capital-to-labor ratio is only about 28 percent that of the United States. However, recent investment has been driven by the public (state) sector rather than the nongovernmental sector. In 2022, for instance, state investment amounted to 44 percent of total fixed asset investment, a significant increase relative to the corresponding ratio of about 36 percent during 2017–2018 (figure 6).[5] This is not inherently a problem—after all, investment in private sector firms, especially smaller ones, rather than large, state-owned enterprises can be

4. The ratios mentioned in this paragraph are based on PWT 10.01 estimates of capital stocks, total factor productivity (TFP), and GDP at constant 2017 national prices and employment levels for the two countries in 2019. Estimates of capital stocks and GDP at current PPPs yield similar ratios. In principle, estimates of the labor force rather than employment levels should be used in such calculations, but this would not affect the ratio much given current estimates of unemployment rates in both countries.

5. The breakdown of investment into state and nongovernmental is based on fixed asset investment data. This is different from the national income accounts concept of gross fixed capital formation (which is the measure used earlier in this paper). A sectoral breakdown of gross fixed capital formation is not available. For a critical evaluation of various measures of investment in China, see Lardy (2020).

Figure 6. Fixed Asset Investment



Sources: CEIC and National Bureau of Statistics, China.

Note: Growth rates are year-over-year based on monthly data. Starting in 2018, the National Bureau of Statistics stopped providing data on levels of fixed asset investments (FAI). The ratio of state FAI to total FAI is based on imputed end-of-year data.

much riskier. But in China state-owned enterprises, which have collectively received a disproportionate share of bank credit, have typically not generated strong returns on those investments.[6]

The recent collapse in nongovernmental investment growth (figure 6), with state investment accounting for nearly all of the growth in overall fixed asset investment in 2022, is a sign that private businesses might be wary of increasing investment when they see the economic and political environments as unfavorable. Moreover, China's capital-to-*output* ratio is in fact about 50 percent higher than that of the United States.[7] This reflects lower levels of total factor productivity (TFP) and human capital in China

6. As one example of the differentials in productivity and profitability between state-owned and private enterprises, Jurzyk and Ruane (2021) find that publicly listed state-owned enterprises are less productive and profitable than publicly listed firms in which the state has no ownership stake.

7. The World Bank, "GDP Growth (Annual %)—United States, China," https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=US-CN.

relative to the United States. This implies that increasing investment might not be the optimal way to generate growth (Rogoff 2022).[8]

Another aspect of rebalancing that has played out over the last three decades is the gradual increase in the services sector's share of aggregate GDP as well as employment (figure 7). By 2012, the services sector accounted for the largest shares of output and employment and, by 2021, this sector accounted for more than 50 percent of GDP and close to 50 percent of aggregate employment. With this sector accounting for a substantial fraction of employment growth in recent decades, the availability of financing and productivity growth in this sector will be important determinants of China's growth.[9]

In short, while the trajectory has been uneven, there has been significant progress toward the objective of growth rebalancing, with household consumption becoming the key driver of growth and the services sector becoming more prominent than manufacturing.

I.B. Prospects

Speculating about China's medium- and long-term growth prospects has been a growth industry in itself—one that has enormous implications for the world economy as well.[10] Pritchett and Summers (2014) and many other authors have pointed to the risks of extrapolating China's future growth based on its performance over the last few decades. There is a large margin of uncertainty surrounding any projections of growth in an economy undergoing substantial structural change. One can at best use the growth of various factors that go into the aggregate production function as an indicator of what the future might hold.

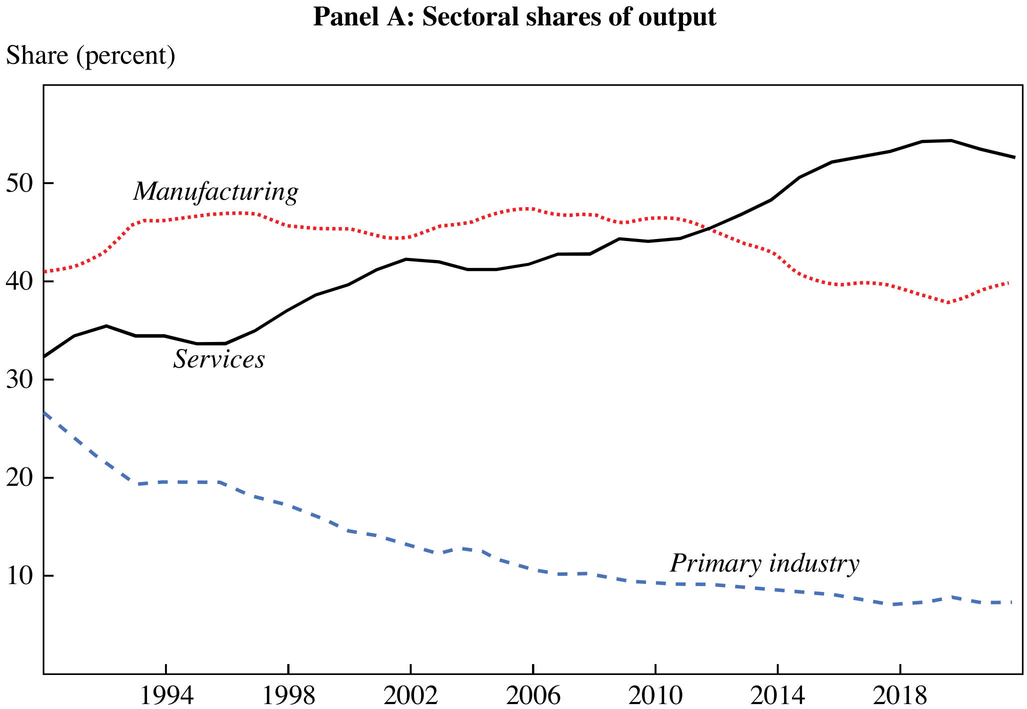
China's labor force, defined as the population in the 15–64 age range, is shrinking (figure 8). By 2030, it is expected to decline at the rate of about 1 percent per year, acting as a drag on growth (immigration is minimal and unlikely to offset this decline). Of course it is not just the number of bodies but the skills embedded in the workforce that matter for output. Is the quality

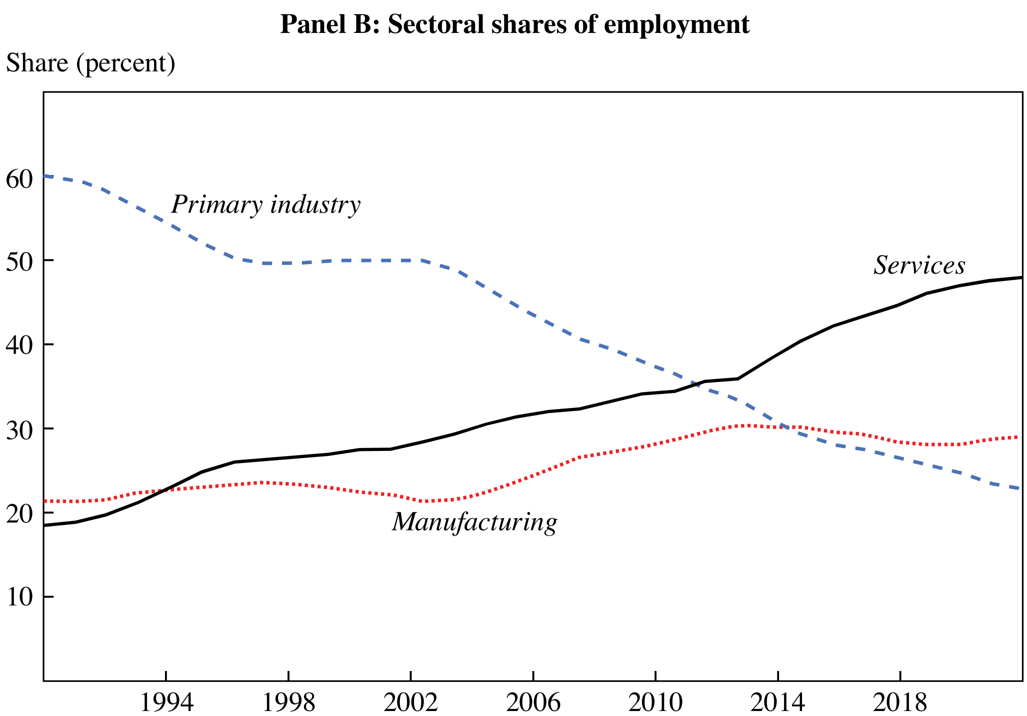
8. For more analysis of these shifts in investment patterns and their implications, see Lardy (2014, 2019).

9. Over the two decades from 1991 to 2021, average annual employment growth in industry and services was 1.5 percent and 3.6 percent, respectively. Overall employment growth averaged only 0.5 percent over this period, as employment in the primary sector continued to shrink. The official urban unemployment rate was 4 percent at the end of 2021.

10. For some recent examples, see Bailliu and others (2017); Dollar, Huang, and Yao (2020); Rosen (2021); and Benzell and others (2022). For discussion of the middle income trap and potential implications for China's growth, see Eichengreen, Park, and Shin (2012) and Kharas and Gill (2020).

