

Economic Outlook, Prospects, and Policy Challenges

01 CHAPTER

This year's Economic Survey comes at a time of unusual volatility in the international economic environment. Markets have begun to swing on fears that the global recovery may be faltering, while risks of extreme events are rising. Amidst this gloomy landscape, India stands out as a haven of stability and an outpost of opportunity. Its macro-economy is stable, founded on the government's commitment to fiscal consolidation and low inflation. Its economic growth is amongst the highest in the world, helped by a reorientation of government spending toward needed public infrastructure. These achievements are remarkable not least because they have been accomplished in the face of global headwinds and a second successive season of poor rainfall.

The task now is to sustain them in an even more difficult global environment. This will require careful economic management. As regards monetary and liquidity policy, the benign outlook for inflation, widening output gaps, the uncertainty about the growth outlook and the over-indebtedness of the corporate sector all imply that there is room for easing. Fiscal consolidation continues to be vital, and will need to maintain credibility and reduce debt, in an uncertain global environment, while sustaining growth. On the government's "reform-to-transform" agenda, a series of measures, each incremental but collectively meaningful have been enacted. There have also been some disappointments—especially the Goods and Services Tax—which need to be retrieved going forward. Accelerated structural reforms at the Centre, the dynamism of competitive federalism, and good economics being good politics could all combine to maintain the fundamental promise that is India. For now, but not indefinitely, the sweet spot created by a strong political mandate but, recalibrated to take account of a weaker external environment, is still beckoningly there.

INTRODUCTION

1.1 A year ago, the Economic Survey spoke about the “sweet spot” for the Indian economy, arising from a combination of a strong political mandate and a favourable external environment. At the same time, it cautioned against unrealistic expectations of

“Big Bang” reforms because of the dispersed nature of power in India and the absence of that impelling driver—crisis. It argued therefore in favour of a “persistent, creative and encompassing incrementalism” as the guide for prospective action and the benchmark for retrospective assessment.

1.2 This year's Survey comes against the background of an unusually volatile external environment with significant risks of weaker global activity and non-trivial risks of extreme events. Fortifying the Indian economy against possible spillovers is consequently one obvious necessity. Another necessity is a recalibration of expectations.

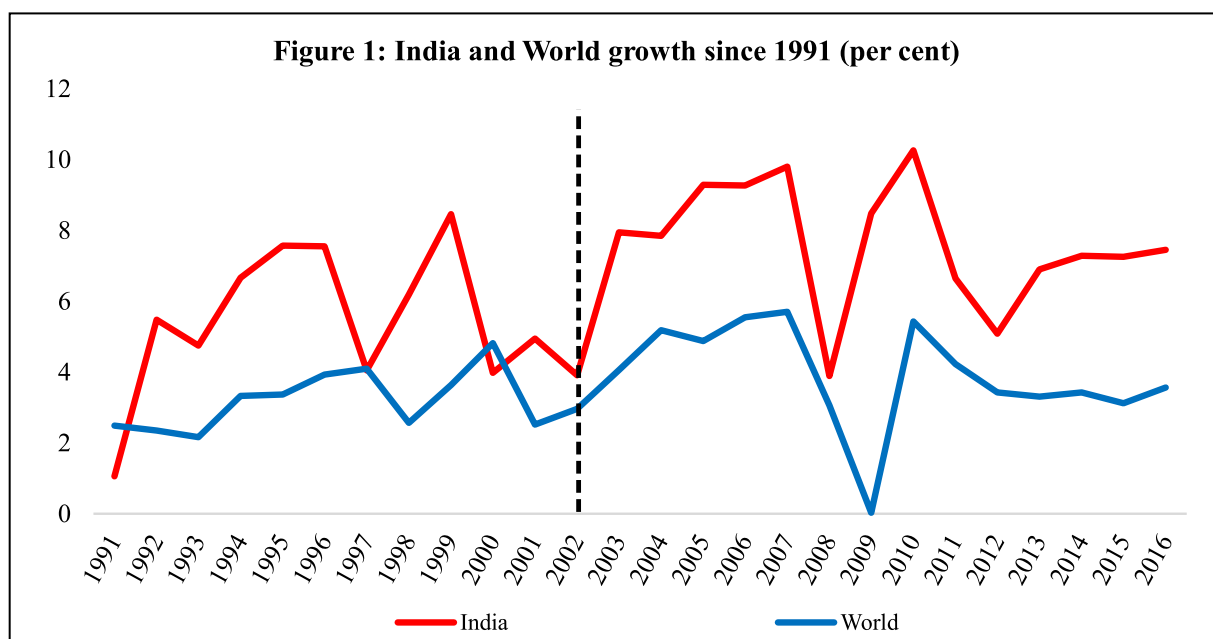
1.3 If the world economy lurches into crisis or slides into further weakness, India's growth will be seriously affected, for the correlation between global and Indian growth has been growing dramatically (Figure 1). Assessments of India's performance over the coming year will therefore need to be conditional. This is not an advance apology for likely future performance but the sobering reality of India becoming "so entwined" with the world.

1.4 Looking backward, the obvious question is: how has the economy performed against the standards set in last year's Survey? India's economic performance can be measured against two distinct benchmarks: India versus other countries; and India versus its own medium-term potential. On the first, the Indian economy has fared well; on the second, steady progress is being made and there is still scope for translating potential into actuality.

1.5 Start with the comparisons with other countries. At a time when the newest normal for the world economy is one of turbulence and volatility, India is a refuge of stability and an outpost of opportunity. Its macro-economy is robust, and it is likely to be the fastest growing major economy in the world in 2016. For an economy where exports have declined due to weak global demand and private investment remains weak, India's economy is performing remarkably well.

1.6 In part, this performance reflects the implementation of a number of meaningful reforms, each incremental, but collectively meaningful:

- Creating the palpable and pervasive sense that corruption at the centre has been meaningfully addressed, reflected in transparent auctions of public assets and non-interference in regulatory decisions;
- Liberalizing foreign direct investment (FDI) across-the-board, including by passing the long-awaited insurance bill. FDI reforms reflect a decisive change in philosophy, from viewing FDI as a tolerable necessity to something to welcome;



Source: World Economic Outlook (WEO), January, 2016 update.

- Vigorously pursuing efforts to ease the cost of doing business, which has allowed India to advance in cross-country competitiveness rankings and become the crucible for “million mutinies” reflected in the unprecedented dynamism of the start-up and e-commerce sectors, and in the interest of large employment-generating companies (Box 1.4 in the Outlook section);
- Restoring stability and predictability in tax decisions, reflected in the settlement of the Minimum Alternate Tax (MAT) imposed on foreign companies, and increasing substantially the limits beyond which the tax department will file appeals;
- Implementing a major public investment program to strengthen the country’s infrastructure and make up for the deficiency of private investment;
- Instituting a major crop insurance program to cushion farmers against adversity;
- Limiting farm interventions which had a first-order effect in moderating overall inflation;
- Elevating to mission mode the financial inclusion agenda via the Jan Dhan Yojana by creating bank accounts for over 200 million people within months. Financial inclusion will also be furthered by the licensing of 11 payments banks and 10 small banks;
- Advancing the game-changing JAM (*Jan Dhan Aadhaar Mobile*) agenda. LPG witnessed the world’s largest direct benefit transfer program, with about 151 million beneficiaries receiving a total of ₹29,000 crore in their bank accounts. The infrastructure is being created for extending the JAM agenda to other government programs and subsidies;
- Attempting to change social norms in a number of areas: open defecation, and voluntarism in giving up subsidies.
- Undertaking comprehensive reforms of

the power sector (especially the UDAY Scheme); and

- Avoiding policy reversals.

1.7 Yet, there was the perception that quantity cannot exculpate quality, that launching and better implementing schemes were privileged over policy changes, and that policies to unlock India’s full supply potential could have been more vigorously advanced. This perception owes in part to a failure to aggregate all the individual reforms and hence to appreciate the sum as more than the parts. It also owes, though, to some disappointments.

1.8 Approval for the game-changing GST bills has proved elusive so far; the disinvestment program fell short of targets, including that of achieving strategic sales; and the next stage of subsidy rationalization is a work-in-progress. Critically, corporate and bank balance sheets remain stressed, affecting the prospects for reviving private investment, a key engine of long term growth.

1.9 Perhaps the underlying anxiety is that the Indian economy is not realizing its full potential. It is incontrovertible that India is still oozing potential. *The country’s long run potential growth rate is still around 8-10 per cent* (Box 1.1 elaborates on this in greater detail). Realizing this potential requires a push on at least three fronts.

1.10 First, India has moved away from being reflexively anti-markets and uncritically pro-state to being pro-entrepreneurship and skeptical about the state. But being pro-industry must evolve into being genuinely pro-competition, and the legacy of the pervasive exemptions Raj and corporate subsidies highlights why favoring business (and not markets) can actually impede competition. Similarly, skepticism about the state must translate into making it leaner, without delegitimizing its essential roles and indeed by strengthening it in important areas.

1.11 Key to creating a more competitive environment will be to address the exit (the

Chakravarty) problem which bedevils the Indian economy and endures as an impediment to investment, efficiency, job creation and growth (see Chapter 2). The Indian economy had moved from socialism with restricted entry to “marketism” without exit. The government is undertaking a number of initiatives such as introducing a new bankruptcy law, rehabilitating stalled projects, and considering guidelines for public private partnerships that can help facilitate exit, thereby improving the efficiency of the economy.

1.12 Second, major investments in people—their health and education—will be necessary to exploit India’s demographic dividend. Tomorrow’s worker is today’s child or foetus—born to and raised by today’s mothers. It would consequently seem important to focus on “mother and child,” involving maternal health and early life interventions, which is the subject of Chapter 5. Raising the necessary resources for investments in human capital is discussed in Chapter 7.

1.13 More broadly, the delivery of essential services is a gargantuan challenge. With increased devolution of resources, states will need to expand their capacity and improve the efficiency of service delivery. That will require them to shift their focus from outlays to outcomes, and to learn by monitoring, innovating, and even erring.

1.14 Improving service delivery in the wake of the Fourteenth Finance Commission requires an evolution in the relative roles of the Centre and the states: the Centre should focus on improving policies, strengthening regulatory institutions, and facilitating cooperative and competitive federalism while the states mobilize around implementing programs and schemes to ensure better service delivery.

1.15 Third, while dynamic sectors such as services and manufacturing tend to grab public attention, India cannot afford to neglect its agriculture (Chapter 4). After all, nearly 42

per cent of Indian households derive the bulk of their income from farming. Smaller farmers and landless laborers especially are highly vulnerable to productivity, weather, and market shocks changes that affect their incomes. The newly introduced crop insurance schemes should begin to address these problems to a great extent.

1.16 Climate change and emerging scarcities will necessitate a focus on “more for less”, and hence redressing the current system of incentives and subsidies, which encourages using more inputs such as fertilizer, water, and power, to the detriment of soil quality, health and the environment. They also disproportionately benefit rich and large farmers.

1.17 Despite the many challenges, there remains considerable room for optimism. Optimism is engendered by the dynamic of competitive federalism. States that perform well are increasingly becoming “models and magnets.” Successful experiments in one state are models for others states to emulate by showing what can be done and stripping away excuses for inaction and under-performance. They are also magnets because they attract resources, talent and technology away from the lagging states, forcing change via the channel of “exit.”

1.18 Optimism is reinforced by events of the last decade that have re-affirmed the dictum that good economics is good politics, even as frequent elections complicate the task of policy-making. Not always and not everywhere but increasingly, Central and State governments that have delivered rapid growth and better governance tend to get re-elected and vice versa. It is telling, for example, that the state governments that have been elected three times have been the ones that have delivered rapid agricultural growth.

1.19 Furthermore, optimism is also fueled

by the Indian decision-making process which allows—hopefully even creates the pressures—for disappointments to be retrieved. The GST is within reach; new bankruptcy procedures, as well as the revival of some big stalled projects such as Dabhol, illustrate that the exit problem can be solved; not only is the infrastructure being created for the game-changing JAM agenda to be translated into reality, there are

numerous silent revolutions taking place all around the country—sugar and seeds in Uttar Pradesh, food and kerosene in Andhra Pradesh, Chandigarh and Puducherry—that are helping the spread, and hence realizing the promise, of the JAM agenda (discussed in Chapter 3).

1.20 In sum, for now but not indefinitely, the sweet spot for India is still beckoningly there.

Box 1.1: What is India's Potential GDP Growth?

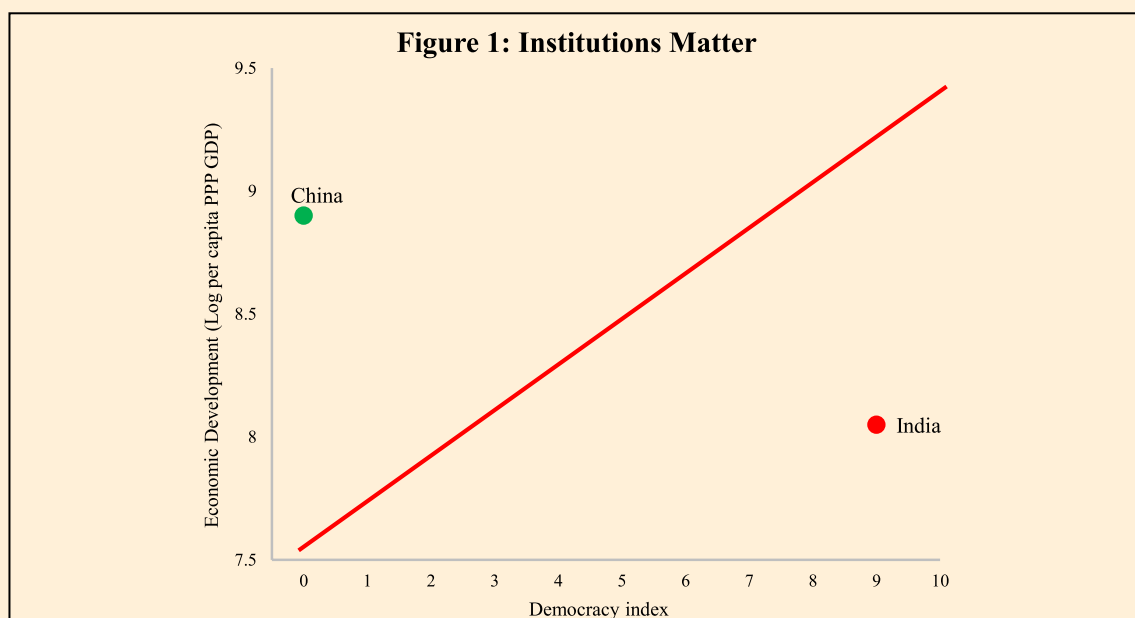
India is oozing potential. That is undeniable. But is it measurable?

Typically, economists measure a country's potential GDP growth in two ways: first, by extrapolating from past growth; and, second, by projecting the underlying drivers of growth: capital (physical and human), labor, and productivity. Both have limitations and both rely on a variety of assumptions.

The first methodology has many variants, including the use of Hodrick-Prescott filters. But they are all essentially mechanical and are really some weighted average of past growth rates. One disadvantage of this method is that variations in actual growth can induce considerable volatility in estimates of potential growth. But potential growth should be relatively stable unless there are some fundamental shifts in the underlying policy and institutional environment.

Estimating potential GDP by projecting the underlying determinants of growth (as done in Rodrik and Subramanian, *"Why India Can Grow at 7 Per Cent a Year or More"*, Economic and Political Weekly (EPW) [2005]) requires assumptions to be made on total factor productivity growth, which can be arbitrary unless they too are based on past performance which leads to the problems noted above.

A different way of estimating potential GDP growth is to use a deep determinants-cum-convergence framework. There is a well-established literature (North, D, *"Institutions"*, Journal of Economic Perspectives, [1991], Acemoglu, D and J.A. Robinson, *"Why Nations Fail: The Origins of Power, Prosperity and Poverty"*, Crown Business [2012]) that suggests that institutions are a key determinant of long run growth. This is summarized in Figure 1 below.

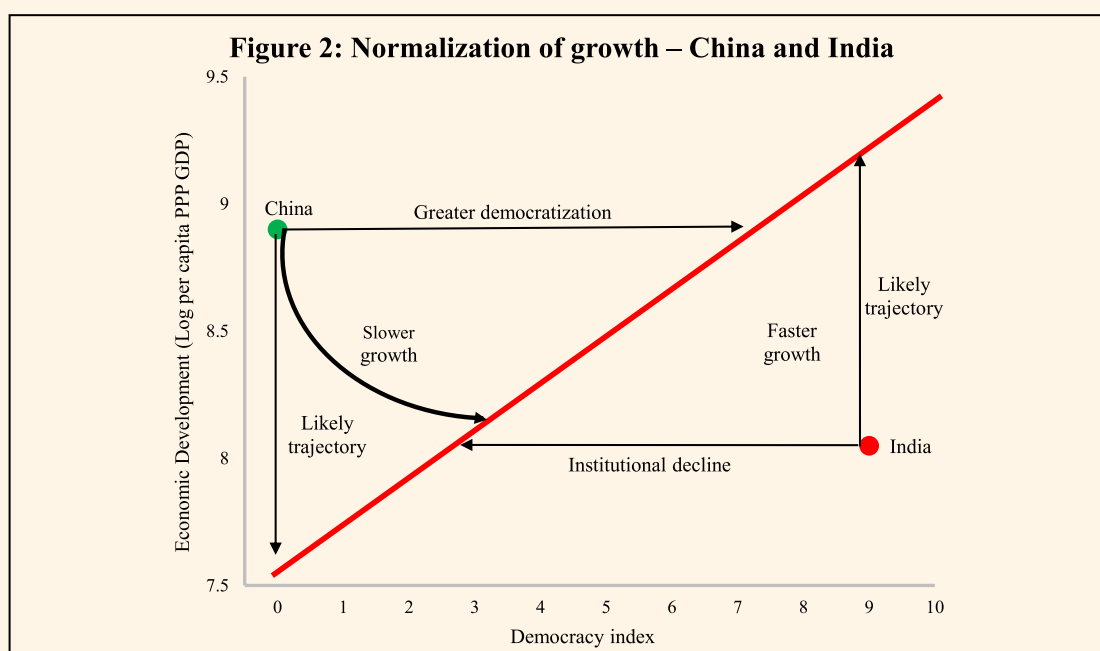


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The upward-sloping line in the figure reflects a strong relationship (on average) between political institutions and economic development that has been found in empirical research, validating the central argument of the “institutions matter” hypothesis. However, China and India are outliers (they are far away from the line of best fit). And the interesting thing is that each of these countries is an exception, or even a challenge, to the relationship but in opposite ways. India (which is way below the line) is not rich enough given its uncontestedly vibrant political institutions. China (which is well above the line) is too rich given its weak democratic institutions.

The assumption is that India and China will mean-revert, that is they will become more typical, and move towards the line of best fit, over the medium term. Mean reversion can happen in different ways. For China, the assumption is that this process of becoming a “normal” country will happen via a combination of slower growth and faster democratization as shown in Figure 2. Indeed, the growth slowdown in China should be seen as a process of normalization after a period of abnormally high growth. For India, normalization should take the form of an acceleration of growth shown in the figure below.

India’s potential growth rate can thus be estimated as a reversion to a state of things where its economic development is consistent with its well-developed political institutions. The question is what is the implied growth rate that is consistent with this mean reversion.



The basic convergence framework provides a framework for estimating, albeit roughly, India’s potential growth rate during this process of normalization (see Technical Appendix for the simple algebra of this computation).

According to convergence theory, India’s per capita GDP growth rate (in PPP terms) between 2015 and 2030 should be some multiple of the difference in the initial level of per capita GDP between the US and India in 2015. That difference is about 2.2 log points. The multiple is called the convergence coefficient—the rate at which India will catch up with the United States. A reasonable parameter from the literature is that this should be about 2 percent per year, at least for countries that are converging. The East Asians converged at a much faster pace but others at a slower pace.

The significance of the figure shown above is that since India has under-achieved so far, it must converge at a faster pace than usual, so that it can revert to the “normal” line. Hence, its convergence coefficient should be substantially better than 2 percent. These PPP-based growth rates need to be converted into market exchange rate growth rates. The resulting estimates are shown in the table below for alternative assumptions about this convergence coefficient.

Based on this analysis, India's medium term growth potential is somewhere between 8 and 10 percent. Of course, this is an estimate of potential, conveying a sense of opportunity. Hard policy choices and a cooperative external environment will be required to convert opportunity into reality.

Table: China and India's Potential Growth Rate, 2015-30 (per cent)

Convergence speed (per cent)	China	India
2	3.3	6.2
2.5	4.1	7.6
3	5.0	9.0
3.5	5.9	10.4

Source: Ministry of Finance calculations

THE GLOBAL CONTEXT

1.21 Since the Economic Survey and Budget were presented a year ago, the Indian economy has continued to consolidate the gains achieved in restoring macroeconomic stability. Inflation, the fiscal deficit, and the current account deficit have all declined, rendering India a relative haven of macro-stability in these turbulent times. Economic growth appears to be recovering, albeit at varying speeds across sectors.

1.22 At the same time, the upcoming Budget and 2016-17 (FY2017) economic policy more broadly, will have to contend with an unusually challenging and weak external environment. Although the major international institutions are yet again predicting that global growth will increase from its current subdued level, they assess that risks remain tilted to the downside. This uncertain and fragile outlook will complicate the task of economic management for India.

1.23 The risks merit serious attention not least because major financial crises seem to be occurring more frequently. The Latin American debt crisis of 1982, the Asian Financial crisis of the late 1990s, and the Eastern European crisis of 2008 suggested that crises might be occurring once a decade. But then the rapid succession of crises, starting with Global Financial Crisis of 2008

and proceeding to the prolonged European crisis, the mini-crises of 2013, and the China-provoked turbulence in 2015 all hinted that the intervals between events are becoming shorter.

1.24 This hypothesis could be validated in the immediate future, since identifiable vulnerabilities exist in at least three large emerging economies—China, Brazil, Saudi Arabia—at a time when underlying growth and productivity developments in the advanced economies are soft (see Box 1.2). More flexible exchange rates, however, could moderate full-blown eruptions into less disruptive but more prolonged volatility.

1.25 One tail risk scenario that India must plan for is a major currency re-adjustment in Asia in the wake of a similar adjustment in China, as such an event would spread deflation around the world. Another tail risk scenario could unfold as a consequence of policy actions—say, capital controls taken to respond to curb outflows from large emerging market countries, which would further moderate the growth impulses emanating from them.

1.26 In either case, foreign demand is likely to be weak, forcing India—in the short run—to find and activate domestic sources of demand to prevent the growth momentum from weakening. At the very least, a tail risk

event would require Indian monetary and fiscal policy not to add to the deflationary impulses from abroad. The consolation

would be that weaker oil and commodity prices would help keep inflation and the twin deficits in check.

Box 1.2: Analytical Taxonomy of Financial Crises, Past and Future

Since the 1980s, external financial crises have followed one of three basic forms: the Latin American, the Asian Financial Crisis (AFC), or the Global Financial Crisis (GFC) model. So one could ask: in the unlikely event that a major event did take place in a systematically important emerging market, which form would it follow? The answer is probably none of the above. The implications would be unlike anything seen in the last 80 years. (The attached table contains a summary).

In the Latin American debt crisis, governments went on a spending binge financed by foreign borrowing (of recycled petrodollars) while pegging their exchange rates. The spending led to a classic sequence: economic overheating, large current account deficits that eventually proved difficult to finance, and finally defaults on the foreign borrowing. The Indian external crisis of 1991 belonged to this category, although the country did not and has never defaulted.

In the AFC of the late 1990s, the transmission mechanism was similar—namely, overheating and unsustainable external positions under fixed exchange rates—but the instigating impulse was private borrowing rather than government borrowing. The troubles in Eastern Europe in 2008 belonged to this category. The 2013 mini-crises in a number of emerging markets following the Federal Reserve’s “taper tantrum” were also similar to the Asian crisis, with the difference that affected countries had more flexible exchange rates which obviated the large disruptive changes that occur when fixed regimes collapse.

The GFC of 2008, with America as its epicentre, was unique in that it involved a systemically important country and originated in doubts about its financial system. The effects radiated out globally, with the irony that even though the problems originated in the American financial system, there was a flight of capital *toward* the United States, which triggered a sharp appreciation of the dollar and significant currency depreciations in emerging markets. In this way, the GFC, while inflicting an adverse financial shock on the rest of the world, simultaneously set in motion an adjustment mechanism that helped emerging markets recover from the crisis.

The Japanese crisis was similar to the GFC in terms of the transmission mechanism (asset price bubbles encompassing equity markets and real estate). But it was dissimilar in that it was corporate rather than household borrowing that was the instigating impulse. Also, the crisis did not have a systemic financial impact, since Japan was not a major international banking centre. Nor did it have a major impact on global exports, even though Japan was (and is) a major global trader, because, as in the GFC, the epicentre’s currency appreciated as the crisis played itself out.

China’s current situation is similar to the AFC case in that fears about excessive corporate debts—in the context of slowing growth and changing economic management—are fostering large capital outflows. But the outcome is less certain, since whereas Asian countries had limited foreign exchange reserves China has more than \$3 trillion in official assets, consequent upon years of running large current account surpluses. This situation gives China much more space and time to deal with incipient problems, and minimize their consequences, for example, by allowing a gradual rather than disruptive decline in the exchange rate.

Were a major event in China or another large emerging market to take place nonetheless, it would be very different from the three categories described above. It would likely involve a large currency depreciation in a systemically important country which would spread outward as a deflationary/competitiveness shock to the rest of the world, especially countries competing with it. Consequently, the built-in adjustment mechanism that took place in the GFC—where the crisis country’s currency appreciated would be absent.

In this sense, a potential tail event in a systemically important emerging market would resemble more the events of the early 1930s when the UK and then the US went off the gold standard, triggering a series of devaluations by other countries, leading to a collapse of global economic activity.

Table: Anatomical Taxonomy of External Financial Crises

<i>Crisis Type</i>	<i>Originating Countries</i>	<i>Origin of problem</i>	<i>Manifestation</i>	<i>Trigger</i>	<i>Exchange Rate Regime</i>	<i>Remarks</i>
Latin American	Emerging markets (Latin America 1982; India 1991); Small advanced country (Greece 2010 onwards)	Government borrowing	Current account deficit	Speculative attack and exchange rate collapse	Fixed rate	Greece was part of euro, so trigger was sharp rise in interest rates.
Asian Financial Crisis	Emerging markets (East Asia 1997-9; Eastern Europe 2008; Fragile Five 2013); Small advanced country (Spain 2010)	Corporate borrowing	Asset price bubbles; High corporate leverage	“Sudden stop” of capital flows and exchange rate collapse	Fixed rate	Fragile Five had flexible exchange rates. Spain was part of euro.
Japan	Systemically Important	Corporate borrowing	Asset price bubbles; High corporate leverage	Asset price collapse	Floating exchange rate	Yen <i>appreciated</i> after crisis.
Global Financial Crisis	Systemically Important (US 2008)	Bank and consumer borrowing	Asset price bubble in housing	Correction in asset prices	Flexible exchange rate	US dollar <i>appreciated</i> .
The NEXT	Systemically Important	Corporate borrowing	Rising debt, asset price bubbles	“Sudden stop” with potential for sharp exchange rate decline	Managed float	Crisis country’s currency could <i>depreciate substantially</i> .

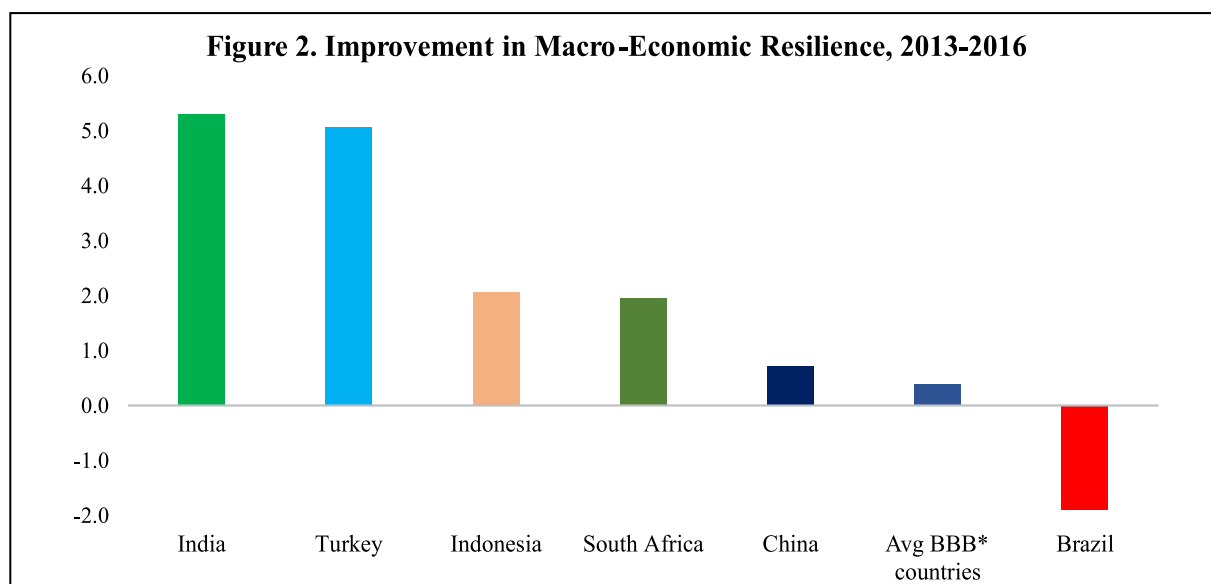
THE INDIAN CONTEXT

1.27 The Indian economy has continued to consolidate the gains achieved in restoring macroeconomic stability. A sense of this turnaround is illustrated by a cross-country comparison. In last year’s Survey, we had constructed an overall index of macro-economic vulnerability, which adds a country’s fiscal deficit, current account deficit, and inflation. This index showed that in 2012 India was the most vulnerable of the major emerging market countries. Subsequently, India has made the most dramatic strides in reducing its macro-vulnerability. Since 2013, its index has improved by 5.3 percentage points compared with 0.7 percentage point for China, 0.4 percentage point for all countries

in India’s investment grade (BBB), and a deterioration of 1.9 percentage points in the case of Brazil (Figure 2).

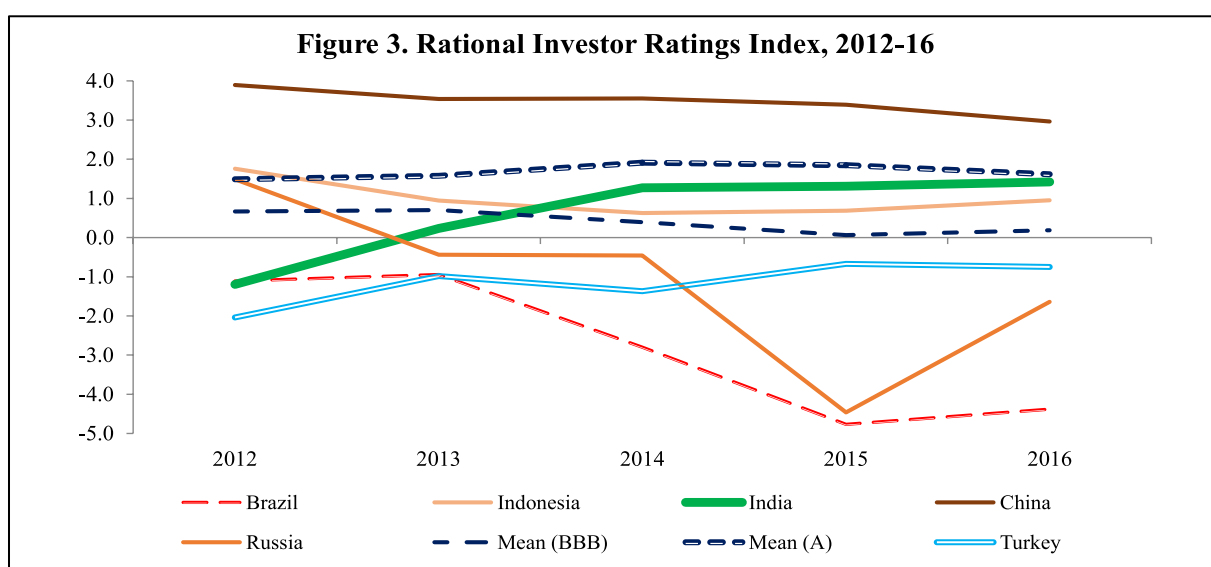
1.28 If macro-economic stability is one key element of assessing a country’s attractiveness to investors, its growth rate is another. In last year’s Survey we had constructed a simple Rational Investor Ratings Index (RIRI) which combined two elements, growth serving as a gauge for rewards and the macro-economic vulnerability index proxying for risks. The RIRI is depicted in Figure 3; higher levels indicate better performance. As can be seen, India performs well not only in terms of the change of the index but also in terms of the level, which compares favourably to its peers in the BBB investment grade and even its “betters” in the A grade¹. As an investment

¹ India is in the BBB investment category according to Fitch rating agency; A is the category just above it.



Source: IMF WEO, October 2015 and January 2016 update.

* BBB is the classification of countries as per Fitch ratings agency in which India falls.



Source: IMF WEO, October 2015 and January 2016 update.

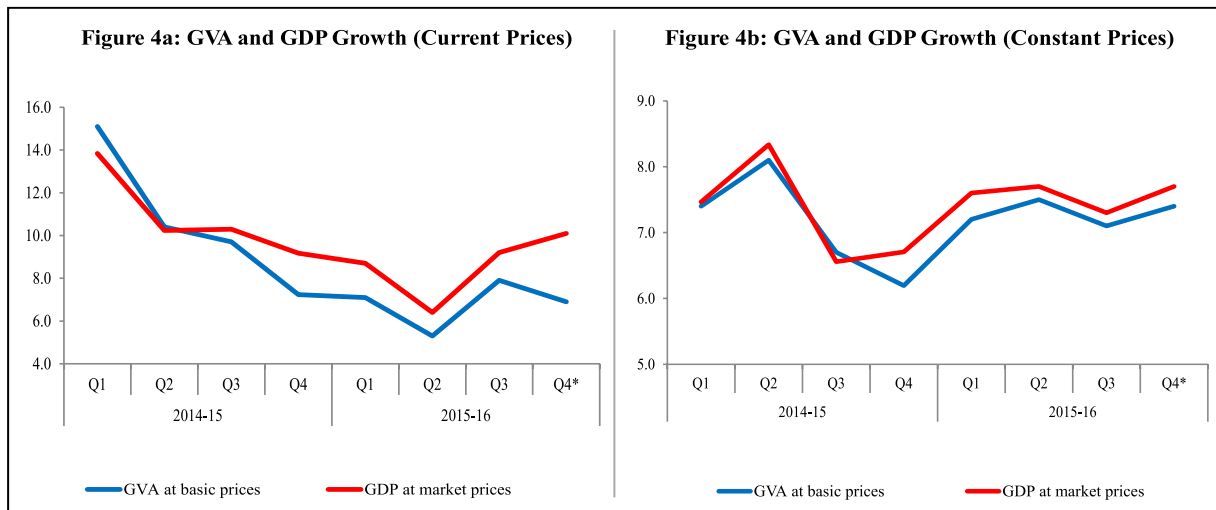
proposition, India stands out internationally.

Review of Major Developments

1.29 In the Advance Estimates of GDP that the Central Statistics Office (CSO) released recently, the growth rate of GDP at constant market prices is projected to increase to 7.6 per cent in 2015-16 from 7.2 per cent in 2014-15, mainly because private final consumption expenditure has accelerated. Similarly, the growth rate of GVA for 2015-16 is estimated at 7.3 per cent vis-à-vis 7.1 per cent in 2014-15

(Figures 4(a) and (b)). Although agriculture is likely to register low growth for the second year in a row on account of weak monsoons, it has performed better than last year. Industry has shown significant improvement primarily on account of the surprising acceleration in manufacturing (9.5 per cent vis-à-vis 5.5 per cent in 2014-15). Meanwhile, services continue to expand rapidly.

1.30 Even as real growth has been accelerating, nominal growth has been



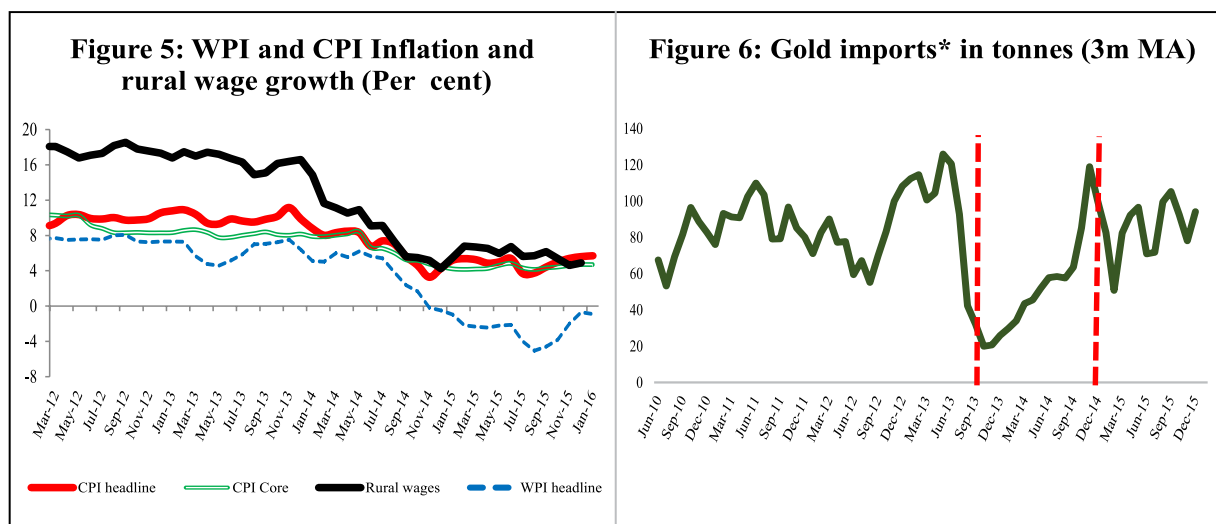
Source: CSO

*GVA growth of Q4 is the implied GVA number from Advanced estimates of 2015-16 and Quarterly estimates by CSO

falling, to historically low levels, an unusual trend highlighted in the Mid-Year Economic Analysis (MYEA), 2015-16. According to the Advance Estimates, nominal GDP (GVA) is likely to increase by just 8.6 (6.8) percent in 2015-16. In nominal terms, construction is expected to stagnate, while even the dynamic sectors (see Box 1.4 for one such example) of trade and finance are projected to grow by only 7 to 7^{3/4} percent.

1.31 Inflation remains under control (Figure 5). The CPI-New Series inflation has

fluctuated around 5^{1/2} percent, while measures of underlying trends—core inflation, rural wage growth and minimum support price increases—have similarly remained muted. Meanwhile, the WPI has been in negative territory since November 2014, the result of the large falls in international commodity prices, especially oil. As low inflation has taken hold and confidence in price stability has improved, gold imports have largely stabilized, notwithstanding the end of a period of import controls (dotted red lines in Figure 6).