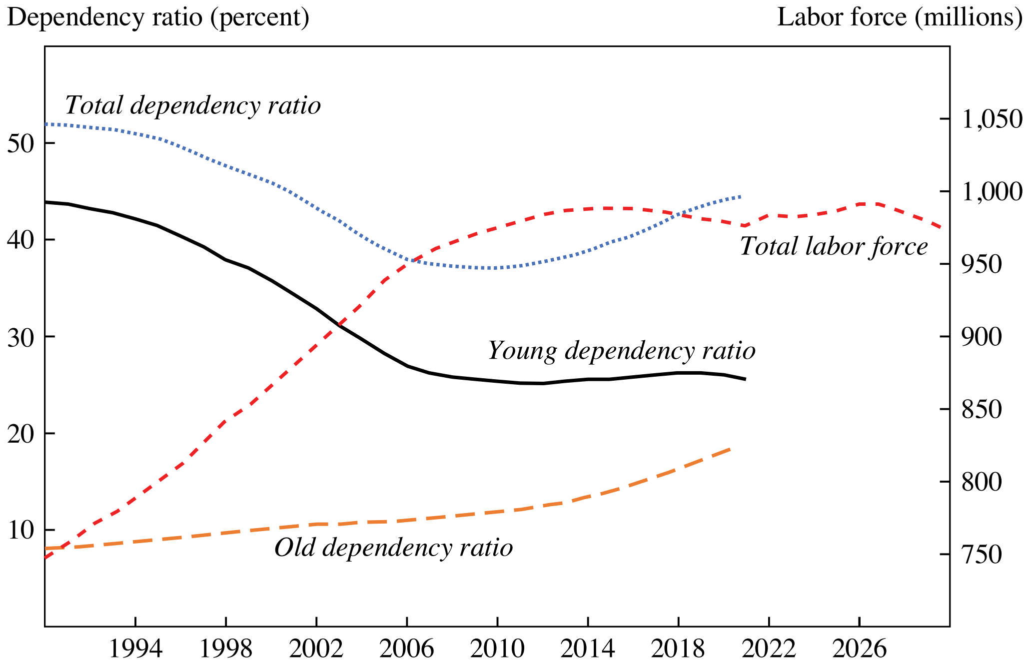
Figure 7. Changes in the Structure of the Chinese Economy





Sources: CEIC Data and National Bureau of Statistics, China.

Figure 8. Demographics and Labor Force



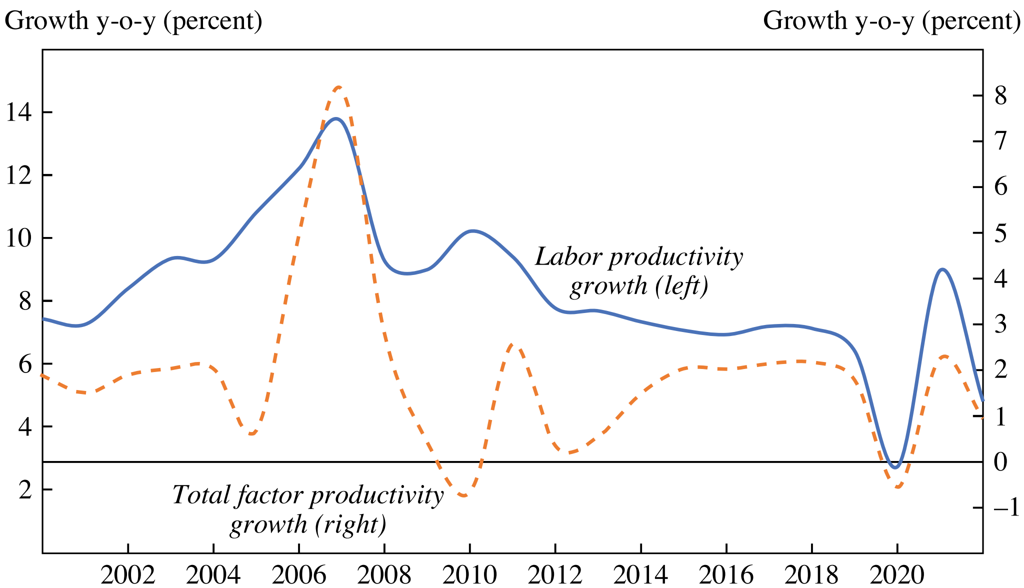
Sources: United Nations; World Bank; and National Bureau of Statistics, China.
Note: Labor force forecasts for 2023–2030 are from the United Nations.

of the labor force improving? China's human capital index in the PWT, based on years of schooling and the returns to education, shows an increase from 1.96 in 1990 to 2.44 in 2010 and then to 2.69 in 2019 (comparable figures for the United States are 3.44, 3.70, and 3.75, respectively).[11] The increase in human capital embedded in each unit of labor could partially offset shrinkage in the labor force, although part of the increase in the PWT's measure of human capital could itself simply reflect higher returns to education on account of a rising capital-labor ratio.

Higher investment growth could pick up some of the slack but that has many risks, as discussed earlier. That leaves productivity: for all the inefficiencies that seem to pervade its economy, China has generated decent TFP growth on average over the last few decades.[12] But as figure 9 shows, productivity growth has been muted over the last decade, with annual TFP growth averaging only about 1 percent per annum. Clearly, China's growth will run aground without an improvement in productivity growth. The government seems to recognize this, but before we discuss its policy approach,

11. These numbers are taken from PWT 10.01 and refer to the variable *hc*.
12. See Bosworth and Collins (2008) and Sasaki and others (2021).

Figure 9. Growth in Labor Productivity and Total Factor Productivity



Sources: CEIC and the Conference Board.

we must consider the possibility that the economy could come off the rails, validating warnings about all the overt and hidden imbalances that have been building up for many years.

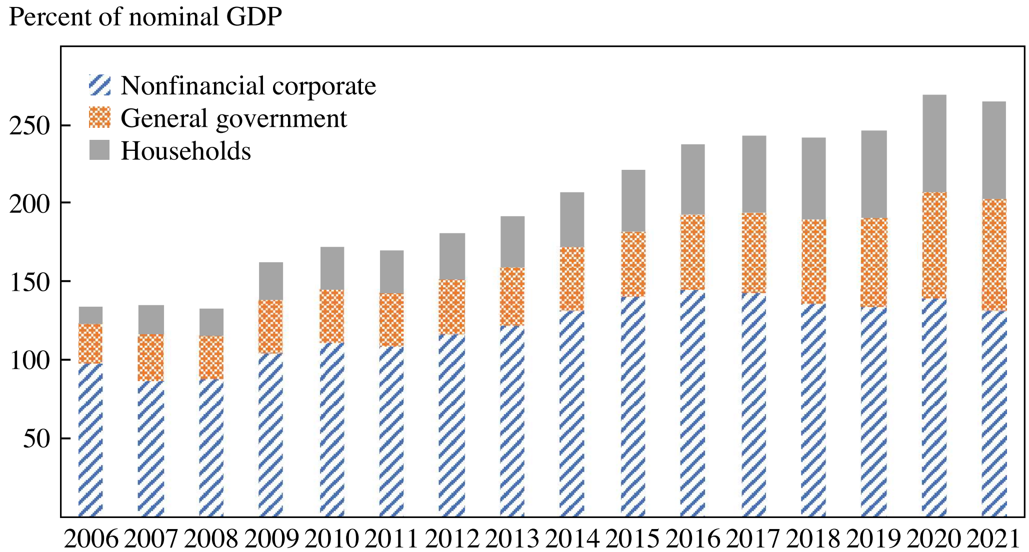
II. Vulnerabilities

A number of domestic and external financial vulnerabilities loom in the background, raising the specter of China's economy being vulnerable to a crash similar to that experienced by other high-flying economies, such as the Four Asian Tigers. There are grounds for concern, but at least some of the traditional red flags—such as high levels of foreign currency–denominated external debt, which have caused numerous emerging market economy crashes—are not present in China's case.

II.A. Debt Distress?

China's overall debt levels and the possibility of a financial crash that spills over to global financial markets have been a significant concern for many years now. Debt levels have indeed risen over time, although gross debt levels are not substantially out of line with other major economies such as the United States and Japan. One important difference is that, as a ratio to nominal GDP, explicit public debt is much lower in China than in most other major economies while corporate debt is higher.

Figure 10. Components of Gross Debt



Source: IMF Global Debt Database.

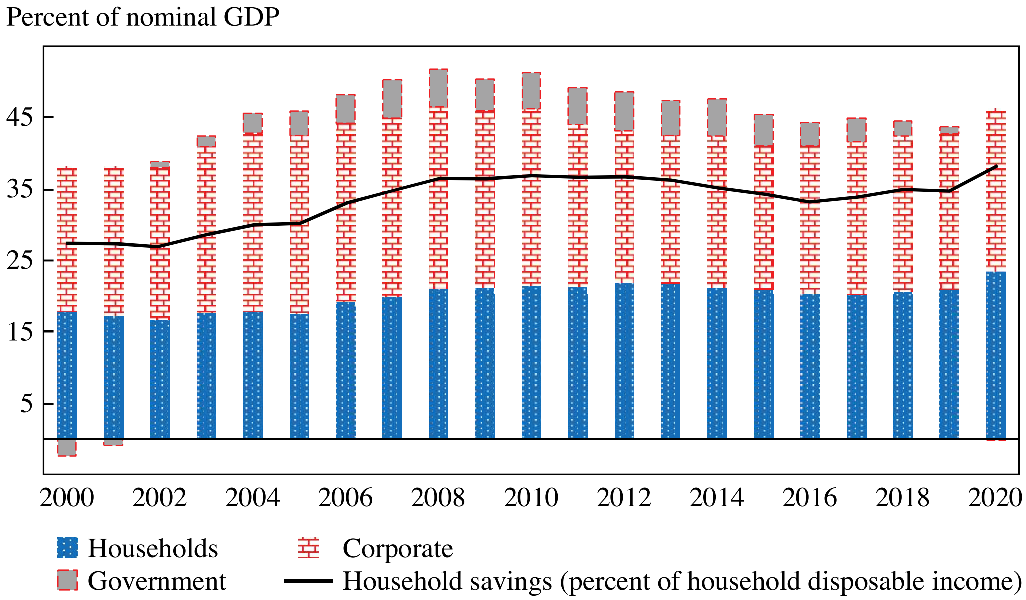
Corporate debt, which rose substantially in the aftermath of the global financial crisis, became a major source of concern and was seen as emblematic of China's investment-heavy growth model (figure 10). By 2016, nonfinancial corporate debt stood at 145 percent of GDP.[13] Recognizing these risks, the government initiated a deleveraging campaign that, by 2021, resulted in corporate debt falling back to 131 percent of GDP. Even though China has a high level of corporate debt, most of this is denominated in China's own currency and owned by domestic banks and investors, creating fewer fragilities than external debt (owed to foreign investors and denominated in foreign currencies such as the US dollar).