Source: CSO.

Source: Ministry of Finance.

*Vertical lines in figure 5 indicate the period over which quantitative restrictions on gold imports was in effect (August 2013 to November 2014).

1.32 Similarly, the external position appears robust. The current account deficit has declined and is at comfortable levels; foreign exchange reserves have risen to US\$351.5 billion in early February 2016, and are well above standard norms for reserve adequacy; net FDI inflows have grown from US\$21.9 billion in April-December 2014-15 to US\$27.7 billion in the same period of 2015-16; and the nominal value of the rupee, measured against a basket of currencies, has been steady (Figures 7(a) to (d)). India was consequently well-positioned to absorb the volatility from the U.S. Federal Reserve

actions to normalize monetary policy that occurred in December 2015. Although the rupee has declined against the dollar, it has strengthened against the currencies of its other trading partners.

1.33 The fiscal sector registered three striking successes: ongoing fiscal consolidation, improved indirect tax collection efficiency; and an improvement in the quality of spending at all levels of government.

1.34 Despite the decline in nominal GDP growth relative to the Budget assumption (11.5 per cent in Budget 2015-16 vis-à-vis 8.6 per cent in the Advance Estimates), the

Figure 7a: Current Account Deficit (per cent of GDP)

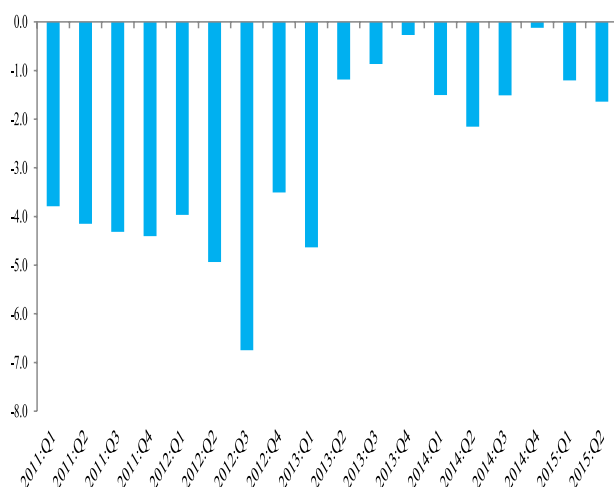


Figure 7b: Foreign Exchange Reserve (US\$ billion)

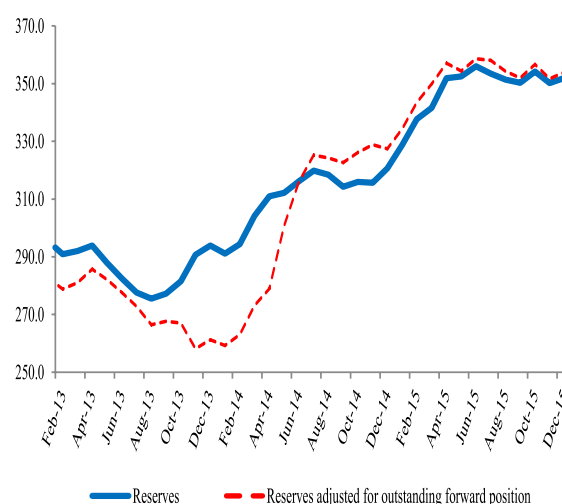


Figure 7c: Trends in major components of Capital Inflows (US\$ billion)

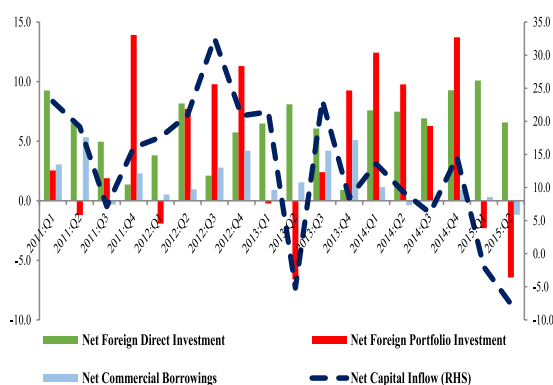
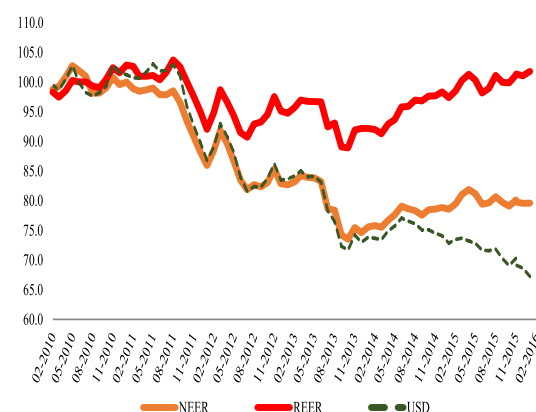


Figure 7d: Index of NEER, REER and US dollar exchange rate (2010=100)



Source: RBI.

central government will meet its fiscal deficit target of 3.9 per cent of GDP, continuing the commitment to fiscal consolidation. Even on the IMF's definition, the fiscal deficit is expected to decline from 4.2 per cent of GDP in 2014-15 to 4.0 per cent of GDP in 2015-16. Moreover, the consolidated revenue deficit has also declined in the first 8 months (for which data are available) by about 0.8 percentage points of GDP.

1.35 Government tax revenues are expected to be higher than budgeted levels. Direct taxes grew by 10.7 per cent in the first 9 months (9M) of 2015-16. Indirect taxes were also buoyant. In part, this reflected excise taxes on diesel and petrol and an increase in the Swachh Bharat cess. The central excise duty collection from petroleum products during April to December 2015-16 recorded a growth of 90.5 per cent and stood at Rs. 1.3 lakh crore as against Rs. 0.7 lakh crore in the same period last year. Tax performance also reflected an improvement in tax administration because revenues increased even after stripping out the additional revenue measures (ARMs). Indirect tax revenues grew by 10.7 per cent (without ARMs) and 34.2 per cent (with ARMs). Table 1 shows that tax buoyancy of direct and indirect taxes improved in 2015-16 vis-à-vis the average of the last three years, although more so for indirect taxes.

1.36 The fiscal stance matters not just for macro-economic outcomes but also for the quality of spending. The budget envisaged an improvement in quality by shifting expenditures away from current to capital expenditures. With the acceptance of the Fourteenth Finance Commission recommendations, and the large devolution toward the states as well as re-structuring of the centrally sponsored schemes, the quality of expenditure must increasingly be assessed from a general government (i.e. combining the center and the states) perspective. This is done in greater detail in Box 1.3.

1.37 The main findings are that a welcome shift in the quality of spending has occurred from revenue to investment, and towards social sectors. Aggregate public investment has increased by about 0.6 per cent of GDP in the first 8 months of this fiscal year, with contributions from both the Centre (54 per cent) and states (46 per cent).

OUTLOOK

Real GDP growth

1.38 Real GDP growth for 2015-16 is expected to be in the 7 to 7^{3/4} range, reflecting various and largely offsetting developments on the demand and supply sides of the Indian economy. Before analyzing these factors, however, it is important to step back and note one important point.

Table 1: Tax buoyancy

Year	Base Growth	Revenue Growth		Implied Buoyancy	
		DT	IDT	DT	IDT
2012-13	15.1	18.5	25.8	1.2	1.7
2013-14	11.4	13.5	4.1	1.2	0.4
2014-15	12.7	8.2	8.0	0.6	0.6
Avg. 2012-15	13.1	13.4	12.6	1.0	1.0
9M 2015	8.3	9.2	11.7	1.1	1.4

Note:

1. Base is summation of GVA in manufacturing and services at current market price.

2. Annual numbers are average of four quarters in that year

DT= Direct Tax IDT= Excise tax plus service tax 9M= April-December

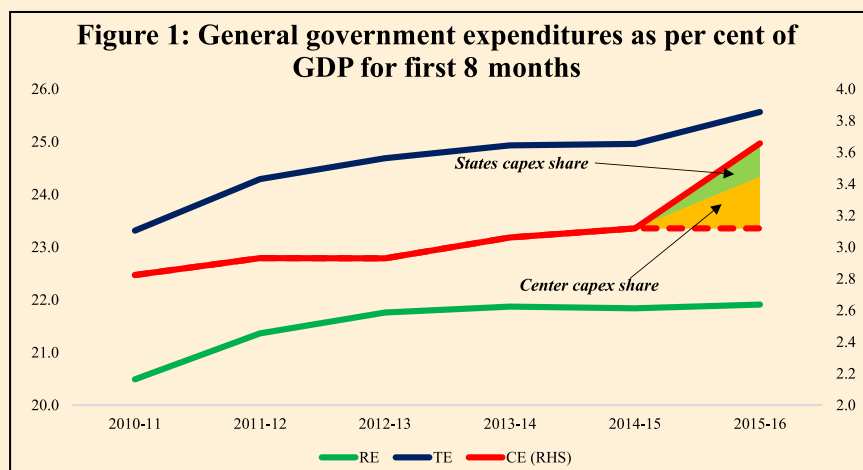
Source: CSO and Controller General of Accounts.

Box 1.3: Assessing the Quality of General Government Spending in FY2016

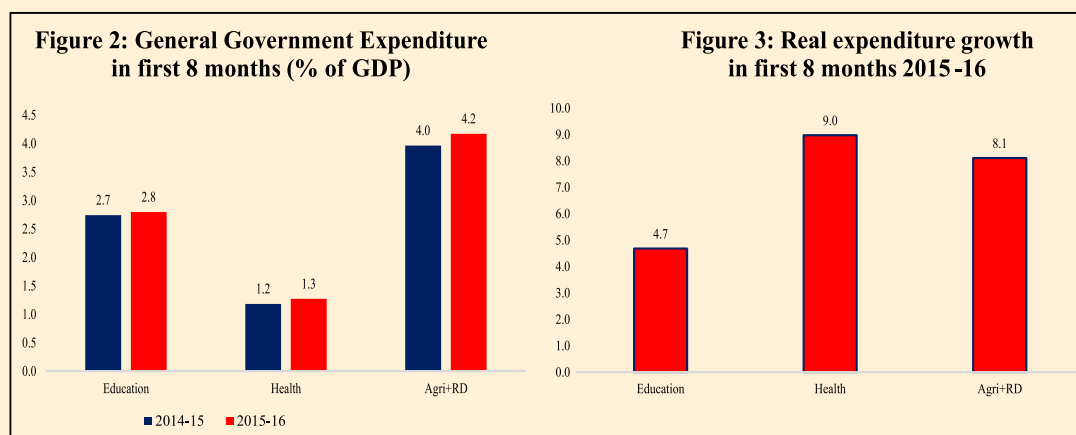
The 2015-16 Union budget envisaged an improvement in the quality of expenditure, shifting resources from current to capital spending and devoting more resources to the agricultural sector at a time of farm distress. At the same time, the recommendations of the Fourteenth Finance Commission, which were accepted by the government, implied that a much greater portion of revenues would be spent by the states. As a result, understanding whether the shift in Union strategy has been successful requires analysing general government (Centre plus states) expenditures, and not just those of the Centre.

In continuation of the analysis done for the Mid-Year Economic Analysis (MYEA) 2015-16, which covered the first half (H1) of 2015-16, we now report the results of this analysis for the first 8 months of this fiscal year (FY2016). These results are also illustrated in the figures below. Two points are noteworthy.

First, there was a significant increase in aggregate capital expenditure of the general government.¹ Such spending increased by 0.6 percentage points of GDP² (Figure 1). Disaggregating further reveals that the increase in capital expenditures occurred both in the Centre and states, with the former contributing 54 per cent and the latter 46 per cent. Thus, the overall budgetary strategy of accelerating public investment seems to be working at an all-India level.



Second, in the first 8 months of FY2016, general government expenditure witnessed an uptick in the three major social sectors—education, health, and agriculture and rural development—both as a share of GDP and in real terms³ (Figure 2 & 3). For example, real expenditure on education, health, and agriculture and rural development recorded growth of 4.7 per cent, 9 per cent and 8.1 per cent, respectively. Available data does not allow for a further disaggregation of these developments into contributions by the centre and states.



Source: Controller General of Account, Comptroller and Auditor General of India, CSO and Calculations.

¹ Capital expenditure for the Centre includes loans and advances whereas capital expenditure for the states does not due to non-availability of data.

² For simplicity, the GDP for the full year has been divided equally across the year.

³ Health expenditure, and Agriculture and Rural Development expenditures have been deflated by the relevant CPI indices.

1.39 India's long-run potential GDP growth is substantial, about 8-10 percent (Box 1.1). But its actual growth in the short run will also depend upon global growth and demand. After all, India's exports of manufactured goods and services now constitute about 18 percent of GDP, up from about 11 percent a decade ago.

1.40 Reflecting India's growing globalization, the correlation between India's growth rate and that of the world has risen sharply to reasonably high levels. For the period 1991-2002 this correlation was 0.2. Since then, the correlation has doubled to 0.42 (Figure 1). In other words, a 1 percentage point decrease in the world growth rate is now associated with a 0.42 percentage point decrease in Indian growth rates.

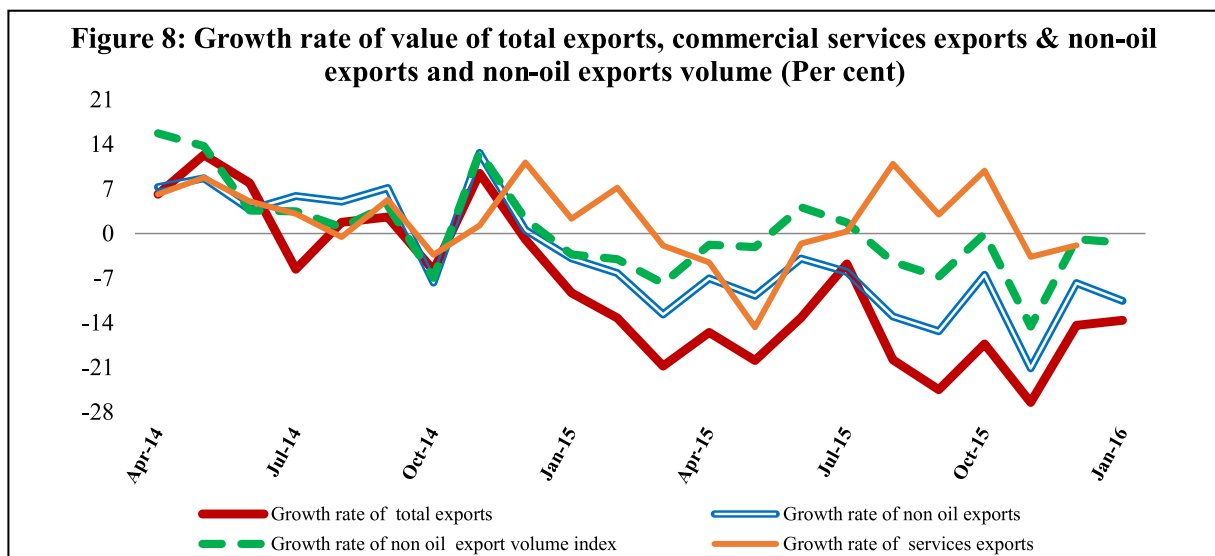
1.41 Accordingly, if the world economy remains weak, India's growth will face considerable headwinds. For example, if the world continues to grow at close to 3 percent over the next few years rather than returning to the buoyant 4-4½ per cent recorded during 2003-2011, India's medium-term growth trajectory could well remain closer to 7-7½ per cent, notwithstanding the government's reform initiatives, rather than rise to the 8-10 per cent that its long-run potential

suggests. In other words, in the current global environment, there needs to be a recalibration of growth expectations and consequently of the standards of assessment.

1.42 Turning to the outlook for 2016-17, we need to examine each of the components of aggregate demand: exports, consumption, private investment and government.

1.43 To measure the demand for India's exports, we calculate a proxy-weighted average GDP growth rate of India's export partners. The weights are the shares of partner countries in India's exports of goods and services. We find that this proxy for export demand growth declined from 3.0 percent in 2014 to 2.7 per cent in 2015, which helps explain the deceleration in India's non-oil exports, although the severity of the slowdown—in fact, a decline in export volume—went beyond adverse external developments (Figure 8). Current projections by the IMF indicate that trading partner growth this demand will improve marginally this year to about 2.8 percent. But the considerable downside risks suggest that it would be prudent not to count on a big contribution to GDP growth from improving export performance.

1.44 On the domestic side, two factors could boost consumption. If and to the extent



Source: RBI.

that the Seventh Pay Commission (7th PC) is implemented, increased spending from higher wages and allowances of government workers will start flowing through the economy. If, in addition, the monsoon returns to normal, agricultural incomes will improve (see Box 1.5), with attendant gains for rural consumption, which over the past two years of weak rains has remained depressed.

1.45 Against this, the disappearance of much of last year's oil windfall would work to reduce consumption growth. Current prospects suggest that oil prices (Indian crude basket) might average US\$ 35 per barrel next fiscal year compared with US\$ 45 per barrel in 2015-16. The resulting income gain would amount roughly equivalent to 1 percentage point of GDP – an 18 per cent price decline times a share of net oil imports in GDP of 6 percent. But this would be half the size of last year's gain, so consumption growth would slow on this account next year.

1.46 According to analysis done by Credit Suisse, (non-financial) corporate sector profitability has remained weak, falling by 1 percent in the year to December 2015.² This decline reflected a sharp deterioration in the financial health of the metals—primarily steel—companies, which have now joined the ranks of companies under severe financial stress. As a result, the proportion of corporate debt owed by stressed companies, defined as those whose earnings are insufficient to cover their interest obligations, has increased to 41 percent in December 2015, compared to 35 percent in December 2014.³ In response to this stress, companies have once again been compelled to curb their capital expenditures substantially.

1.47 Finally, the path for fiscal consolidation will determine the demand for domestic output from government. The magnitude of the drag on demand and output will be largely equal to the size of consolidation, assuming a multiplier of about 1.

1.48 There are three significant downside risks. Turmoil in the global economy could worsen the outlook for exports and tighter financial conditions significantly. Second, if contrary to expectations oil prices rise more than anticipated, this would increase the drag from consumption, both directly, and owing to reduced prospects for monetary easing. Finally, the most serious risk is a combination of the above two factors. This could arise if oil markets are dominated by supply-related factors such as agreements to restrict output by the major producers.

1.49 The one significant upside possibility is a good monsoon. This would increase rural consumption and, to the extent that it dampens price pressures, open up further space for monetary easing (Box 1.6).

1.50 *Putting these factors together, we expect real GDP growth to be in the 7 to 7^{3/4} per cent range, with downside risks because of ongoing developments in the world economy. The wider range in the forecast this time reflects the range of possibilities for exogenous developments, from a rebound in agriculture to a full-fledged international crisis; it also reflects uncertainty arising from the divergence between growth in nominal and real aggregates of economic activity.*

² As measured by EBITDA, a common measure of cash flow profits; it refers to earnings before interest, taxes, depreciation, and amortization.

³ An interest coverage ratio (ICR) less than 1 implies that the corporation is under financial stress, since its earnings are not sufficient to service its interest obligations. Research indicates that an interest cover of below 2.5x for larger companies and below 4x for smaller companies is considered below investment grade. ICR is typically measured by calculating the ratio of earnings before interest and taxes (EBIT) to interest obligations.

Box 1.4: Startups and Dynamism

One part of the economy that is witnessing unusual dynamism is the start-up sector, focused on e-commerce and financial services. As of January 2016, there were 19,400 technology-enabled startups in India, of which 5,000 had been started in 2015 alone.¹ No less than 2000 of the startups have been backed by venture capital/angel investors since 2010, of which 1005 were created in 2015 alone. Indian start-ups raised \$3.5 billion in funding in the first half of 2015, and the number of active investors in India increased from 220 in 2014 to 490 in 2015.² As of December 2015, eight Indian startups belonged to the ‘Unicorn’ club (valuations greater than \$1 billion).

It is important that start-ups, too, see “exit” (the theme of Chapter 2), which would take the form of these companies being listed, allowing the original private investors to cash in on the initial investment, and plough it back into other similar ventures. Exit valuations in India are still low but are expected to increase as the impact of new SEBI policies on listings comes into effect, and as equity markets in general revive from current low valuations caused by a sense of gloom in the global economy.

¹ Based on the research done by Your Story and iSPIRT.

² NASSCOM report titled “*Startup India-Momentous Rise of the Indian Startup Ecosystem*”.

Box 1.5: El Niño, La Niña and Forecast for FY 2017 Agriculture

From time to time, agricultural production is affected by El Niño, an abnormal warming of the Pacific waters near Ecuador and Peru, which disturbs weather patterns around the world. The 2015 El Niño has been the strongest since 1997, depressing production over the past year. But if it is followed by a strong La Niña, there could be a much better harvest in 2016-17.

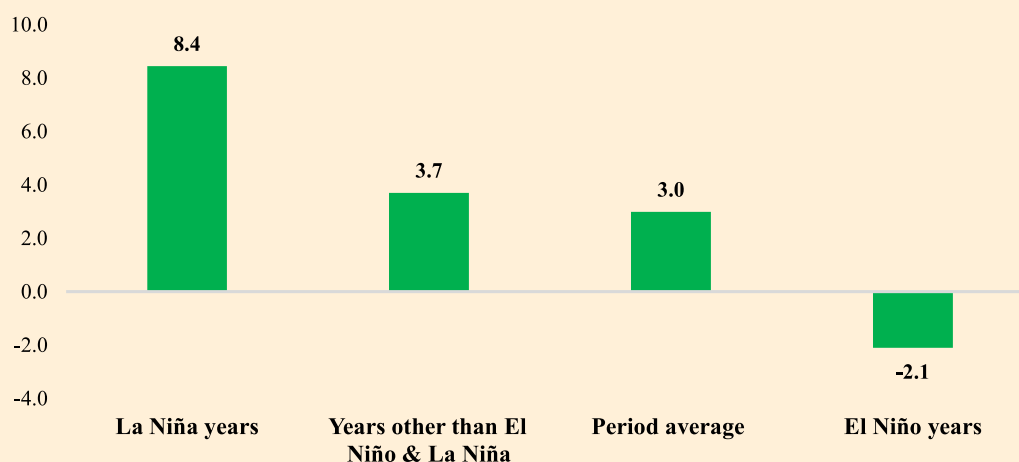
The 1997 episode lasted roughly from April 1997 to June 1998. During these 15 months, the Oceanic Nino Index (ONI) – which compares east-central Pacific Ocean surface temperatures to their long-term average and is used by the US National Oceanic and Atmospheric Administration (NOAA) for identifying El Niño events – was consistently positive and greater than 0.5 degrees Celsius.

The current El Niño started around February 2015; most climate models predict a return to “neutral” conditions not before May 2016. That makes it just as long as the 1997-98 event. Also, in terms of intensity, it is comparable to that of 1997-98: The most recent Oceanic Nino Index (ONI) value of 2.3 degree Celsius for November 2015-January 2016 tied with the level for the same period of 1997-98.

An extended and strong El Niño explains why India had a deficient south-monsoon and dry weather lasting through the winter this time. The prolonged moisture stress from it has, in turn, impacted both kharif as well as the rabi crop. The figure below shows that average agricultural growth in El Niño years since between 1981-82 and 2015-16 has been -2.1 per cent compared with a period average of 3.

There is a silver lining here, though. Since 1950, there have been 22 El Niño events of varying durations and intensities, according to NOAA data. But out of the 21 prior to this one, 9 have been followed by La Niña, involving an abnormal cooling of sea surface waters along the tropical west coast of South America with an ONI less than minus 0.5 degrees Celsius. This phenomenon – there have been 14 such events since 1950 – has been associated with normal-to-excess monsoons in India, which may be a by-product of atmospheric convection activity shifting to the north of Australia.

Now, it is important that some of the strongest El Niño years (1997-98, 1972-73, 2009-10, 1986-87 and 1987-88, ranked in the order of strength and of which the last four produced droughts in India) were followed by La Niña episodes, resulting in bumper harvests. The possibility of this being repeated in 2016 after the second strongest El Niño on record cannot be ruled out. The figure below shows, for example, that average growth in La Niña years was 8.4 per cent, substantially higher than the period average.

Figure: Agricultural Growth, 1981-82 to 2015-16 (average, Per cent)***El Niño years (very strong, moderate):***

1982-83, 1986-87, 1987-88, 1991-92, 1997-98, 2002-03, 2009-10, 2015-16

La Niña years (strong, moderate):

1988-89, 1998-99, 1999-00, 2007-08, 2010-11

But there is a big catch. El Niño, as of now, continues to be “strong” and is only gradually weakening. It will enter neutral zone only with the onset of summer. NOAA’s latest forecast assigns only a 22 per cent probability of La Niña developing in June-July-August, going up to 50 per cent for September-October-November. The Australian Bureau of Meteorology suggests the “neutral” state as the “most likely for the second half of the year”.

In other words, one shouldn’t expect La Niña conditions to develop before the second half of the southwest monsoon season (June-September). Even if it develops, the translation into actual rainfall in India could take time. The effects of the 2015 El Niño, after all, were felt only from July, although the east-central Pacific sea surface temperature anomalies began in February.

In sum, La Niña is unlikely to deliver its full bounty in the coming monsoon, or at least not until late in the kharif season. That doesn’t, however, mean the monsoon is going to be bad, especially when all models are pointing to a very low probability of a repeat El Niño happening this year. The monsoon could also be good due to other favourable factors such as a “positive Indian Ocean Dipole”. The latter phenomenon – where the western tropical Indian Ocean waters near Africa become warmer relative to those around Indonesia – prevented at least two El Niño years (1997 and 2006) from resulting in droughts in India.

The policy implication of such a cautious prognosis is that the government should be ready with a contingency plan for a monsoon, especially after two successive drought years. *Declaring minimum support prices well before kharif sowing operations, incentivizing farmers to produce crops most prone to domestic supply pressures (such as pulses), and timely contracting of imports of sensitive commodities would be essential components of this strategy.*

Box 1.6: Addressing the Twin Balance Sheet Challenge

One of the most critical short-term challenges confronting the Indian economy is the twin balance sheet (TBS) problem—the impaired financial positions of the Public Sector Banks (PSBs) and some large corporate houses—what we have hitherto characterized as the ‘*Balance Sheet Syndrome with Indian characteristics*’. By now, it is clear that the TBS problem is the major impediment to private investment, and thereby to a full-fledged economic recovery.

The problems in the banking system have been growing for some time. Stressed assets (nonperforming loans plus restructured assets) have been rising ever since 2010, impinging on capital positions, even as the strictures of Basel III loom ever closer on the horizon. Banks have responded by limiting the flow of credit to the real economy so as to conserve capital, while investors have responded by pushing down bank valuations, especially over the past year. The shares of many banks now trade well below their book value.

This balance sheet vulnerability is in some ways a mirror and derivative of similar frailties in the corporate sector, especially the large business houses that borrowed heavily during the boom years to invest in infrastructure and commodity-related businesses, such as steel. Corporate profits are low while debts are rising, forcing firms to cut investment to preserve cashflow.

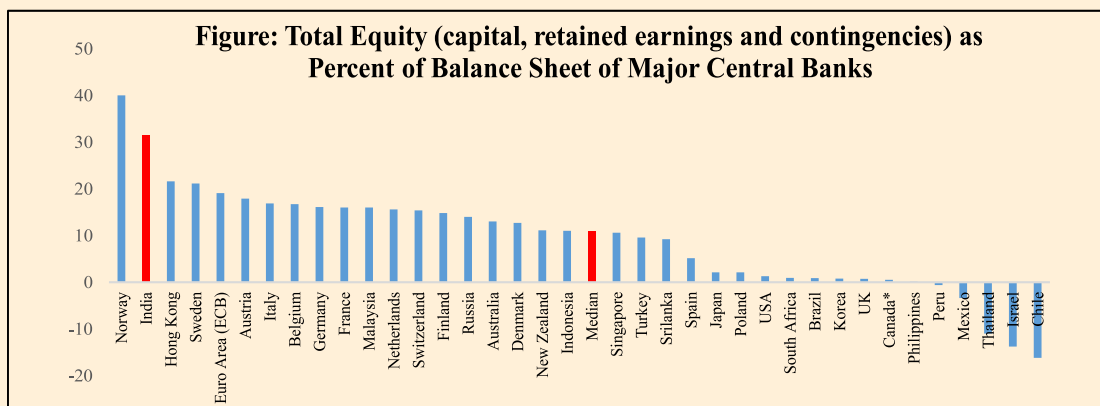
This situation is not sustainable; a decisive solution is needed. But finding one is difficult. For a start, given the intertwining set of problems, solutions must strengthen both sets of balance sheets. Some steps have already been taken. In August last year, the government launched the *Indradhanush* scheme, which includes a phased program for bank recapitalization. Meanwhile, the RBI initiated the 5:25 and SDR schemes, which create incentives for the banks to come together with their borrowers to rehabilitate stressed assets. These are good initial steps which might require follow-up.

Resolving the TBS challenge comprehensively would require 4 *Rs* : *Recognition, Recapitalization, Resolution, and Reform*. Banks must value their assets as far as possible close to true value (recognition) as the RBI has been emphasizing; once they do so, their capital position must be safeguarded via infusions of equity (recapitalization) as the banks have been demanding; the underlying stressed assets in the corporate sector must be sold or rehabilitated (resolution) as the government has been desiring; and future incentives for the private sector and corporates must be set right (reform) to avoid a repetition of the problem, as everyone has been clamouring.

But there is a needed sequence to these 4 *Rs*: Recognition must come first, but it must be accompanied by an adequate supply of resources; otherwise, banks will be vulnerable. Given the tight fiscal position, where might the resources to recapitalise PSB's come from?

One possible source is the public sector's own balance sheet. For example, the government could sell off assets that it no longer wants to hold, such as certain nonfinancial companies, and use the proceeds to make additional investments in the PSBs. This option is reasonably well understood. What is less appreciated is that RBI could do the same. That is to say it could redeploy its capital as well.

Like all financial firms, central banks hold capital to provide a buffer against the risks they take. In the case of central banks, risks arise because the value of the foreign exchange reserves in terms of domestic currency fluctuates along with the exchange rate, while the value of the government securities they own changes as interest



Source: Bank for International Settlements (BIS).

rates move. Measuring these risks and calculating how much buffer should be provided against them is difficult. For that reason, central bank capital holdings vary widely.

The figure above depicts the ratio of shareholder equity to assets for various central banks. Shareholder equity is defined to include capital plus reserves (built through undistributed retained earnings) plus revaluation and contingency accounts. The chart shows that RBI is an outlier with an equity share of about 32 per cent, second only to Norway and well above that of the U.S. Federal Reserve Bank and the Bank of England, whose ratios are less than 2 per cent. The conservative European Central Bank (ECB) and some EM central banks have much higher ratios, but even they do not approach the level of the RBI.

If the RBI were to move even to the median of the sample (16 per cent), this would free up a substantial amount of capital to be deployed for recapitalizing the PSBs.

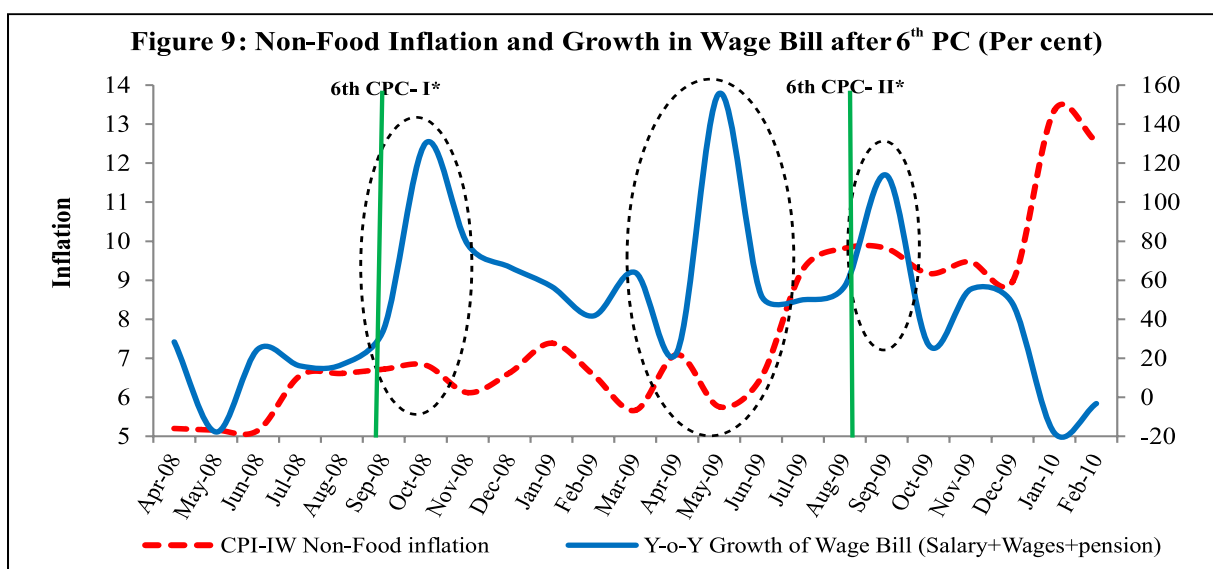
Of course, there are wider considerations that need to be taken into account. Most important, any such move would need to be initiated jointly and cooperatively between the government and the RBI. It will also be critical to ensure that any redeployment of capital would preserve the RBI's independence, integrity, and financial soundness—and be seen to do so. At this stage, what is important is the broader point: that funds for recapitalization can be found, at least to a certain extent, by reallocating capital that already exists on the public sector's balance sheet.

Once the resources to back recognition are identified, the remaining 2 *Rs* (Resolution and Reform) can be pursued with vigour. There are many options here, including creating “bad banks” to implement the four *Rs*.

Inflation

1.51 For most of the current fiscal year, inflation has remained quiescent, hovering within the RBI's target range of 4-6 percent. But looming on the horizon is the increase in wages and benefits recommended for government workers by the Seventh Pay Commission (7th PC). If the government accepts this recommendation, would it destabilize prices and inflation expectations? Most likely, it will not.

1.52 The historical evidence is clear on this point. Figure 9 illustrates the experience of the Sixth Pay Commission (6th PC). It plots the monthly increase in salaries during the period of the award, from September 2008 – September 2009, against non-food inflation. (At that time, overall inflation was rising due to a sharp increase in global food prices.) The figure shows that the 6th PC award barely registered on inflation despite the lumpiness of the award, owing to the grant of arrears. If the 6th PC award barely registered, the 7th



Source: CSO, 6th Pay Commission report, Budget documents and CGA.

*Reflecting the phased implementation of the 6th PC, the vertical lines indicate the timing of grant of arrears.

PC is unlikely to either, given the relative magnitudes: even if fully implemented, the expected wage bill (including railways) will go up by around 52 per cent under the 7th PC vis-à-vis 70 per cent under the 6th PC.

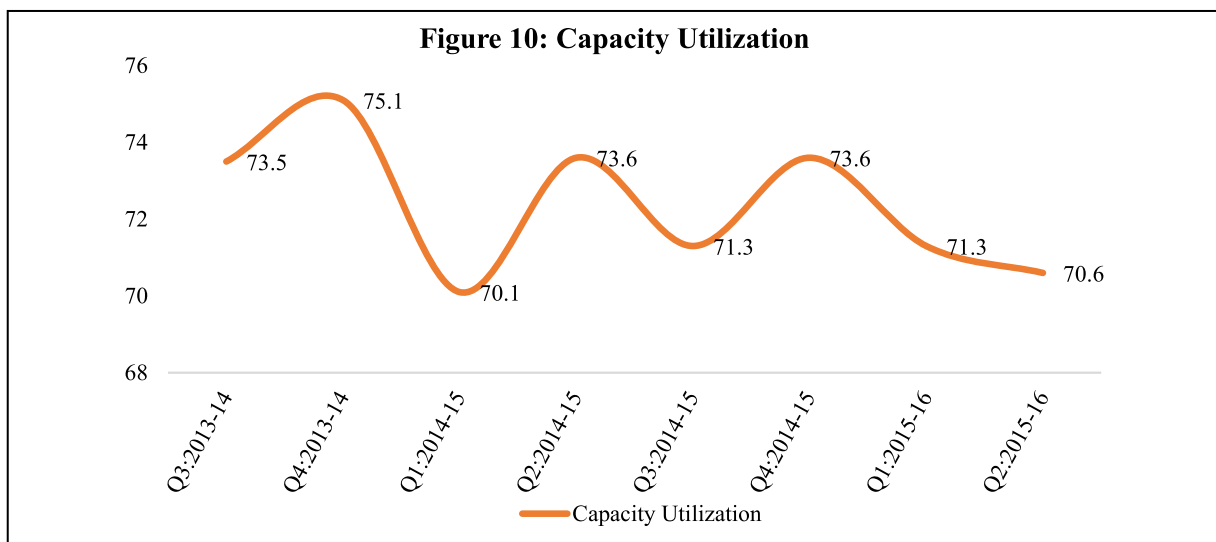
1.53 This outcome may seem surprising. *Why would such a large wage increase have so little impact on inflation?* There are three reasons. Most important is a broad theoretical point. In principle, inflation reflects the degree to which aggregate demand exceeds aggregate supply. And pay awards determine only one small part of aggregate demand. In fact, they do not even determine government demand: that depends on the overall fiscal deficit, which is the difference between how much the state is injecting into the economy through overall spending and how much it is taking away through taxes. Since the government remains committed to reducing the fiscal deficit, the pressure on prices will diminish, notwithstanding the wage increase.

1.54 That said, theory does suggest that a sharp increase in public sector wages could affect inflation if it spilled over into private sector wages and hence private sector demand. But currently this channel

is muted, since there is considerable slack in the private sector labour market, as evident in the softness of rural wages (see Figure 4). And even if private sector wage increases nonetheless do quicken somewhat, the existence of substantial capacity under-utilization (Figure 10) suggests that firms might find it difficult to pass the cost increase onto consumer prices.