There are, however, specific sectors where the concentration of debt could be a problem. The real estate sector, in particular, is a broader source of economic vulnerability. Real estate investment has become a bulwark of the economy, helping to keep growth on an even keel even when other sectors flounder.[14] Local government officials are eager to sell land to developers,

13. International Monetary Fund, "Global Debt Database," https://www.imf.org/external/datamapper/datasets/GDD.

14. Rogoff and Yang (2021) estimate that the direct and indirect domestic value added of the real estate sector (both residential and commercial) is about 24 percent. Adding in the imported content of China's real estate sector would push that estimate up by about 3 percentage points. Rogoff and Yang (2022) and Huang (2023) highlight various other risks related to this sector and their systemic implications. Chen and others (2017) discuss how the real estate boom has exacerbated capital misallocation.

Figure 11. Components of Gross National Saving



Sources: CEIC and Flow of Funds, Ministry of Finance, China.
Note: Corporate saving calculated as the sum of gross savings of financial and nonfinancial institutions.

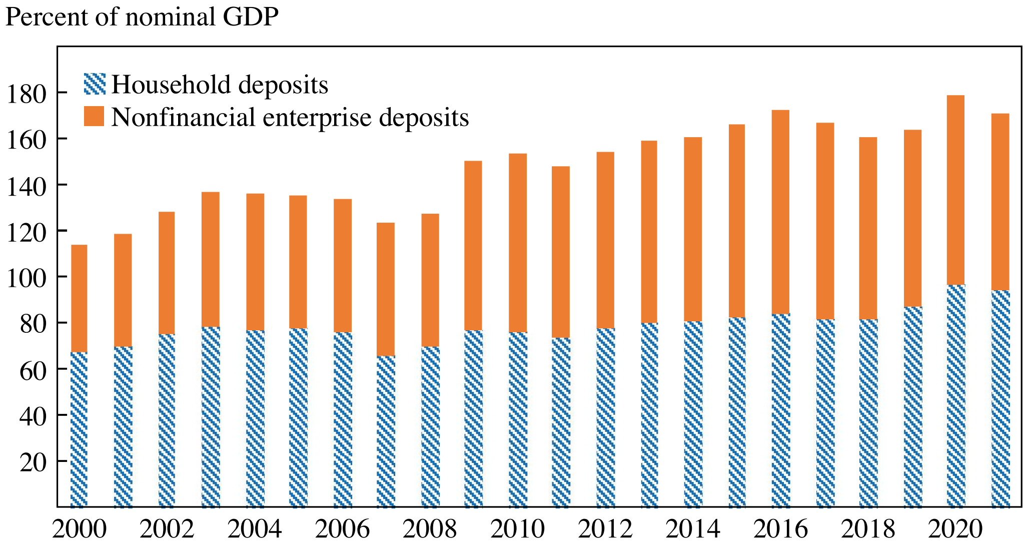
boosting government revenues and enabling a range of expenditures, including pet infrastructure projects. A fall in real estate prices or other factors that restrain real estate activity could thus have broad implications for growth through knock-on effects on other sectors, local government finances, and even household wealth.

Indeed, household exposure to the real estate sector, which has risen partly on account of government policies, has created additional vulnerabilities that could affect not just economic but also social stability. Easier access to residential mortgages, which the government encouraged, boosted housing demand and played a significant role in the surge in household debt, from about 30 percent of GDP a decade ago to slightly more than 60 percent of annual GDP (figure 10). Property has also become a mainstay of Chinese household wealth, accounting for nearly 60 percent of household wealth in 2019.[15] Thus, households are exposed in multiple ways to house price fluctuations.

While corporate and household debt levels are high, however, it is worth noting that saving rates are high as well (figure 11). Take, for instance, household saving which has averaged 25 percent of GDP in the last few

15. This estimate is based on a survey conducted by the People's Bank of China that is summarized in a news story, Xinhua (2020).

Figure 12. Banking Deposits: Household and Corporate



Sources: CEIC; Flow of Funds; and National Balance Sheet, China.

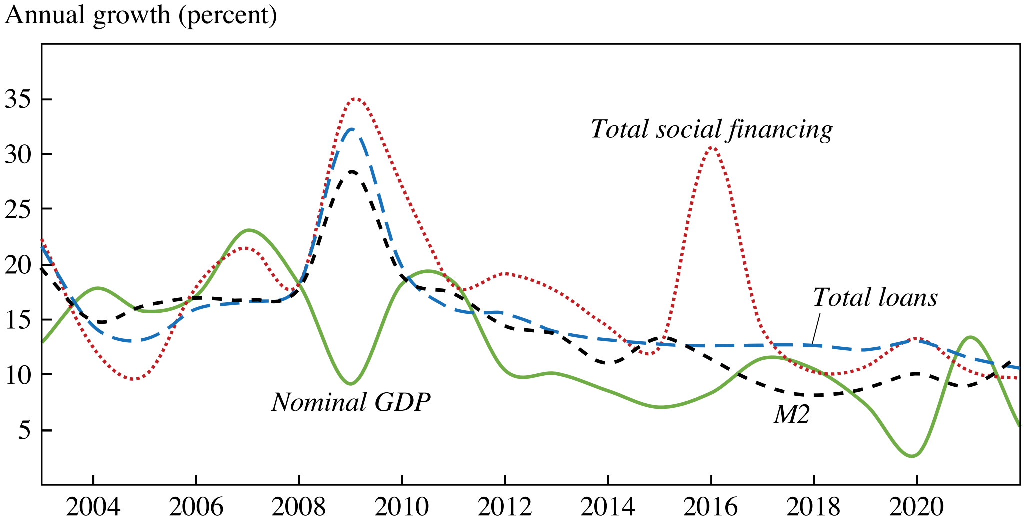
years. This is a flow variable as opposed to debt, which is a stock variable. A stock measure of household savings such as household deposits in the banking system, which amounted to 94 percent of GDP in 2021 (figure 12), portrays a more benign situation. In particular, overall household balance sheets do not appear at risk. In fact, the high level of household saving, which now amounts to 38 percent of household disposable income (figure 11), provides a measure of protection for household balance sheets but also inhibits the objective of boosting consumption growth.

One of the takeaways from this discussion is that much of the debt accumulation in China is financed by domestic savings, making it not so much a source of financial risk as of major inefficiencies and waste because of a broken system of allocating capital.[16] The state owns many of the key creditors and debtors, so a financial shock is unlikely to set off a financial crisis or a collapse in growth. There are still potential concerns about social stability if the government were to account for the true extent of losses in the banking system and use tax revenues to finance a recapitalization, which would be a large and complex undertaking.

Of course, it is not just aggregate levels of debt versus assets but how those are distributed through the economy that matter. A number of property

16. Song and Xiong (2018) reach a similar conclusion.

Figure 13. Growth in Nominal GDP and Monetary/Credit Aggregates

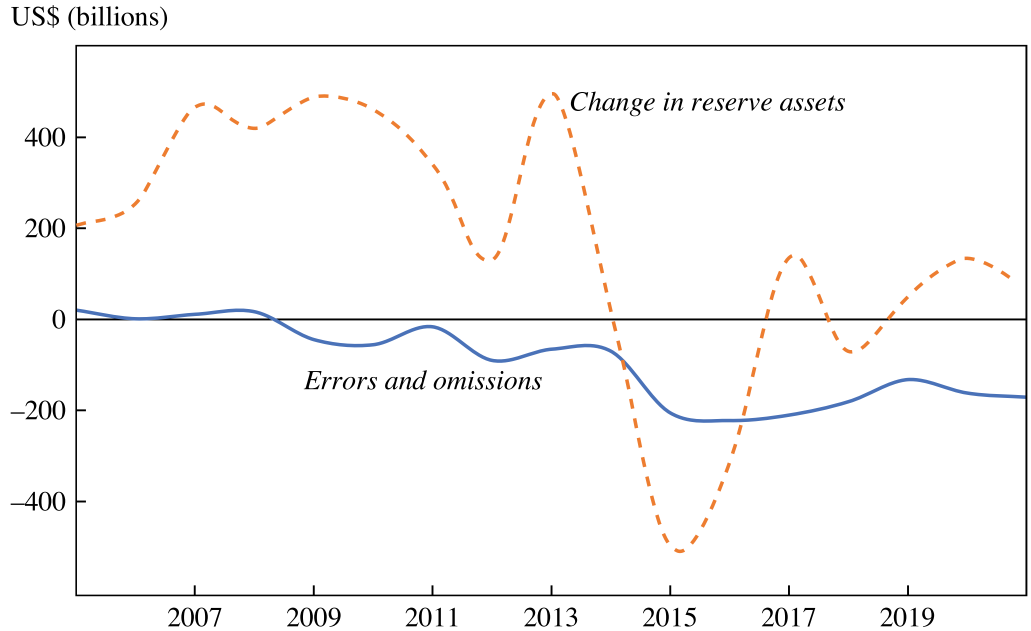


Source: CEIC.
Note: "Total loans" is the sum of total loans denominated in local currency and total loans denominated in foreign currencies.

developers, such as Evergrande Group, have run into financial trouble in recent years. Many property developers who are similarly exposed, with high debt levels and with vulnerable balance sheets if house prices were to tumble further, and a number of financial institutions that have lent to them are exposed to spillovers of problems from Evergrande. But a systemic meltdown is not in the cards. Most major Chinese banks are under state control and can provide infusions of cash to troubled corporations, even if that only pushes problems off into the future. Such stumbles are inevitable as China tries to give market forces freer rein, but the government has enough control and resources to prevent broader financial crashes.