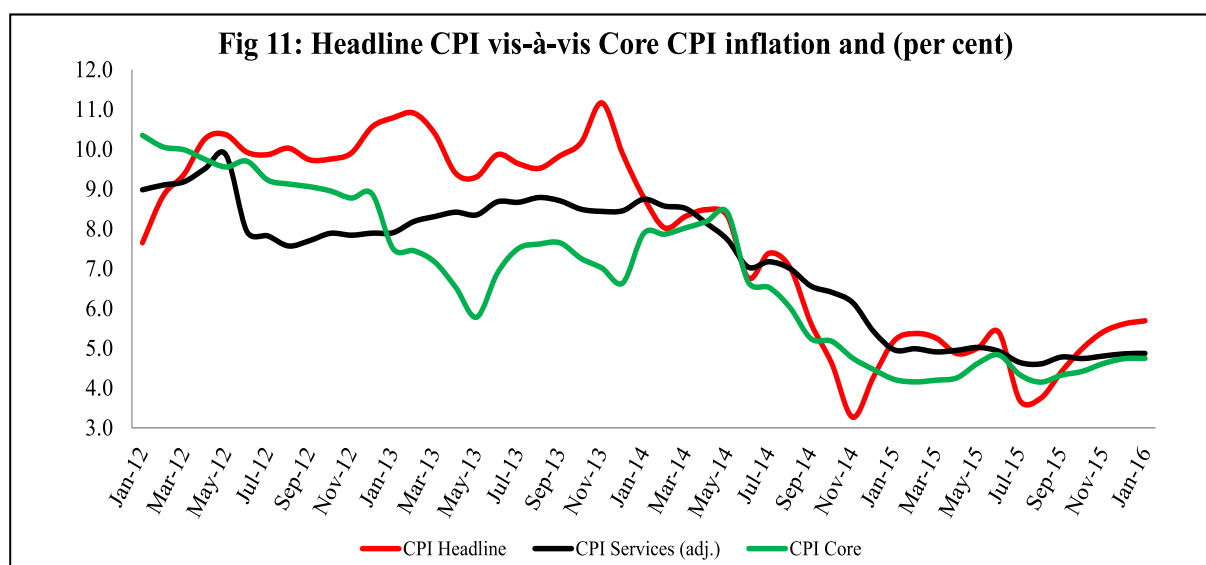
1.55 Finally, there will be some mechanical impact of the increase in the house rent allowance (HRA) on the housing component of the CPI. But this effect is likely to be modest between 0.15 and 0.3 percentage points.⁴ And even then it will merely have a one-off effect on the level of the CPI, rather than the rate of inflation going forward, which is the real target of the RBI.

1.56 The outlook for inflation will consequently depend on other factors. On the domestic side, another year of below-potential growth will mean that the output gap (reflected for example in the declining capacity utilization) will widen further. As a result, there will be additional downward pressure on underlying inflation, which has already fallen below 5 percent, as measured



Source: RBI.

⁴ The weight of rented government housing in the overall CPI is 0.35 per cent. But this includes central and state governments and public sector undertakings. Since only central government housing allowances are relevant, the impact on the CPI would be further moderated.



Source: CSO.

by services inflation excluding the oil-related sub-indices (Figure 11). Meanwhile, if the monsoon returns to normal, food prices will ease, especially since the government remains committed to disciplined increases in MSPs for cereals, and rural wage growth remains muted.

1.57 Further relief should come from abroad. Oil prices have plunged in the first two months of 2016, as have some commodity prices, suggesting that input prices are likely to be lower next fiscal year. Beyond this factor lie other deflationary forces. As growth in China continues to slow, excess capacity there could continue to increase, which will put further downward pressure on the prices of tradable goods all around the world. Part of this might be offset by upward pressure coming from a depreciation of the rupee, especially if the Federal Reserve Bank continues to raise interest rates, prompting capital to reflow to the U.S, although the prospects of aggressive Fed action are receding. On balance the risk to imported pressures, as with domestic pressures, remains firmly to the downside.

1.58 All this suggests that the RBI should be

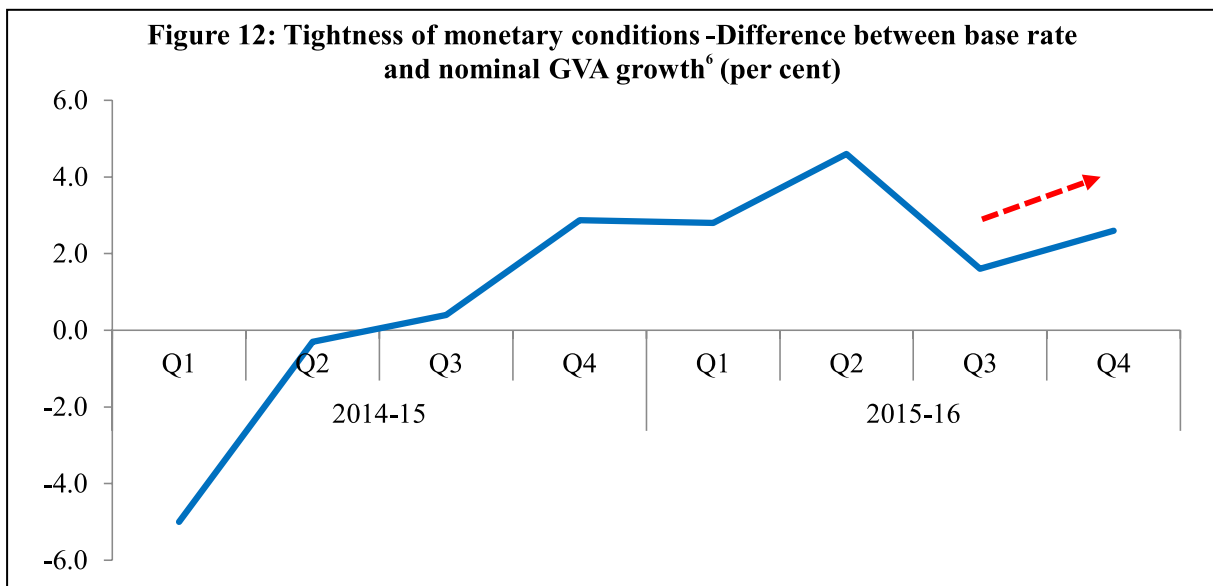
able to meet its target of 5 percent by March 2017. Indeed, with the current stance, there is a possibility of undershooting. While the current policy rate seems “neutral” in that it is only modestly higher than consumer price inflation, liquidity conditions are unusually tight, impeding the passthrough of recent declines in policy rates to the actual bank rates faced by borrowers (see Box 1.7).⁵

1.59 Figure 12 depicts the situation. It shows a measure of the tightness of monetary conditions: the gap between bank lending (base) rates and nominal GVA growth. If the difference is negative, then nominal GVA growth—and for the average firm, revenue growth—is increasing faster than interest is accruing on its debts. In that sense, the monetary stance poses little problems for the corporate sector. But if interest rates are higher than nominal GDP growth, firms’ cash flows are being squeezed. If firms then respond by curbing price increases in order to boost sale volumes sales and cash flow, this will put downward pressure on inflation. The chart shows that this is indeed what has broadly been happening this year.

⁵ Of course, bank lending rates have also been influenced by weaknesses in firm balance sheets, which increases the risks of providing credit to them.

1.60 For all these reasons, we project that CPI inflation will ease to between 4^{1/2} - 5 per cent in 2016-17. We therefore think that the effective stance of monetary policy could be relaxed and in two ways. First, by easing liquidity conditions to make them consistent with the current policy rate (Box 1.7). Second, by further lowering the policy rate consistent with meeting the inflation target while supporting weakening economic activity and corporate balance sheets. Robust

measured growth of real GDP may not warrant an easing of monetary conditions. But a risk framework combined with a focus on the more reliable nominal aggregates is useful. If, in fact, real growth is weaker than suggested by the headline number, easing is appropriate. On the other hand, if real GDP growth is indeed robust, the implied disinflation is large, mitigating the inflationary risks of easing.



Source: CSO and RBI.

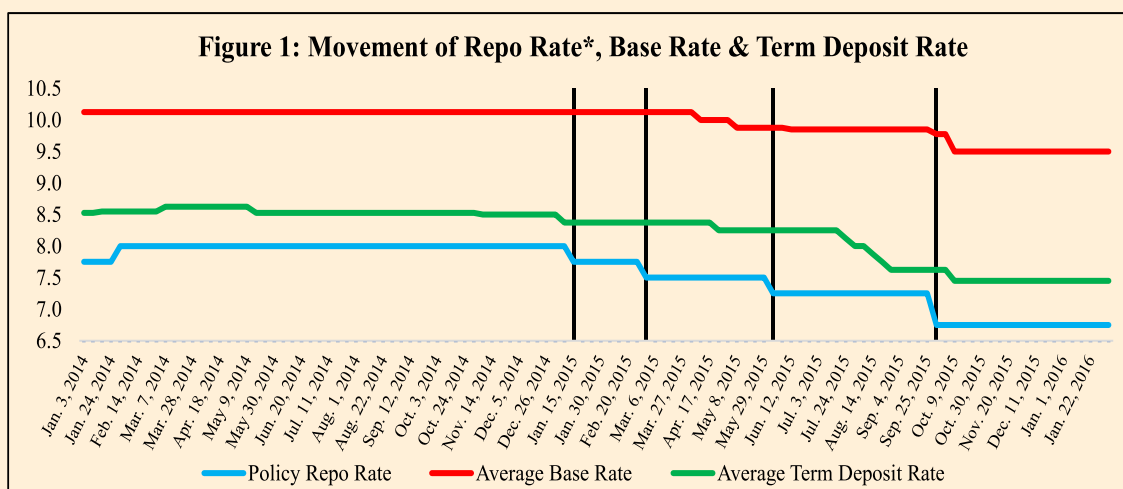
Box 1.7 What Explains the Incomplete Passthrough of Monetary Policy?

According to the February 2016 policy statement, the RBI has shifted to an accommodative policy stance. Without doubt, policy rates have been reduced substantially: in 2015, there were no less than four rate cuts cumulating to 125 basis points, including a 50 basis point cut at the October meeting. But there has been much less “accommodation” in bank lending rates, which have only fallen by around 50 basis points. What explains the failure of passthrough from policy rates to bank rates?

Figure 1 illustrates the transmission problem. It shows that the gaps between policy rates and bank rates have increased significantly over the past year. For example, deposit rates before the first rate cut were about 50 basis points higher than the policy rate, whereas now they are around 75 basis points higher. The lending rate spread, meanwhile, has increased by even more, from 200 basis points to 275 basis points.

Many commentators have emphasized that transmission is limited by high administered and small savings rates. The argument is that banks worry that if they cut their deposit rates, customers will flee to small savings instruments. Recognizing this, the government has reduced rates on some small savings schemes to make them more responsive to market conditions. But it is also clear from the chart that the small saving schemes don’t always constrain passthrough. For example, the June rate cut was followed by a large reduction in deposit rates whereas the much larger October cut was barely passed on at all. And the small saving schemes cannot explain why the reductions that have taken place in deposit rates have *not* led to commensurate reductions in lending rates.

⁶ The base rate for Q4 is taken to be the base rate for January 2016.



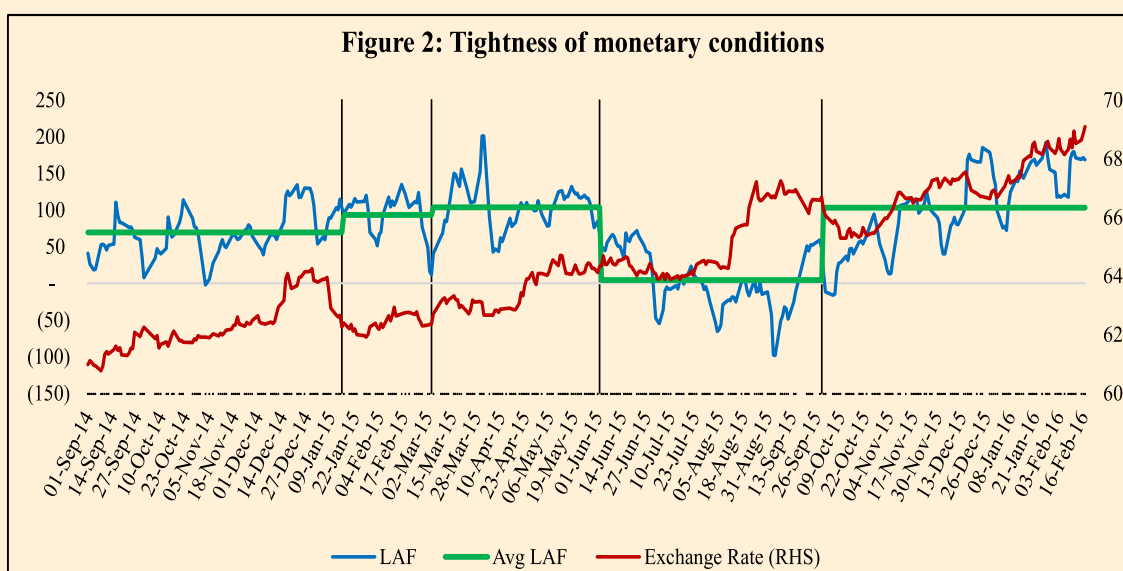
Source: RBI.

* Vertical Lines in all these boxes refer to dates when repo rate changes were announced.

It consequently seems that additional factors are at work. One possible factor could be changes in liquidity conditions as these can reinforce or negate the changes in policy rates. The reason is straightforward: if liquidity conditions are tight, commercial banks will be extra cautious about passing on policy rate cuts into lower deposit rates, for fear of losing customers and hence more liquidity.

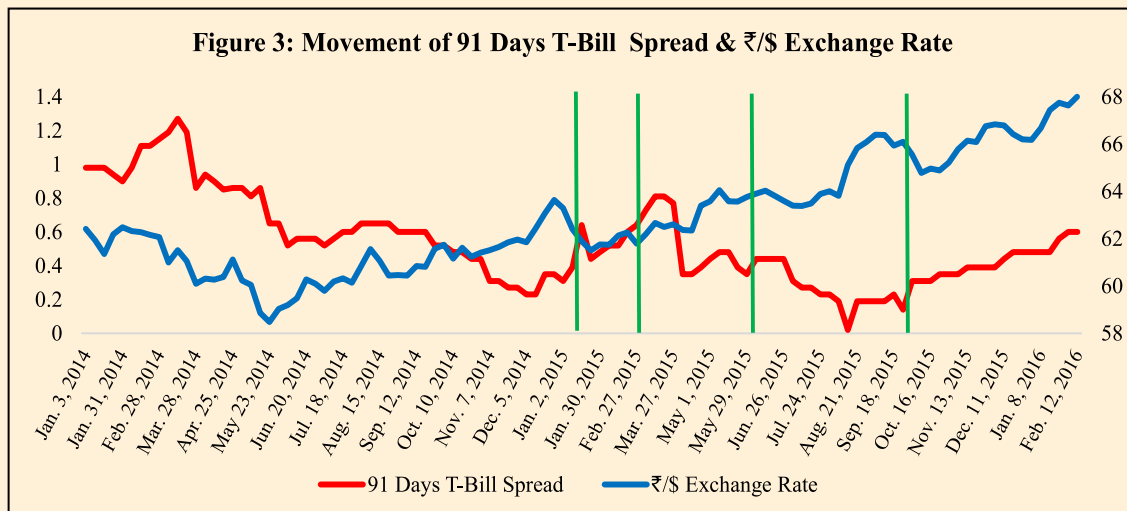
Figure 2 measures the tightness of monetary conditions in terms of quantities, plotting the RBI's provision of funds in the form of overnight and term repos (the "LAF" or Liquidity Adjustment Facility) in response to banks' demand for liquidity (The LAF is, by definition, a measure of the demand for liquidity). After the June rate cut, bank borrowing under the LAF fell to zero on average, in line with the RBI's strategy of easing its monetary stance. But around the time of the October cut, something changed: suddenly, banks began to borrow again, demanding an average of ₹1 lakh crore per day, rising to ₹1.75 lakh crore per day by February 2016.

Figures 3 and 4 show how the liquidity tightness has shown up in prices, that is to say short-term market interest rates most influenced by RBI policy. In the periods following the first three rate cuts, the spread between the 91 day t-bill rate and the repo rate declined. But it increased sharply starting in August and continuing after the October rate cut (Figure 3). Similarly, in the period following the first three rate cuts, the call money rate was below the repo rate, signalling easy liquidity conditions. After the October cut, that wedge has disappeared, signalling a tightening of liquidity (Figure 4).



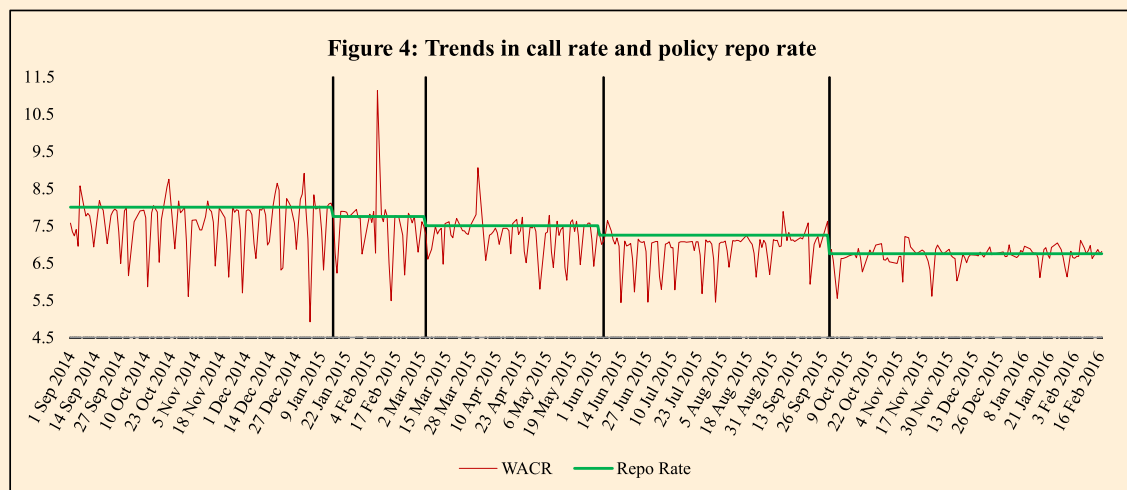
Source: RBI.

Contd....



Source: RBI.

What the quantity and price data suggest is that starting in late 2015 liquidity has been tightening even as policy rates have been cut. The consequence is that market interest rates and exchange rates are higher than otherwise, with implications for domestic growth, exports, and the health of the over-indebted corporate sector.



Source: RBI.

MEDIUM-TERM FISCAL FRAMEWORK

1.61 The 2016-17 fiscal stance needs to be assessed in two contexts. Most obviously, it needs to be evaluated against the likely short-term outlook for growth and inflation. At the same time, it also needs to be framed in a medium-term context. That's because the most fundamental task of budget policy is to preserve fiscal sustainability. The government needs to be in a strong position tomorrow to

repay the debts it is incurring today. And it needs to be seen to possess this strength.

1.62 Governments adopt various targets to achieve and signal fiscal sustainability. These include the overall deficit, the primary deficit, the revenue deficit, and the debt-to-GDP ratio. In principle, sustainable ratios are very much time, country, and history-contingent (Reinhart, Rogoff, and Savastano, 2003). But pinning down a relationship between

⁷ Reinhart, C., K. Rogoff, and M. A. Savastano, 2003, "Debt Intolerance", NBER Working paper No. 9908.

these contingencies and targets is difficult to do scientifically. Accordingly, countries often adopt targets established by others. For example, countries in other regions adopted targets of 3 percent of GDP for the fiscal deficit and 60 percent for the debt-to-GDP ratio as these had been adopted by Eurozone economies under the Stability and Growth Pact (SGP).

1.63 The clearest sign that a government is on a sustainable path is the direction of its debt-to-GDP ratio. If this ratio is declining, then the government's fundamental fiscal strength is improving. For much of the period since the 2008-09 the government has run large annual deficits in order to reflate the economy. Initially, the impediment was the large annual deficits that the government incurred as it sought to reflate the economy. These deficits were eventually curtailed, but macro imbalances nonetheless continued to grow, leading by 2013-14 to the second impediment: a sharp exchange rate depreciation that inflated the rupee value of foreign debts.

1.64 As a result, overall government debt continued to grow as fast as GDP, keeping the debt ratio of the consolidated government (Centre plus states) near 67 per cent of GDP. This ratio is high compared to some countries in Emerging Asia, India's credit rating peers. Accordingly, the government is determined to break the post-GFC trend, and finally put the debt ratio on a downward path toward more comfortable levels.

1.65 For this reason, there are strong arguments to stick to a path of aggressive fiscal consolidation as envisaged at the time of the last budget. Such a low deficit would not only curtail the debt accumulation, but would also offer some wider advantages. To begin with, it would mean that the government would be delivering on a commitment, thereby reinforcing its credibility, which is one of the most precious assets that any authority can command. Conversely, it is far from clear

why such a commitment would be abandoned when the economy is growing at more than 7 per cent. Such rapid growth would seem to provide ample revenues for the Budget, while enabling the economy to withstand the reduction in government demand. So, credibility and optimality seem to argue for adhering to the 3.5 percent of GDP target.

1.66 However, there are also arguments on the other side. With respect to feasibility, two factors complicate the fiscal task in 2016-17 and beyond:

- The Seventh Pay Commission has recommended that government wages and allowances be increased significantly. Full implementation of this pay award--which the government will decide on--would add about ½ percent of GDP to the Centre's wage bill.
- Public investment may need to be increased further to address a pressing backlog of infrastructure needs. Such an increase would merely return spending to its 2010-11 level of around 2 percent of GDP, well below the level in other emerging markets.

1.67 Taking these factors into account, the Centre's deficit could swell substantially. As a result, achieving the original could prove difficult unless there are tax increases or cuts in expenditures. There is some scope to increase receipts from disinvestment and spectrum auctions to realize which will require effort.

1.68 Second, even the desirability of a strategy of aggressive fiscal consolidation could be questioned. This is because the current environment is fraught with risks, which threaten all the engines of India's growth, as explained earlier. It would consequently seem important for the government to "purchase insurance" against these downside risks -- rather than reduce fiscal demand significantly and take the chance of precipitating their realization. Data uncertainty reinforces the

need for purchasing insurance.

1.69 But if the deficit target were to be relaxed, two questions would need to be answered. First, what would happen to interest rates? The lower the fiscal deficit, the lower the borrowing requirement, and possibly the lower the interest rate on government securities, which would be very helpful to companies facing debt servicing difficulties. International empirical research, however, suggests that the impact of deficits on long-term rates is typically small and uncertain. The reason for this is straightforward: long-term rates are basically determined by expectations of the future path of short-term rates. And this expected path typically depends largely on the long-term outlook for growth and inflation-and, not necessarily on the current year's fiscal deficit.

1.70 In India's case, the impact of fiscal deficits on long-term rates might be somewhat larger than elsewhere. That's because most government securities (G-secs) are held by banks, and banks have limited capacity to absorb bond supplies. This risk might seem particularly pertinent because over the past few years' banks have accumulated large holdings of G-secs, exceeding by a large margin the statutory liquidity ratio (SLR) minima that they are required to hold. Moreover, they will be acquiring sizeable amounts of state bonds over the next few years as bank loans to electricity distribution companies are securitized under the UDAY scheme. So, banks' appetite for additional bond issues might seem to be limited.

1.71 In fact, the risk of oversupply seems fairly small. For a start, a reduction in the fiscal deficit – even to one somewhat higher than 3.5 percent of GDP – implies a lower net bond issue, relative to GDP. And banks might actually be eager to purchase additional G-secs, since falling oil prices could lead to lower inflation, which could then lead to lower interest rates and capital gains on their

holdings. At the same time, foreign portfolio investors might also increase their purchases, since the RBI has been relaxing the limits on their G-sec investments. Conversely, if foreign inflows prove small, the RBI itself may need to buy G-secs to assure an adequate increase in money supply. Finally, if demand proves weak the government can always scale back its bond issues and instead run down its ample cash balances.

1.72 What about short-term interest rates? Isn't there a risk that large pay awards could push up inflation, forcing the RBI to increase their policy rate? As discussed above, the risk seems small, as there's little evidence that public sector pay increases are transmitted to prices, or even to wages in the private sector. In fact, the more significant risks to inflation would seem to be to the downside: from lower oil prices, a slowing Chinese economy, and the impact of fiscal deficit reduction – of any size – on aggregate demand.

1.73 Summing up the cyclical considerations, small differences in the degree of fiscal adjustment may not have much impact on interest rates. Which means that any positive effects from a large adjustment ("austerity") coming from lower interest rates could be offset by the direct negative impact on aggregate demand.

1.74 That still leaves the second issue: the need to put debt on a downward path. To see whether this would be possible with a more moderate pace of adjustment, a careful examination of the medium-term fiscal outlook is in order. The basic drivers of government debt can be specified precisely. Aside from exchange rate movements, which are unpredictable, the evolution of the debt-to-GDP ratio depends on two factors. These are: (i) the level of the primary deficit, that is, the fiscal deficit once interest costs are set aside; and (ii) the difference between the interest rate on government debt and the growth of nominal GDP (multiplied by the

previous year's debt ratio). In symbols:

$$d(t) - d(t-1) = p_d(t) + [i-g]/[1+g]*d(t-1)^8$$

1.76 Put simply, primary deficits push up the debt ratio. But nominal growth can bring it down, as long as the growth rate exceeds the interest rate on government debt. The primary deficit has been curbed to less than 1 percent of GDP in 2015-16, far below the nearly 3 percent of GDP recorded in 2011-12. But nominal growth has collapsed, as the GDP deflator has plunged to minimal levels, virtually eliminating the gap between growth and interest rates. And therein lies the problem.

1.76 The fiscal outlook consequently hinges on what will happen to the interest-growth differential. If it normalizes, the debt-GDP ratio could come down on its own, even without adjustment measures. For example, if nominal growth quickly recovers and averages 12 percent over the next five years (say, around 8 percent real and 4 percent inflation) while the effective interest rate on government debt stays near current levels, then consolidated debt could fall by $1^{1/2}$ percentage points of GDP over the next five years – even as states assume debts of around $2^{1/2}$ percent of GDP under the UDAY electricity reform scheme. Since the states would merely be recognizing an existing contingent liability, and bringing it onto their own balance sheet, a better measure of the underlying fiscal progress would perhaps be the reduction in debt, excluding UDAY bonds. This would be 4 percent of GDP (Figures 13 and 14).

1.77 It would be imprudent, however, to count on this scenario materializing. For one thing, adverse shocks have a way of throwing debt dynamics off course. The global recovery could falter. Inflation could turn out to be lower than expected. For these or many other reasons, the interest- growth

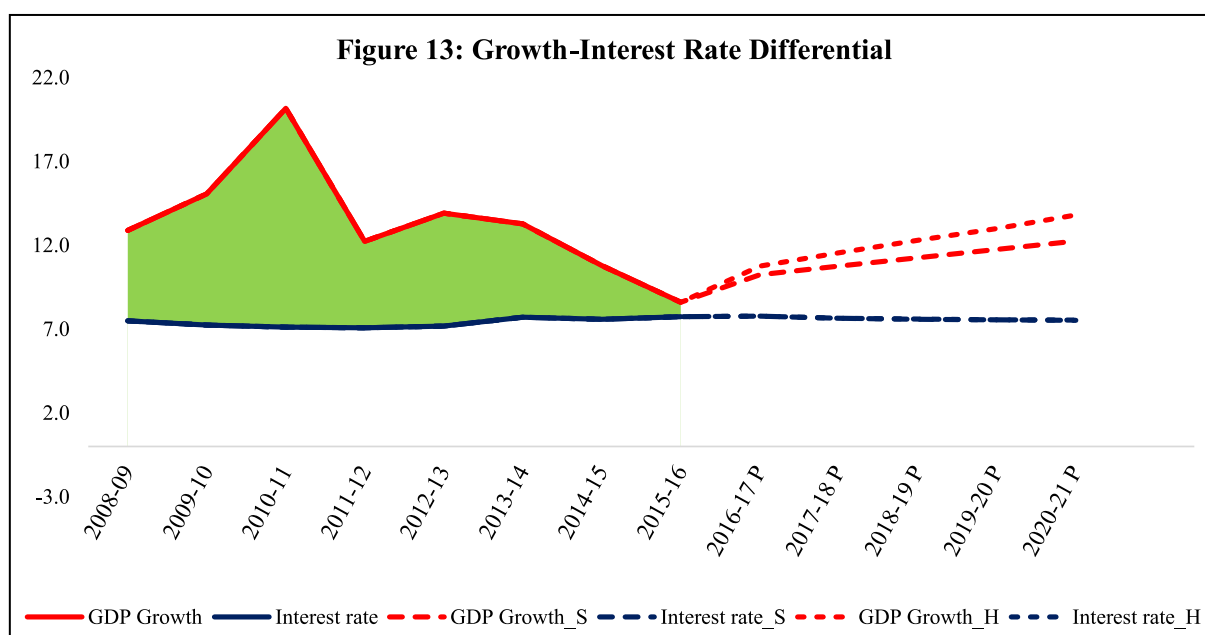
differential may not normalize anytime soon.

1.78 Consequently, a much more prudent approach would be to assume a more gradual recovery of nominal GDP, say one where nominal growth averages 11 percent over the next 5 years. In that case, the interest-growth differential would not be sufficient to bring down the debt—the primary deficit would need to be reduced. But if such a strategy were to be pursued, even modest and gradual adjustment could eventually make a significant difference. For example, if the fiscal deficit were reduced annually by around 0.2-0.3 percentage points of GDP, by the end of the period the overall deficit would be around 3 percent and the primary deficit would be essentially eliminated. Most significantly, the debt ratio would eventually— though not immediately—fall. Debt would decline by 2 percentage points of GDP in overall, and $4^{1/2}$ percentage points in underlying terms, slightly further than in the more favourable growth scenario (in Figure 14, this scenario would be very close to that shown as “Debt_H”). And of course if the economy responded to the fiscal prudence, as well as other structural reforms being pursued, and growth rebounded toward earlier levels, then the debt reduction would be even larger.

1.79 In sum, fiscal policy needs to navigate between Scylla and Charybdis. There are very good arguments for a strategy of aggressive fiscal consolidation, as earlier envisaged, and equally good arguments for a strategy of moderate consolidation that can place the debt on a sustainable path while avoiding imparting a major negative demand shock to a still-fragile recovery. The Union Budget will carefully assess these options.

1.80 In any event, the time is ripe for a review of the medium term fiscal framework. A medium-term perspective to expenditure

⁸ d refers to public liabilities of the general government; p_d refers to primary deficit; i is the interest rate and g is the growth rate.



Source: CSO, RBI & projections.

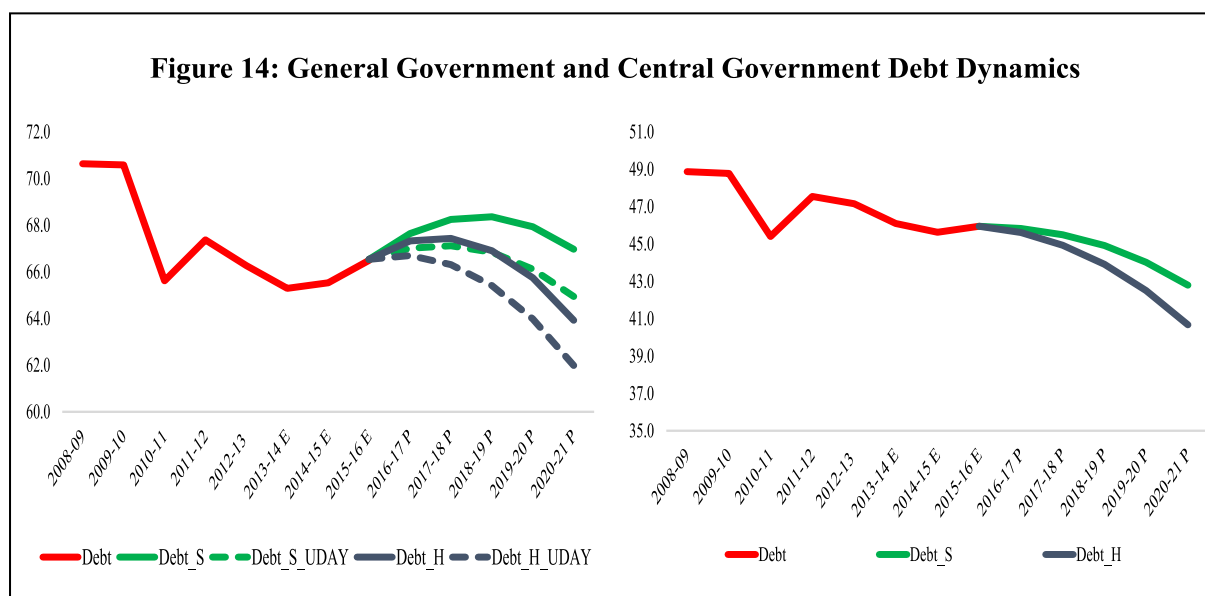
P=Projected

GDP Growth_S= Slower GDP growth forecast

GDP Growth_H= Higher GDP growth forecast

Interest rate_S= Projected interest rates under Slower GDP growth forecast

Interest rate_H= Projected interest rates under Higher GDP growth forecast



Source: CSO, RBI, DMO, budget document and Projections.

E= Estimated

P=Projected

Debt_S= Debt under *Slower* GDP growth forecast

Debt_S_UDAY= Debt under *Slower* GDP growth forecast and without UDAY

Debt_H= Debt under *Higher* GDP growth forecast

Debt_H_UDAY= Debt under *Higher* GDP growth forecast and without UDAY

E= Estimated

P=Projected

Debt_S= Debt under *Slower* GDP growth forecast

Debt_H= Debt under *Higher* GDP growth forecast

planning is necessary. The fundamental growth and fiscal outlooks have changed considerably since the Fourteenth Finance Commission provided medium term revenue projections. And, above all, there are new developments in, and approaches to, medium term fiscal frameworks around the world from which India could usefully learn.

EXTERNAL OUTLOOK

1.81 Last year's Survey had identified a weak external environment as a major medium-term risk. It turned out to be a short run risk as well, and the prospects are that it might continue to be one in the period ahead.

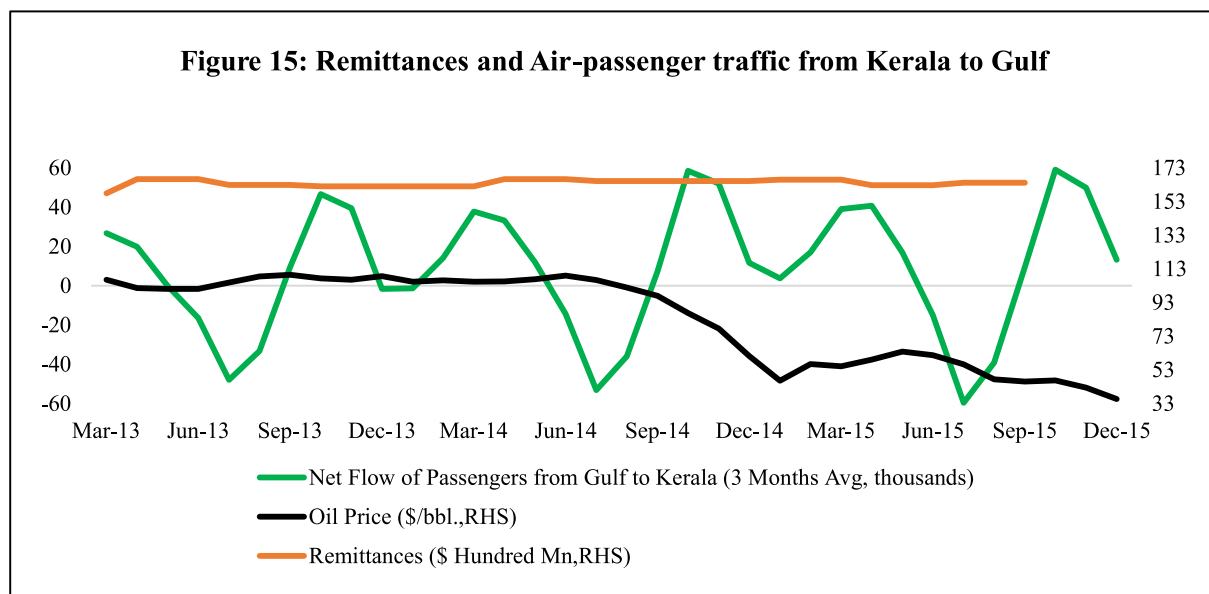
1.82 One of the puzzles this year has been how remittances have held up despite a dramatic decline in oil prices and hence in the health of countries that host overseas Indian workers. (Figure 15). The Indian economy and foreign exchange earnings were buoyed by this non-decline in remittance flows. Still, prudence warrants monitoring this source of earnings because it is plausible that with oil prices remaining low in the near future, oil exporting countries will eventually be forced to curtail their use of foreign labour.

1.83 Overall exports declined by about 18 per cent in the first 3 quarters; much of this

was due to falling commodity prices but the decline in non-oil dollar exports and export volume was still sizable. Exports of commercial services remained stagnant in the first 3 quarters compared with an average growth of about 17 per cent during 2006-2011 (Figure 8). As a result, growth this year was held back—by about 1-1.2 percentage points relative to last year. A question—critical for assessing prospects going forward—is whether this recent export performance is explained mainly by a decline in global demand or a decline in competitiveness, related to the exchange rate or other factors.

1.84 It has been well documented that at the global level, trade has sputtered and more so than the world GDP. So, the question is whether India has fared worse than other exporters.

1.85 One can answer this question by examining how India's exports relative to world GDP have fared compared with world exports. Figure 16 plots four relationships: between India's exports of goods and world GDP (top left panel); between India's export of services and world demand (top right panel); and the two equivalents for the world (bottom panels). It is noteworthy that in the 2000s, India's exports of manufactured



Source: RBI & DGCA.

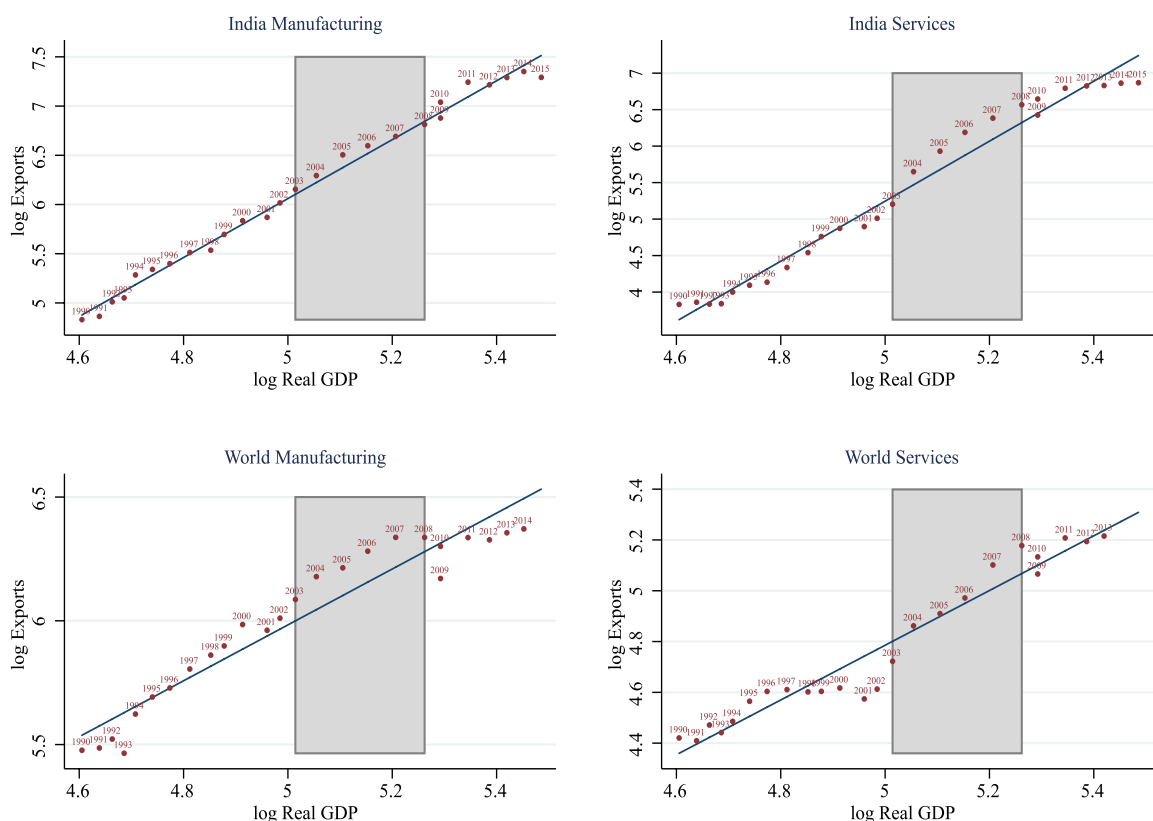
goods and services were above the line of best fit but note that services outperformed manufacturing (services data points are more above the line than manufacturing data points). For the world, there is a similar but less pronounced pattern, especially for services. In the last two years, however, Indian services exports have been more affected than Indian manufacturing exports and also world service exports.

1.86 Put differently, all the focus on manufacturing exports has distracted attention from what might be a no less noteworthy development. It is India's exports of services that has changed in the most significant, and perhaps alarming, way. One can see the problem looking at market shares. India's share of world exports of services, after surging in the mid-2000s, has flattened out.

1.87 What makes this development puzzling is that in recent years the composition of Indian exports of services is more favorable than that of Indian exports of manufactured goods. More of the former goes to the United States, and more of the latter to Asia. Since Asia has slowed down more rapidly, India's exports of manufactures should have been more affected. Furthermore, in the last year, the rupee has depreciated strongly against the dollar which should have helped India's exports of services.

1.88 These developments have longer-term implications. Realizing India's medium term growth potential of 8-10 per cent will require rapid growth of exports. How rapid this should be is suggested by comparing India's export performance in services with China's performance in manufacturing at a comparable stage of the growth surge.

Figure 16: Exports and world GDP



Manufacturing & Services Exports deflated using World Bank's Manufacturing Unit Value Index and US GDP deflator respectively.

Figure 17 plots China's global market share in manufacturing exports beginning in 1991, and juxtaposed on it is India's global market share beginning in 2003 when the shares were roughly similar. The magnitude of the challenge becomes evident when examining China's trajectory over the last fifteen years. To achieve a similar trajectory, India's competitiveness will have to improve so that its services exports, currently about 3 per cent of world exports, capture nearly 15 per cent of world market share. That is a sizeable challenge—and recent trends suggest that a major effort at improving competitiveness will be necessary to meet it.

TRADE POLICY

1.89 For decades, India's fundamental position on trade has been common across the political spectrum, shared by a wide range of intellectual opinion. But during this period the economy has changed almost beyond recognition. The non-success of the Nairobi WTO negotiations, the seismic shifts in the international trade architecture because of the emergence of mega-regional trade agreements, and a slowing world economy which creates pressures on domestic industry combine to present India with a great opportunity to collectively self-interrogate

on the national near-consensus.

1.90 Introspection is overdue on five issues:

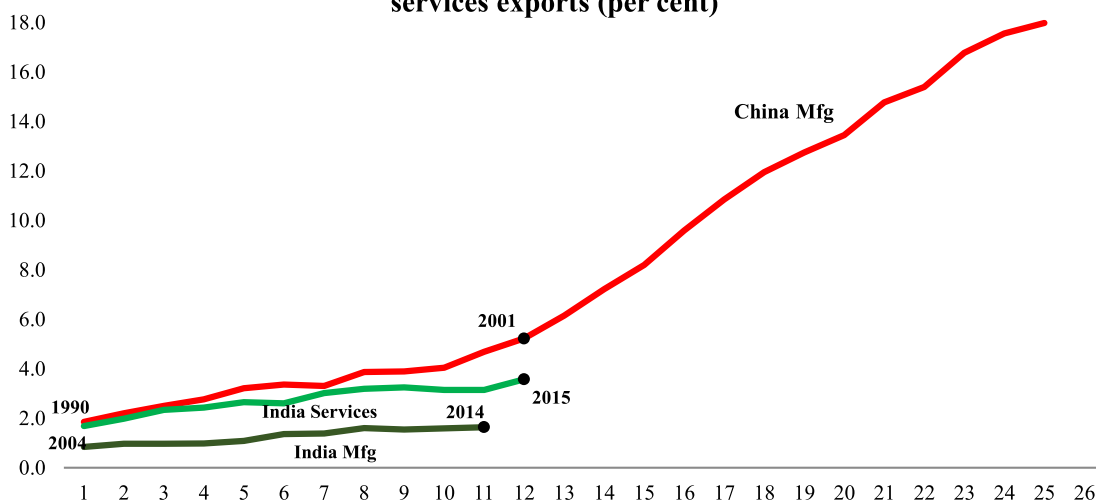
- Providing support to farmers in light of WTO rules;
- Mitigating the impact of erratic trade policy on farmer incentives;
- Reconciling the “big but poor” dilemma that confronts India in trade negotiations;
- Dealing with ongoing stresses brought on by the external environment; and
- Engaging more broadly with the world on trade.

Agriculture and the WTO

1.91 Start first with the two key issues in the Doha Development Agenda (DDA): the special safeguard mechanism (SSM) and food security/public stockholding both of which affect farmer interests.

1.92 The SSM embodies the right to impose trade barriers if there is a surge in agricultural imports into India. But there is one critical but overlooked question: to what extent does India really need SSM? In the Uruguay Round, many countries including India were allowed to set ceiling (jargon for very high) tariff bindings: that is, they were allowed to set, as their WTO obligation, high levels of

Figure 17: Share of India and China in world manufacturing and services exports (per cent)



tariffs which range from 40 per cent to 100 per cent (India's modal rate in agriculture) to 150 per cent. In a preponderance of tariff lines, there is a considerable gap between applied tariffs and the level of tariff bindings.

1.93 Once India had this freedom, it was not necessary to have safeguard actions because, in response to import surges, but even otherwise, India could raise tariffs up to the high level of bindings. Why then, for a long time, has India been asking for the right to impose SSMs, which is in effect asking for even more freedom to determine agricultural policies?

1.94 The answer is not very clear. As Table 2 illustrates, India's applied rate is less than 5 percent of the bound rate for about 4 percent of tariff lines, and less than 20 percent for about 16 percent of its tariff lines. So, India's only real need for SSM arises in relation to a small fraction of its tariff lines—some milk and dairy products, some fruits, and raw hides—where its tariff bindings are in the range of about 10-40 percent which can be uncomfortably close to India's current tariffs, limiting India's options in the event of import surges. But if that is the case, India should call for a discussion of SSMs not as a generic issue of principle but as a pragmatic negotiating objective covering a small part of agricultural tariffs. Perhaps, in this instance, lofty theologizing about freedom and sovereignty needs to cede to mundane haggling over hides and hibiscuses.

1.95 Take next the food security/stockholding issue. India had obtained a virtual cast-iron legal guarantee in 2014, which made the Bali Decision permanent and put it on a sound legal basis. This was reiterated in Nairobi. It remains open whether pressing for "permanent solution" is vitally necessary.

1.96 Especially at a time of farm stress, India must have the freedom to provide support to its farmers. The open question is

its appropriate level and form. The particular policies which are being defended are those that India intends to move out of in any case because of their well-documented impacts: decline in water tables, over-use of electricity and fertilizers (causing health harm), and rising environmental pollution, owing to post-harvest burning of husks. Moreover, the government is steadfastly committed to providing direct income support to farmers and crop insurance which will not be restricted by WTO rules.

1.97 The way forward on agriculture and the WTO can be thought of in the following conceptual terms. At the time of the Uruguay Round, India was a net importer of food and decided that it needed a lot of room to maintain "border protection" (tariffs in particular) and was less concerned about providing support to agriculture via domestic support (producer subsidies, minimum support prices etc). That was India's choice.

1.98 Twenty years on, India's position in agriculture has changed: it has become more competitive in agriculture and it now relies relatively more on domestic support (and less on tariff protection) for agriculture both to sustain domestic production and address low incomes for farmers. India's WTO obligations could predominantly be based on this domestic shift away from border protection to domestic support. India could consider offering reduction in its very high tariff bindings and instead seek more freedom to provide higher levels of domestic support: this would be especially true for pulses going forward where higher minimum support prices may be necessary to incentivize pulses production. This would be good for India, and India's trading partners should be more reasonable about accepting this shift.

Volatile Trade Policy

1.99 Agricultural policy, especially trade policy, is characterized by unusual volatility. The ups and downs are striking. Take the case

of cotton shown in Table 1A in the technical appendix of this volume. In 2010, there were ten changes in policy, mostly relating to exports, and often reversing previous actions. Look at the August 4, 2011 action compared with the action on March 31, 2011. There were then 5 changes in 2011, 5 in 2012 and 2 in 2014.

1.100 The view is that in agriculture, the interests of the producer and consumer have to be balanced. When world prices go up or there is domestic scarcity, export restrictions or bans are imposed; when the reverse happens, import tariffs are imposed. But this policy volatility actually ends up hurting farmers (of course) but eventually also consumers. This is because farmers produce less because of the policy volatility which results in reduced domestic availability and hence higher prices. Farmers are affected not only by the fact that on average they get less for their produce but even more so by the policy uncertainty that dampens, even chills, the incentive to produce. The notion that there is a trade-off between farmers and consumers is false except in the very short run.

1.101 Farm policy—minimum support prices and import and export policy—should be announced well in advance of the crop growing season and should not be altered during the course of the season unless there are exceptional developments.

Broader issues: The “Big-but-Poor” Dilemma

1.102 India also needs to address two broader issues. The first is what might be called the “big-but-poor” dilemma. On the one hand, India’s self-perception as a poor country translates into a reluctance to recognize and practice reciprocity (give-and-take) in trade negotiations. On the other hand, India’s policies have a significant impact on global markets and it has become a large economy in which partner countries have a legitimate stake in seeking market access—just as India

should in relation to its partners’ markets.

1.103 The latter means that partners expect India to play the reciprocity game: “you open your markets and/or you reduce your freedom to protect in return for us doing the same.” If the WTO is not to be consigned to irrelevance—in the wake of the big trading countries turning decisively away from it towards regional agreements—there is only one way forward: in return for similar actions by its trading partners, India, China and other similar countries must be willing to offer to open up their markets and undertake greater commitments in the context of future WTO negotiations.

1.104 In the 1970s and 1980s, India’s engagement in the WTO was broadly non-reciprocal. This was possible because was small enough for trading partners to overlook this non-reciprocity. Today they do care because of India’s market size, and India must respond, balancing the “big-but-poor” dilemma.

1.105 Partner countries must show a serious interest in reviving multilateralism. Equally India and other emerging market economies must make it attractive for trading partners to engage in the WTO. An important part of this will require India playing more of the reciprocity game and using its growing markets as leverage to attain its own market interests abroad, including the mobility of labor.

1.106 The costs of reluctant engagement need careful review. The US and others are negotiating agreements (the Trans-Pacific Partnership (TPP)) that have excluded India and hence shaped in a way that do not take into account India’s important interests (the rules on intellectual property are a good illustration). If and when India joins these agreements, it will be not on India’s terms but on terms already cast in stone, terms that India could not influence because of being perceived as not engaging fully.

Dealing with ongoing stresses

1.107 Trade policy is under stress also for reasons related to the ongoing turmoil in the international environment. Global demand is weak, and one of the powerhouses of trade in recent times—China—is slowing down. Chinese slowdown has important implications for India. As the Chinese currency weakens, setting in train reactions from other countries, India's external competitiveness across-the-board will come under pressure. But there will also be sectoral impacts. Chinese excess capacity in commodity-related sectors such as steel and aluminum will lead to a surge in imports into India.

1.108 How should India respond? India should resist calls to seek recourse in protectionist measures, especially in relation to items that could undermine the competitiveness of downstream firms and industries. India could respond in three ways. First, the most effective instrument to respond to threats to overall competitiveness is the exchange rate. The rupee's value must be fair, avoiding strengthening. This can be achieved through some combination of monetary relaxation, allowing gradual declines in the rupee if capital flows are weak, intervention in foreign exchange markets if inflows are robust, and being cautious about any further opening to inflows that could unduly strengthen the rupee.

1.109 Second, India should strengthen procedures that allow WTO-consistent and hence legitimate actions against dumping (anti-dumping), subsidization (countervailing duties), and surges in imports (safeguard measures) to be taken expeditiously and effectively. Ineffective domestic procedures risk becoming the excuse for broad-based protectionist actions.

1.110 Third, India should eliminate all the policies that currently provide negative protection for Indian manufacturing and favor foreign manufacturing. This could be achieved by quick implementation of the GST as recommended by the recent report of the GST Committee. If delays are envisaged, a similar result could be achieved by eliminating the countervailing duty exemptions.

Broader issues: Prerequisites for Trade opening

1.111 Underlying all these proximate issues is a much deeper problem: can trade liberalization be a source of efficiency, dynamism and growth not just for services but also agriculture and manufacturing going forward?

1.112 To put it in the terms that Rodrik and Subramanian (2004) used to describe India's reforms of the 1980s and 1990s: is India really pro-competition or is it just pro-business?⁹

1.113 Every country, and every constituency in every country, wants more exports. But there is much more ambivalence about imports. The efficiency effects of trade, however, work through imports: by exposing domestic industry to greater competition and by creating incentives domestically to move resources toward export sectors.

1.114 Now, it is intrinsic to creating greater competition that there will be churn, stress, and dislocation, necessitating some exit of uncompetitive firms and industries. Accepting the transitory costs of trade liberalization and providing a cushion against them—in the form of targeted assistance—will be necessary for India to be able to negotiate credibly in the WTO today and, if India so decides, the Trans-Pacific Partnership (TPP) tomorrow. That is why, the government's

⁹ Dani Rodrik and Arvind Subramanian, *From "Hindu Growth" to Productivity Surge: The Mystery of the Indian Growth Transition*, NBER Working Paper No. 10376.

Skill India and Make in India initiatives are so important. Greater trade opening will increase the size of the pie but it must be combined with assistance in the transition phase to make everyone better off.

1.115 In some ways, that ambivalence about

greater foreign competition, stemming in turn from the domestic politics of disruption and exit, is at the heart of India's difficulties with the WTO, trade agreements, and trade policy more broadly (as discussed in Chapter 2). There is no getting away from it.

Table 2: India's Actual and Bound Rates in Agriculture (Per cent)

Bound minus applied	No. of tariff Lines	Cumulative tariff Lines	Percentage	Cumulative
0	21	21	1.6	1.6
1-5	20	41	1.5	3.1
6-10	136	177	10.4	13.5
11-20	39	216	3.0	16.4
21-30	109	325	8.3	24.7
31-40	354	679	26.9	51.7
41-60	111	790	8.4	60.1
61-80	235	1025	17.9	78.0
81-100	101	1126	7.7	85.7
Above 100	188	1314	14.3	100.0
Total	1314			

Source: WTO.

The *Chakravyuha* Challenge of the Indian Economy

From socialism with restricted entry to “marketism” without exit

02

CHAPTER

India has made great strides in removing the barriers to the entry of firms, talent, and technology into the Indian economy. Less progress has been made in relation to exit. Thus, over the course of six decades, the Indian economy moved from ‘socialism with limited entry to “marketism” without exit’. Impeded exit has substantial fiscal, economic, and political costs. We document its pervasive nature which encompasses not just the public sector and manufacturing but the private sector and agriculture. A number of solutions to facilitate exit are possible. The government’s initiatives including the new bankruptcy law, rehabilitation of stalled projects, proposed changes to the Prevention of Corruption Act as well as the broader JAM agenda hold the promise of facilitating exit, and providing a significant boost to long-run efficiency and growth.

INTRODUCTION

2.1 The *Charkravyuha* legend from the Mahabharata describes the ability to enter but not exit, with seriously adverse consequences. It is a metaphor for the workings of the Indian economy in the 21st century, the legacy of several decades of economic policy making.

2.2 A market economy requires unrestricted entry of new firms, new ideas, and new technologies so that the forces of competition can guide capital and labour resources to their most productive and dynamic uses. But it also requires exit so that resources are forced or enticed *away* from inefficient and unsustainable uses.

2.3 Joseph Schumpeter recognized the vital role of exit, via “the gale of creative destruction,” in the efficient workings of a market economy, the “process of industrial mutation that incessantly revolutionizes the economic structure from within, *incessantly destroying the old one, incessantly creating a new one.*”

2.4 Structural impediments to India’s economic progress have often been framed in relation to the problem of entry as evoked in the famous phrase--“licence-quota-permit Raj”--of C. Rajagopalachari, India’s original economic liberal. Since the early 1980s, the Indian economy has made remarkable progress in increasing entry: industrial licensing has been dismantled, public sector monopolies have been diluted, some public sector assets have been privatised, foreign direct investment has been considerably liberalised, a process that has been accelerated under this government, and trade barriers have been reduced. Indeed, the narrative of reforms has been one of promoting entry by eliminating the barriers to it.

2.5 Yet, as this chapter will document, there has been less progress in relation to exit. Indeed, the twin balance sheet challenge confronting the Indian economy today highlights vividly the exit problem. One might, therefore, hazard that the Indian economy had moved from

socialism with restricted entry to “marketism” without exit.

2.6 To be sure, in a country as large and diverse as India, exit may not always be desirable. But policy action is needed when the costs clearly outweigh the benefits, when the lack of exit generates externalities that hurt others—such as firms that have to compete with subsidised “sick” firms or taxpayers who have to pay for the corporate subsidies. Those paying the costs could well be the poor. They pay taxes, even if only indirect ones. And they may also have to bear the burden of paying higher prices while getting substandard goods and services from inefficient firms which should have exited, but haven’t. In fact, the true beneficiaries of the interventions that prevent exit may often be the rich, who own the firms.

2.7 Two caveats are in order. First, focusing on the exit problem does not mean that the challenges of entry have been fully addressed. The Government’s reform agenda, including liberalising FDI and launching the Start-up India and Entrepreneurship initiatives are noteworthy endeavours to further facilitate entry.

2.8 Second, there are sectors in which exit

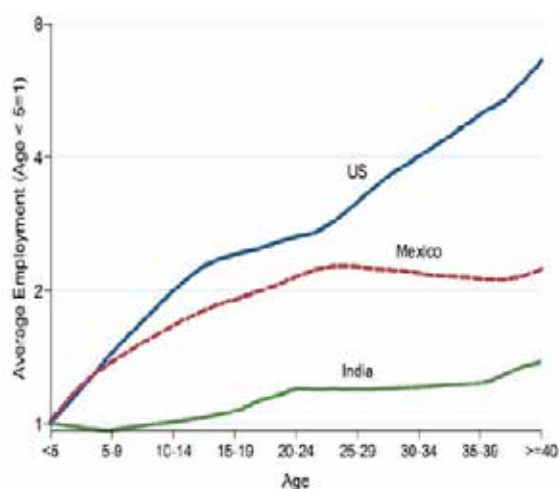
is not a first-order problem, for example IT services and e-commerce, evidenced most recently in the dynamism displayed in relation to start-ups in India. The case studies suggest that the Chakravyuha challenge is more a feature of the relatively traditional sectors of the economy but is not restricted to the public sector—indeed, impeded exit in the private sector is becoming a major challenge.

2.9 The chapter is divided into four sections. In the next section we briefly describe the costs of impeded exit. In subsequent sections we illustrate costs of impeded exit and the severity and breadth of the problem with sectoral examples. We then place them into analytical categories that explain why exit is difficult. And, finally, in the last section, we provide tentative solutions for facilitating greater exit.

MAGNITUDE OF THE PROBLEM

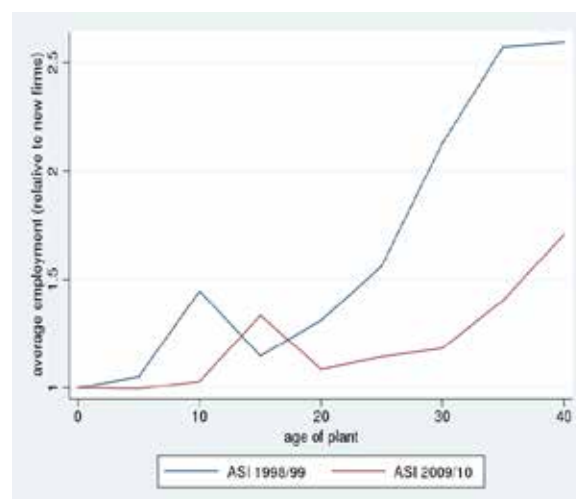
2.10 That there is an exit problem in India is beyond dispute. But how severe is the problem? There are several ways of answering the question. Figure 1 below provides one measure, based on the size of firms. In principle, productive and innovative firms should expand and grow, forcing out the

Figure 1: Average employment of old and new plants in India, Mexico and US



Source: Hsieh and Klenow (2014).

Figure 2: Average employment of old and new plants in India, FY1999 and FY2010



unproductive ones. So surviving firms should be much larger than new ones. Figure 1 shows that in the US the average 40-year old plant is 8 times larger (in terms of employment) than a new one. Established Mexican firms are twice as large as new firms. But in 2010 India the average 40 year old plant was only 1.5 times larger than a new one.

2.11 Figure 2 illustrates the situation has worsened over the years. It plots the size of Indian plants relative to new ones across their ages from the Annual Survey of Industries in 1998-99 and 2009-10; in 1998-99 the ratio was 2.5. But now the gap between old and new firms is much smaller. Taken together, these charts show that there are not enough big firms and too many firms that are unable to grow, the latter suggesting that there are problems of exit.

2.12 Bloom and Van Reenen (2010)¹ take another approach. They show that India unlike many countries seems to have a disproportionately large share of inefficient firms with very low productivity and with little exit. They assign a management practice scores of 1 to 5 (worst to best) for a sample of 695 randomly chosen U.S. manufacturing firms with 100 to 5,000 employees and the second panel for 620 similarly sized Indian ones. The results reveal that compared to the US, there is a “thick tail” of badly run firms in India. This is directly related to an exit problem in Indian industry because a majority of these large numbers of small and inefficient firms should not survive.

COSTS OF IMPEDED EXIT

2.13 *Why does the situation matter?* The lack of exit creates at least three types of costs: fiscal, economic (or opportunity), and political.

2.14 **Fiscal costs:** Exit is impeded often through government support of incumbent,

mostly inefficient, firms. This support—in the form of explicit subsidies (for example, bailouts) or implicit ones (tariffs, loans from state banks)—represents a cost to the economy. The cost is an increasing function of the taxes that will have to make up for the lost revenue, and/or the general equilibrium effects of greater deficits, via the greater interest costs and reduced private sector investment activity that result if the government borrows to finance the foregone revenue.

2.15 **Economic costs:** Economic losses result from resources and factors of production not being employed in their most productive uses. In a capital scarce country such as India, misallocation of resources can have significant costs. In their study, Hsieh and Klenow (*"Misallocation and Manufacturing TFP in China and India"*, The Quarterly Journal of Economics, 2009) argue that when capital and labour are hypothetically reallocated within firms to equalize marginal products to the extent observed in the United States, it leads to manufacturing TFP gains of 40 – 60 per cent in India. Now, not all of this misallocation is due to impeded exit but that does play an important role in impeding the needed reallocation of resources.

2.16 Another cost, in the current context, stems from the overhang of stressed assets on corporate and bank balance sheets. It reflects the difficulty of apportioning costs of past mistakes between equity holders, creditors, taxpayers and consumers. The consequence is a reduced flow of new investment, dampening medium term growth.

2.17 **Political costs:** The lack of exit can also have considerable political costs for governments attempting to reform the economy. The benefits of impeded exit often flow to the rich and influential in the form of support for "sick" firms. This can give the impression that governments favour

¹ Bloom, N. & John van Reenen, 2010, “Why do Management Practices Differ across Firms and Countries?” *Journal of Economic Perspectives*.

large corporates, which politically limits the ability to undertake measures that will benefit the economy but might be seen as further benefitting business. Similarly, if wilful defaulters cannot be dealt with appropriately, the legitimacy of a market economy and the regulating institutions can themselves be called into question.

2.18 No sector illustrates the combination of fiscal, economic, and political costs more starkly than fertilizer. As shown in Chapter 9, fiscal subsidies amount to 0.8 percent of GDP, much of which leaks abroad or to non-agricultural uses, or goes to inefficient producers, or to firms given the exclusive privilege to import. But precisely for these reasons it has proved politically impossible to close the inefficient firms or eliminate the canalisation of imports.

2.19 While recognising the centrality of low cost fertilisers for all farmers, big and small it should be noted that the subsidy to farmers—which predominantly benefits large farmers—cannot be reduced/eliminated because of an exit problem— the entitlement that farmers, especially rich farmers, have internalised, and the power of their voice in preventing reform. In order to maintain low domestic prices to farmers (the consumer subsidy), both producers and importers have to be subsidised. But eliminating the producer subsidy runs up against the exit problem in relation to inefficient producers. Eliminating canalization could face resistance from existing importers and so on.

2.20 Nor is agriculture immune from the exit problem evidenced in the persistence of policies that promote some crops that create

Table 1: Characterising the Exit Problem

Sector	Employment	Inefficiency Measure/Cost ²	Solution
PUBLIC SECTOR			
<i>Fertilizers (inefficient firms)</i>	15,619	Estimated subsidy based on economic cost of production Rs. 23,013 crore in 2013-14 .	Progress being made with neem-coating which reduces diversion, decanalisation, JAM for farmers (Chapter 3).
<i>Civil Aviation</i>	25,047 ³	In 2013-14, the total loss was about Rs. 2400 crore; 7 th straight year of loss	Strategic approach.
<i>Public Sector Banks (a few banks)</i>	86,744	Capital infusion between 2009-10 and 2015-16 (H1): Rs. 1.02 lakh crore.	Consolidate; Strategically disinvest; 4 R's for the NPA problem: <i>Recognition, Recapitalization, Resolution and Reform</i> (Chapter 1). Changing PCA (Box 2.2)
<i>Discoms (major loss-making states)</i>	2.6 lakh	Accumulated losses over 2008-09 and 2013-14 about Rs. 2.3 lakh crores.	Tying structural improvements with debt relief (as in UDAY). Create 'one market' in power (Chapter 11).
<i>Central Public Sector Enterprises</i>	2.5 lakh (sick CPSEs, 2013-14)	Accumulated losses of sick units as of 2013-14: Rs 1.04 lakh crore.	Allow sick CPSEs to exit. Leverage the land and capital unlocked to promote new investment.
<i>Administrative Schemes</i>	N/A	Number of central sector and centrally sponsored schemes increased from 908 in 2006-07 to 1086 in 2014-15.	Rationalisation of schemes as done in 2014-15. Regular evaluations.
<i>Regulatory bodies</i>	N/A	The average age of their heads is about 60.	Administrative reform to bring in young, professional talent.
PRIVATE SECTOR			
<i>Agriculture (cereals and sugar)</i>	N/A	Over-intensive cultivation of water-intensive crops has led to water tables declining at a rate of 0.3 meters per year.	Incentivize pulses over water-guzzling crops. Facilitate use of <i>drip irrigation</i> (chapters 3 and 4). Highlight social costs and benefits of crop production.

² Unless otherwise specified, numbers are inflation-adjusted.

³ Air India Annual Report 2012-13.

Table 1: Characterising the Exit Problem

Sector	Employment	Inefficiency Measure/Cost ²	Solution
<i>Steel</i>	N/A	Cost of production 50-75% higher for few inefficient firms in comparison to global norms.	Bankruptcy Code.
<i>Infrastructure (few large groups)</i>	N/A	As of FY15 the average interest cover is about 0.3.	Kelkar (PPP) Committee recommendations, bankruptcy code. Changing PCA (Box 2.2 below)
<i>Small Savings</i>	N/A	Implicit subsidy to well-off: Rs 11,900 crore.	Rationalize schemes to benefit the small savers. Make transparent true beneficiaries (chapter 6).
ECONOMY WIDE			
<i>Trade Liberalisation</i>	N/A	Nearly highest restrictions on imports; gains from liberalisation of goods and services estimated at 1% of GDP ⁴ .	Safety nets to tackle transitory costs of greater trade liberalization and competition (chapter 1).
<i>Labour</i>	N/A	Not enough big firms and too many small and inefficient firms (Hsieh & Klenow, [2014] ⁵ ; Bloom and van Reenen [2010]).	Employee-centric regulations; provision of greater choice to employees (chapter 10).

adverse externalities at the expense of others; nor is it the case that impeded exit benefits the poor because the relatively well-off are also beneficiaries of the interventions that prevent exit.

DESCRIBING THE PROBLEM OF EXIT

2.21 An exhaustive documentation and quantification of the exit problem is difficult. We will instead illustrate the problem by a partial listing. In what follows, we cite and briefly discuss (Box 2.1) instances where exit has emerged as a serious constraint.

2.22 There are many ways to measure the exit problem. For the sake of simplicity and consistency, we use some simple metrics.

These are presented in Table 1. For each case, it presents a measure of employment, inefficiency and potential solutions.

2.23 Box 2.1 also documents in greater detail the exit problem for certain specific sectors listed in Table 1: public sector banks, infrastructure, steel and trade.

Why is There an Exit Problem?

2.24 It is useful to understand the exit problem in terms of analytical categories because it aids in the search for solutions. In India, the exit problem arises because of three types of reasons, what might be called the three I's: *interests*, *institutions*, and *ideas/ideology*.

Box 2.1: Characteristics of Selected Sectors

I. Public Sector Banks

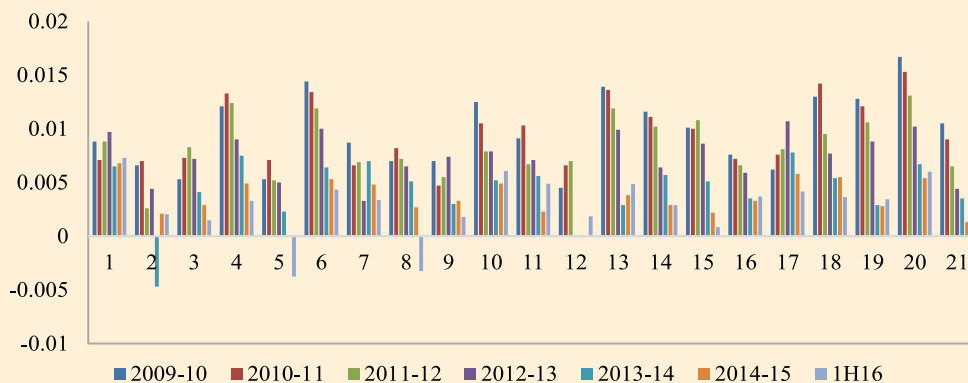
The first figure reports the bank-wise time series of return on assets (RoA) which are declining rapidly across the banking landscape. There is a corresponding deterioration in the asset portfolio the full extent of which will be known after the RBI completes its asset quality review. The second figure plots the return on assets against employment for all public sector banks.⁶ The lines represent median values. The RoA for most banks is currently less than one third of the norm of 1 per cent that is considered reasonable.⁷ Many, though not all, of the less profitable banks are those with smaller levels of employment.

⁴ The World Bank. http://www.wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2015/03/10/090224b082bf51e6/1_0/Rendered/PDF/Economic0impli0nd0the0United0States.pdf

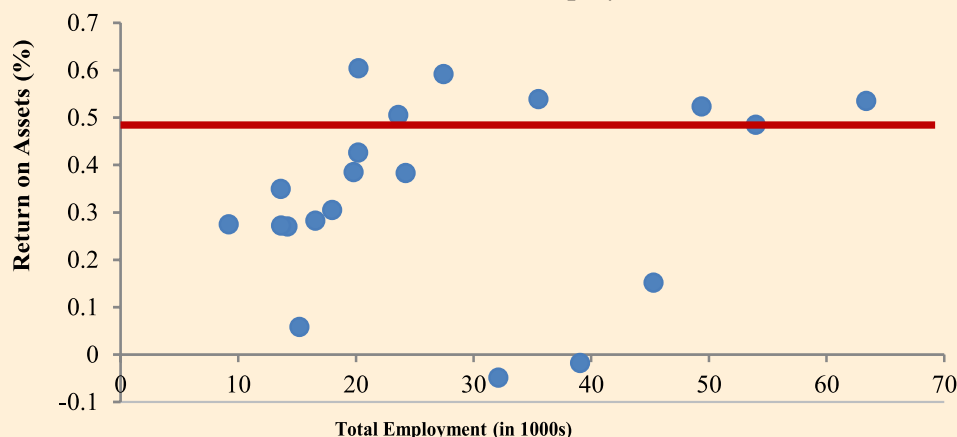
⁵ Klenow, P & Chang-Tai Hsieh, 2014. "The Life Cycle of Plants in India and Mexico", *The Quarterly Journal of Economics*.

⁶ Note that State Bank of India and Punjab National Bank are not included- they are two largest employers.

⁷ Most private sector banks currently in India have a RoA of more than 1 per cent.

Figure : Return on assets of public sector banks, 2009-10 to 2015-16 H1

Source: Reserve Bank of India (RBI).

Figure : Performance of public sector banks (avg. return for 2013-14, 2014-15, 2015-16 H1) & total employment (2014-15)

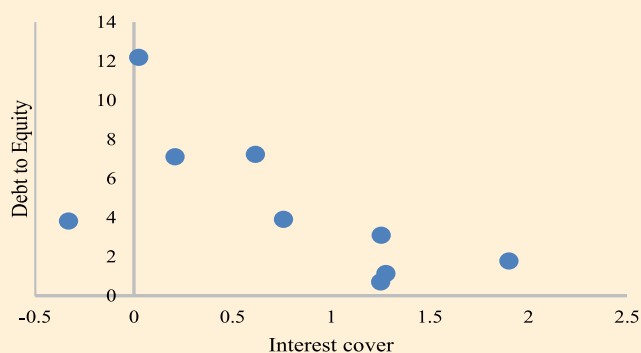
Source: Credit Suisse.

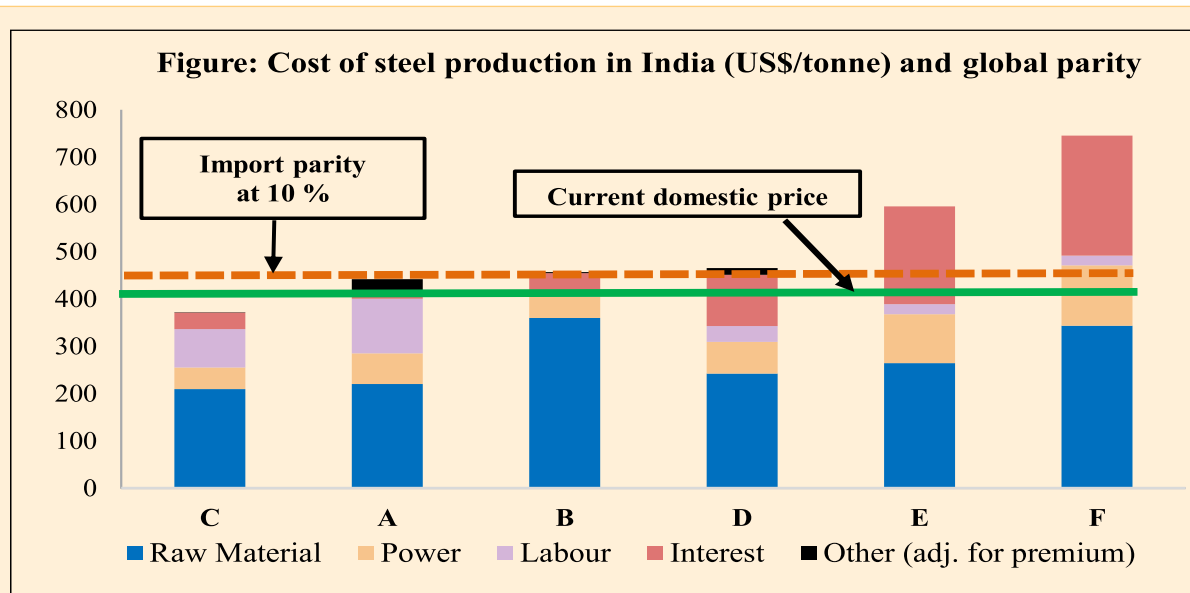
II. Infrastructure and Corporate Performance

Corporate balance sheets are stretched, depressing private investment. In the Economic Survey 2014-15, we called it the “balance sheet syndrome with Indian characteristics.” The figure below provides a scatter plot of debt to equity ratios against interest coverage ratios (ICR) of the 10 most overstretched corporate groups according to the latest data from Credit Suisse. An ICR of less than 2.5 is considered quite low- it implies that the revenues are not sufficient to cover the interest costs on debt.

III. Steel

The steel sector is under severe stress for domestic and international reasons. The figure below shows that the cost of production of a few private players (5 and 6) for FY15 is significantly greater than that of other firms when benchmarked against international prices.

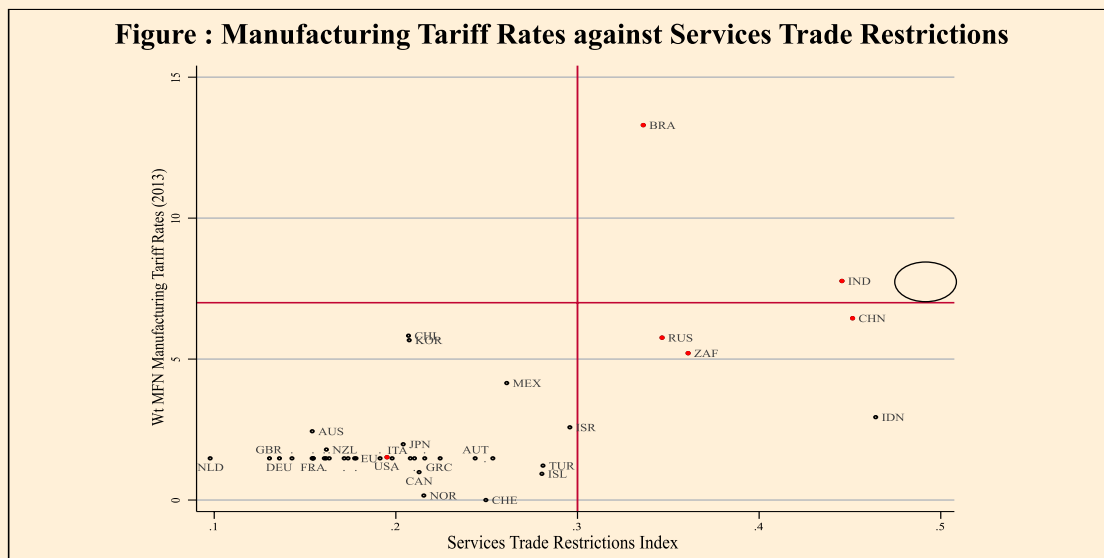
Figure : Debt to equity (Per cent) and interest cover ratios of large corporate groups



Source: Credit Suisse.