On a less sanguine note, it is worth noting that for a number of years various monetary and credit aggregates have grown faster than nominal GDP (figure 13). These aggregates include M2 and measures of credit growth (total renminbi loans and total social financing, a broad measure of credit and liquidity that includes corporate bonds, foreign currency loans, trust loans, bank acceptance bills, and nonfinancial corporations' equity financing). There was a dramatic discrepancy between growth in these aggregates and in nominal GDP in 2009–2010, a period when the government unleashed a massive gusher of credit to support the economy by financing an investment boom (Hsieh, Bai, and Song 2016). Some of these discrepancies have persisted over time, including in 2020 and 2022. Coming on

Figure 14. Net Errors and Omissions and Changes in Reserves



Sources: CEIC and IMF.
Note: Changes in reserves are calculated from end-of-year stocks of foreign exchange reserves.

top of already high levels of leverage, this portends rising levels of debt that could pose problems in the future.[17]

II.B. External Vulnerabilities

Many emerging market economies have run into distress on account of high levels of external debt, particularly foreign currency debt than can cause balance sheet problems when a country's economy and exchange rate deteriorate simultaneously. China's overall external debt is estimated to be about 14 percent of GDP, far less than most other emerging market economies, and less than half of this is denominated in foreign currencies.[18]

Still, economic and political uncertainty have created concerns about capital flight. For a number of years now, the net errors and omissions item in the balance of payments has been substantially negative (figure 14).

17. According to official data from the China Banking and Insurance Regulatory Commission, the ratio of nonperforming loans to total loans (NPL ratio) in the banking system at the end of 2022 was 1.7 percent. Of the different categories of banks, the average NPL ratio was 1.3 percent for large commercial banks, 3.2 percent for rural commercial banks, and under 2 percent for all other categories. Whether these numbers are an accurate reflection of problem loans in the banking system and how large the effects of loan evergreening are remain open to question.

18. CEIC Data, https://www.ceicdata.com/en.

This is suggestive of a great deal of capital flowing out through unofficial channels, presumably to obviate controls on capital outflows.[19] These outflows seem to have picked up during 2015–2016, when the renminbi came under sharp depreciation pressures and the government also initiated an anti-corruption campaign, and have mostly stayed in the $150–200 billion range since then.

How large could these outflows be if, for instance, a banking panic were to lead to a flight of deposits out of the banking system and out of the country? In 2021, total deposits in the banking system amounted to about 170 percent of GDP (see figure 12). With foreign exchange reserves amounting to about 17 percent of GDP, flight of even 10 percent of total deposits would deplete reserves.[20] This is, of course, an unlikely scenario given that much of the banking system is state-owned and the government would probably back all deposits in the event of a financial panic. Moreover, capital control levers can be quite potent when the government directly controls much of the banking system and, therefore, the main conduits for large capital outflows.

Financial or currency meltdown scenarios are, almost by definition, the result of unexpected sequences of events. While these cannot be ruled out altogether, it is not easy to lay out a plausible scenario for such a meltdown in China.

III. Policy Frameworks and Contradictions

China has used a variety of organizing frameworks for its policies. These frameworks can often sound like slogans rather than policy statements. In fact, they serve as guideposts for a broad range of reforms and even serve to galvanize public support. While there have been reforms in recent years, many of these have been related to the financial sector and capital markets, with far less progress on supply-side and institutional reforms. This lack of balance creates its own risks.

19. The balance of payments identity is as follows: current account plus capital account plus net errors and omissions minus change in international reserves equals zero. A negative net errors and omissions implies that the sum of the current and capital accounts is positive (assuming no change in international reserves). During the early 2000s, when the renminbi faced substantial appreciation pressures and the government was trying to restrict capital *inflows*, net errors and omissions were persistently positive and large.

20. Obstfeld, Shambaugh, and Taylor (2010) argue that emerging market economies take M2 into consideration in determining their reserve holdings. The IMF now incorporates similar measures into its assessments of reserve adequacy.

III.A. Frameworks for Organizing Reforms and Reducing Resistance

Major economic reforms are often undertaken under the shadow of a crisis. Chinese leaders have undertaken some reforms even when short-term growth seems secure and despite potential risks and dislocations. There are multiple elements to any major reform effort—the framework, strategy, tactics, and implementation. At least on the first three, China has created an effective template.

To begin with, let us review examples of policy frameworks deployed by the government. Consider, for instance, how China rallied domestic support around the objective of making the renminbi an international currency, which in turn necessitated relaxing restrictions on cross-border capital flows.[21] Given its underdeveloped financial markets, capital account liberalization is premature for China. But this objective highlighted areas where reforms were in China's own interest—more efficient financial markets, better regulation of those markets, and a more flexible exchange rate. The framework proved important not only for catalyzing the individual reforms but in showing how they fit together and reinforce each other.

Second, a narrative that highlights the broad benefits of reforms can help blunt opposition. A major stumbling block to reforms in emerging market economies is the view, often a legitimate one, that such reforms largely benefit the economic and political elite. China has been effective at creating narratives that build broad support and provide a framework for communicating the logic and desirability of individual reforms. In early 2013, the Chinese government announced the common prosperity plan to reduce inequality, a dubious policy goal if it were to emphasize redistributive policies. In fact, the specific steps outlined in the plan were exactly the reforms China needed—financial market liberalization, reform of state-owned enterprises, and freer labor mobility. All worthy reforms in and of themselves but the narrative helped emphasize that the benefits were designed and intended to be widespread rather than accruing to the select few.

A clear timeline helps build credibility and reduce opposition to reforms. Some years ago, the government announced that within a two-year period it would eliminate the ceiling on interest rates paid on bank deposits. The ceiling had stifled bank competition, resulting in households getting minuscule inflation-adjusted returns on their deposits for much of the last decade.

21. See Prasad (2017), Eichengreen and Xia (2019), and Miao and Deng (2019). For a discussion of China's approach to capital account liberalization, see Prasad and Rajan (2008) and Clayton and others (2023). For a discussion of the indirect (collateral) benefits of capital account liberalization, see Kose and others (2009).

This sort of explicit commitment to a major policy change not only signaled seriousness but also blunted the opposition from banks, which had time to adjust to the change rather than having it foisted on them at short notice.

The implementation of such reforms is a fraught matter, however. China's approach often seems plodding and hypercautious, but it might have some merits in an economy beset with multiple inefficiencies. For instance, despite the strong rationale for the move, removing the ceiling on deposit rates had risks. Weaker banks could offer higher interest rates to compete for deposits, make riskier loans, and set themselves up for failure. While it put in place an explicit deposit insurance system to reduce these risks, the government chipped away at the deposit rate ceiling by allowing the proliferation of other saving products with higher returns. This approach had its own risks as "wealth management products" and off-balance-sheet lending proliferated. Regulators had to aggressively rein in these sorts of activities; nevertheless, these actions by the government eventually helped catalyze interest rate reforms.

Similarly, reform of state-owned enterprises has focused on subjecting them to harder budget constraints and market discipline rather than privatization. Keeping these enterprises in state hands lessens the imperative for reforms but also avoids the risks of large-scale privatization, such as the looting of assets. Small and indirect reform steps—even if inefficient overall relative to a big bang approach—elicit less opposition, pose fewer risks from the reforms themselves, and make course corrections easier.

The government has persisted with this approach. Recognizing the need to improve productivity and shift away from low-skill manufacturing, the government recently articulated the "dual circulation" policy, which implies continued engagement with global trade and finance but seeks a greater reliance on domestic demand as well as technological self-sufficiency and homegrown innovation. This policy, as well as the Made in China 2025 policy, have run into difficulties as China still needs foreign technology to upgrade its industry but US-China tensions have limited the availability of the necessary products and technological expertise.[22] Rising economic and geopolitical rifts with the West, particularly due to Beijing's stance on the Russian invasion of Ukraine and also because of the increasingly

22. Bergsten (2022) and Roach (2022) discuss the US-China economic rivalry and the possible fallout on both countries. For more discussion of the Made in China 2025 policy, as well as its impact and limitations, see Wei, Xie, and Zhang (2017) and Branstetter and Li (2022).

hostile environment toward foreign businesses operating in China, could more broadly limit China's access to foreign technology (and markets for its exports). In addition, there are limits to direct government intervention, not just in the allocation of resources but in an environment where reforms in complementary areas do not proceed in parallel.[23]

III.B. Unbalanced Reforms

Thanks to the efforts of some reform-minded officials, Xi Jinping's government seems to have understood the need for financial sector reforms and liberalization in order to promote better resource allocation. Fixing the financial system is not just about managing risks and avoiding financial disaster but also about allocating capital to the more productive, dynamic, and employment-generating parts of the economy. What will it take?

Since China's financial system is still bank dominated, fixing the banks is a key priority. The reported nonperforming loan ratios of major Chinese banks are low, but that is largely a reflection of that loan portfolio being concentrated in the state enterprise sector. Evergreening those loans, many of which may never be repaid in full, is in the interest of banks in order to keep those enterprises afloat and the loans from having to be recognized as nonperforming. Banks also need the right incentive structure to make loan decisions based on commercial considerations. Bankers are rational in responding to distorted incentives—loans to large state enterprises are safer even if those enterprises are insolvent because of implicit government guarantees. Solving these two problems requires recognizing and removing bad loans from banks' balance sheets, as well as reform of the state enterprises themselves, including weaning them off dependence on bank credit.