IV. Trade

The last figure of the box shows that India has amongst the severest trade restrictions in goods (y-axis) and services (x-axis). Only Brazil has higher manufacturing tariffs, China and Indonesia more severe restrictions on services trade. This ambivalence about greater foreign competition owes in part to the domestic politics of disruption and exit, and might be at the heart of India's difficulties with the WTO, trade agreements, and trade policy more broadly.



Source: World Bank.

2.25 Interests: The first, most obvious, and perhaps most powerful reason for lack of exit is the power of vested interests. Often, this vested interest problem is aggravated by a certain imbalance or asymmetry (first identified by the Italian economist Pareto)

that confers greater power on concentrated producer interests in relation to diffused consumer interests. It has long been known that trade liberalization is difficult because the beneficiaries are consumers (whose aggregate benefit is large but who benefit individually

by a small amount) and the losers are a few producers each of whom stands to lose by a lot. The latter will be more influential because they have more voice, backed by financial power. And often democratic political systems will give disproportional influence to the latter.

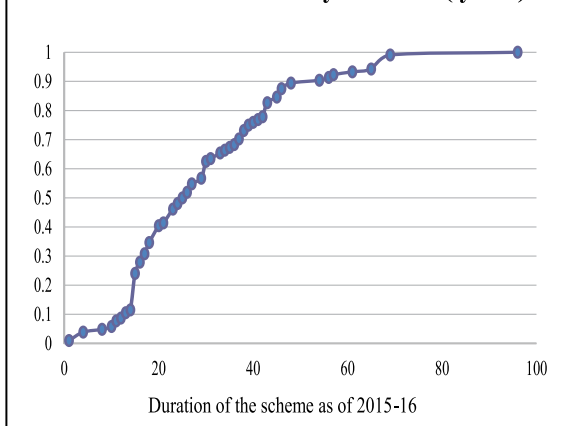
2.26 One good example of interest groups blocking reform comes from introducing JAM for MGNREGA expenditure. It is acknowledged that MGNREGA, despite its benefits as a well-targeted social insurance mechanism and for rural development, suffers from significant leakage. To reduce leakages and payment delays, Andhra Pradesh introduced direct benefit transfers, so that salaries would be paid directly to workers, with biometric Smartcards to reduce the scope of siphoning of funds via registering ghost workers.

2.27 The Smartcards program was a tremendous success, reducing payment delays by 19 per cent, increasing MGNREGA wages by 24 per cent and reducing leakages by 35 per cent. The return on investing in Smartcards infrastructure was thus seven times the cost of implementation. 90 per cent of beneficiaries also preferred the Smartcards system (Muralidharan et. al. 2015)⁸. And yet, the perception was created that the program was mostly negative. This was a classic case of the imbalance of power between concentrated losses and diffuse benefits.

2.28 In the case of administrative schemes, vested interests often create a market of their own, planning their actions to benefit from it: put differently, this is a case of supply creating its own demand. Thus schemes may become

an instrument of granting favours. Finally, bureaucratic inertia perpetuates persistence. Figure 3 plots the cumulative distribution function of Central Sector Schemes that were allocated money as per the Union Budget 2015-16⁹. It shows the percentage of schemes by their longevity. For example, 50 percent of schemes were 25 years old. And out of the 104 total schemes, 92 have been ongoing for 15 years or more.¹⁰ Longevity, per se, may not be a problem but extra vigilance is necessary to ensure that schemes remain relevant and useful over time. And vigilance should probably increase in proportion to the longevity of schemes.

Figure 3: Distribution of centrally sponsored and central sector schemes by duration (years)



Source: Ministry of Finance.

2.29 **Institutions:** Another reason for impeded exit is institutions. The interesting, even paradoxical, fact about India today is that the problem arises from a combination of both weak and strong institutions.

2.30 Examples of weak institutions are legal procedures that increase the costs—time and financial costs—of exit. One example is the

⁸ Muralidharan, K., Paul Niehaus & S. Sukhtankar, 2015, "Building State Capacity: Evidence from Biometric Smartcards in india", J-PAL.

⁹ Note that Central Sector Schemes are different (and less in number) than Centrally Sponsored Schemes. The major difference is that the former is funded entirely by the Central government and implemented by its machinery, whereas the latter is based on subjects in the State List, and is majorly funded by the Central government but implemented by the states.

¹⁰ There is scheme that is 96 years old called 'Livestock Health & Disease Control' under the Department of Animal Husbandry, Dairying and Fisheries. In the Union Budget 2015-16, it was allocated ₹ 251 crores.

debt recovery tribunals (DRTs). As the name suggests, they perform the role of helping financial institutions recover bad debt quickly and efficiently. In principle, both banks and borrowers can approach the DRTs to settle outstanding debt repayment problems.

2.31 With rising non-performing assets, recourse to DRTs has increased dramatically. Figure 4 shows that the share of settled cases is small and declining; and the accumulated backlog of unsettled cases increased to nearly Rs. 4 lakh crore at the end of FY15.

2.32 The delay in debt recovery creates dynamic efficiency cost on the economy since it prevents the cleaning up of balance sheets of banks and the corporate sector.

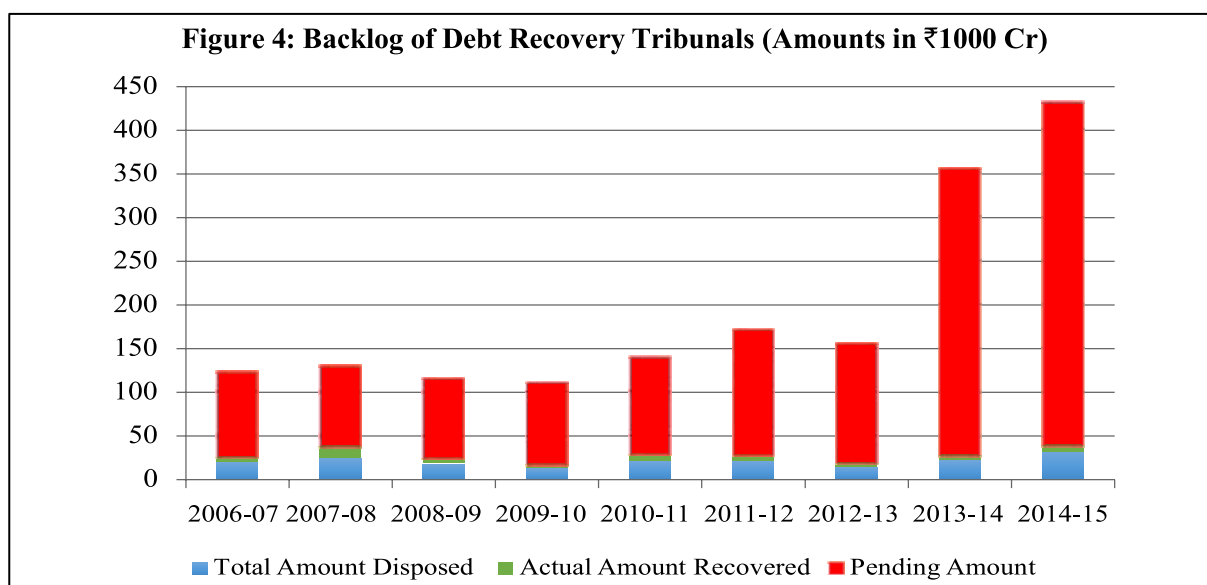
2.33 Another stark example of weak institutions is simply the inability to punish wilful defaulters: if demonstrable wrongdoing goes unpunished, the legitimacy of all institutions is called into question.

2.34 Paradoxically in India, exit is also impeded by “strong” institutions. For a number of reasons, certain institutions—characterized by Devesh Kapur of University of Pennsylvania as “referee institutions”—for example, some of our investigative

institutions have become enormously powerful over the last few decades. The strength of these institutions now exists in conjunction with another feature of Indian decision-making, namely the asymmetric incentives for bureaucrats that favours abundant caution and hence the status quo.

2.35 One consequence of this is that incentives are stacked against decisions to precipitate exit. In the case of public sector banks, it is well-known that senior managers are often reluctant to take decisions to write down loans for fear of being seen as favouring corporate interests and hence susceptible to scrutiny. This encourages ever-greening of loans, postponing exit. (see Box 2.2 for an analysis and possible solution).

2.36 Consider the difficulty. On the one hand, a market economy requires the operation of the perpetrator pays principle (PPP). If equity providers/promoters take risks that do not pay off, they must pay the financial consequences: that is at the heart of limited liability in a market economy, and bankruptcy procedures enshrine this principle. Otherwise, perverse incentives—the problem of moral hazard—are created.



Source: Ministry of Finance.

2.37 On the other hand, though, circumstances may demand that the PPP be applied with less than full vigour. In the case of India, ten large corporate houses account for a sizable share of private capital expenditure. Penalising them might lead to the destruction of assets which might otherwise be amenable to rehabilitation. Tricky trade-offs must be made between the perpetrator pays principle and the need to revive investment in a weak economy. But the Damocles sword of “strong referee institutions” -- undoubtedly critical for any democracy -- militates against nuanced, even risky, decision-making when departures from strict principles may be necessary.

2.38 **Ideas/Ideology:** A third reason for impeded exit relates to ideas/ideology. All around the world, and at most points in time, it is very difficult to phase out entitlements. But this may be especially true in a country with sizable poverty and inequality and one that is a democracy. Democracy will favour—legitimately—redistribution for the numerous poor. The founding ideology of state-led development and socialism both mirrored this imperative and furthered the objective.

2.39 A good illustration arises in relation to all the interventions in agriculture and all the anti-poverty programs. The objective in all these cases is laudable. But once the policies and programs have been set in place, they are very difficult to reverse. Minimum support prices (MSPs) were envisioned as an insurance mechanism for farmers, but have become price floors instead, favouring some crops in some regions at the expense of others. A variety of subsidies and tax concessions are intended for the poor end up accruing to the relatively better-off (see Chapter 6). The political communication of targeting and policies that promote it are evidently not easy.

2.40 Another factor that impedes exit is what might be called the “sanctification of the

small.” To be sure, small firms and enterprises merit help through easy availability of credit. It is equally true that economic dynamism and long-run growth requires small firms becoming big and efficient. The experience of the infrastructure boom in which big corporate groups were serial perpetrators should not result in the “sanctification of the small.”

CONCLUSION: ADDRESSING THE PROBLEM

2.41 How might the exit problem be addressed? At least, five possible ways suggest themselves.

2.42 ***Avoid exit through liberal entry:*** Since 1991, an overarching principle for eliminating inefficiency and/or addressing the exit problem in vast parts of the economy has been this: to promote competition via private sector entry rather than change ownership through privatisation. This approach had some intrinsic merit - after all, Russia suffered from trying to privatize assets which ended up in the hands of a few so-called “oligarchs.”

2.43 More importantly, the entry-favouring approach had the virtue of political expediency. Achieving exit via privatising public sector companies would have encountered significant opposition from their managers as well as labour interests. Allowing private sector companies to enter the market without touching the public sector incumbents bypassed some of these costs. The logic, of course, was that a vibrant private sector would grow rapidly.

2.44 And the strategy broadly worked. The Indian aviation and telecommunication sectors of today are unrecognizably different from what they were 20 years ago, with enormous benefits for the citizens. Public sector companies now account for a small share of the overall size of these sectors. In some ways, the exit problem has been skirted if not avoided.

2.45 In the financial sector, liberal entry of more banks and different types of banks and entry into capital markets still remains an option to shrink the role of inefficient public sector banks.

2.46 **Direct policy action:** Some of the problems of weak institutions can be addressed through better laws. This is why the government has introduced a new bankruptcy law that will significantly expedite exit (see Appendix for salient features of the draft Bankruptcy Code submitted to Parliament).

2.47 Similarly, part of the problem arising from overly strong institutions can be addressed by empowering bureaucrats and reducing their vulnerability. One way, which the government is actively considering, is to reform the Prevention of Corruption Act, differentiating cases of graft from those of genuine errors of decision-making (see Box 2.2).

2.48 The exit problem in relation to public-private partnership projects requires the creation of alternative, albeit temporary, structures to be able to credibly allocate the burden of past failure. The Kelkar Committee on “Revisiting and Revitalising the Public Private Partnership model of Infrastructure” has made recommendations on resolving legacy issues and key contractual features going forward. The Committee has recommended quick finalisation of principles of renegotiation to build in the flexibility while protecting authorities against the risk of moral hazard. Recognizing the importance of predictability and fairness in dealing with both sides of the partnership, the Committee has recommended the setting up of independent sector regulators with a unified mandate.

2.49 **Technology and the JAM solution:** Many of the exit problems—in relation to fertilizer, agriculture, sugar etc—can be addressed through technology and leveraging the potential of JAM. DBT in fertilizer and other input use can achieve targeting which

allows the poor to be protected while allowing the underlying and persistent distortions to be removed.

2.50 Technology can help in two ways. First, it brings down human discretion and the layers of intermediaries. And, second, it breaks the old shackles and old ways of doing business. Both can contribute directly to finding solutions to the exit problems plaguing Indian agriculture and informal sectors (Chapter 3 discusses these solutions in greater detail).

2.51 **Transparency:** In relation to agriculture, the government sets minimum support prices to create incentives for producing wheat, cereals, and pulses. It is increasingly clear that there is over-production of cereals, especially in some states. Reducing this over-production—a manifestation of this exit problem—is difficult. But one possible way of effecting change is to throw light on the costs of the status quo.

2.52 One possibility might be for the government to highlight the social costs of producing cereals in the north-western states: over-use of fertilizer and the health and soil quality costs; over-use of water and power and the environmental costs; and the post-harvest burning of stalks that leads to pollution and health hazards. For pulses, the social and economic accounting should include the benefits that their cultivating creates in the form of better fixing nitrogen and efficient use of fertiliser and water. The Commission for Agricultural Costs and Prices (CACP), for example, could publish these social costs and benefits of production along with its routine calculation of the private costs of production.

2.53 Another example relates to the “small” savings schemes. Here, transparency about the real beneficiaries—identified in Chapter 6 as the very rich and not the “small” at all—can help further reform and facilitate exit.

2.54 Exit as an opportunity: In many cases where public sector firms need to be privatized, the problems of exit arise because of opposition from existing managers or employees' interests. But in some instances, such action can be converted into opportunities. For example, resources earned from privatization could be earmarked for employee compensation and retraining.

2.55 Most public sector firms occupy relatively large tracts of land in desirable locations. Parts of this land can be converted into land banks and made into vehicles for promoting the 'Make in India' and Smart City

campaigns. If the land is in dense urban areas, it could be used to develop eco-systems to nurture start-ups and if located in smaller towns and cities, it could be used to develop sites for industrial clusters.

2.56 One concern with privatization is the fear that social policies—of reservation for example—will become casualties when the underlying assets move from public sector to private sector control. Credibly ensuring that such policies will be maintained will be necessary to secure wider social acceptability for exit.

Box 2.2: Improving economic policy-making and implementation by getting public servants to decide without fear or favour

Rapid and equitable economic growth requires the formulation and implementation of good policy, which in turn involves both ministers and civil servants. There is a widely held perception, both within the civil service and among outsiders who interact with government, that civil servants have in recent times become increasingly reluctant to decide issues quickly and firmly. This has consequences for the economy.

The problems with civil service decision-making stem from multiple sources. Firstly, there are gaps in capacity, training and specialised knowledge in dealing with certain kinds of economic issues. Secondly, the increasing number and rigour of external oversight mechanisms may have unintended effects. As Prendergast¹¹ and Kapur¹² have argued, external monitoring in the public sector tends to be skewed towards bad decisions that were taken rather than good decisions that were not taken (i.e. opportunities that were missed). This promotes a culture where avoidance of mistakes is more important than the pursuit of opportunities. However this box will focus on the third and possibly most important reason which may also be the easiest to remedy: certain provisions of the anti-corruption law and the way they have been used in recent years.

Good public administration and sound policy making requires that public servants take decisions in public interest and, in particular, without 'fear or favour' (a phrase which finds place in the oath of office for ministers). There is a credible perception that well-intentioned but draconian legal provisions seeking to prevent decision making with favour, seem to be resulting in decision taking with fear. Some provisions of anti-corruption law seem to scare the honest without deterring the corrupt.

The Prevention of Corruption Act

In a bid to tighten anti-corruption law, the new Prevention of Corruption Act of 1988¹³ (PCA) added a provision in Section 13(1)(d)(iii) according to which:

A public servant is said to commit the offence of criminal misconduct if he, while holding office as a public servant, *obtains for any person any valuable thing or pecuniary advantage without any public interest.*

Because the definition does not include words like 'corruptly' or 'wrongfully', this offence has no requirement of mens rea or guilty intent – it is an 'absolute offence'. Since the law does not require the public servant to have had any improper motive, even a benefit conferred inadvertently is sufficient to be prosecuted. For example, suppose an honest public servant makes, in good faith, an error of judgment and undervalues an asset which is being disinvested. Obviously that undervaluation causes a pecuniary gain to the buyer of the asset and is not in public interest, but it was not a corrupt or deliberate undervaluation. Indeed it may not even have been appeared at the

¹¹ Prendergast, C., 2001, "Selection and Oversight in the Public Sector", *NBER Working Paper No. 8664*,

¹² Kapur, Devesh, 2003, "Do As I Say Not As I Do: A Critique of G-7 Proposals on Reforming the Multilateral Development Banks", United Nations Conference on Trade and Development, *G-24 Discussion Paper Series*.

¹³ http://www.persmin.gov.in/DOPT/EmployeesCorner/Acts_Rules/PCAct/pcact.pdf

time of the decision to be an error of judgment. An error (with no benefit to the public servant), or something regarded with hindsight as an error, can constitute a crime punishable by imprisonment and, during the trial stage, the stigma of corruption. No such section appears to exist in other democracies, where it is the duty of the investigating agencies to establish corruption including evidence of motive and thus mens rea.

Is public interest served by this approach?

Wrongdoing by public servants can fall in a continuum ranging from receiving minor non-monetary benefits to outright bribery. The purpose behind Section 13(1)(d)(iii) was to provide a catch-all offence to deal with difficult cases where a public servant could confer favours without leaving any trail. Since other provisions of law specifically deal with a wide range of corruption offences covering every form of 'illicit gratification', Section 13(1)(d)(iii) essentially targets minor forms of corruption (by diluting the standard of proof). It is meant to make it easier for Indian investigative agencies to prosecute for corruption without having to establish any direct benefit to the decision-taker or participant in a decision.

In tackling corruption, two kinds of error may arise- Type I error where the corrupt may escape, and Type II error where an innocent person may be falsely accused of corruption. An extremist approach to reducing Type I errors by preventing the escape of those who may have received minor or non-monetary favours, or against whom proof of illicit gratification cannot be found, increases the chance of a Type II error where an innocent person (who took decisions with no ulterior motives) is prosecuted.

From an economic point of view, the loss to the public from the Type II error and the policy and implementation paralysis it promotes, is far larger. This draconian section therefore appears to be hurting the public more than it has helped it. There is considerable and very credible evidence that many serious governance problems--the reluctance of government to accept responsibility for its own delays in projects, the penchant for departments to appeal even fair and reasonable arbitration awards or lower court judgements, the tendency to raise tax disputes based on audit objections even if the tax authority disagrees with the auditor, the reluctance of civil servants to sell land or divest public enterprises--are traceable in large part to the fear of 'causing pecuniary gain' to the other side.

Remedies

Amendments to the PCA

The Prevention of Corruption (Amendment) Bill 2013¹⁴, which is pending in the Rajya Sabha, seeks to carry out major improvements to the PCA and in general strengthen the anti-corruption law by bringing it into conformity with the United Nations Convention against Corruption. It proposes to replace the provisions of Section 13(1) with new wording in conformity with international norms that is fairer and would prevent prosecution for mere administrative errors. The Kelkar Committee on Public Private Partnerships too has strongly recommended amendment of the law to protect bona fide decision-making.

Commission to recommend a new prosecutorial approach

The combination of Section 13(1)(d)(iii) PCA and Section 120A of the Indian Penal Code may have rendered prosecuting agencies 'lazy' in the figurative sense of not needing to do the painstaking forensic and investigative work needed to trace the money flow of bribes and establish pecuniary gain. Experience with successful prosecution of white collar crime in developed countries suggests that Indian investigative agencies may need to change their approach and modernize their investigative techniques. Many staff of the investigative agencies do not have the tools, skills or training to do a proper investigation of modern day financial crime and corruption. It would be desirable for the Government to set up a Commission to recommend a *new prosecutorial policy for the offence of corruption which balances the need for probity with the need for bona fide decisions to be taken without fear of false allegations of corruption*. The Commission should also recommend measures to improving the capacity of both the investigative agencies and the public prosecutors. It is crucial that the Commission have the resources needed to *access international expertise*.

Re-assess the relevance of the Vigilance machinery

The Government and public sector are dotted with a large number of 'Vigilance Officers'. Quantitative evidence and public perception both suggest that this has not been accompanied by any reduction in levels of corruption, and if anything the problem is perceived to have worsened. The Vigilance Officer system is widely felt to be ineffective and in some cases even counter-productive. It may be time to consider whether the costs of this elaborate, but apparently ineffective, system are worthwhile.

¹⁴ <http://www.prsindia.org/administrator/uploads/general/1376983957~PCA%20Bill%202013.pdf>

Spreading JAM across India's economy

03 CHAPTER

Large-scale, technology-enabled, real-time Direct Benefit Transfers can improve the economic lives of India's poor, and the JAM Trinity—Jan Dhan, Aadhaar, Mobile—can help government implement them. Over the past year JAM has thickened and spread: Jan Dhan and Aadhaar deepened their coverage at an astonishing rate—respectively creating 2 and 4 million accounts per week—and several mobile money operators were licensed. This chapter examines the first variety of JAM—the PAHAL scheme of transferring LPG subsidies via DBT. The scheme reduced leakages by 24 per cent and seems to have excluded few genuine beneficiaries. When deciding where next to spread JAM, policymakers should consider first-mile (beneficiary identification), middle-mile (distributor opposition) and last-mile (beneficiary financial inclusion) challenges. Our JAM preparedness index suggests that the main constraint on JAM's spread is the last-mile challenge of getting money from banks into people's hands, especially in rural areas. The government should improve financial inclusion by developing banking correspondent and mobile money networks, while in the interim considering models like BAPU—Biometrically Authenticated Physical Uptake. At present, the most promising targets for JAM are fertiliser subsidies and within-government fund transfers—areas under significant central government control and with substantial potential for fiscal savings.

INTRODUCTION

3.1 Cash transfers can directly improve the economic lives of India's poor, and raise economic efficiency by reducing leakages and market distortions. Implementing direct benefit transfers (DBT) at large-scale and in real-time remains one of the government's key objectives, and significant progress has been made in the past year. Last year's Economic Survey explained how the JAM Trinity—Jan Dhan, Aadhaar, Mobile—can help government implement DBTs. This chapter:

- Takes stock of the spread of JAM;
- Studies the government's first full-

scale cash transfer program – delivering cooking gas (LPG) subsidies via DBT;

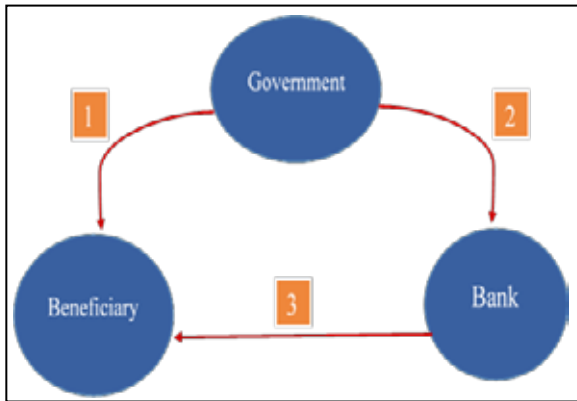
- Discusses first-mile, middle-mile and last-mile issues to help policymakers decide where next to spread JAM;
- Presents a simple JAM preparedness index to assess states' ability to implement two varieties of JAM—DBT and Aasaan; and
- Concludes with policy recommendations on LPG and the broader JAM agenda.

THE INGREDIENTS OF JAM

3.2 Suppose the government wanted to

transfer ₹1000 to every Indian tomorrow. What would that require?

1. Government must be able to *identify* beneficiaries;
2. Government must be able to *transfer* money to beneficiaries;
3. Beneficiaries must be able to easily *access* their money.



3.3 Failure on (1) leads to inclusion errors and leakage – benefits intended for the poor flow to rich and “ghost” households, resulting in fiscal loss. Failure on (2) and (3) leads to exclusion errors – genuine beneficiaries being unable to avail benefits. The government must be especially sensitive to exclusion

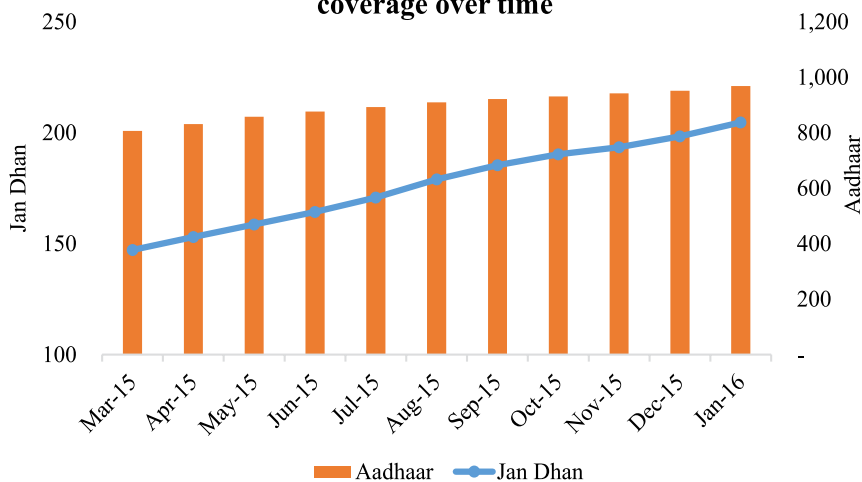
errors, which typically hurt the poorest and can be invoked as reason—and highlighted by leakage beneficiaries—to roll back DBT schemes¹. We now discuss the 3 requirements for JAM in turn.

Government → Beneficiary: the challenge of identification

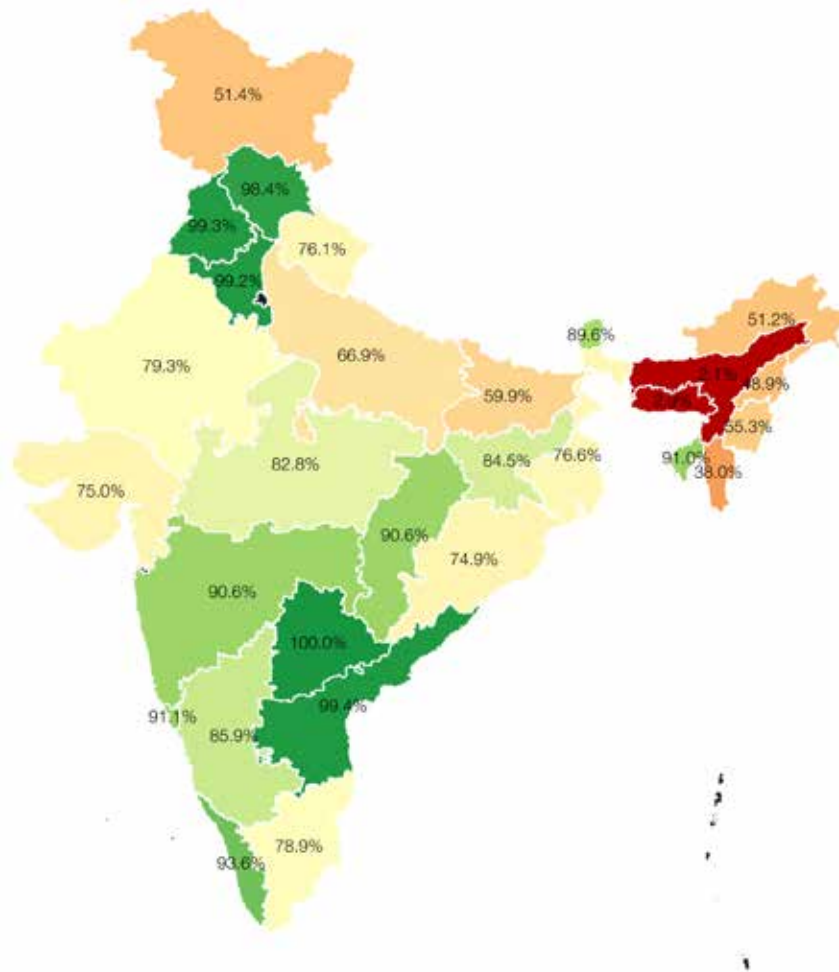
3.4 To identify beneficiaries, the government needs databases of eligible individuals. Beneficiary databases have existed for long before Aadhaar, but their accuracy and legitimacy have been hampered by the administrative and political discretion involved in granting identity proofs like BPL cards, driving licenses and voter IDs. Ghost and duplicate names crept into beneficiary lists, leading to leakage. Aadhaar's virtue lies in using technology to replace human discretion, while keeping the system simple enough – fingerprints and iris scans – for citizens to understand.

3.5 The current government has built on the previous government's support for the Aadhaar program: 210 million Aadhaar cards were created in 2015, at an astonishing rate of over 4 million cards per week. 975 million

Figure 1: The thickening of JAM --Jan Dhan & Aadhaar coverage over time



¹ Even in one of the most successful DBT programs—MGNREGA in Andhra Pradesh, which had 92 percent customer satisfaction rates—the feedback that bubbled up to top administrators through the state bureaucracy was disproportionately negative. This was a classic case of large, diffuse benefits and small but concentrated losses (Muralidharan et al 2015).

Figure 2: Aadhaar coverage across states

individuals now hold an Aadhaar card – over 75 percent of the population and nearly 95 per cent of the adult population (Figure 1). Figure 2 shows that Aadhaar penetration is high across states. Nearly one-third of all states have coverage rates greater than 90 percent; and only in 4 states—Nagaland (48.9), Mizoram (38.0), Meghalaya (2.9) and Assam (2.4)—is penetration less than 50 per cent.

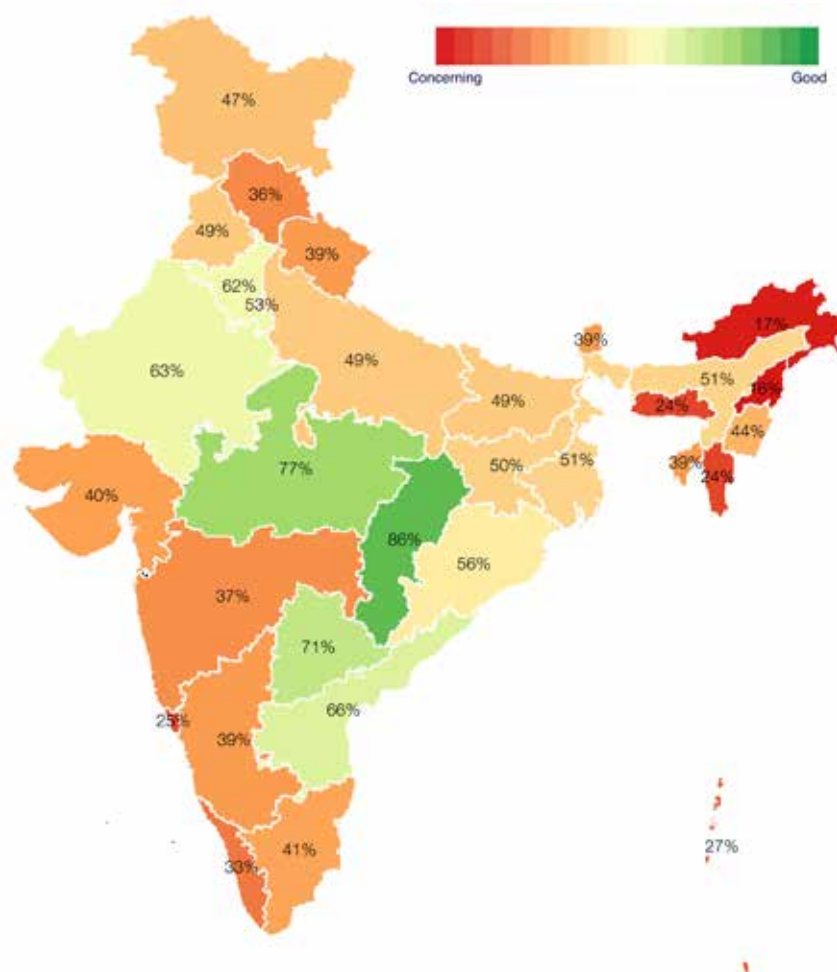
Government → Bank: the challenge of payment

3.6 After identifying beneficiaries, the government must transfer money to them. Every beneficiary needs a bank account and

the government needs their account numbers. This constraint has been significantly eased by the Pradhan Mantri Jan Dhan Yojana, under whose auspices nearly 120 million accounts were created in the last year alone—at a blistering, record-setting pace of over 3 lakh accounts per day².

3.7 Figure 3 shows that, despite Jan Dhan's record-breaking feats, basic savings account penetration in most states is still relatively low – 46 per cent on average and above 75 per cent in only 2 states (Madhya Pradesh and Chattisgarh). Policymakers thus need to be cognisant about exclusion errors due to DBT not reaching unbanked beneficiaries. Comparing the reach of Jan Dhan with that of

² Jan Dhan was awarded a Guinness World record for opening the most bank accounts in a single week (18 million during 23-29 August 2014).

Figure 3: Basic Saving Account coverage across states

Aadhaar suggests that the unbanked are more likely to constrain the spread of JAM than the unidentified.

Bank → Beneficiary: the last-mile challenge of getting money into people's hands

3.8 Having transferred money to people's bank accounts, is the government's job done? Perhaps in urban areas, where people live near banks, even though financial literacy remains a concern³. In rural India, however, there is a serious "last-mile" problem of getting money from banks into household's hands: only 27 per cent of villages have a bank within 5 km⁴. To help address this problem, the RBI in 2015 licensed 23 new banks – 2 universal banks, 11

payment banks and 10 small finance banks.

3.9 While the figures show states' performance relative to each other, it is important to benchmark India's preparedness against a country where last-mile financial inclusion is considered good—like Kenya. The Kenyan BC:population ratio is 1:172. By contrast, India's average is 1:6630, less than 3 per cent of the Kenyan level. Kenya is more sparsely populated than India, so perhaps India needs fewer BCs. Yet still the spatial density of BC's in India is 17 per cent the Kenyan level.

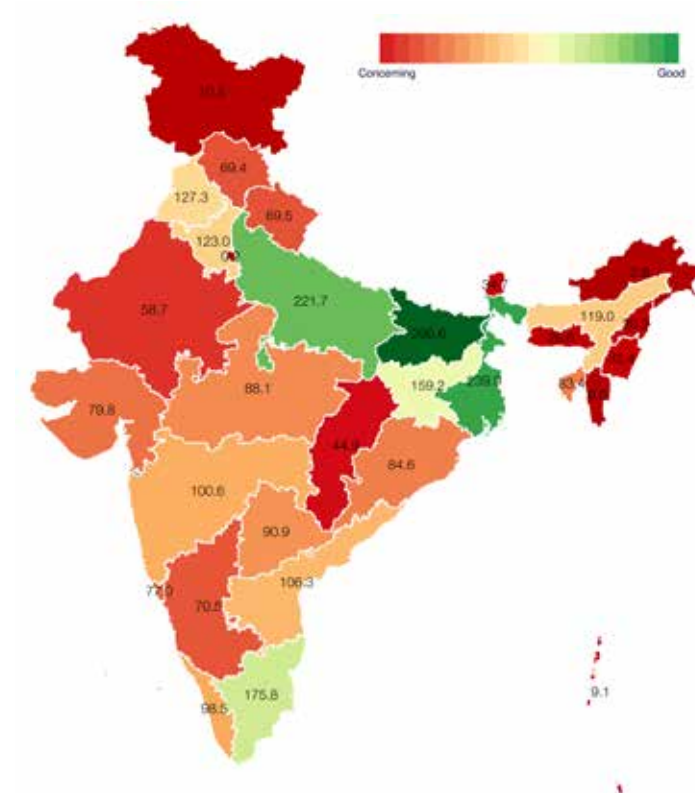
3.10 The contrast with India's mobile operator penetration is instructive. Figure 5

³ Cole et al (2011)

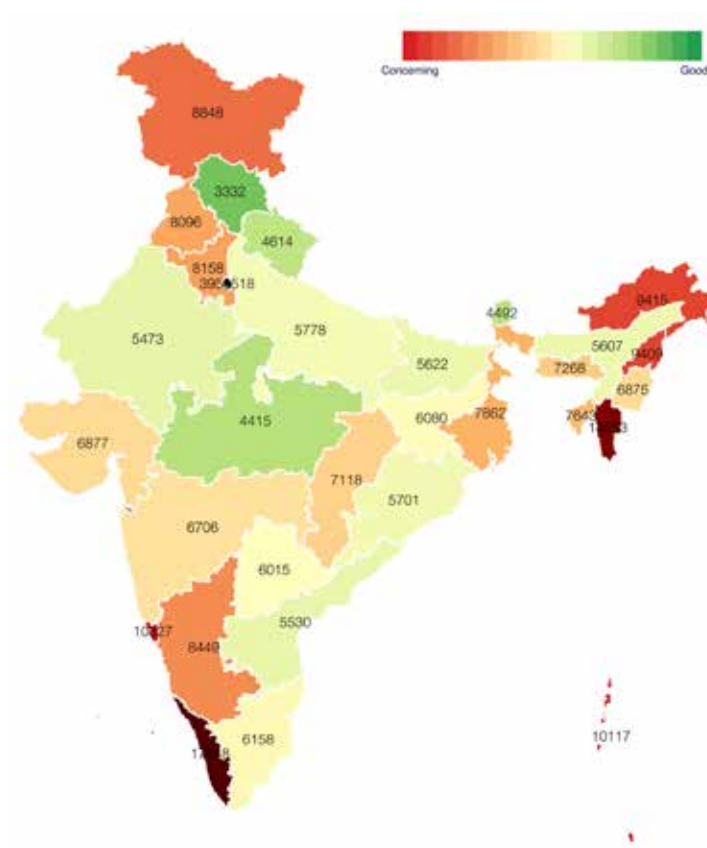
⁴ DBT Mission

Figure 4: One of the missing pieces of JAM – a thriving BC industry

Spatial density of BCs – BCs per area



Population density of BCs – People per BC



shows that mobile penetration across India is strong. Only in Bihar (54 per cent) and Assam (56 per cent) is penetration lower than 60 per cent. Moreover, there are approximately 1.4 million agents or service posts to serve the approximately 1010 million mobile customers in India, a ratio of about 1:720.

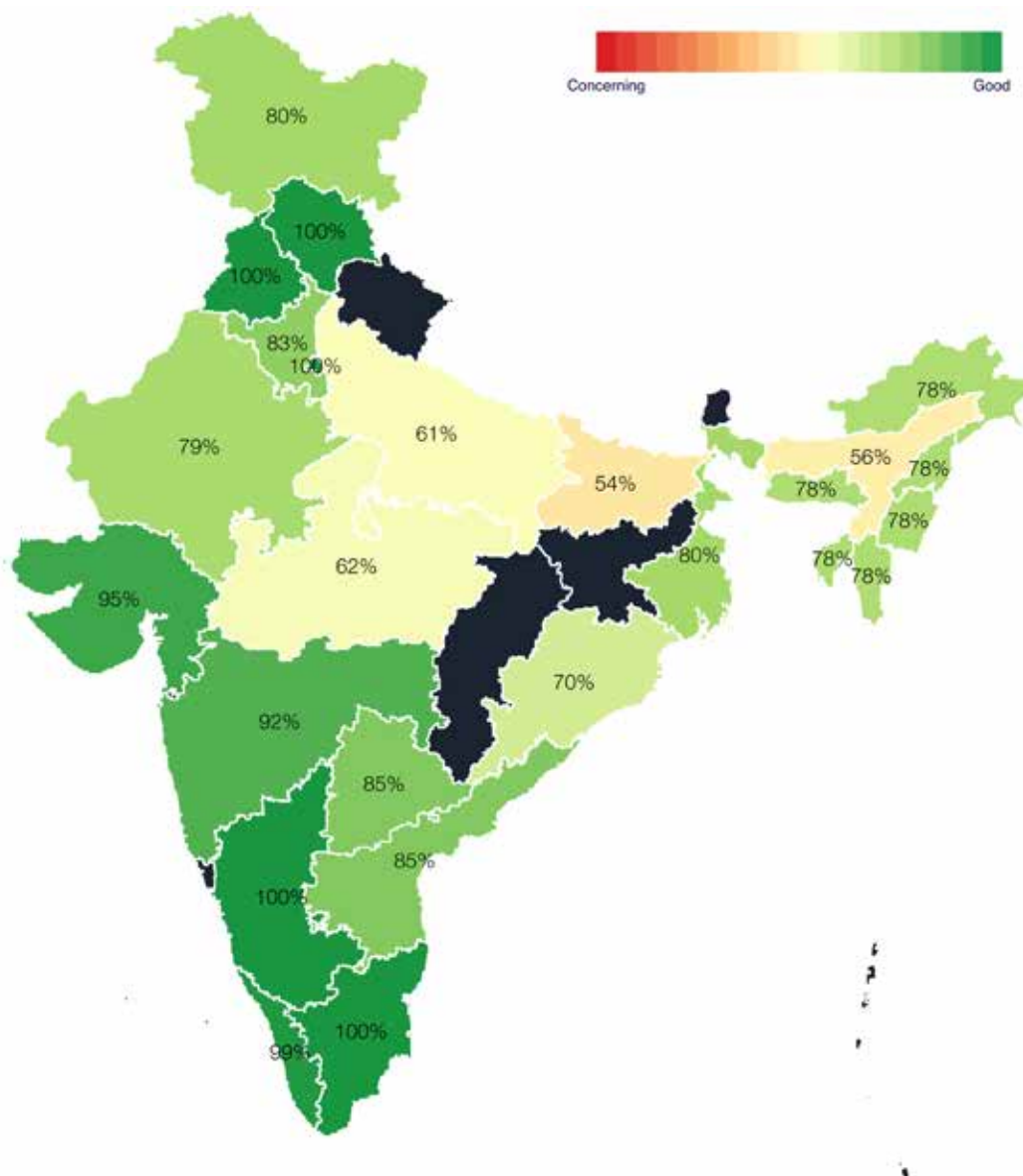
3.11 India should take advantage of its deep mobile penetration and agent networks by making greater use of mobile payments technology. Mobiles can not only transfer money quickly and securely, but also improve the quality and convenience of service

delivery. For example, they can inform beneficiaries that food supplies have arrived at the ration shop or fertiliser at the local retail outlet. While some important changes have occurred this year to improve last-mile financial connectivity—including the Jan Dhan Yojana's initiatives to develop the BC space and the licensing of several mobile money operators—the Bank-Beneficiary connection still appears the weakest link in the JAM chain.

THE AMOUNT AND VARIANTS OF JAM

3.12 The ingredients of JAM came together

Figure 5: Mobile coverage across states



in 2014-15, and Tables 1 and 2 illustrate its scale and distribution. Over 20 per cent of India's population received a cash transfer from the government in FY14-15. Table 2 shows that JAM was involved in distributing benefits across a range of government programs—from education and labour schemes (scholarships and MGNREGS) to subsidies and pensions (NSAP). This chapter studies the two largest JAM schemes in detail. Box 1 shows that, while MGNREGS has introduced DBT for paying workers' wages, JAM remains incomplete. Significant savings and efficiency gains can be achieved by transferring funds directly from the state/central government to the worker rather than layer by layer (Centre → State → District → Block → Panchayat), with leakages along the way. We begin however with the first type of JAM – DBT in LPG.

Table 1: The Amount of JAM in 2014-15

Total amount disbursed (₹Cr)	44035
No. of beneficiaries (in Cr)	29.6
Beneficiaries seeded with Aadhaar	57%
Funds transfer using Aadhaar Bridge Payment	26 %

Table 2: The varieties of JAM in FY14-15

Scheme	No. of Schemes	% Share of total disbursement
Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)	1	41
PAHAL (the LPG subsidy scheme)	1	37
National Social Assistance Program (NSAP)	1	14
Scholarship Schemes	29	7
Other Schemes (Labour, Women and Banking)	10	1

The first type of JAM – DBT in LPG

3.13 This section studies the Pahal scheme, which directly transfers LPG subsidies into customers' bank accounts. The current government launched the Pahal scheme in late 2014 and early 2015, restarting and modifying a program that the UPA government had begun and then suspended. Currently over 151 million beneficiaries receive LPG subsidies via DBT, and ₹29,000 crore have been transferred to beneficiaries to date.

3.14 Household LPG is both untaxed and enjoys a universal subsidy, even though, as Chapter 6 shows, 97 per cent of LPG is consumed by the richest 30 per cent of households. Before the DBT scheme was introduced, households could buy LPG cylinders at subsidised prices (~Rs 430). Commercial establishments are ineligible for the subsidy and must pay market prices plus central and state taxes of about 30 per cent on average. This violation of the One Product One Price principle provides strong incentives for distributors to create 'ghost' household accounts and sell subsidised LPG to businesses in the black market.

3.15 Now, with DBT in place, the government identifies beneficiaries by linking households' LPG customer numbers with Aadhaar numbers to eliminate 'ghost' and duplicate households from beneficiary rolls⁵. Households buy at market prices (currently ~Rs 670), and have the subsidy credited into their bank account within 3 days. A permanent advance was made by the government to reduce household liquidity constraint issues. The phased introduction of DBT in LPG allows us to study its impact by comparing districts that started DBT a few months earlier to districts that began DBT slightly later. This research design helps us control for confounding factors like seasonality and changing world prices.

⁵ Aadhaar is not mandatory in the Pahal scheme, but many beneficiaries have chosen to seed their Aadhaar with their customer numbers.

3.16 Figure 6 shows the impact of introducing and then suspending DBT in LPG. Sales of subsidised domestic cylinders fell by 24 per cent when the scheme was introduced and spiked when the scheme was suspended by the UPA. Pahal had a similar impact: a 27 per cent reduction in sale of subsidised cylinders. Based on prices and subsidy levels in 2014-15, we estimate that the potential annual fiscal savings of Pahal will be Rs 12700 crore in a subsequent FY.

3.17 Before celebrating PAHAL's success, it is important to check that reduced sales of domestic cylinders do not merely reflect exclusion errors – lower consumption by genuine beneficiaries who do not have bank accounts and therefore cannot access the subsidy under the JAM arrangement. Figure 8 plots the number of LPG cylinders purchased in the year before DBT introduction against the percentage in each group who were receiving the DBT. If exclusion was high among the poor, groups who consume the least LPG should have the lowest DBT compliance rates. But in fact the lowest compliance rates are for those with the largest

prior consumption of LPG cylinders. These are likely to be ghost households now denied the subsidy. Figure 8 thus provides some reassurance that JAM in LPG has succeeded in reducing leakages rather than excluding the poor.

3.18 Economic theory would predict the reduction in black market supply would increase black market prices. Barnwal (2015) collected data on black market prices from both consumers (samosawallahs, hotels and other commercial retailers) and suppliers (LPG deliverymen). Table 3 shows that black market prices spiked by almost 30 per cent in districts where DBT was introduced.

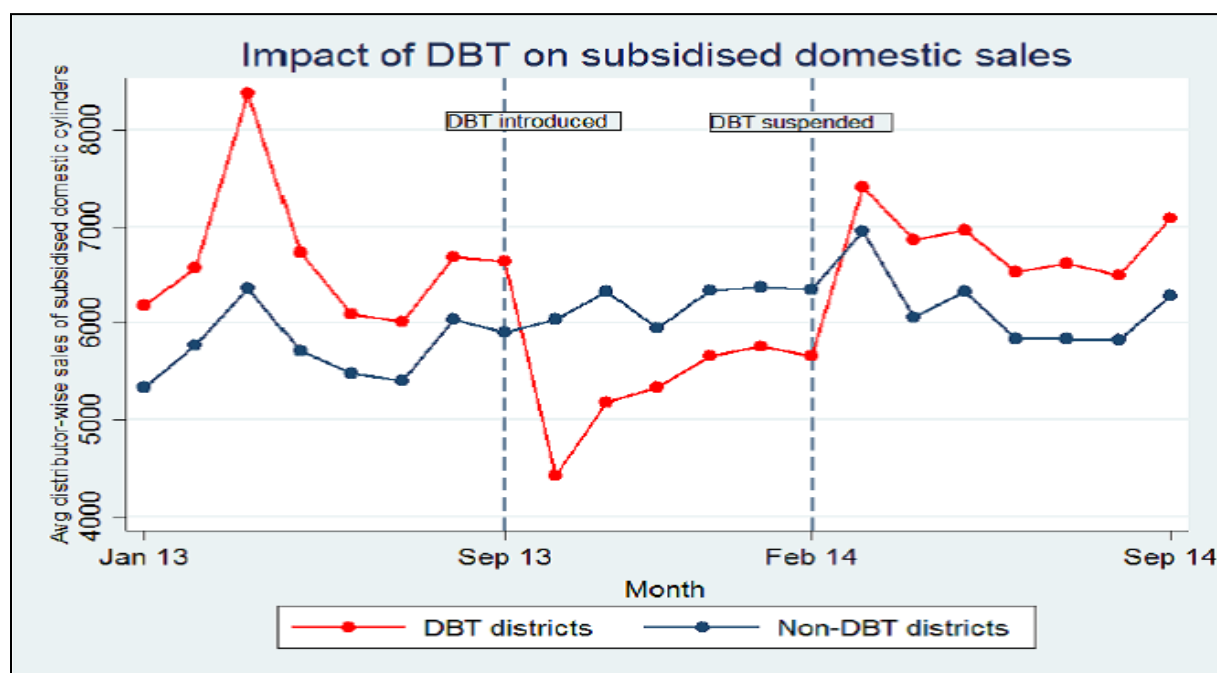
Table 3: JAMming the LPG black market

	Black market price of domestic cylinders	
	during DBT phase	After suspension
DBTL districts	Rs. 1143	₹ 861
Non-DBTL districts	₹ 988	₹ 970

Lessons from the LPG experience

3.19 We should also expect that previous consumers of black market cylinders—such

Figure 6: Impact of DBT on subsidised domestic sales



as commercial establishments—are forced by the introduction of DBT to buy commercial cylinders. Figure 9 shows evidence that commercial LPG sales increased when DBT was introduced and fell back when DBT was suspended. But the effect is surprisingly small (6 per cent). What happened? Sales of non-subsidised domestic cylinders shot up. While households can buy only 12 subsidised cylinders a year, they can buy an unlimited number of unsubsidised cylinders. However

these cylinders are still 30 per cent cheaper than commercial cylinders due to differential tax treatment of household and commercial LPG. The latter is subject to customs and excise duties of 13 per cent and state taxes of between 5 per cent (Assam) and 20.5 per cent (Bihar) over-and-above domestic LPG. This is a second violation of the One Product One Price principle and creates another source of leakage—a shortfall of tax revenue in this case rather than excess subsidy burden.

Figure 7: DBT causes some substitution to commercial sales

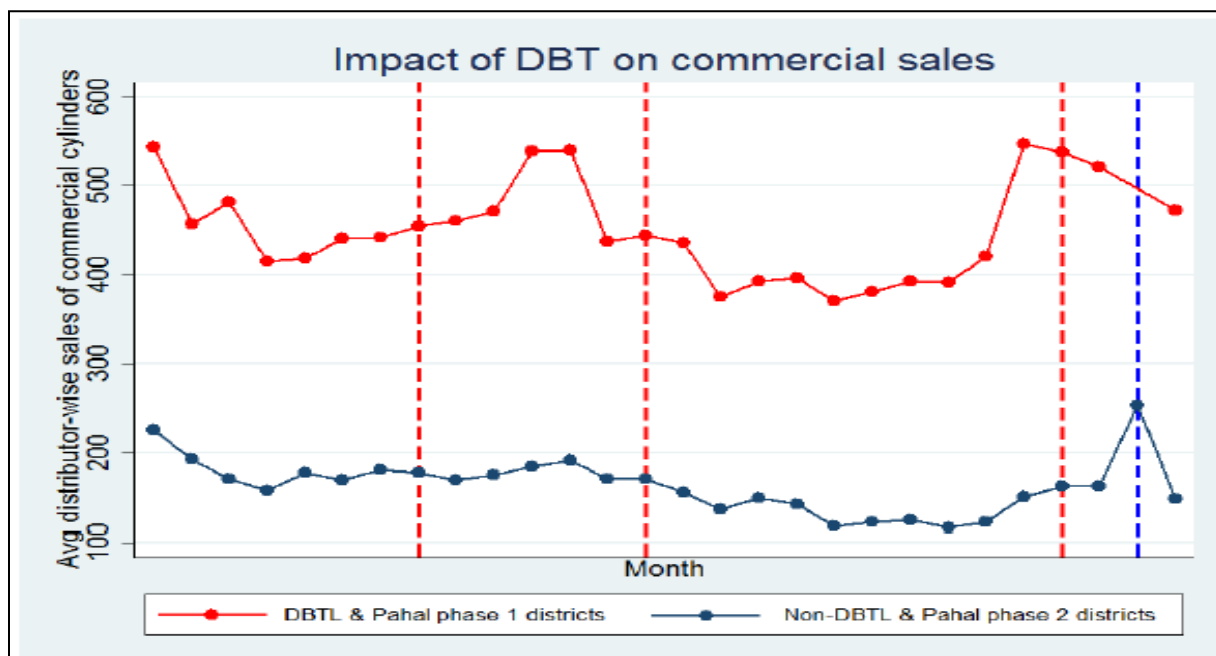
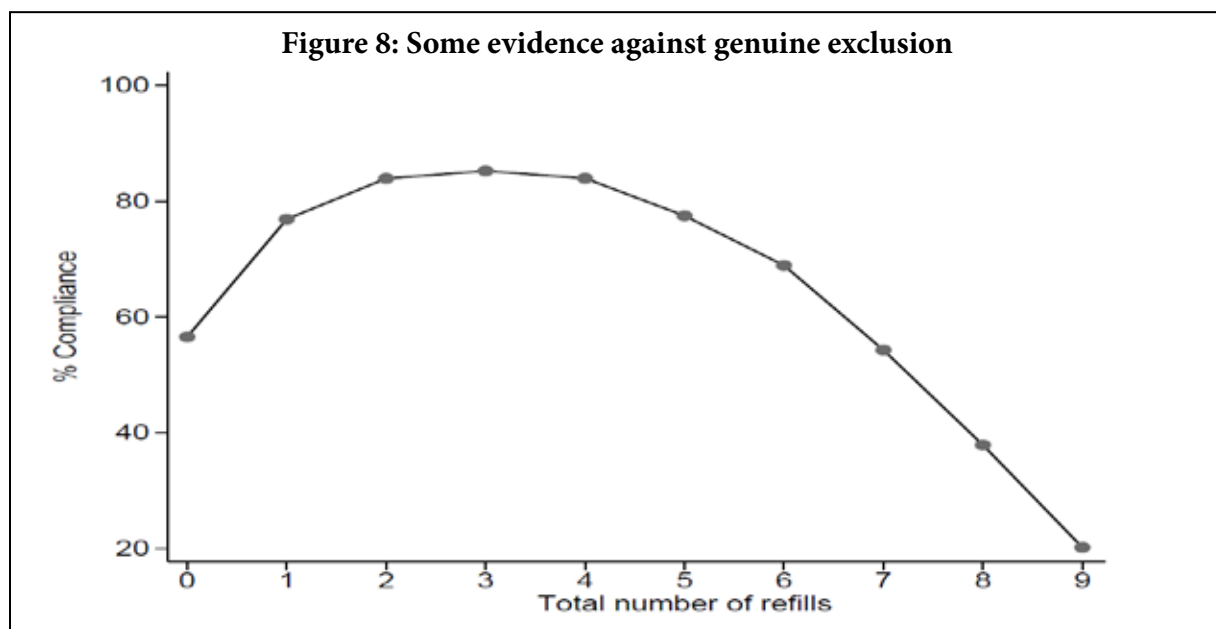


Figure 8: Some evidence against genuine exclusion



3.20 Another reform that could further reduce LPG leakages with limited genuine exclusion is lowering the household cap from 12 to 10. Table 4 shows that even the richest households—the top 10 per cent—typically do not consume more than 10 cylinders per year, so reducing the household cap will be unlikely to hurt the poor. Moreover, as Figure 9 illustrates, there is a well-known ‘March problem’ in LPG. Because March is the end of the fiscal year, distributors have strong incentives to invoice unconsumed subsidised cylinders to households and resell them in the black market. This explains the observed spike in March consumption (January and December consumption are high because households use LPG for heating during the

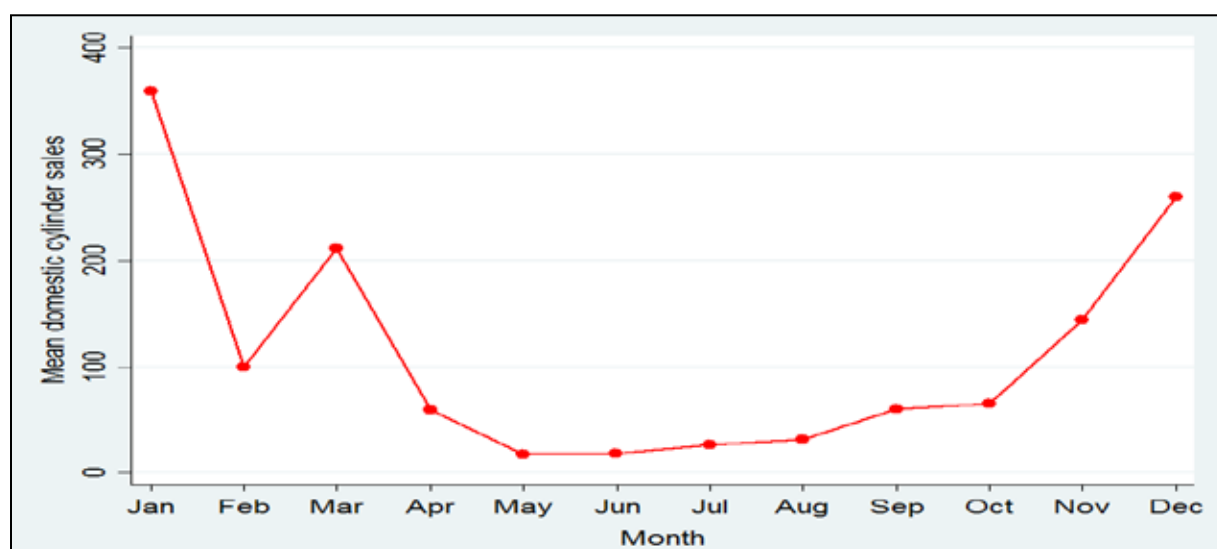
winter months). Reducing the cap could significantly reduce this leakage.

Table 4: Household LPG consumption by decile

Consumption decile	Rural	Urban
1st	4	4
2nd	7	9
3rd	7	9
4th	7	10
5th	8	10
6th	8	10
7th	8	10
8th	8	10
9th	8	10
10th	8	10

Source: HPCL administrative data

Figure 9: LPG's March problem



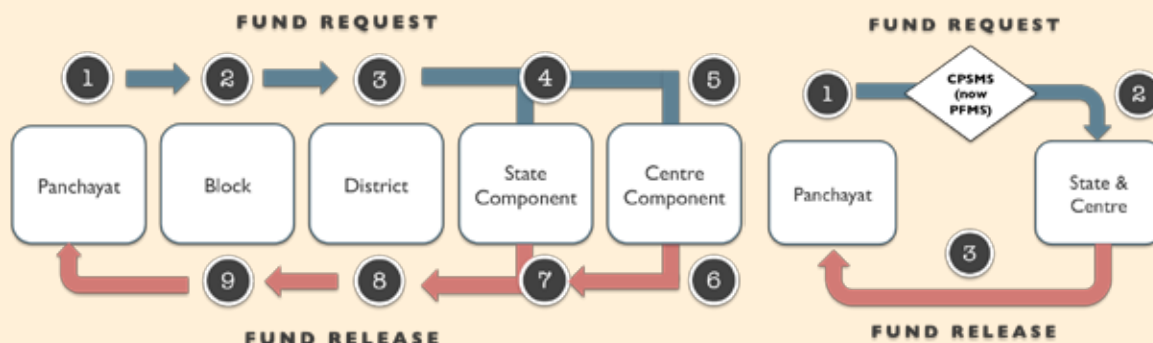
Box 3.1: Why the government should use JAM for its bread-and-butter functions

Poor households rely on government subsidies to buy certain commodities. In the same way, state and local governments rely on central transfers to fund key programs, businesses working with government rely on timely payment to manage cash flow, and government employees rely on government transfers for their salaries. All receive funds from the same *Sarkari* financial pipe that delivers subsidies – and which JAM can improve by reducing delays, leakages, and administrative burden.

This box documents the returns to experimenting with JAM for MGNREGS expenditure in Bihar between 2011 and 2013, and discusses its implications for other schemes and payments.

The figure below shows how the old and new MGNREGS fund flow systems compare, and the Table explains the two conceptual differences, followed by the effects seen from the Bihar experiment. In the old system, disbursements were based on forecasted expenditure, and funds sat idle in local government accounts till expenditures were incurred—though MGNREGS has reformed its system as shown in the figure at the national level following an August 2015 cabinet note, most other government schemes still follow the old system.

Contd....

Figure : MGNREGS fund flow systems: old vs. new**Table: Conceptual Differences in Fund Flow Systems**

Characteristic	Old system	New system	Effect
When are funds allocated?	Before spending occurs, based on forecasts	When spending occurs, in real-time	Reduced float (26%)
How do funds flow?	Level by level: Centre → State → District → Block → Panchayat;	Directly from fund pool to spender: Centre/State → Panchayat	Reduced payment delays and uncertainty
When does expenditure documentation occur?	Aggregated and ex-post: For multiple beneficiaries at a time, and after funds have been disbursed	Individually and in real-time: For every individual beneficiary's payment and in order to secure fund release	Reduced leakages (14%) and funds disbursed by 38%

The old MGNREGS system (and the current system for most schemes) has 4 major problems:

1. **Float:** idle funds accrue interest costs for the central government since this is borrowed money. Outside of MGNREGS, the estimated stock of unspent balances in government accounts is at least Rs 1 lakh crore and leads to an annual cost of Rs 8500 crore. The new system keeps funds in a central pool and only disburses expenditure in real-time, reducing float by 26 per cent.
2. **Leakages:** funds had to pass through multiple layers, meaning more people can demand a cut to secure the release of funds. Accounting happens ex-post and in aggregate, making monitoring difficult. The new system reduced leakages by 14 per cent and fund disbursement by 38 per cent even though a household survey showed no change in the amount of work done in MGNREGA.
3. **Misallocation:** funds, once disbursed, usually do not return, so forecast errors lead to misallocation of fiscal resources, with idle funds in some accounts and shortages in others. This leads to scheme shortages for beneficiaries in some panchayats, even if a neighbouring panchayat has available but unused funds.
4. **Resource-intensity:** scheme managers spend valuable time haggling with officials at higher administrative units, who often demand arbitrary documentation to release funds. Similarly, businesses must haggle with programme managers and face arbitrary requirements to receive payments. The reform has eased the burdens in doing business with the government, both internally and for vendors.

MGNREGS is one of the government's largest schemes, and forms 41 per cent of DBT expenditure. Through fund management reforms, it is overcoming these challenges. Similar gains are possible from adopting these reforms for all government payments, including other central and state schemes that still use the old model.

Bringing these reforms will require development of IT systems and strong coordination under the auspices of the Controller General of Accounts. But for the government to reach the world frontier in expenditure management, it requires a new strategic agency that is precisely the expenditure analog of the Goods and Services Tax Network—the Expenditure Information Network (EIN)—that must be created to shepherd and manage this process.

Where next to spread JAM?

3.21 DBT in LPG has generally been a big success, and policymakers in other areas are understandably keen to emulate its success. However, when designing DBT schemes in other areas, caution should be exercised in drawing lessons from the LPG case. Several features of LPG made it conducive to the application of JAM. Table 5 presents a framework to help policymakers decide whether—and how—to pursue JAM in various policy areas. The table is meant to be illustrative rather than exhaustive. We organise thinking along 3 categories: first-mile, middle-mile and last-mile. We now describe each of these in turn.

First-mile

3.22 First-mile issues deal primarily with beneficiary eligibility and identification.

- **Targeting:** targeted subsidies are harder to JAM than universal programs, as they require government to have detailed information about beneficiaries. Subsidies targeted at the poor (like food and kerosene) require government to know people's wealth, while benefits targeted at farmers or pregnant mothers require government to know beneficiaries' occupation and pregnancy status respectively. By contrast, the LPG subsidy is universal; all households are eligible.
- **Beneficiary databases:** to identify beneficiaries, the government needs a database of eligible individuals. Some subsidy distributors have beneficiary lists in digital form, such as the The Oil Marketing Companies that distribute LPG subsidies. Customer IDs can then be seeded with Aadhaar and bank account information and mobile numbers. Most states have now digitised their PDS. The recently released Socioeconomic Census (SECC) contains information about household asset-holding and occupation

status. This information, if continuously updated, has the potential to aid targeting and serve as a baseline database for administrators in sectors where beneficiary databases do not yet exist.

- **Eligibility:** a third issue with identification is the household-individual connection. Some benefits are for households while others are for individuals. For example, the National Food Security Act (NFSA) provides for subsidised grain to households but a cash transfer maternal entitlement to mothers. Jan Dhan is monitored at household level, while Aadhaar is an individual identifier. This is doubly important because of the way resources are usually allocated within households: the (typically male) recipient of a cash transfer may have different spending priorities from the (occasionally female) intended beneficiary.

Middle-mile

3.23 The chief middle-mile issues are the administrative challenge of coordinating government actors and the political economy challenge of sharing rents with supply chain interest groups.

- **Within-government coordination:** ministries and state government departments share authority in administering subsidies and transfers. Some subsidies have more streamlined administrative arrangements than others. The LPG subsidy, for instance, merely requires coordination between the Union Petroleum Ministry, the 3 Oil Marketing Companies and the network of distributors it manages. Coordination in this setting is significantly easier than in kerosene, where the Union Petroleum Ministry must coordinate with the Union Ministry of Consumer Affairs, Food & Public Distribution and all the states' Public Distribution Departments. It is thus no accident that LPG was the first subsidy where DBT was introduced!

- **Supply chain interest groups:** agents along a commodity's supply chain can obstruct the spread of JAM if their interests are threatened. The limited progress in getting Fair Price Shops in the Public Distribution System (PDS) to adopt Point of Sale (POS) machines for biometric authentication is suggestive of such resistance. Profits are required for FPS, fertiliser retail outlets and other distributors to remain viable, and ought to be seen as a feature, not a bug, in subsidy design. Rents must be shared for reform to proceed, and thus distributors need incentives before they invest in JAM infrastructure. The hold-up power of groups within the subsidy system is an example of the Indian's economy exit problem (Chapter 2).

Last-mile

3.24 Last-mile issues relate to the risks of excluding genuine beneficiaries, especially the poor. These depend on two factors:

- **Beneficiary financial inclusion:** exclusion errors can be substantial if few beneficiaries have bank accounts and can easily access them. Bank account penetration is growing, thanks to Jan Dhan, but in rural areas physical connectivity to the banking system remains limited, and BCs and mobile money providers have not yet solved this last-mile problem. A subsidy's share of rural consumers is thus a rough proxy of the level of beneficiary financial inclusion.
- **Beneficiary vulnerability:** exclusion error risks increase when the beneficiary population is poorer. The poorest 3 deciles of Indian households consume only 3 per cent of subsidised LPG consumption, but 49 per cent of subsidised kerosene.

So, where and how to JAM?

3.25 We argue that policymakers should decide where next to JAM based on two

considerations:

- **Size of leakages:** as shown in Box 1 and the previous section, JAM significantly reduced leakages in LPG and MGNREGS with limited exclusion of the poor. The returns from pursuing JAM in other areas depends on the size of leakages in those sectors. Subsidies with higher leakages have larger returns from introducing JAM.
- **Central government control:** when introducing JAM, policymakers will confront administrative challenges in coordinating central and state government departments, and political challenges in bringing the supply chain interest groups like Fair Price Shops on board with DBT.

3.26 Based on these considerations, the policy areas that appear most conducive to JAM are those where the central government has significant control and where leakages—and hence fiscal savings due to JAM—are high. Table 5 shows that this combination is met for fertiliser and within-government fund transfers.

3.27 We consider two JAM options: DBT and BAPU—Biometrically Authenticated Physical Uptake. With DBT, subsidies are transferred to beneficiaries in cash. With BAPU, beneficiaries certify their identity using Aadhaar and then physically take the subsidised goods like today. In the next section we evaluate states' preparedness to implement these two JAM options

JAM Preparedness Index

3.28 We construct an index to measure states' preparedness to implement (i) DBT in urban areas, (ii) DBT in rural areas, and (iii) BAPU. Table 6 shows the indicators used to construct the various indices:

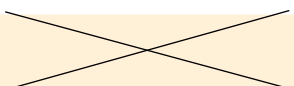
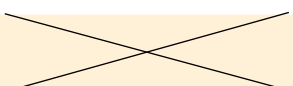
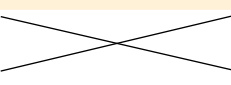
3.30 Because each condition is necessary and none on its own is sufficient, our index is *not the average but the minimum* of the respective indicators. Using the minimum is a way of highlighting the binding constraints along the JAM chain⁶.

⁶ The idea of binding constraints appeared in a well-known paper called "The O-ring theory" by Kremer (1993).

Table 5: The spread of JAM across the Indian economy

		LPG	Kerosene	Food	Fertiliser	Within-govt JAM
First-mile	Eligibility	Household	Household	Household	Individual	Scheme
	Targeting	Universal	Targeted (BPL)	Targeted (BPL)	Targeted (farmers)	All central government scheme expenditure
	Beneficiary database	Digitised	Most digitised	Most digitised	None	Public Finance Management System
Middle-mile	Within-government coordination	Central Petroleum Ministry with OMCs	Central Petroleum & Food Ministries with all State PDS	Central Food Ministry with all State PDS	Central Fertiliser Ministry with fertiliser manufacturers	Expenditure Department with Central Ministries
	Supply chain interest groups	LPG distributors	Fair Price Shops	Fair Price Shops	Fertiliser retailers	N/A
Last-mile	Beneficiary vulnerability	3%	49%	51%	62%	N/A
	Beneficiary financial inclusion	33%	83%	78%	100%	N/A
Where to JAM?	Leakages	24%	46%	Wheat - 54%, Rice - 15%	40%	14%
	Central government control	High	Low	Low	High	Very High
What kind of JAM?	Recommended policy option	JAM	BAPU	BAPU	BAPU/JAM	JAM

Table 6: Indicators in the JAM preparedness index

	Urban DBT	Rural DBT	BAPU
Can government identify beneficiaries?	Aadhaar penetration	Aadhaar penetration	Aadhaar penetration
Authenticating transactions			POS machines
Paying beneficiaries	Basic bank account penetration	Basic bank account penetration	
Beneficiaries accessing money	BC density	BC density	

3.31 We begin with the Urban DBT index, shown in Figure 10. There is significant variation across states. Some, like Madhya Pradesh and Chattisgarh, show preparedness scores of about 70 per cent. Others, like Bihar and Maharashtra, have scores of only about 25 per cent. As described earlier in the chapter the binding constraint here is basic bank account penetration—paying beneficiaries is the issue, not identifying them.

3.32 The Rural DBT preparedness index adds an additional indicator: BC density as a ratio of the Kenyan level (Figure 11). We

use Kenya as a benchmark – intuitively as the 100 per cent level – because it is a country where banking agent networks appear to be functioning relatively well in rural areas. The DBT rural preparedness scores are significantly worse than the urban scores, with an average of 3 per cent and a maximum of 5 per cent (Haryana). Comparing the rural and urban indexes—i.e. Figures 10 and 11—it is clear that last-mile financial inclusion is the main constraint to making JAM happen in much of rural India. Jan Dhan’s vision must truly succeed before much of India can JAM.