The government has also tried to improve market mechanisms to fortify the banking system by putting in place an explicit deposit insurance system, in the hope that markets would better discipline banks based on the riskiness of their balance sheets. But there appears to be a pervasive belief (garnered from observed yields and risk spreads) that the state still provides implicit full insurance to the entire banking system and perhaps even for other financial products. The government will need to demonstrate its seriousness about not protecting weak banks or unregulated saving products. (Much the same can be said for advanced economy governments and central banks!)

23. Branstetter, Li, and Ren (2022) find that Chinese industrial policies have not had salutary effects in promoting productivity.

In recent years, the government has had to deal with episodes of housing market and stock market volatility (Chong 2023).[24] The government has often found itself caught in a schizophrenic effort to strike a balance between maintaining confidence in the market and allowing the market to discipline itself, which has the perverse effect of heightening market turbulence. This on-off approach to intervention has sometimes injected a strong dose of uncertainty on top of already fragile investor sentiment and added to market volatility.

Another lesson to be taken from these episodes of volatility is not that market-oriented reforms can backfire but that they can add to volatility and generate more risks if they are not accompanied by broader reforms. China needs a better institutional framework—including more transparency in its policymaking process, better corporate governance and accounting standards, and more operational independence for the central bank and regulatory authorities—to supplement its financial and other market-oriented reforms. Progress in these areas has been lacking.

The government has rightly encouraged the development of stock and corporate bond markets, both as avenues for firms to raise financing and for savers to get higher returns and diversify their portfolios. But it has done little to improve corporate governance of Chinese companies or their accounting and auditing standards. The resulting opacity has contributed to large fluctuations in stock and bond markets, as investors have little information about the companies they are investing in, leading them to follow and exacerbate market swings. Although China has dropped most restrictions on capital inflows into its bond and stock markets, foreign investors remain wary for the reasons above and also because capital controls have been used as a tool to relieve large transitory pressures on the exchange rate (Prasad 2016).

This highlights the importance of getting regulatory frameworks and other institutional aspects such as public and corporate transparency right while freeing up markets. Otherwise, the result is likely to be more volatility and few of the benefits anticipated from such reforms.

When the government talks about state enterprise reform, it means subjecting them to market forces while maintaining state control. When it allows market forces a greater role in determining the exchange rate, it still wants to maintain stability and control. Reconciling these two contradictory impulses—more freedom for markets but with a heavy hand of

24. FRED Economic Data, "CBOE China ETF Volatility Index," https://fred.stlouisfed.org/series/VXFXICLS.

government intervention to maintain "stability and order"—poses difficult challenges.

Implementing even well-intentioned reforms in a second-best world with rampant inefficiencies involves transitional risks that might manifest in financial and economic volatility. The Chinese government has so far had enough resources and policy space to cope with some of those transitional risks, but it is a legitimate concern that its actions and attempts to clamp down on markets at difficult times might exacerbate problems, with long-lasting consequences.[25]

IV. Conclusion

China has found a way to get results—generating sustained growth over a long period, improving the living standards of its people, avoiding a financial crisis, and pulling its economy through a number of perilous periods for the world economy. It has done all of this without a well-functioning financial system, a strong institutional framework, a market-oriented economy, or a democratic and open system of government. There is certainly cause for humility for anyone attempting to explain the China phenomenon based on the historical record and experiences of other countries.

China's growth model and approach to reforms have not hewed to conventional norms and arguably tensions are building up in the system, with a possibly explosive meltdown at some point. But so far the government has proved adept at navigating around such perils. There have undoubtedly been mishaps, often with significant consequences, but the government has left itself room for maneuver. And there have been many resources wasted over time, with a big bill left to pay at some point in the future.

If the government's goal is to sustain growth, it needs to find ways to improve the allocation of resources within the economy and enhance productivity growth. This will require a better financial system. Indeed, while there are legitimate concerns about China's high rates of investment in

25. One interesting example is the People's Bank of China's attempt, in August 2015, to allow for a wider trading band for the renminbi's exchange rate relative to the dollar. This was intended as a move toward greater exchange rate flexibility. However, the central bank combined this policy change with a 1.9 percent step devaluation of the renminbi relative to the dollar. In the absence of clear communication from the central bank, this move was interpreted by markets as a signal of more devaluation to come in order to boost exports at a time when the economy was weakening. This set off worldwide turmoil in currency markets that lasted for over a year. It cost the Chinese central bank about $1 trillion in reserves to limit the renminbi's further depreciation and prevent a capital outflow/currency depreciation spiral.

physical capital, the capital-labor ratio is much lower than in advanced economies such as the United States, and China still has vast needs for infrastructure in its interior provinces. The challenge is the efficient intermediation of domestic savings into domestic investment, so capital is allocated to its most productive uses. China would benefit from a financial system that does a better job of allocating resources to more productive uses and to dynamic parts of the economy, especially the services sector and small and medium enterprises. This requires fixing the banking system, improving depth and liquidity in bond markets, and tightening regulation to mitigate institution-specific and system-wide risks. Such reforms, in tandem with institutional and supply-side reforms, will help reduce unproductive investment, improve employment and household income growth, and promote more regionally balanced development.

The underpinnings of China's growth seem fragile from historical and analytical perspectives. Things that must end do often end suddenly and in unpredictable ways. Yet, if the government plays its cards right, one could equally well envision a more benign future for the Chinese economy—with growth that is more moderate by its own standards, but that is more sustainable from economic, social, and environmental perspectives.

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Comment and Discussion

COMMENT BY

KENNETH ROGOFF It is a pleasure to discuss these three superb papers on India, Brazil, and China. India and China, of course, both have populations over 1.4 billion people.[1] Brazil is the most important economy in Latin America. All three papers deserve immense credit for managing to give a sweeping overview of current macroeconomic issues facing these economies in very condensed form.

Although these economies have been grouped together in a single panel, and they are all important socially, economically, and politically, China is vastly the most significant in the global economy. It is by any measure the world's second-largest economy, and by some measures first. Using end of 2021 World Bank data, China's 2021 GDP in current dollars at market exchange rates was \$17.8 trillion.[2] India, with roughly the same size population of 1.4 billion people, had a GDP of only \$3.2 trillion. Brazil's economy is only about half the size of India's, but then it has only approximately 15 percent as many people. India becomes significantly larger if one uses the Penn World Table (PWT) to compare "expenditure equivalent" per capita GDP; this is a way to try to compare incomes using a common set of prices for different goods and services. PWT 10.1 is the most recent version, which runs through 2017. It gives per capita GDP in China as roughly \$13,700, in India \$6,000, and Brazil \$14,300; for 2017, the United States is \$60,800.[3]

1. World Bank, "Population, Total," https://data.worldbank.org/indicator/SP.POP.TOTL.
2. World Bank, "GDP (Current US\$)," https://data.worldbank.org/indicator/NY.GDP.MKTP.CD.
3. University of Groningen, "Groningen Growth and Development Centre," https://www.rug.nl/ggdc/productivity/pwt/?lang=en.

A BRIEF OVERVIEW Acharya offers a broad perspective on why India has failed to grow faster and what economic changes are needed to do better. He focuses especially on how Indian growth has been shackled by monopolies. A few conglomerates, particularly the top handful, have outsized footprints and influence. The concentration would not necessarily be crippling if, as in Korea, these firms had to compete with world-beaters from other countries. But the Indian political class's insistence on maintaining perhaps the world's largest tariff barrier regime coddles and protects highly inefficient firms. Heavy protectionism stunts growth and makes India a far less central player in the global economy than it should be. One hopes this will change over time, but so far political forces have resisted mightily, despite the obvious success of the IT and outsourcing sectors, not to mention pharmaceuticals. No single reform would be a magic bullet for development, and Acharya emphasizes several, especially improving education and expanding opportunities for women. Although India has managed decent growth in recent years—indeed, somewhat faster than China—it has been heavily concentrated in urban areas, with rural India still left far behind.

In contrast to India, which has produced some very wealthy people but remains a lower-middle-income nation, China's growth has been the envy of the world, albeit recent rethinking of the way economists compare growth across countries makes China's performance slightly less impressive than had previously been thought. Prasad's paper is replete with important nuances and empirical refinements, making it an invaluable resource. This reappraisal does not diminish the fact that China has continually managed to outperform the expectations of many Western economists who have long seen China as an accident waiting to happen. Given its seemingly weak institutions, inefficient financial sector, and the slow pace of reform, China's performance is remarkable indeed. Prasad acknowledges the arguments of skeptics but pushes back forcefully on the view that a financial crisis or a major slowdown in trend growth is likely in the foreseeable future; the Chinese authorities have simply proven too adept, again and again.

I learned a lot from the paper, but as I shall discuss below, I am considerably less sanguine about the future. Most immediately, China is likely running into sharply diminishing returns to investment in real estate and infrastructure, as documented in the city-by-city analysis of Rogoff and Yang (2022), which is worrisome indeed given the reliance on real estate construction and infrastructure investment for growth (Rogoff and Yang 2021). The overbuilding problem is particularly acute in the so-called tier 3 cities and below, which are smaller and poorer than the tier 1 and tier 2 cities, yet nevertheless collectively account for 60 percent of China's GDP. In fact, in Prasad's commendably comprehensive analysis, he does note that although China's capital labor ratio is only 28 percent that of the United States, its capital-to-output ratio considerably *exceeds* that of the United States. There is also the matter of China's rapidly aging population and the overcentralization of economic control, which has become considerably more acute the past decade. Last but not least, China appears to have increasingly emphasized investment in defense and security over growth.

The paper by Carvalho and Nechio on Brazil is much narrower in scope than the other two papers but is not lacking in importance, rigor, and ambition. The paper exploits a remarkable data set on the inflation expectations of professional forecasters that the central bank in Brazil, Banco Central do Brasil (BCB), with tremendous foresight, started gathering in 2002, shortly after the country's adoption of inflation targeting. The data set allows the authors to construct a measure of "inflation unanchoring" with medium-term expectations (they particularly focus on eighteen months in line with the BCB's focus). They show that there is now a worrying unmooring of inflation expectations, which has taken place twice before in this century, in each case only being reversed with painful adjustments, and only when fiscal policy became supportive. They show that "reanchoring" typically takes a couple of years and at large cost. Although certainly Brazil is quite different than an advanced economy today, the authors argue that nevertheless the estimates are sobering, and of course it was not so long ago that advanced economies experienced enormous difficulties in bringing down inflation expectations.

FURTHER THOUGHTS Acharya gives an excellent overview of where India's economy stands today, not only providing cogent analysis of the problems but a useful quantitative perspective. A key theme is that India's high aggregate growth numbers in recent years mask how little progress has been made in rural India, where, as Acharya observes, well over half the population lives at barely subsistence levels. (Academic debate about exactly where the world poverty line lies obscures the almost incomprehensible chasm between the standard of living for low-income residents of Western nations and low-income citizens of rural India.) Acharya argues that without key reforms, things are not going to improve anytime soon. Among the reforms he emphasizes are lowering tariffs, reducing monopoly power and fiscal deficits, improving primary and secondary education, and raising the labor force participation of women. Although all of these are of fundamental importance, perhaps the most frustrating are India's tariff barriers, since of course they can be reduced with the stroke of pen. Tariffs for most goods did come down sharply thanks to India's hugely successful 1991 IMF program, but with an average rate of over 18 percent in 2021, they are still among the highest in the world (WTO 2022; Alessandrini and others 2009). India's tariff wall effectively cuts it off from the global supply chains which have bolstered growth among many other Asian countries in recent decades. Supply chains work by assigning production to the most efficient supplier country at every stage, but they cannot work if every time an intermediate product crosses a national border, it is hit with a heavy tariff. India's tariff regime is perhaps built for another era, certainly not this one.

For years, defenders of the high-tariff status quo have pushed back, arguing that as modern manufacturing plants become ever more automated, the time to follow the Asian growth model as a vehicle to employ India's youthful population had long passed. While it is true that technology and robotics are increasingly making employment growth through manufacturing exports a less viable approach in some industries, countries such as Vietnam are showing there are still plenty of lower-tech industries where it can be done. Moreover, just now, with geopolitical tensions forcing many firms to adopt a China Plus One model—that is, to keep existing plants in China but diversify with plants in another country for future production growth—India would have a huge opportunity were it not isolated by tariffs and other forms of protectionism, for example, limits on foreign ownership and investment.

Longer term, for India to reach its potential, it must also educate its rural population and bring more women in the labor force; Acharya shows that on both counts, India does not stack up well against successful Asian economies. With the right policies, there is the potential to bring hundreds of millions of desperately poor Indian citizens into the world's middle class. True, the one percent in India would hugely benefit from changes that raise India's growth trajectory, leading many rich-country academics and media commentators to complain about neoliberalism and the Washington Consensus. My guess, however, is that the overwhelming majority of Indians would vote for freeing up India's economy in a heartbeat, if the costs, benefits, and risks were honestly and transparently presented to them. (It would be important to redistribute a share of the benefits of globalization, an area where the United States has fallen short.) Unfortunately, there are deep-seated reasons why India has not managed to achieve the growth seen in East Asia.

In his passionately argued 2023 book, *India Is Broken,* Ashoka Mody argues that since achieving independence in 1947 India's government, beginning with its first prime minister, Jawaharlal Nehru, has failed its people. Nehru and later prime minister Indira Gandhi famously eschewed markets for a form of democratic socialism that worked to a degree at first but that by the mid-1980s had completely lost credibility. As has often been the case with overly powerful centralized governments, absent strong checks and balances, a system of cronyism and corruption first crept in and then became all-consuming. Powerful monopolies, protected by a massive wall of trade barriers, became ingrained. For the (relatively) rich Indians, these were not a flaw but a feature of the system, and they successfully lobbied to protect it, as Mody demonstrates. India failed to ride the manufacturing export wave that first Japan, then the Four Asian Tiger countries, and then China and Vietnam, have exploited.

As noted earlier, India did open up in the 1990s, prodded by a transformational IMF program (most Indian policymakers give the IMF program considerable credit even if some of the IMF's most vocal Western academic critics cannot bring themselves to do so). Indeed, the IMF program was hardly radical, but nevertheless it led to reforms that gradually propelled India forward for some time. Unfortunately, this initiative had burned out by the early 2000s. Today, India, with Narendra Modi as its current president, has found growth in some areas—particularly in digital technology, as Acharya documents—but the majority of the population has been left behind, living at a level of rural poverty most Americans have never seen and have no concept of.[4] Whatever one thinks of the American economy having not produced good middle-class jobs, the problem is an order of magnitude worse in India. With its incredibly young population (more than half under thirty), India ought to be taking over as the growth engine of the world (Pradhan and Chatterjee 2023). Instead, even college graduates, if they fail to land cushy lifetime government jobs or ambitious jobs in the digital sector, are either unemployed or massively underemployed. India has tried to emulate China to some extent by investing heavily in infrastructure, and there have been massive improvements, but the sector is perhaps less efficient than China's; moreover, it is difficult to reap the rewards as long as the tariff wall stands.

To be clear, Mody's (2023) prescription of having Indian politicians be more honest and less self-serving seems utopian. But his diagnosis of the core problem—India's politicians and political system—is spot on, and how to fix this cuts to the heart of development. There is a huge debate in development about whether the problem is institutions—as Acemoglu

4. Oxfam International, "India: Extreme Inequality in Numbers," https://www.oxfam.org/en/india-extreme-inequality-numbers.

and Robinson (2012), building on Landes (1998), argue—or culture, which Alesina and Guiliano (2015) emphasize. India has suffered from having prime ministers who took on too much power and did not use it wisely, with perhaps the worst offender being Indira Gandhi in the 1970s. Yet this argument alone does not provide a sufficient explanation; other countries have had strong autocratic leaders who nevertheless managed to open up their economies to benefit from trade integration.

The postwar experience speaks very clearly to the point that any countries that have tried an insular approach and eschewed strong export orientation have failed to achieve development escape velocity, unless one wants to point to the former Soviet Union.

Acharya notes that India's consolidated government deficit has consistently exceeded 10 percent in recent years, reaching as high as 14 percent. Of course, some of this is simply the result of the pandemic, but it has been a long-standing problem in India for decades now. Historically, the government stuffed the debt into the state-controlled banks, which allowed the deficits to be financed at relatively low interest rates but at the cost of crowding out private investment. Acharya notes that today the capital markets are considerably more liberalized so the risks of financial repression are less. But this is far truer of equity than debt markets precisely because the bankruptcy laws are so weak and in need of repair. More complete financial liberalization, even if just domestically, would unquestionably put the debt—which exceeds 83 percent of GDP according to the October 2022 IMF Fiscal Monitor—under far greater pressure. Again, the weakness of the political system has made the debt problem chronically difficult to fix, and it has only been contained by constraining India's capital markets and capital market openness. The one bright spot is that reserves now exceed $550 billion, making it relatively easy for the central bank to stabilize exchange rates.

One important area Acharya does not touch on is India's energy transition, which is likely to be a huge point of contention between India and the West for decades to come and to imply massive costs that need to be addressed. India is certainly taking great efforts to use wind and especially solar and is steadily building nuclear power plants, which many advanced economies have perhaps unwisely sidelined (Goldstein and Qvist 2019). India is also heavily reliant on coal, however, which is cheap and abundant, and the government is reluctant to abandon coal for reasons of energy security. It seems to me that the United States and Europe have yet to reconcile themselves to the fact that their own green energy transition efforts, which are especially important to show leadership and potentially to find new technologies, will not be nearly enough to prevent significant rises in global temperatures without inducing developing economies to also embrace the green energy transition. In many cases, and particularly in the case of India, developing economies will need strong inducement, not just financing. In Rogoff (forthcoming), I expand on a long-standing proposal I have had for establishing a world carbon bank, precisely to systemically help developing economies with the green energy transition, providing a framework for both economic incentives and technical assistance.

Prasad's analysis of China asks whether, after the pandemic, China will be able to resume anything like the kind of growth rates the country has had in the past. The paper offers a thoughtful and balanced overview of the Chinese economy. Prasad is absolutely right to emphasize how Western economists need to have some humility in assessing China's growth prospects, given how it has managed to persist with high growth despite low levels of financial and institutional development, high levels of debt, and a state-dominated economy.

However, my own take is more pessimistic. I completely agree that the problem China faces is not necessarily imminent financial catastrophe; Prasad dismisses that given China's extremely high household savings rate (over 25 percent), relatively low external debt, and especially the ability of the authorities to quickly intervene and allocate losses in the event of any financial crisis. Admittedly, this relatively sanguine view of China's financial vulnerabilities has yet to be stress-tested. Despite having a central government that can adjudicate losses far more expeditiously than say, the United States' court system, a financial shock would cause huge battles over the size and allocation of losses. And even absent bank runs and bank collapses, it would be exceedingly difficult for China to avoid the credit collapse that would inevitably accompany a sharp weakening of growth, with central government stretched thin to bail out both financial firms sitting on bad debts and heavily indebted local governments.

Setting aside crisis, China still faces sharply diminishing returns on its go-to growth sector, real estate. Including direct and indirect inputs, real estate accounts for roughly a quarter of total aggregate demand in China, and that figure would be even higher still if infrastructure spending is included (Rogoff and Yang 2022). The core problem is not just the overall size of the sector but the fact that cumulative construction and building is so huge after decades of building at breakneck speed.