Figure 10: JAM preparedness index – Urban

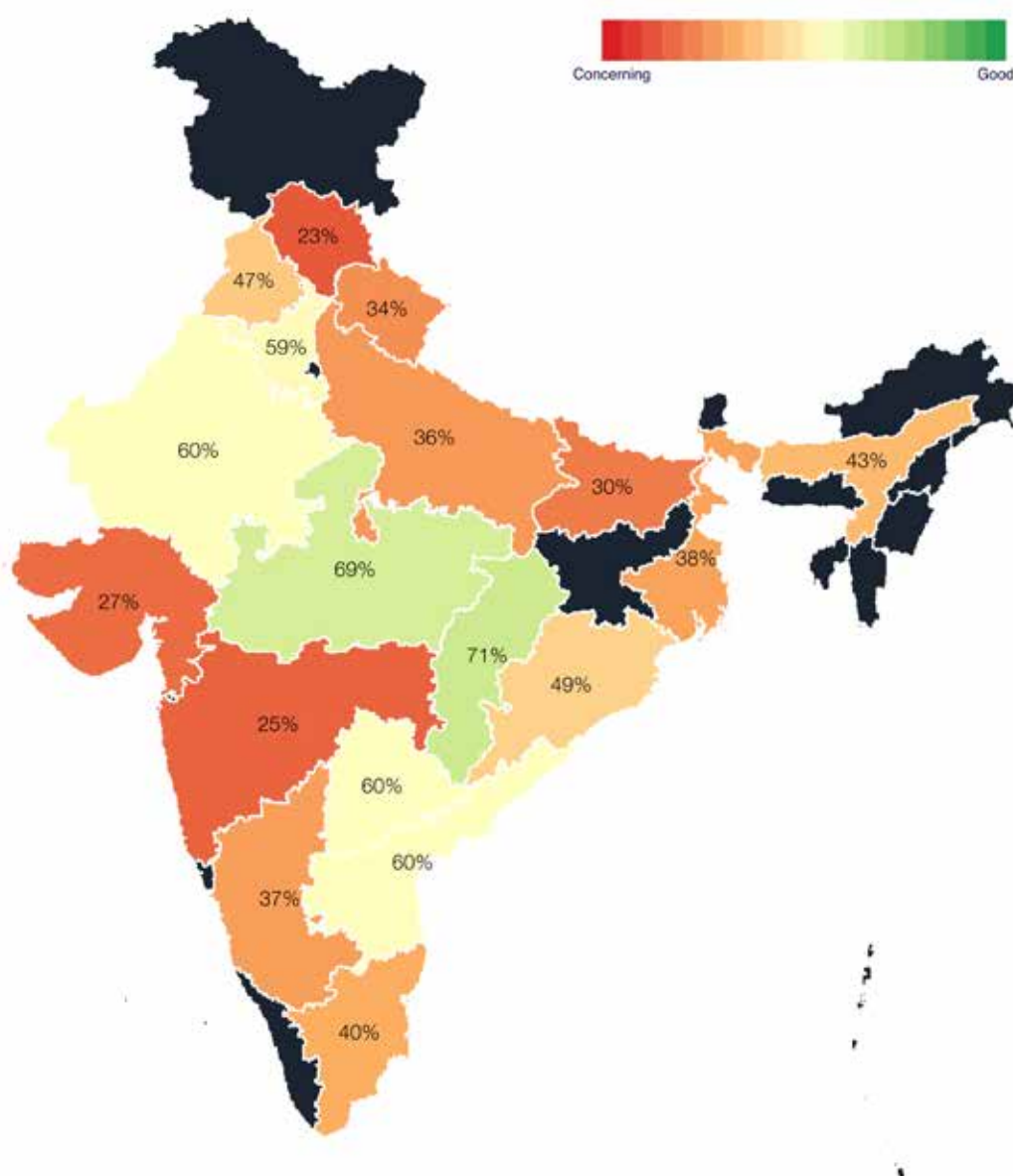
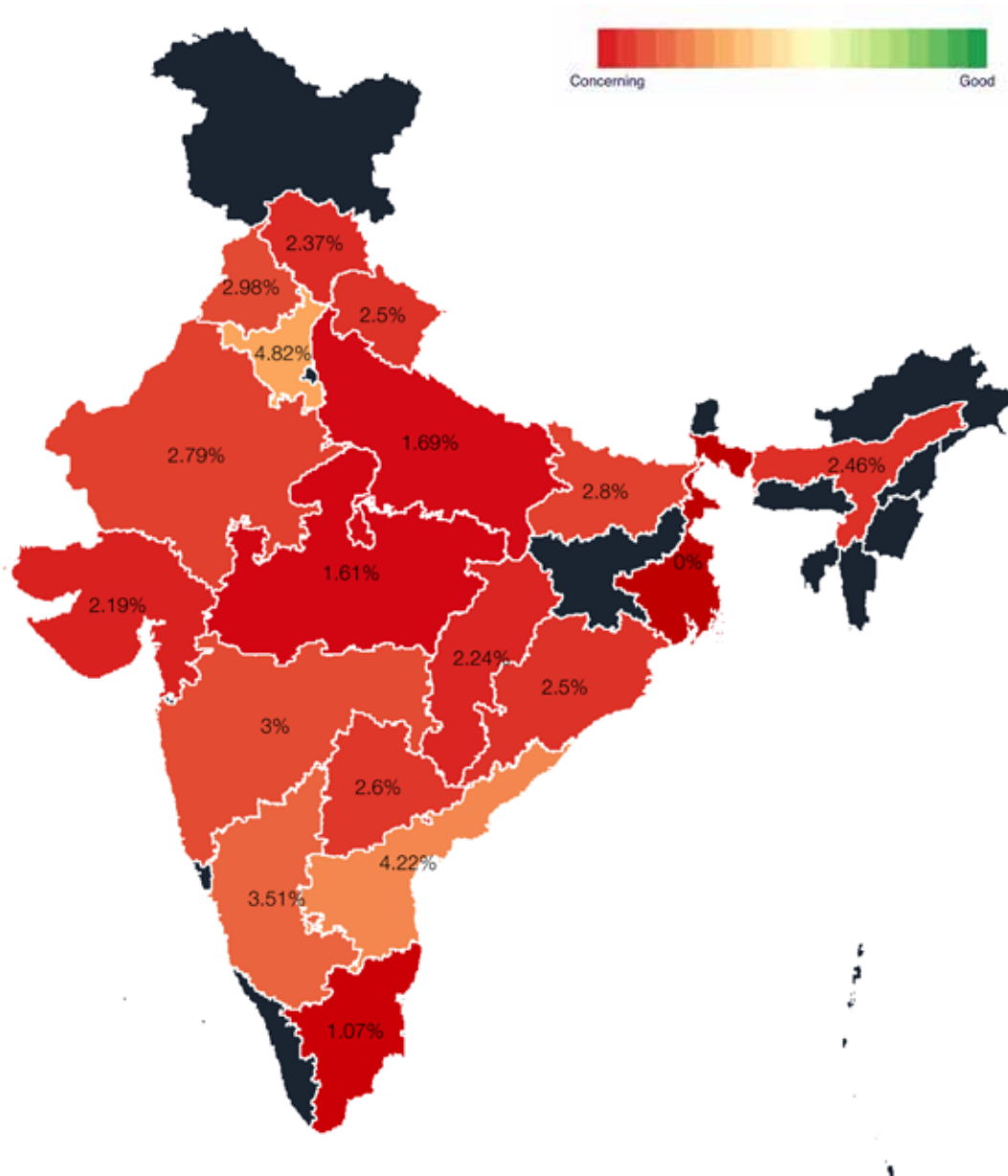
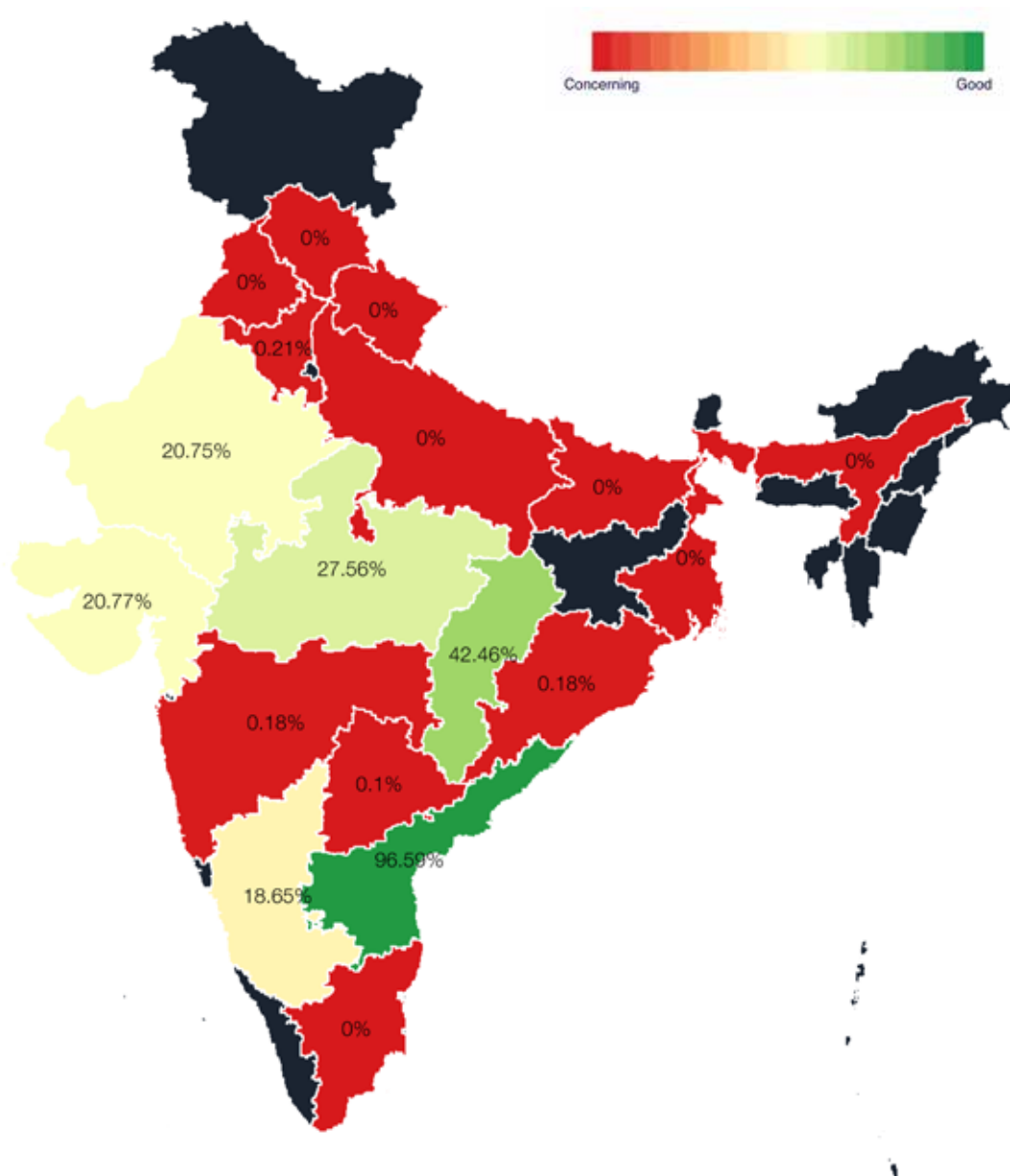


Figure 11: JAM preparedness index - Rural

3.33 What can be done to reduce leakages in the meantime, while banking correspondent networks develop and mobile banking spreads? One possibility would be what we call BAPU—Biometrically Authenticated Physical Uptake. Beneficiaries verify their identities through scanning their thumbprint on a POS machine while buying the subsidised product—say kerosene at the PDS shop. This is being successfully attempt by Krishna district in Andhra Pradesh, with significant leakage reductions. Despite

financial inclusion scores being low, if Fair Price Shops are equipped with POS machines, beneficiaries can simply authenticate their identities while taking their rations as under the current system. BAPU preparedness is much better than for Rural DBT preparedness. The average state preparedness is 12 per cent (Figure 12), but there are some states – like Andhra Pradesh (96 per cent), Chattisgarh (42 per cent) and Madhya Pradesh (27 per cent) – that with some policy push could be well-prepared for BAPU in the near future.

Figure 12: BAPU Preparedness Index



CONCLUSION

3.36 We conclude with policy recommendations on LPG and the broader spread of JAM.

LPG

3.37 The Pahal scheme has been a big success. The use of Aadhaar has made black marketing harder, and LPG leakages have reduced by about 24 per cent with limited exclusion of genuine beneficiaries. However, diversion of LPG from domestic

to commercial sources continues, because of the differential tax treatment of “commercial” and “domestic” LPG. In other words, the One Product One Price principle is still being violated. Diversion could be further reduced by equalising taxes across end-uses. This will not necessarily be inequitable because as Chapter 6 shows, LPG subsidies almost entirely benefit the well-off.

Broader spread of JAM

3.38 Considerable work needs to be done to fully implement the game-changing JAM

agenda. In those areas where the centre has less control, it should incentivise the states to invest in first-mile capacity (by improving beneficiary databases), deal with middle-middle challenges (by designing incentives for supply chain interest groups to support DBT) and improve last-mile financial connectivity (by developing the BC and mobile money space). To this end, states should be incentivised by sharing fiscal savings from DBT.

3.39 Meanwhile, the centre should prioritise areas where it has the highest control over the first- and middle-mile factors and leakages are high. Fertiliser and within-government transfers stand out as good candidates. The example of MGNREGS highlights that delivering within-government transfers via JAM can help other centrally sponsored schemes reduce idle funds, lower corruption and improve the ease of doing business with government.

3.40 Despite huge improvements in financial inclusion due to Jan Dhan, the JAM preparedness indicators suggest that there is still some way to go before bank-beneficiary linkages are strong enough to pursue DBT without committing exclusion errors. In that sense, the JAM agenda is currently jammed by the last-mile challenge of getting money from banks into beneficiaries' hands, especially in rural India. The centre can invest in last-mile financial inclusion via further improving BC networks and promoting the spread of mobile money. The recent licensing of banks will help. Regulations governing the remuneration of BCs may need to be reviewed to ensure that commission rates are sufficient to encourage BCs to remain active.

3.41 In the meantime models like BAPU offer the prospect of lower leakages without the risk of exclusion errors, and therefore merit serious consideration.

Agriculture: More from Less

Indian agriculture, is in a way, a victim of its own past success—especially the green revolution. It has become cereal-centric and as a result, regionally-biased and input-intensive (land, water, and fertiliser). Rapid industrialization and climate change are raising the scarcity value of land and water, respectively. Evolving dietary patterns are favoring greater protein consumption. To adapt to these changes, agriculture requires a new paradigm with the following components: increasing productivity by getting “more from less” especially in relation to water via micro irrigation; prioritizing the cultivation of less water-intensive crops, especially pulses and oil-seeds, supported by a favorable Minimum Support Price (MSP) regime that incorporates the full social benefits of producing such crops and backed by a strengthened procurement system; and re-invigorating agricultural research and extension in these crops. Finally, we provide evidence of deep segmentation in Indian agricultural markets which, if remedied, would create one Indian agricultural market and boost farmers’ incomes.

INTRODUCTION

4.1 Mahatma Gandhi believed that India lives in villages and agriculture is the soul of Indian economy. These words still ring true today. Agriculture brings home the bread to nearly half of all households and supplies it to the remainder. And, while non-farm activities are becoming increasingly important, there is still a core truth in Theodore Schultz’ Nobel Prize lecture: “Most of the world’s poor people earn their living from agriculture, so if we knew the economics of agriculture, we would know much of the economics of being poor.”

4.2 Indian agriculture has come a long way since independence, with chronic food scarcity giving way to grain self-sufficiency despite a two-and-a-half fold increase in

population. In 1966-67, just before India’s Green and White Revolutions, Indian wheat and milk production were just about one-third of US output. By 2013-14, Indian wheat output was 60 per cent higher than America’s, while Indian milk output was 50 per cent higher. These tremendous increases in aggregate output do, however, mask some disquieting trends.

4.3 At the heart of the problem is one of lack of exit (the theme of Chapter 2). Indian agriculture, is in a way, a victim of its own success, which over time is posing to be a major threat. Indian agriculture has become cereal-centric and as a result, regionally-biased and input-intensive, consuming generous amounts of land, water, and fertiliser. Encouraging other crops, notably pulses (via

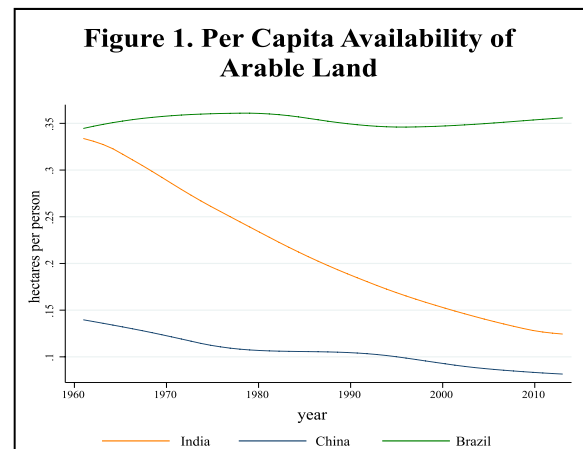
a *Rainbow Revolution* to follow the Green and White Revolutions) will be necessary to match supply with evolving dietary patterns that favor greater proteins consumption. At the same time, rapid industrialization and climate change will require economizing on land and water, respectively—getting “more from less” of these inputs.

4.4 Figure 1 depicts the land challenge, and shows the sharp decline in cultivable land per person in India—much sharper than in other countries. Over the next twenty years, India’s fast population growth will make the cross-country comparison even less favorable for India. Figure 2 highlights the water challenge. It shows that India has much lower levels of water per capita than Brazil, one of the world’s leading agricultural countries. This constraint is exacerbated because, while Brazil and China use approximately 60 per cent of their renewable fresh water resources for agriculture, India uses a little over 90 per cent.

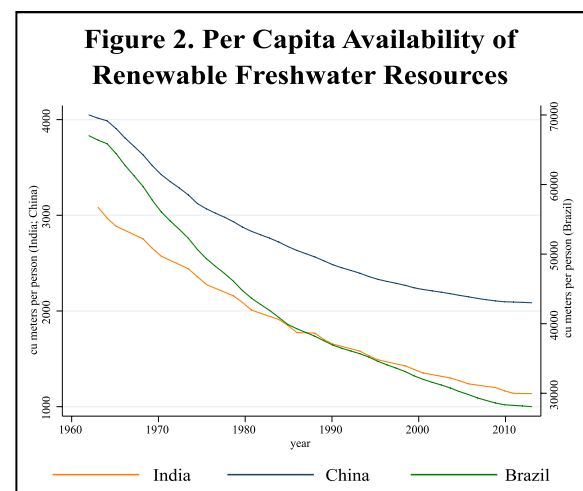
4.5 Agriculture is deserving of several treatises (Niti Aayog, 2015). Given the constraints of space, this chapter focuses on the core issues of engineering a switch toward pulses and the need to economize on the use of water. We first present data on Indian productivity compared with frontier productivity in cereals and pulses. The next section elaborates on the “more from less” imperative with a focus on economizing water via micro irrigation. (The scope for economizing on fertiliser is discussed in Chapter 9). Thereafter, we discuss how the policy on *Minimum Support Prices* (MSP) should be geared towards increasing pulses production, followed by a section highlighting the complementary investments required in *agricultural research and extension*. The final section, building on last year’s Economic Survey, presents some new findings on the *extent of segmentation of Indian agricultural markets*. The findings emphasize the need for expediting action to create one Indian

common market in agriculture, which would increase the returns to farmers substantially.

4.6 Certain very important issues, ranging from crop insurance (where the government has been taking important steps to protect farmers against natural and market shocks) to land leasing, to rural infrastructure, to the livestock sector, are not addressed in this chapter.



Source: FAOSTAT, <http://faostat3.fao.org/>



Source: FAOSTAT, <http://faostat3.fao.org/>

Note: Read India, China off left y-axis and Brazil off right y-axis.

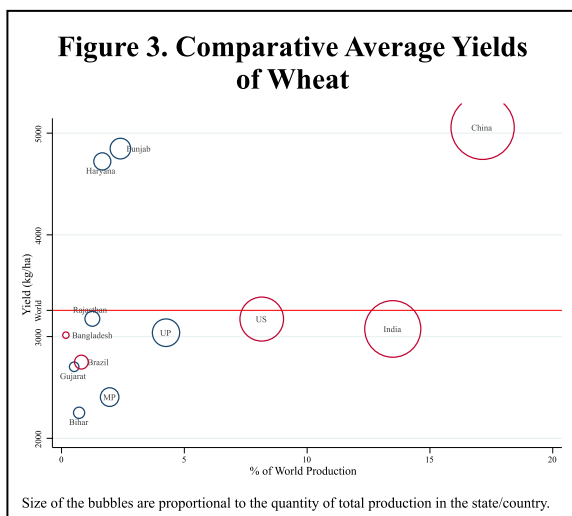
PRODUCTIVITY

The macro picture

4.7 The central challenge of Indian agriculture is low productivity, evident in modest average yields, especially in pulses. First, consider the main food grains – wheat and rice. These two cereals are grown on the most fertile and irrigated areas in the country. And

they use a large part of the resources that the government channels to agriculture, whether water, fertiliser, power, credit or procurement under the MSP program. Even then, average yields of wheat and rice in India are much below that of China's – 46 per cent below in the case of rice and 39 per cent in the case of wheat.

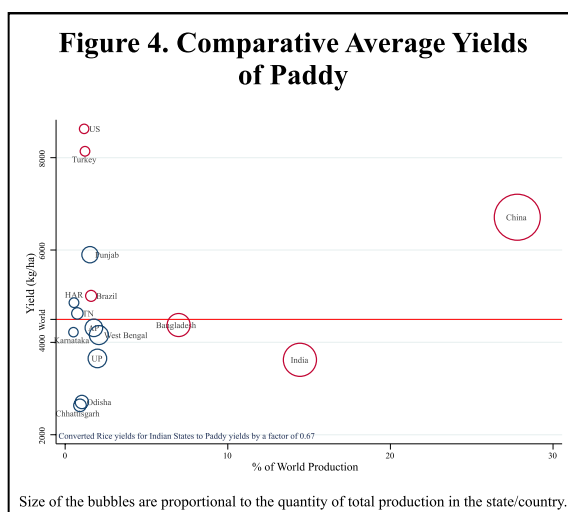
4.8 In wheat (Figure 3), India's average yield in 2013 of 3075 kg/ha is lower than the world average of 3257 kg/ha. Although both Punjab and Haryana have much higher yields of 4500 kg/ha, most other Indian states have yields lower than that of Bangladesh.



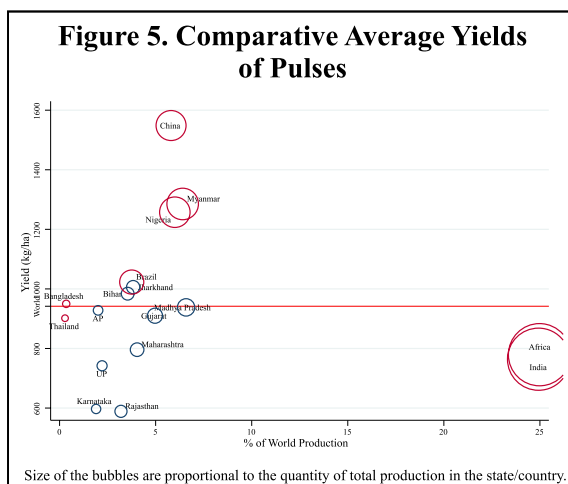
Source: FAOSTAT for the world and Agriculture Statistics at a Glance 2014, GOI for India. All estimates for year 2013-14.

4.9 The picture is starker in paddy production (Figure 4)¹ where *all* Indian states have yields below that of China and *most* states have yields below that of Bangladesh. India's best state, Punjab, has paddy yield close to 6000 kg/ha whereas China's yield is 6709 kg/ha.

4.10 India happens to be the major producer and consumer of pulses, which is one of the major sources of protein for the population. India has low yields comparable to most countries. On an average, countries like Brazil, Nigeria, and Myanmar have higher



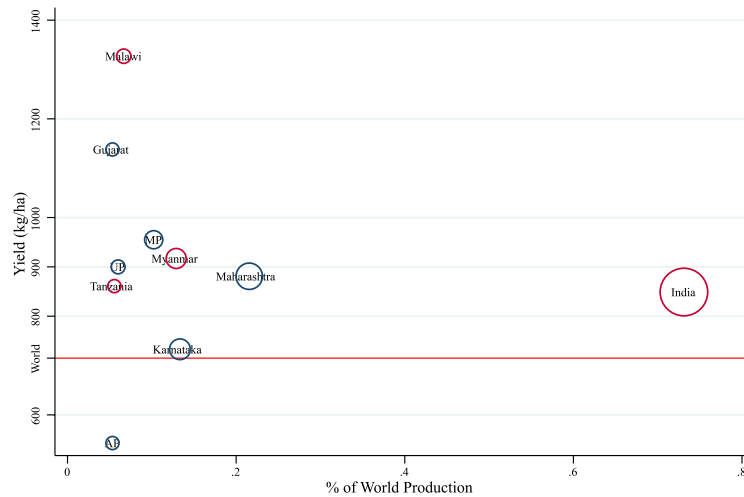
Source: FAOSTAT for the world and Agriculture Statistics at a Glance 2014, GOI for India. All estimates for year 2013-14.



Source: FAOSTAT for the world and Agriculture Statistics at a Glance 2014, GOI for India. All estimates for year 2013-14.

yields (Figure 5). Some states do much better than the all-India average, but even the key pulse producing state of Madhya Pradesh has yields (938 kg/ha) barely three-fifths that of China's (1550 kg/ha). These comparisons are based on the basket of pulses grown in each country. If we compare yields of just tur (or pigeon peas) across countries, the qualitative picture is no different (Figure 6). Given that India is the major producer and consumer of pulses, imports cannot be the main source for meeting domestic demand. Therefore, policy must incentivise movement of resources towards production of pulses.

¹ One caveat while comparing paddy yields is that varieties are not exactly homogenous. Also the differences between varieties are large.

Figure 6: Comparative Yields of Tur (Pigeon Peas)

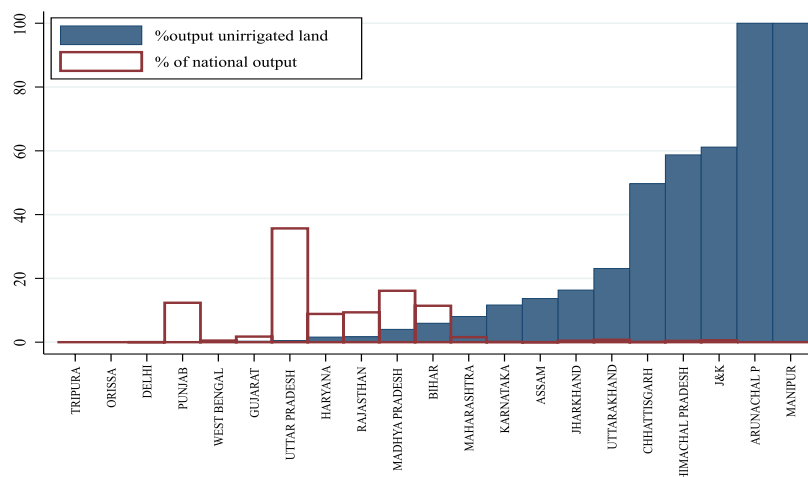
Size of the bubbles are proportional to the quantity of total production in the state/country.

Source: FAOSTAT for the world and Agriculture Statistics at a Glance 2014, GOI for India. All estimates for year 2013-14.

4.11 All four figures carry one important message: India could make rapid gains in productivity through convergence *within* India. For example, in pulses, if all states were to attain even Bihar's level of productivity, pulses production would increase by an estimated 41 per cent² on aggregate.

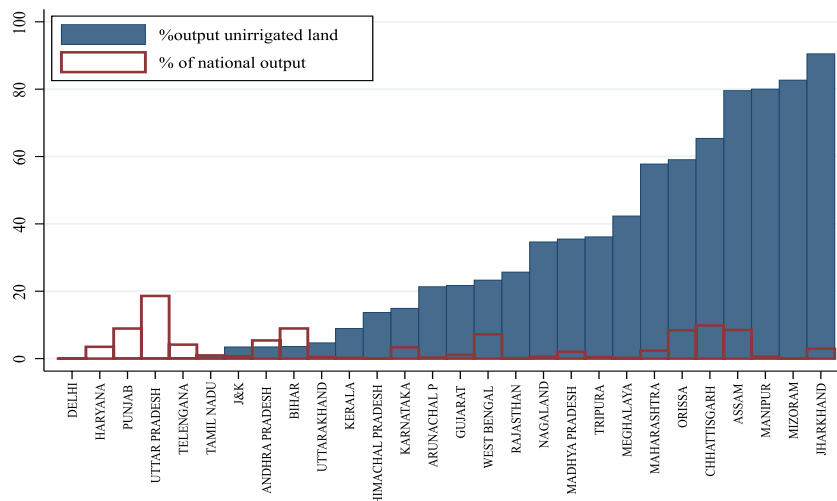
WHERE ARE CROPS GROWN? A DOUBLE BLOW FOR PULSES

4.12 To better understand the productivity challenge, an analysis of the allocation of irrigated land by crop is instructive. Data from the "Situation of Agricultural Households Survey, 2013" by the NSSO allows an estimation of the percentage of crops grown on un-irrigated land across different states. The data is summarized in Figures 7-10.

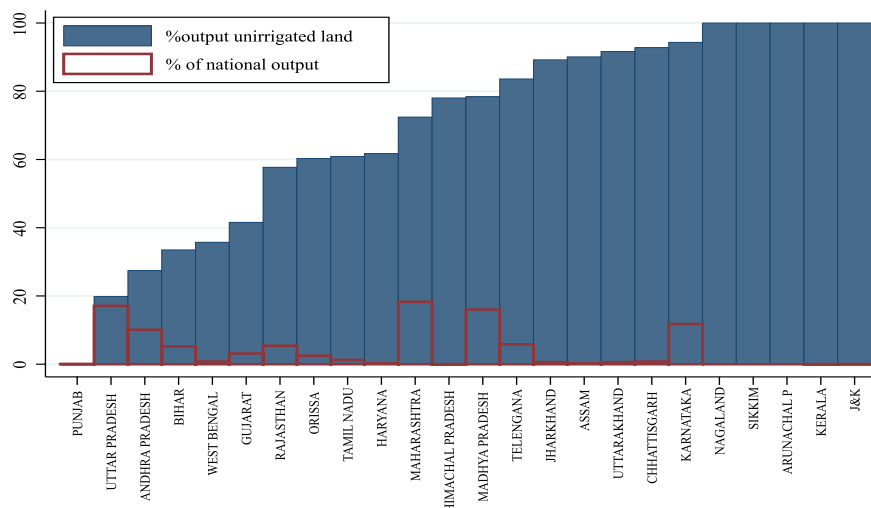
Figure 7. Percentage of wheat grown in un-irrigated land

Source: NSS SAS Round 70. July 2012 - June 2013.

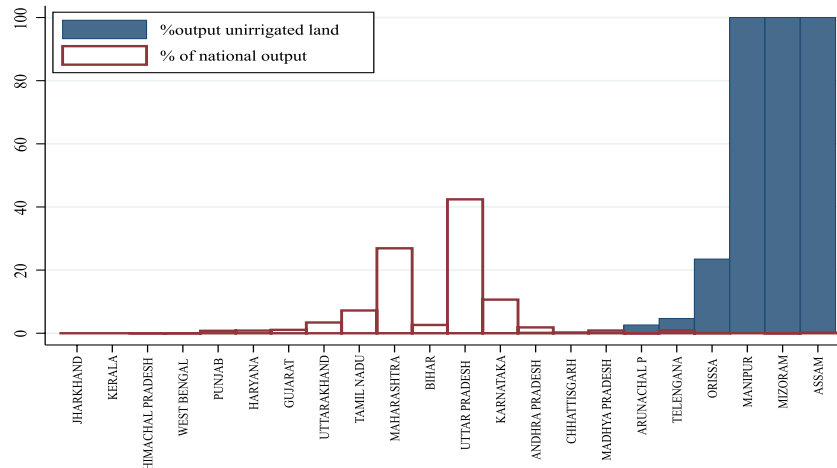
² We arrive at this rough estimate by applying Bihar's pulses productivity level from Figure 5, to the aggregate area under pulses production in a state and comparing it to its current quantity produced. The latter two data points were obtained from data.gov.in (<https://www.data.gov.in/catalog/district-wise-season-wise-crop-production-statistics>).

Figure 8. Percentage of paddy grown in un-irrigated land

Source: NSS SAS Round 70. July 2012 - June 2013

Figure 9. Percentage of pulses grown in un-irrigated land

Source: NSS SAS Round 70. July 2012 - June 2013

Figure 10. Percentage of sugarcane grown in un-irrigated land

Source: NSS SAS Round 70. July 2012 - June 2013.

4.13 It is immediately apparent that the production pattern for pulses is very different from other crops. Not only is most of the land dedicated to growing pulses in each state un-irrigated, but the national output of pulses comes predominantly from un-irrigated land. In contrast, a large share of output in wheat, rice and sugarcane – in Punjab, Haryana and UP – is from irrigated land. In water scarce Maharashtra, all sugarcane is grown on irrigated land. Meeting the high and growing demand for pulses in the country will require large increases in pulses production on irrigated land, but this will not occur if agriculture policies continue to focus largely on cereals and sugarcane.

WHAT DOES THIS MEAN FOR FARM INCOMES?

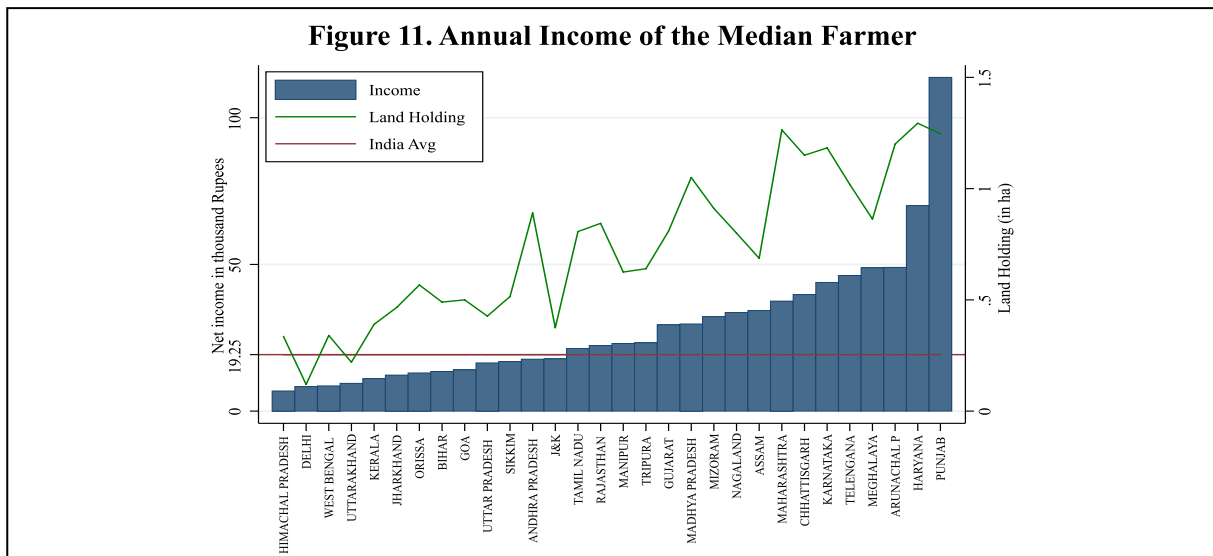
4.14 The negative consequences of low agriculture yields extend from precarious incomes of farmers to large tracts of land locked in low value agriculture, despite growing demands for high value products such as fruits, vegetables, livestock products

because of consumption diversification with rising incomes and urbanization. According to NSS data, the average annual income of the median³ farmer net of production costs from cultivation is less than ₹20,000 in 17 states (Figure 11).⁴ This includes produce that farmers did not sell (presumably used for self-consumption) valued at local market prices. Given high wedges between retail and farm gate price, this might underestimate income but it is still low. Moreover, the variance in agriculture income between the more and less productive states is also very stark.

CRITICAL INPUT: WATER

4.15 Although water is one of India's most scarce natural resources, India uses 2 to 4 times more water to produce a unit of major food crop than does China and Brazil (Hoekstra and Chapagain [2008]). Hence, it is imperative that the country focus on improving the efficiency of water use in agriculture.

4.16 Since independence India has invested numerous resources on irrigation, both



*Data from NSS SAS Round 70. Sample restricted to households surveyed in both Rabi and Kharif. Income only from cultivation net of costs. Unsold produce valued at local market rate.

³ Median refers to the median farmer of each state by net income. We have subsequently backed out the corresponding land holding size of farmers from the NSS data.

⁴ Ideally this net income estimates should be conditional on the monsoon. However, data for such analysis was unavailable.

public (canal irrigation) and private (tube wells). In both cases the water has been deployed via “flood” irrigation, which is an extremely inefficient use of water. Irrigation investments must shift to adopting technologies like sprinkler and drip irrigation and rainwater harvesting (leveraging labour available under the MGNREGS where possible). In order to facilitate this shift, the new irrigation technologies need to be accorded “infrastructure lending” status (currently accorded to canal irrigation) and both the centre and states need to increase public spending for micro irrigation. The consolidation of ongoing irrigation schemes – the Accelerated Irrigation Benefit Programme (AIBP), Integrated Watershed Management Programme (IWMP) and On Farm Water Management (OFWM) – into the Prime Minister’s Krishi Sinchayi Yojana (PMKSY) offers the possibility of convergence of investments in irrigation, from water source to distribution and end-use.

4.17 It has long been recognized that a key factor undermining the efficient use of water is subsidies on power for agriculture that, apart from its benefits towards farmers, incentivises wasteful use of water and hasten the decline of water tables. According to an analysis by National Aeronautics and Space Administration (NASA)⁵, India’s water tables are declining at a rate of 0.3 meters per year. Between 2002 and 2008, the country consumed more than 109 cubic kilometers of groundwater, double the capacity of India’s largest surface water reservoir, the Upper Wainganga.

4.18 It is also noteworthy that India, a water-

scarce country, has been “exporting water” as a result of distorted incentives. Goswami and Nishad (2015) estimate water content embedded in crops at the time of trade. This is different from water used in production, which is much higher. Water “embedded” in crops is the water content of each crop and once the crop is exported, it cannot be recovered. In 2010, India exported about 25 cu km of water embedded in its agricultural exports. This is equivalent to the demand of nearly 13 million people.

4.19 India was a “net importer” of water until around 1980s. With increases in food grain exports, India has now become a net exporter of water – about 1 per cent of total available water every year. The ratio of export to import of such virtual water is about 4 for India and 0.1 for China. Thus China remains a net importer of water. This is also evident in China and India’s trade patterns. China imports water-intensive soybeans, cotton, meat and cereal grains⁶, while exporting vegetables, fruits and processed food. India, on the other hand, exports water-intensive rice, cotton, sugar and soybean.⁷

MICRO IRRIGATION

4.20 A promising way forward, to increase productivity while conserving water (more for less), is to adopt micro irrigation methods. In drip irrigation for example, perforated pipes are placed either above or slightly below ground and drip water on the roots and stems of plants, directing water more precisely to crops that need it. An efficient drip irrigation system reduces consumption of fertiliser (through fertigation⁸) and water

⁵ “NASA Satellites Unlock Secret to Northern India’s Vanishing Water”. December 2009. http://www.nasa.gov/topics/earth/features/india_water.html

⁶ Gale, Fred; Hansen, James; and, Jewison, Michael. *China’s Growing Demand for Agricultural Imports*. February 2015. United States Department of Agriculture (<http://www.ers.usda.gov/media/1784488/eib136.pdf>) and *Agriculture and trade policy: Background note*. <http://tinyurl.com/z3gecmx>

⁷ *India’s Agricultural Exports Climb to Record High*. August 2014. United States Department of Agriculture. <http://tinyurl.com/glng3nf>

⁸ Fertigation is the process of introducing fertiliser directly into the crop’s irrigation system.

lost to evaporation, and higher yields than traditional flood irrigation.

4.21 The key bottlenecks in the adoption of this technology are the high initial cost of purchase and the skill required for maintenance. However, the increase in yields and reduction in costs of power and fertiliser use can help farmers recover the fixed cost quickly. Provisions for credit to farmers can incentivise greater adoption of this technology.⁹

4.22 Results from an impact evaluation of National Mission on Micro Irrigation (of the Ministry of Agriculture, Government of India) conducted in 64 districts of 13 states – Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Haryana, Karnataka, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Sikkim, Uttar Pradesh and Uttarakhand – are revealing on the benefits of drip irrigation.

4.23 There were substantial reductions in irrigation costs and savings on electricity and fertilisers (Figure 12). This is because water is efficiently supplied and hence pumps are used for a limited time. Moreover, water soluble fertilisers are supplied directly to the roots

of the plant and hence there is less wastage. Yields of crops also went up – up to 45 per cent in wheat, 20 per cent in gram and 40 per cent in soybean. The resulting improvement in net farm incomes is substantial. Until now micro-irrigation techniques, owing to high fixed costs of adoption, have mostly been used for high value crops. However, recent research has shown its feasibility even in wheat and rice.

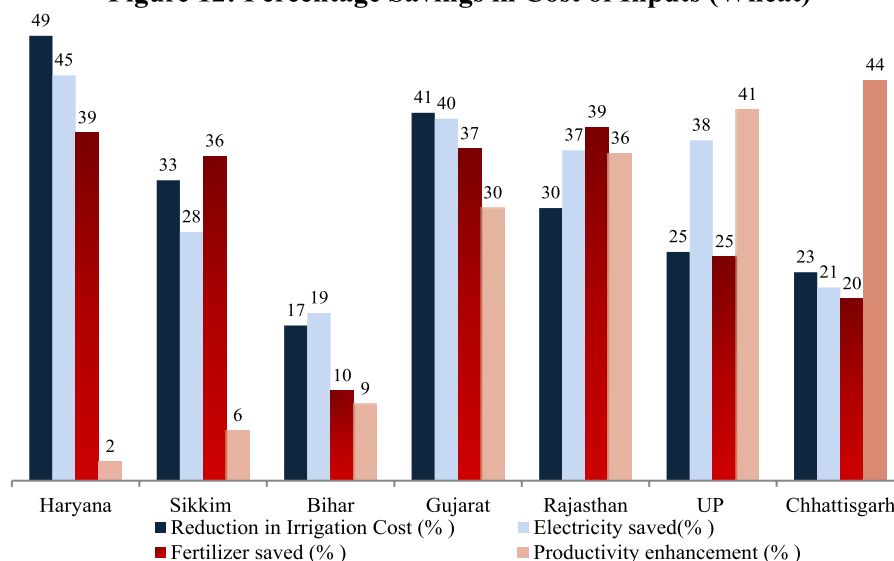
POLICIES

Minimum Support Price and Procurement Policy

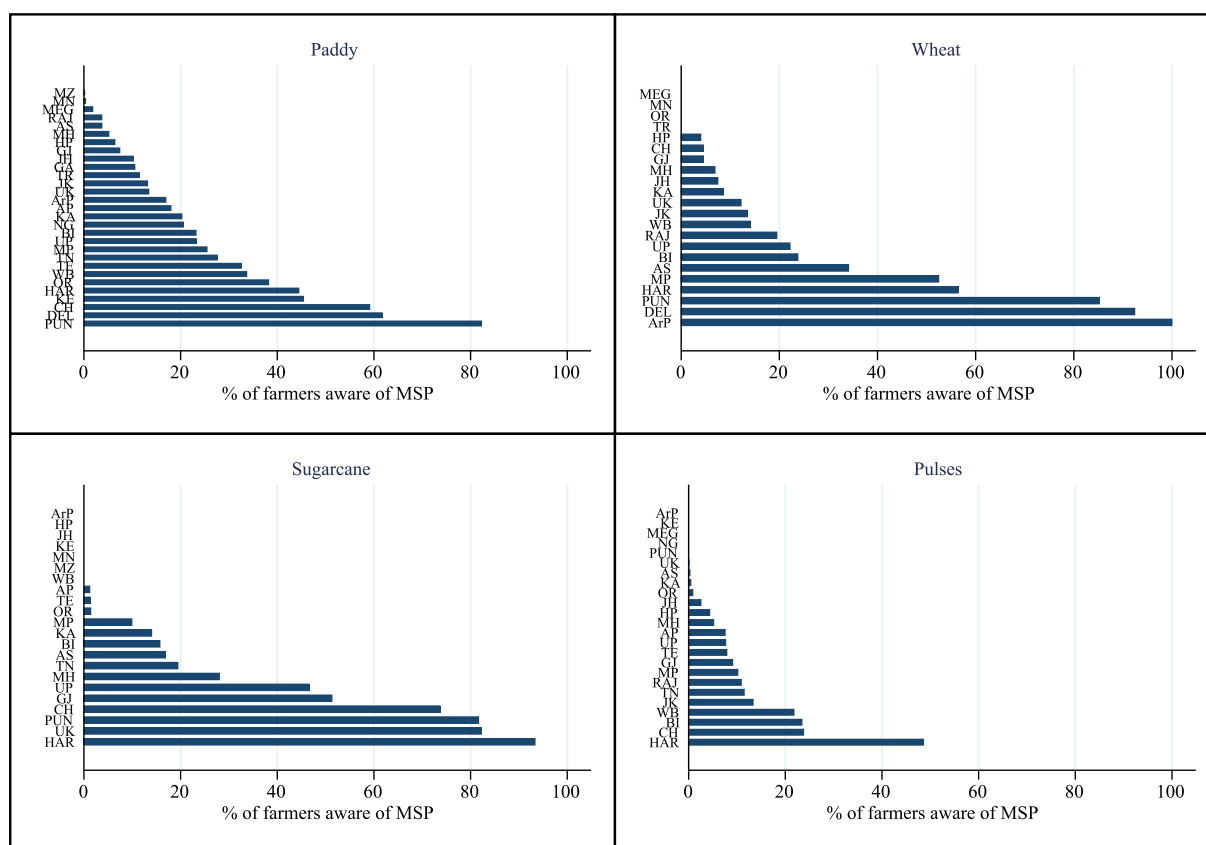
4.24 When planting crops, farmers face several uncertainties in terms of their realized prices in the several months following their harvest. In principle, a farmer could buy an option contract to reduce this price uncertainty and make corresponding cropping decisions, but in reality this option is unavailable for all but a miniscule fraction of India's farmers.