In Rogoff and Yang (2022), we look at detailed city region–by–city region construction and real estate data for 284 Chinese cities, ranging from the four marquee tier 1 cities (Beijing, Shanghai, Shenzhen, and

Guangzhou) to the thirty-five tier 2 cities to 250 smaller and generally less affluent tier 3 cities, over the period 2000 to 2022, including both residential and commercial real estate. We reach two key conclusions. First, the size of the real estate sector in China is enormous; as a percentage of GDP, it is on par with Ireland and Spain at the peak of their booms, and far higher than that of the United States before the crash that began in 2007. The second conclusion comes from constructing a novel annual measure of the total cumulative size of the housing stock, making use of national census data (every ten years) and annual data available at the city level. Incredibly, China appears to now have a measure of square meters per capita of housing on par with countries such as France, Germany, and the United Kingdom, which have per capita income (measured at current dollar exchange rates) more than three times that of China's. The broader point is that after years of massive building of real estate and infrastructure, China is almost surely running into diminishing returns. The problems are particularly acute in tier 3 cities, which account for 60 percent of China's GDP and roughly 50 percent of the market value of its real estate. In effect, China has poured money into construction in tier 3 cities on the theory that it would help incentivize and rationalize a greater spreading out of the population, which can be observed in most countries. But simply put, the good jobs never came, and the tier 3 cities are now experiencing falling housing prices and declining populations. The fact that this key driver of China's growth strategy is running into diminishing returns is reminiscent of the obstacles faced by the investment-led growth strategies of Russia, Japan, and East Asia.

And financial risks cannot be dismissed entirely. It is true that the state-owned banks are basically backed by the central government, but city-level commercial banks and rural commercial banks have been rising rapidly in importance, particularly after 2005. They are more aggressive than bigger state-owned banks and have arguably become a significant risk factor in the banking system. Moreover, China is a bank-dominated financial system, where financing through bank loans is much larger than financing through capital markets. The shift to direct financing through bonds, as China aspires to do to enhance efficiency, will not be easy.

There are other problems as well. China faces a demographic crater: its population is projected to fall from over 1.4 trillion people today to a trillion or less by 2100.[5] As Prasad notes, the labor force is set to fall

5. United Nations, "Population," https://www.un.org/en/global-issues/population.

by 1 percent per year starting in 2030. China still has much to gain from importing Western technology, again as noted by Prasad, but surely there are diminishing returns here too compared to the early decades of opening up. Perhaps the most problematic near-term problem though is the huge centralization of power and decision-making that has taken place since 2013 under Chinese president Xi Jinping. Part of the reason China has been able so successfully to navigate problems that have derailed other fast-growing emerging markets is the country's ability to have very effective technocrats, making effective use of competition, incentives, and continuing education. It is not clear whether this tradition of excellence will survive the increasing centralization of power. If the desire to emphasize loyalty over competence weakens China's economic management, obviously the country's ability to consistently outperform will weaken.

Finally, how much has China actually outperformed? Prasad presents some interesting new numbers that have come out of attempts to develop more refined cross-country comparison of growth. He notes that "in the latest version of the PWT (10.01), China's growth looks a little less remarkable. . . . Average annual per capita GDP growth over 1977–2010 . . . is 8.75 based on PWT 8.0 data and roughly 6 percent based on PWT 9.0 and 10.01 (which has data through 2019). China's per capita GDP growth rate was 3.9 percent from 2011 through 2019 per PWT 10.01 and 6 percent from 2011 through 2022 in the official data." This is actually a rather stunning downgrade of China's performance, and it is an important contribution by Prasad to highlight it. It's beyond the scope of this comment to discuss the details, but fundamentally it is not trivial to try to make purchasing power parity comparisons of output across countries that have vastly different production and consumption patterns.

We now turn to Brazil. The paper by Carvalho and Nechio focuses narrowly on one particular problem that Brazil faces, anti-inflation credibility. Moreover, Brazil's inflation credibility problem is emblematic of a host of broader macroeconomic problems that it faces. The paper begins with the real exchange rate stabilization problem in the early 1990s, but to put the country's credibility problems in context, it is important to understand that Brazil had two periods of hyperinflation before that (Reinhart and Rogoff 2009). After the collapse of the real plan, Brazil instituted an extremely ambitious inflation targeting regime in 1999 under central bank governor Arminio Fraga, who had been airlifted into the government from his position as a hedge fund manager in New York. Along with the inflation targeting regime instituted by Mexico's Guillermo Ortiz Martínez, this was the first time inflation targeting—really a mechanism for asserting central bank independence—had been tried seriously in an emerging market. The enduring success of the regime is remarkable; the fact that we can now consider it a problem when inflation expectations deviate by even 2 or 3 percentage points from target is quite an achievement in a country that has known 2,000 percent inflation (Reinhart and Rogoff 2009, 186). Of course, inflation targeting would be meaningless without central bank independence to underpin it (Rogoff 1985), and here the Banco Central do Brasil has been remarkably effective in asserting itself, despite incredible pressures at times.

The authors mark three instances where despite the inflation targeting regime, credibility became de-anchored in the way they attempt to measure. All three times were associated with political transition: 2002 with the first election of Lula, 2015 with the second term of Rousseff, and now again starting in 2021 with the return of Lula. They emphasize how, in all three cases, political transition sparked fears of a general loosening of fiscal policy combined with an undermining of central bank independence. In the first two cases, reanchoring inflation expectations (by their measure) took more than two years and, they argue, came at great cost to output.

The current de-anchoring began under President Bolsonaro, who came into office emphasizing fiscal discipline but who first, in response to COVID-19 and to lagging in the polls against Lula, expanded deficits significantly. It is remarkable how successfully Brazil was able to do this without exploding interest rates, and certainly this would not have been possible without the public believing that the Banco Central do Brasil enjoyed significant independence. Things became worse when Lula won the election and even more so when he came to office, with policies that involved even further expanding deficits. Unlike in advanced economies, Latin American economies were relatively quick to start raising interest rates as inflation unfolded, with Brazil's central bank raising its benchmark Selic rate to over 13 percent.[6] Curiously, the authors find that despite the explosion of inflation Brazil nevertheless experienced, and the obviously expansive fiscal policy, inflation expectations did not become unanchored right away, and really became so only as Lula came to power. Even more curiously, inflation expectations started becoming unanchored after inflation had peaked and seemed to be getting under control. It is an interesting example of how slowly inflation expectations adjust, and if there is a lesson for advanced economies, it is that even if inflation expectations had only

6. Banco Central do Brasil, "Selic Interest Rate," https://www.bcb.gov.br/en/monetarypolicy/selicrate.

moved slightly so far, they may move farther even as inflation falls below its peaks, making it difficult to go the last mile in reducing inflation as central banks hope to do.

A complication in interpreting the Brazilian experience is that its real interest rates have tended to be among the highest of all major emerging markets (along with Turkey) frequently in the past (Seguro-Ubiergo 2012). Brazil's high real interest rates may have to do partly with lingering default concerns but likely also capture an inflation risk premium that may not be well captured in the mean forecasts of the market. The risk premium to compensate for inflation risk, above and beyond what is captured in expected inflation, has likely fallen steadily in advanced economies over the past couple of decades. Another lesson from Brazil is that even if inflation expectations remain reasonably anchored, it is quite possible—indeed perhaps likely—for the term premium in longer-term bonds to increase, even in advanced economies.

In sum, this is an excellent set of papers, giving concise and interesting insights to three extremely important economies.

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GENERAL DISCUSSION Olivier Blanchard made a comment on the significance of whether the Big-5 industrial conglomerates mentioned in Viral Acharya’s paper have become so big that it would be politically extremely difficult to decrease tariffs.

Acharya highlighted this as a key point, suggesting that culture and institutions are linked and that autocratic regimes weaken institutions by attempting to show their ineffectiveness, instigating a shift from reliance on institutions to reliance on the leader. He posited that the focus of the leader on being able to get credit for the progress of the country presents the root of the political economy issue. Acharya referred to Kenneth Rogoff’s mention of *India Is Broken* by Ashoka Mody, concluding that this has been the case in India.[1] He expanded on the point, describing how India was a reasonably private economy under the guise of a socialist economy until Indira Gandhi nationalized a large portion of India. Acharya suggested that she did so in an effort to get reelected by earning credit for the progress made in the country that was being attributed to private companies. Acharya also suggested that since this nationalization approach has failed, India has turned to selecting four or five national champions in the economy as its industrial policy.

1. Ashoka Mody, *India Is Broken: A People Betrayed, Independence to Today* (Palo Alto: Stanford University Press, 2023).

In response to Rogoff's discussant remarks, Acharya noted that India should be prepared for the potential bankruptcy of a large conglomerate and his paper aimed at proposing adequate policy measures. He pointed out that foreign borrowing costs of some of the large conglomerates in India have risen significantly and as a result they are deleveraging sharply, which he suggests is a sign that there might be a problem of a credit risk.

Kristin Forbes referenced Pinelopi Goldberg's paper on whether the world is deglobalizing, also presented at the Spring *BPEA* Conference. Forbes posed the question to each of the panelists of whether the risks they highlighted in their presentations would be aggravated or mitigated if there is a shift toward a more deglobalized trading system.

In response, Eswar Prasad mentioned policy frameworks, such as the dual circulation strategy, which use an indigenous innovation approach and suggested that these signal China's intent to move up the value-added chain and engage in technological upgrading. Prasad pointed out, however, that China is not self-reliant yet and needs American technology. He mentioned that China might be getting to a stage where economic and geopolitical tensions might affect its attempt to achieve domestic objectives.

Forbes then referred to the risks around inflation and fiscal policy that Fernanda Nechio highlighted in her presentation and asked whether a move toward a more deglobalized world would reduce the incentive to maintain fiscal discipline. Forbes inquired whether the ability to stabilize inflation in response to global shocks would be more or less difficult in a less globalized world.

In addition, Forbes posited that trade has been central to the China model. She asked Prasad what a more deglobalized world would mean for productivity and the reforms highlighted in his presentation. Would deglobalization slow down progress in that regard?

Finally, Forbes discussed what a shift toward friend-shoring or having two spheres of trade would mean for China, Brazil, and India. She asked whether this direction would hinder their development due to being less able to benefit from globalization, which has been key to the growth of many emerging markets, or instead improve their position by increasing their bargaining power as the largest world economies seek to expand their trade relationship with them.

Carlos Carvalho posited that a trend toward deglobalization would be less detrimental to Brazil's economy than a bipolar world given that Brazil is a very closed economy that exports a lot of commodities and trading with its important partners in a bipolar world would be more challenging.

Forbes also asked Acharya whether a shift to a more deglobalized world and less market discipline from trade would aggravate risks around market concentration in India, some of which were mentioned in his presentation.

Acharya responded to Forbes's questions by mentioning that if world economies become closed, there will be more concentration in sectors by construction, and he believes inflation will rise from nearshoring activity. Acharya expressed his view that integrating with the rest of the world is key for India to grow its share in manufacturing and become a slightly more exports-focused economy, as Rogoff mentioned in his comment on the three panel papers. Acharya stated that he expects India to remain a services hub but recognizes there are limits until the rest of the reforms (to improve education, skilling, and female labor force participation) are implemented.

Alessandro Rebucci commented on Acharya's focus on nonfinancial sector concentration and questioned whether this concentration might be rooted in concentration in the financial sector as well, and whether capital allocation in this sector might be driving concentration in both the non-financial and financial sectors. He also wondered whether there is a risk that the nonfinancial sector ends up regurgitating part of the financial system.

Acharya commented that in the past decade private banks have grown at the expense of public sector banks and mentioned the Reserve Bank of India (RBI) has prevented weak bank balance sheets from expanding, mentioning the RBI has adopted a "prompt corrective action" policy for weakly capitalized banks. He noted that even though more subtle, public sector banks are now becoming the largest asset management companies, with the biggest equity investments, making reference to the State Bank of India as the equivalent of Vanguard. Acharya mentioned that some of them are significant recipients of mutual fund flows and equity market allocations and noted the importance of researching the resulting implications for efficient capital allocation in the economy.

Tristan Reed commented on the potential assumptions in the markup estimation in Acharya's presentation and posited that including profit margins in the estimation, if not already included, would be more transparent.

Acharya responded that everything goes through if one limits the estimation to the traditional profit margin of companies, which he mentioned is what analysts generally do, and that he sought to do something better along the lines of state-of-the-art academic methods.

Blanchard raised the point that the interest rate at Brazil's central bank is set at 13.75 percent and the inflation rate is at about 4.7 percent, implying real interest rates of about 8 or 9 percent, highlighting that the minister of finance of Brazil is not happy with that.[2] He wondered whether there are reasons to worry about the fiscal path and whether it is a cause or a result of the current fiscal situation in Brazil. Blanchard posed the question of whether the central bank is increasing rates too much, and what difficulties this may pose to the government.

Şebnem Kalemli-Özcan commented on Nechio's mention of Brazil's central bank grooming to the targeting regime, then losing credibility, and then regaining it quicker with the unanchoring index moving less. Kalemli-Özcan brought up how much the central bank of Brazil might care or not about the effects of the nominal exchange rate on inflation, suggesting that even though Nechio and Carvalho only show the second episode, the central bank was likely not interested in the exchange rate in the first episode, suggesting that they just looked at the unanchored expectations and increased the interest rate without mentioning any exchange rate to show capital loss issues. Kalemli-Özcan inquired whether the central bank did the same in the second episode but not in the first episode.

Nechio responded that more statistics, such as exchange rates, interest rates, and inflation, were included in the paper than in the presentation due to time limitations. She mentioned that the movements and effects had been very different in the previous episode in relation to the pandemic and that there was a sizable depreciation in the early stages of the pandemic, while the exchange rate did not move as much since the unanchoring of expectations. However, she emphasized that the same type of movements in effects leading during the period of unanchoring were seen in the first two episodes.

Nechio added that because of recent attacks to the law that granted central bank independence in Brazil in 2021, the authors decided to end their sample in January 2023.[3] She mentioned that, had they included the most currently available data, the degree of unanchoring would be at levels similar to 2015, when Brazil experienced the pursuit of a presidential impeachment and a downgrading. She noted that these attacks are making

2. Focus Economics, "Interest Rate in Brazil," https://www.focus-economics.com/country-indicator/brazil/interest-rate/; "Inflation in Brazil," https://www.focus-economics.com/country-indicator/brazil/inflation/; Marcela Ayres and Ricardo Brito, "Brazil Finance Minister Backs Lula on Rates but Is Focused on Economy," Reuters, February 9, 2023, Brazil finance minister backs Lula on rates but is focused on economy-source | Reuters.

3. International Monetary Fund, *Brazil: 2021 Article IV Consultation—Press Release; Staff Report; and Statement by the Executive Director for Brazil* (Washington: IMF, 2021), https://www.imf.org/-/media/Files/Publications/CR/2021/English/1BRAEA2021001.ashx.

it more challenging for the central bank to reduce inflation. On the topic of the interest rate level, Nechio mentioned that even though the central bank raised interest rates a significant amount, Brazil has rising and unanchored inflation expectations. She noted that many of their correlations are indicative of a relationship between the fiscal stance and monetary and inflation expectations, emphasizing that these are only correlations and that there is interest in researching this further in the future.

Carvalho echoed Nechio's point that Brazil has had high real interest rates over time and that this has been a debate for a long time. He suggested that looking at the record of inflation targeting could help understand whether rates have been excessively high. He mentioned that Brazil has rarely experienced below-target inflation, suggesting that interest rates have not been excessively high and that there is something structural about real interest rates in Brazil that is up for debate. Carvalho added that, for that reason, simple international comparisons of interest rate levels are not very useful.

Jason Furman brought up the distributional issues in China and his perception that even though inequality was increasing in the country, individuals at the bottom economic level were becoming better off and that now, with the Common Prosperity campaign, the rates of economic growth for those at the bottom have decreased. Furman interpreted this scenario as slowing economic growth for the whole Chinese population rather than increasing growth rates for the poorest, prompting the importance of thinking how this might unfold politically and economically.

In response, Prasad expressed his recognition of China's effectiveness at crafting narratives around its reform agenda when compared to the experience of other emerging economies. He brought up the point that internationalizing the renminbi for China meant opening up the capital account more cautiously, allowing the exchange rate to become more flexible with better financial markets, and better regulatory frameworks, which Prasad asserted would be better for China. He followed up by stating that the Common Prosperity campaign offers an avenue to change the narrative and offer support for reforms in light of concern in other emerging economies that economic and political elites will consume the benefits of the reforms. He also noted that China's efficiency in moving a lot of its people from the bottom end of the distribution to a better economic status resonates with the people of China.[4]

4. China Power, "Is China Succeeding at Eradicating Poverty?," October 23, 2020, https://chinapower.csis.org/poverty/.

Reed questioned the view of a decrease in the growth rate from 9 percent to 5 percent as catastrophic, referencing the point made in the Solow model that after capital accumulation the growth rate slows down. He questioned whether the decrease in China's growth rate should be seen as a disaster or as China becoming a middle-income or upper-middle-income country.

Prasad made the point that China has an economy that is over $18 trillion and that a growth rate of 5 to 6.5 percent in real terms adds significantly more to global GDP growth than any other country in the world.[5] He suggested that China may be too harshly judged by its historical standards rather than by international standards. However, he agreed with Rogoff that there are signs of a slower growth rate and pointed to whether and how much the government can change the allocation of resources to be more efficient and increase productivity growth.

In the context of the deglobalization debate, Goldberg pointed to Prasad's mention of capital flight from China and inquired where this capital would go, considering that it is likely no longer welcome in the United States or Europe. She mentioned that one possibility is that the capital go toward financing another of the BRI countries (Brazil, Russia, India), and she posed the question of whether it is safe to assume that capital would leave the country without knowing where it would go.

Prasad responded that capital flight is a concern from the private side and mentioned that it will be challenging for the People's Bank of China to move $100 billion elsewhere, considering the official capital flows China has had for several years before 2014 and 2015. However, Prasad stated that, as errors and omissions show, private capital is going out of the country and that it is unclear where the capital would go.

Goldberg also referred to the reversal in policy in 2021–2022 mentioned by Prasad and pointed out that it would make sense to seek to promote investment, given that there was no domestic demand due to China's zero-COVID-19 policy until recently, although this might be reversed again. Finally, Goldberg commented on Prasad's point that there has been little employment growth while the GDP growth rate has increased. She inquired whether, given China's demographic challenge of an aging population and low employment growth, promoting policies that increase labor productivity wouldn't be a sound strategy or whether there are missing considerations.

5. KPMG, "China Economic Monitor: Q1 2023," February 28, 2023, https://kpmg.com/cn/en/home/insights/2023/02/china-economic-monitor-q1-2023.html; China Power, "Unpacking China's GDP," January 12, 2023, https://chinapower.csis.org/tracker/china-gdp/.

Prasad asserted that there is an argument to generate growth in a country with a shrinking labor force through better investment but highlighted the importance of questioning whether the investment is efficient and financed by a financial system that is open to allocating domestic and international resources to the most productive uses. Prasad added that investment in China is being made largely by public firms and that the rate of return on investment does not look very good.

Prasad referenced Rogoff's work on the importance and risks of real estate investment to China's growth and posed the question of whether this would cause the system to come apart.[6] He mentioned that there are some developers and banks, especially the joint stock commercial banks and some of the rural credit cooperatives, that are very exposed, and he suggested that although it is very unlikely that this would cause a systemic event, there can be spillovers.

6. Kenneth S. Rogoff and Yuanchen Yang, "Peak China Housing," working paper 27697 (Cambridge, Mass.: National Bureau of Economic Research, 2020), https://www.nber.org/papers/w27697.