4.25 Instead, future prices are guaranteed by the government through the MSP. But while the government announces MSP for 23 crops, effective MSP-linked procurement occurs

Figure 12: Percentage Savings in Cost of Inputs (Wheat)



⁹ However, ensuring that credit effectively reaches target groups in agriculture is not a small challenge (see Box 5.2 in Economic Survey 2014-15).

Figure 13. Crop-wise Awareness about MSP among Farmers

Source: NSS Situation Assessment Survey of Agricultural Households Round 70

mainly for wheat, rice and cotton. While there is no government procurement per se in sugarcane, a crop with assured irrigation, mills are legally obligated to buy cane from farmers at prices fixed by government, an effective MSP-like engagement. But even for these crops MSP is restricted to a subset of farmers in a few states. This can be clearly observed in large gaps in the percentage of farmers who are even aware of the MSP policy (Figure 13).

4.26 In Punjab and Haryana, almost all paddy and wheat farmers are aware of the MSP policy. However, very few farmers who grow pulses are aware of an MSP for pulses. Even for paddy and wheat where active procurement occurs, there is a substantial variation across states – with only half or less paddy and wheat farmers reporting awareness of MSP, especially in states such as, Gujarat, Maharashtra, Rajasthan, Andhra Pradesh and

Jharkhand. This points to the possibility that procurement in these states may be happening in some districts and not in others.

4.27 Thus, while in principle MSP exists for most farmers for most crops, its realistic impact is quite limited for most farmers in the country. Public procurement at MSP has disproportionately focused on wheat, rice and sugarcane and perhaps even at the expense of other crops such as pulses and oilseeds. This has resulted in buffer stocks of paddy and wheat to be above the required norms, but also caused frequent price spikes in pulses and edible oils, despite substantial imports of these commodities.

4.28 The absence of MSP procurement for most crops in most states implies either that farmers are selling their products to private intermediaries above the MSP or the converse, i.e., farmers have little option but to sell their produce at prices below the MSP,

resulting in a regional bias in farm incomes. There is a general sense that the latter is a more prevalent phenomenon, highlighting the need for reorienting agriculture price policies, such that MSPs are matched by public procurement efforts towards crops that better reflect the country's natural resource scarcities.

4.29 One way of rationalizing MSP policy is to make these price signals reflect social rather than just private returns of production. Table 1 provides an illustrative example for quantifying these private and social returns to cultivating different crops.

4.30 Table 1 estimates the returns to growing wheat, sugarcane or paddy, taking account of the negative externalities from using chemical fertiliser (soil depletion and health), water (falling water tables), and from burning crops (adverse health consequences). Conversely, the social returns to pulse production is higher than the private returns, because it not only uses less water and fertiliser but fixes atmospheric nitrogen naturally and helps keep the soil porous and well aerated because of its deep and extensive root systems. These positive social benefits should be incorporated into MSP estimates.

4.31 Farmers could also be assured a

floor price for their crops through a "Price Deficiency Payment" (Niti Aayog [2015]). Under this system if the price in an Agriculture Produce Market Committee (APMC) mandi fell below the MSP then the farmer would be entitled to a maximum of, say, 50 per cent of the difference between the MSP and the market price. This subsidy could be paid to the farmer via Direct Benefits Transfer (DBT). Such a system would keep the quantum of the subsidy bill in check and also be consistent with India's obligations to the WTO.

AGRICULTURAL RESEARCH AND EDUCATION

4.32 Addressing India's multiple challenges in agriculture will require significant upgradation of country's national agriculture research and extension systems.

4.33 India's National Agricultural Research System (NARS) (comprising the Indian Council of Agricultural Research (ICAR), other central research institutes, and national research centres set up by ICAR), together with agriculture research universities played a key role in the Green revolution. In more recent years, however, agriculture research has been plagued by severe under investment and neglect.

Table 1: Crop-wise return in Punjab during TE 2010-11

Crop Name	Season	Return at market prices (Rs/ha)	Return based on social contribution (Rs/ha)	Difference in social and private returns (Rs/ha)*	Difference in social and private returns (% of market prices)*
Chick-pea	Rabi	2633	5295	2,662	101%
Lentil	Rabi	11349	13584	2,235	20%
Blackgram	Kharif	1564	3057	1,493	95%
Wheat	Rabi	36244	27017	(9227)	(25%)
Paddy-non Basmati	Kharif	46198	32412	(13786)	(30%)
Paddy-Basmati	Kharif	53377	40534	(12843)	(24%)
Sugarcane(Planted)	Kharif	98384	82163	(16221)	(16%)
Sugarcane(Ratoon)	Kharif	118676	103779	(14898)	(13%)

Source: Niti Aayog. The estimates were undertaken as part of the Regional Crop planning for improving resource use efficiency and sustainability at ICAR-NIAP, New Delhi.

* negative(positive) value in the column indicates adverse (favourable) social externalities.

4.34 The system has been sapped by three weaknesses. One, in states where agriculture is relatively more important (as measured by their share of agriculture in state GDP), agriculture education is especially weak if measured by the number of students enrolled in agricultural universities (Figure 14). This is especially true in states in the Northern (except Punjab and Haryana) and Eastern regions. The agriculture universities have been plagued by: (i) resource crunch, (ii) difficulty in attracting talented faculty, (iii) limited linkages and collaborations with international counterparts, (iv) weakening of the lab-to-land connect; and, (v) lack of innovation (Tamboli and Nene [2013] and Niti Aayog [2015]).

4.35 The weaknesses of state agriculture universities (SAU) imply that extension systems critical for the diffusion of new agricultural innovations and practices, or even dissemination of information about public programs such as MSP, are unable to achieve their intended objectives. Urgent intervention in this respect is therefore currently required of the states.

4.36 Second, investment in public agricultural research in India needs to be augmented. Given the large externalities, the centre needs to play a more important role. India's current spending on agriculture research is considerably below that of China and as a share of agriculture GDP even less than that of Bangladesh and Indonesia (Figure 15).

4.37 Third, resource augmentation can go only so far unless accompanied by changes in incentives. There is a strong need to take steps to enhance research productivity among the scientists in public agriculture research institutes by instituting performance indicators "as the majority (63.5 per cent) of scientists [had] low to very low level of productivity." (Paul et. al. [2015]). For example, the rapid

rate of innovation required in pulses can be achieved by securing participation from the private sector, which hitherto, has remained largely limited due to the small scale of pulse production in the country. This can potentially be of the form of a pull system of research, similar to Kremer's HIV/AIDS vaccine idea, albeit with a smaller quantum of reward. In such a system, the winner is offered a proportionately large enough award for innovating desirable agricultural traits, but the intellectual property rights of the innovation are transferred to the government. The policy should however, seek to level the playing field for private, public and citizen sector participation.

4.38 Similarly, private sector innovation and high yielding variety in seeds can result in productivity gains. Currently, the seed replacement rate for pulses are in the range of 19 per cent to 34 per cent,¹⁰ highlighting the need for greater private sector engagement in order to spur innovation and high yields.

4.39 India should also fully leverage new low-cost technologies that have wider benefits for agriculture. Cellphones have been creatively used by countries like Ghana, Kenya, Nigeria and Thailand to provide information on prices and cultivation to farmers which has led to massive increases in farm incomes. Since the costs of drones have fallen sharply, they can be used by SAUs to provide crucial information on crop health, irrigation problems, soil variation and even pest and fungal infestations that are not apparent at eye level to farmers. Small efforts can go a long way in mitigating farm losses and risks and maximizing income.

4.40 A host of studies has demonstrated significant net benefits of GM crops (Kathage and Qaim [2012]) with leading countries such as Brazil and now China opening up to new GM technologies and aggressively building

¹⁰ State wise seed replacement rates are from Seednet, <http://seednet.gov.in/PDFFILES/SRR-13.pdf> ; Data cited is for 2011-12, the latest available estimates.

their own research capacity. Nonetheless there are good reasons for some of the public apprehensions on GMOs. Therefore, the regulatory process in India needs to evolve so as to address the concerns in a way that does not come in the way adapting high yielding technologies and rapidly moving towards the world's agro-technological frontier.

MARKET FAILURE FOR AGRICULTURAL OUTPUT

Market Segmentation

4.41 Market segmentation reduces overall welfare because it prevents gains through competition, efficient resource allocation, specialization in subsectors and fewer

Figure 14: Agricultural University Students per 1000 Households¹¹

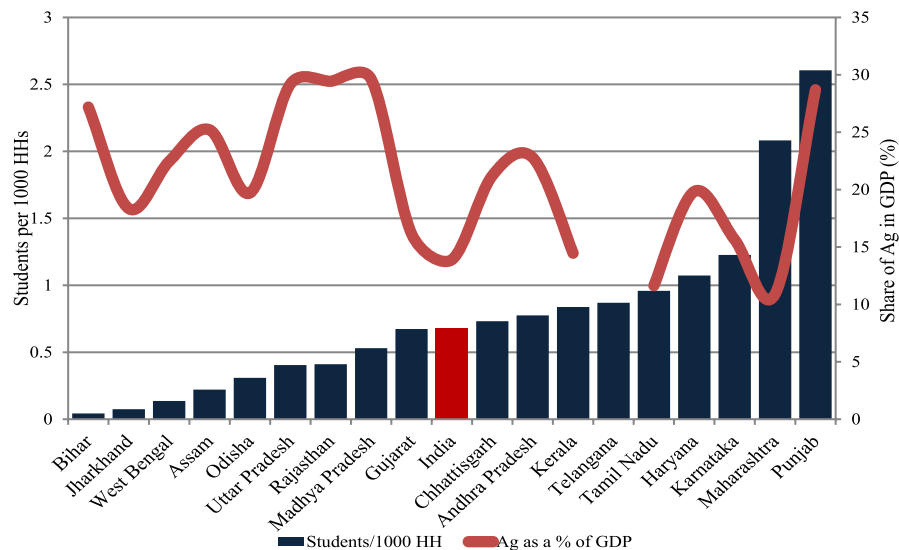
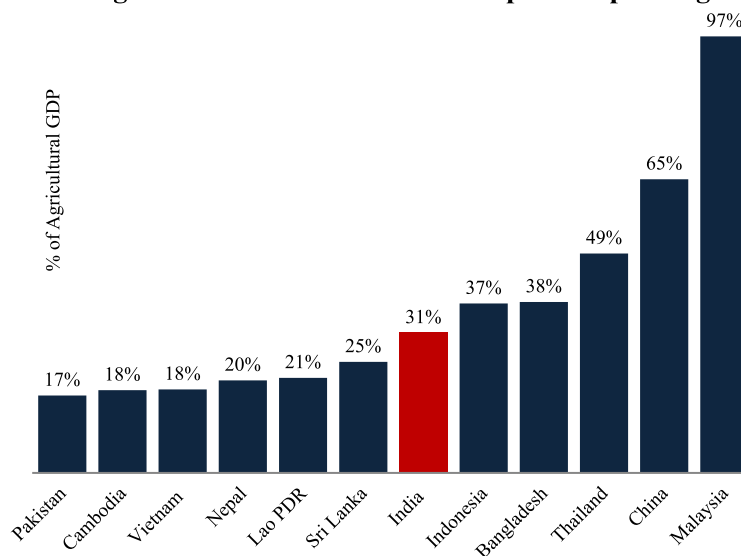


Figure 15: Agriculture Research and Development Spending in 2010¹²



¹¹ Source: Lok Sabha unstarred question number 5645, dated 28.04.2015, NSS SAS 2013 and Agriculture Statistics at a Glance 2014.

¹² Source: Stads, G.J. 2015. *A snapshot of agricultural research investment and capacity in Asia*. "ASTI Resource Paper for the Asia Pacific Association of Agricultural Research Institutions' High Level Policy Dialogue, Bangkok. December 2015. Washington, DC: International Food Policy Research Institute.

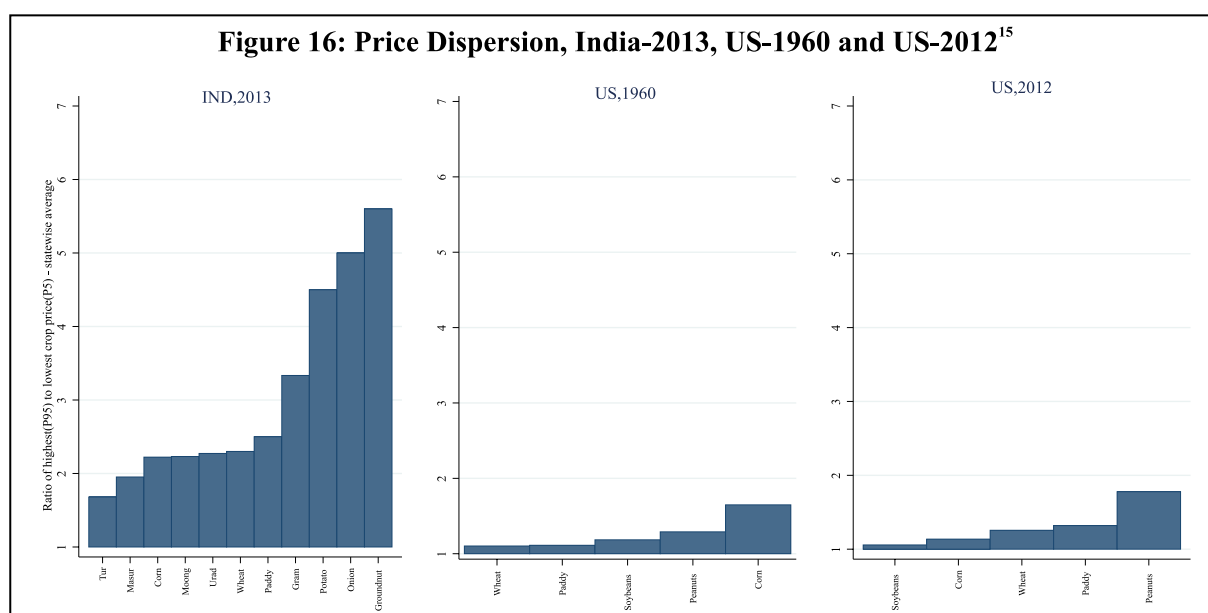
intermediaries. Massive railroad expansion in the late 19th Century changed the landscape of agriculture markets in the United States. The resulting gains due to the increase in market integration is estimated to be around 60 per cent in terms of land value (Donaldson and Hornbeck [2015]) and 90 per cent in terms of output (Costinot and Donaldson [2011]).

4.42 The causes of market segmentation are many – differences in remoteness and connectivity (rural roads), local market power of intermediaries, degree of private sector competition, propensity of regional exposure to shocks, local storage capacity, mandi infrastructure and farmers access to them, storage life of the crop and crop specific processing cost.

4.43 Market segmentation results in large

differences in producer and consumer prices. Although these differences are location-specific, they result in higher costs for both farmers and consumers alike. This is immediately apparent if one compares India to the US. In Figure 16, price¹³ dispersion for prices received by farmers is measured as the ratio between the highest (P95) and the lowest (P5) price of the crop in a country, i.e. if this ratio were to be equal to one, it would imply that there is no price dispersion, and that there is one common market.¹⁴

4.44 India's price dispersion across commodities (the left-most graph) is a stark contrast to those of the U.S. even in the 1960s. For example, in 2012 in the United States the *maximum* price dispersion is for peanuts, which hardly exceeds 1.75, much higher than the *minimum* observed for any



Source: NSS Situation Assessment Survey of Agriculture Households Round 70, United States National Agricultural Statistics Service

¹³ The prices are constructed as state wise averages of prices received by farmers in that state for India. The US prices were obtained from the United States Department of Agriculture, National Agricultural Statistics Service <http://www.nass.usda.gov/>

¹⁴ We recognize that these estimates should ideally be compared to similar emerging market economies today. We used the US as a benchmark because historical data going back to 1960 was more easily available. Moreover, a comparison between India today and the US in 1960 controls, to some extent, for the stage of development.

¹⁵ India, 2013 farmgate prices were procured from NSS SAS 2013. The data for US-1960 and US-2013 is obtained from United States Department of Agriculture, National Agricultural Statistics Service <http://www.nass.usda.gov/>

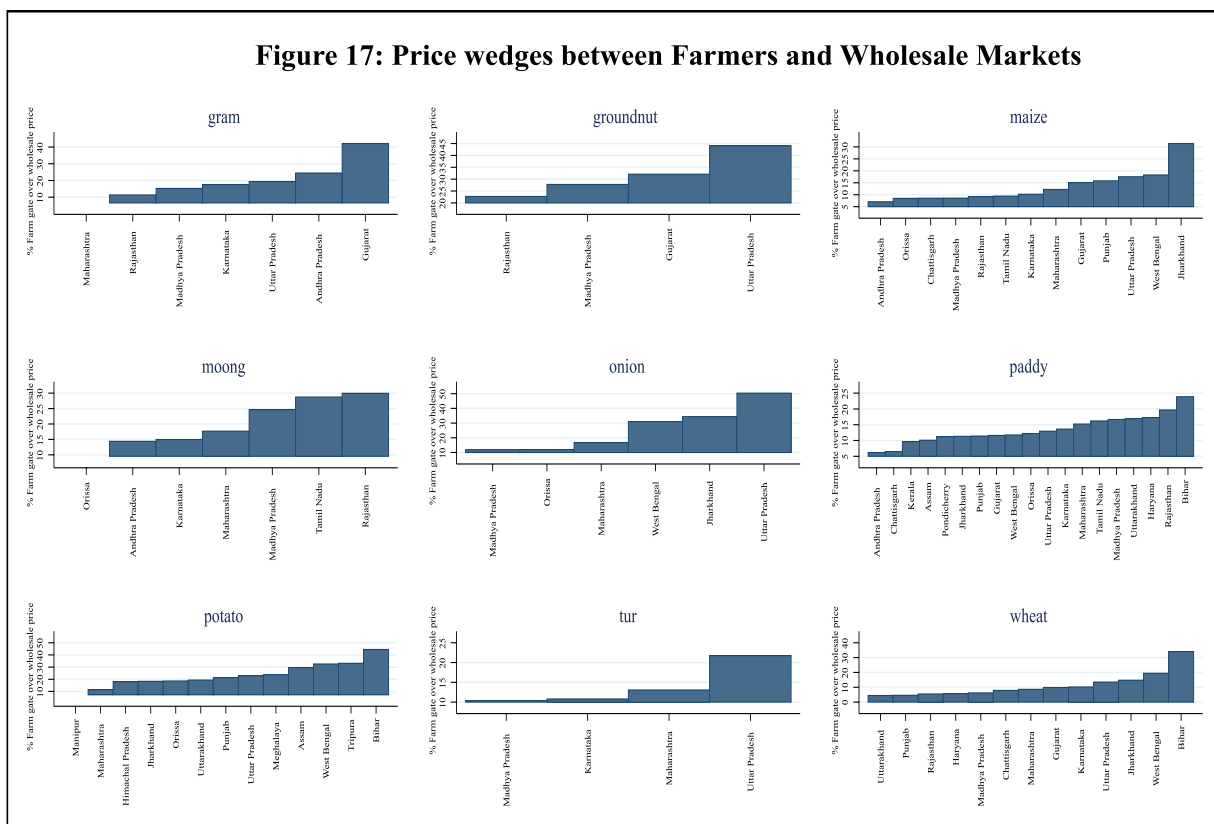
agriculture commodity in India (i.e., tur). In effect, price dispersion in India is about 100 per cent-45 per cent greater than in the US today or the US in 1960.

4.45 As noted earlier, segmentation also creates a “wedge” at various points in the supply chain from the farm-gate to the final consumer in India. Quantifying these price wedges across agents spread over the supply chain is complex given data constraints, but we have attempted some rough estimates.

PRICE WEDGES

4.46 The graphs below quantify the wedges

between farm-gate and wholesale prices and then between retail and wholesale prices for certain crops. Several layers of intermediary networks exist between farmers and wholesale markets and also between wholesale and retail markets, data for which is unavailable. Consequently, this analysis is unable to isolate the contribution of each of these intermediaries and other sources of price wedges such as transportation costs, storage capacity and other factors listed above (see Appendix 6, Technical Appendix, Chapter-4 for a full set of assumptions). With these caveats, the estimates are provided in Figures 17 and 18.



Source: NSS SAS Round 70, 2013; Agmarknet

4.47 Figure 17, which examines farm gate-wholesale price wedges,¹⁶ indicates that the biggest price wedges are for potatoes, onions and groundnuts. The wedges are lower for rice, wheat (two commodities that

are produced by a large majority of farmers and where MSP declaration is followed by government procurement) and interestingly for maize. The wedges for pulses (tur and moong) are not as high as potatoes, onions and

¹⁶ The data for farm gate price is NSS SAS 2013. The data for wholesale prices is from <http://www.agmarknet.in> for the same year and season as NSS SAS 2013.

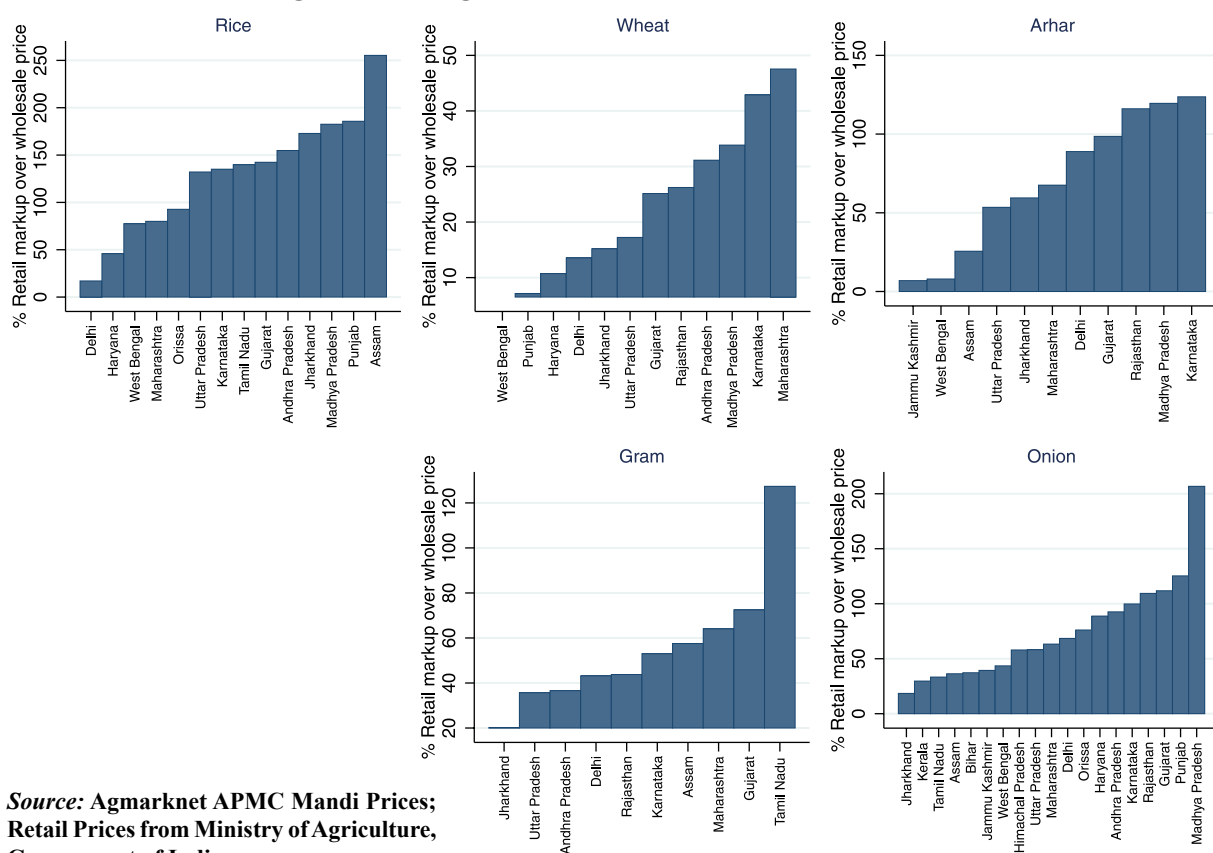
groundnuts. It appears that the perishability of a product is an important factor driving the wedges.¹⁷

4.48 The estimates are qualitatively similar when we look at wedges between the retail and wholesale markets (Figure 18). The analysis (for 2014) finds higher markups in perishables such as onions than in cereals and pulses. Higher markups in rice might reflect the processing cost of paddy. But in addition to the price wedges across commodities there is also substantial variation in wedges for the same commodities across states. If processing and other costs are similar across

states then higher markups for certain states across commodities is a reflection of state specific effects – which could range from rural infrastructure, storage capacities to the rural political economy. For example, Karnataka, Madhya Pradesh, Maharashtra and Karnataka appear to have higher markups across commodities.

4.49 Chapter 8 of last year's Economic Survey addressed the need for a national market for agricultural commodities India. The analysis above shows the large magnitude of price wedges both across commodities as well as across states¹⁸. It

Figure 18: Wedges between Retail and Wholesale Prices



Source: Agmarknet APMC Mandi Prices; Retail Prices from Ministry of Agriculture, Government of India.

¹⁷ The calculation of wedges does control for crop variety. Given limited information about quality and varieties in the retail and farm-gate price data, we have tried to allay these concerns as best as we could by comparing median prices over similar distances. As a robustness check, in analysis not reported here, we also tried comparing the 80th percentile of wholesale to the 40th percentile of retail prices and the results did not change much.

¹⁸ Statistical tests for market integration, derived from the law of one price, look at whether prices of similar goods in different markets co-move with each other. They can also test for whether the co-movements fail in either the short- or the long-run or both. However, a broader understanding of market segmentation is also whether local shocks do not spread geographically. Hence, the wedges (which measure prices in changes and not in levels) should not be location specific if markets are perfectly integrated. Our analysis should be viewed in that spirit.

illustrates an important point: greater market integration is essential for farmers to get higher farm gate prices. While the GST bill is a step in the right direction, a lot more needs to be done by the states, including, creating better physical infrastructure, improved price

dissemination campaigns, and removing laws that force farmers to sell to local monopolies, etc. Nearly seventy years after Independence, India is still far from being one nation in agriculture.

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Mother and Child

Imagine the government were an investor trying to maximise India's long-run economic growth. Given fiscal and capacity constraints, where would it invest? This chapter shows that relatively low-cost maternal and early-life health and nutrition programs offer very high returns on investment because: (i) the most rapid period of physical and cognitive development occurs in the womb, so in utero and early-life health conditions significantly affect outcomes in adulthood; and (ii) the success of subsequent interventions—schooling and training—are influenced by early-life development. Despite recent progress, India generally under-performs on maternal and child health indicators: pre-pregnancy weights and weight-gain during pregnancy are both low. India is already halfway through its demographic dividend, and taking full advantage requires a healthy and educated population. Making these investments in maternal nutrition and sanitation, and enhancing their effectiveness by working to change social norms, can help India exploit this window.

INTRODUCTION: INVESTING IN TOMORROW'S INDIA TODAY

5.1 Imagine the government were an investor trying to maximise India's long-run economic growth. Given constraints on fiscal space and the state's capacity to deliver public services, where would it invest? This chapter argues that some of the highest economic returns to public investment in human capital in India lie in maternal and early-life health and nutrition interventions¹.

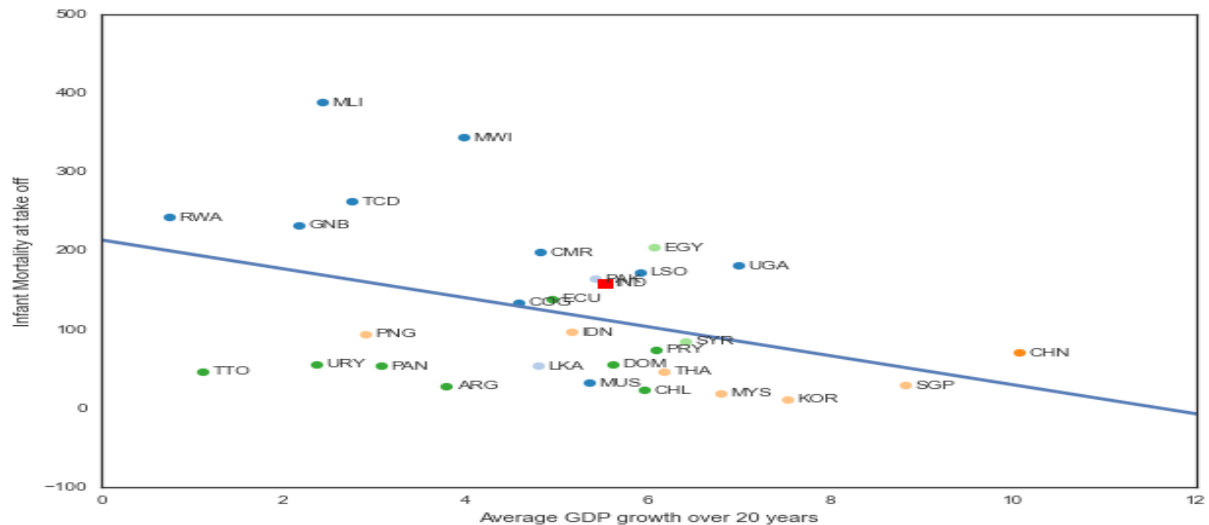
5.2 We begin by investigating the macro relationship between infant health and economic growth. For a sample of countries

that have experienced rapid economic growth, Figure 1 plots the relationship between GDP growth and infant mortality in the year the economy “took off”. It shows that countries with better maternal and infant health “at take-off” grew faster over the subsequent 20 years. This relationship is robust and consistent with other evidence².

5.3 Economists agree that human capital—physical health, education, skills and broader capabilities—is a key determinant of a country's growth potential. The government's investment in skills training—through schemes like the Deen Dayal Upadhyay

¹ Of there are course intrinsic reasons to invest in early-life health; it improves quality of life directly and expands possibilities for the individual. But this chapter shows that, just on very narrow economic grounds alone, there is a strong case for investing in early-life health.

² Notably Bloom and Canning (2000) and Deaton (2013).

Figure 1: Infant mortality at “take-off” and average growth over the next 20 years³

Source: World Bank and Demographic and Health Surveys.

Grameen Kaushalya Yojana—tertiary education, and schooling should all thus be seen as investments in the productivity of tomorrow’s worker.

5.4 But tomorrow’s worker is today’s child or foetus, and evidence from epidemiology and economics suggest that events which occur while a child is in utero (in the womb) or very young (below the age of 2) cast a long shadow over cognitive development and health status even in adulthood⁴. Two reasons explain the extraordinary persistence of early-life conditions. First, the most rapid period of physical and cognitive development in a person’s life occurs in the womb, and epidemiological evidence suggests that a mother’s health and nutritional status significantly affect the biological development of the foetus⁵. Economic research suggests that health hazards—influenza epidemics, being born in a low-rainfall year, polluted air—during the in utero period may thus be particularly difficult to recover from⁶. Second,

there may be “dynamic complementarities” in human capital accumulation, because early-life conditions affect cognitive development⁷. A healthy mother is more likely to give birth to a healthy baby who learns better and stays on in school longer as a result. Thus “skill begets skill”, as Nobel Laureate James Heckman wrote. Indeed, medical research has shown that low birth-weight children benefit less from early-life cognitive stimulus programs, suggesting that dynamic complementarities may kick in quite early in life. Figure 2 illustrates these interactions between maternal, early-life and later-life human capital.

5.5 Figures 3 and 4 show a meta-analysis depicting how the returns to human capital investments vary with the age of the child. Each dot in the graph is an estimate from a research paper examining a program or event’s long-run impact on cognitive ability or test scores (Figure 3, measured in standard deviations) and adult wages (Figure 4, measured in percentage terms). Certain

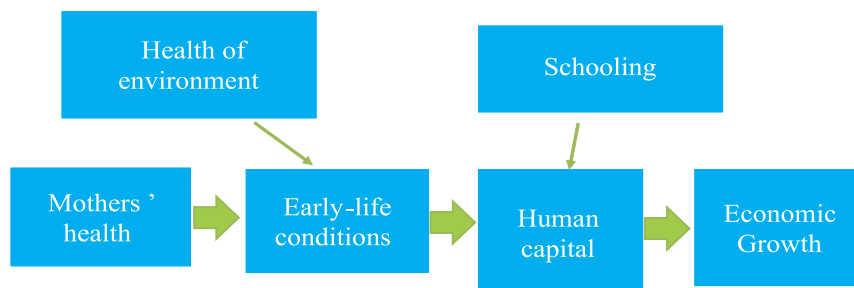
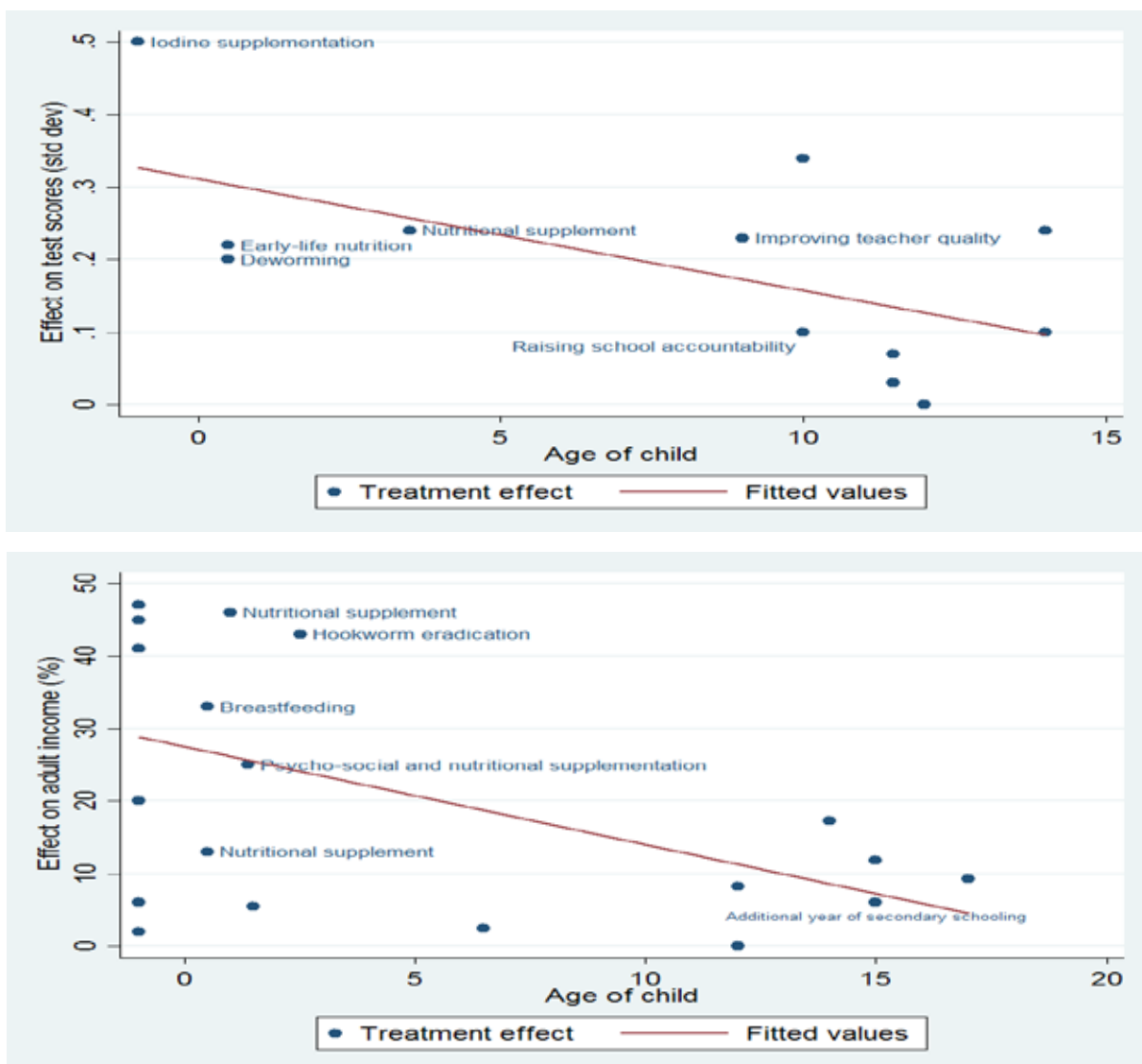
³ Colours classify countries by continent. Blue dots represent Africa, yellow Asia and green South America.

⁴ Currie and Vogl (2013).

⁵ Currie and Almond (2011).

⁶ Currie (2013).

⁷ Heckman (2014).

Figure 2: Human Capital Accumulation and the Demographic Dividend**Figures 3 and 4: Returns to human capital investment by age of child – what does the evidence say?**

Source: Ministry of Finance calculations.

programs are labelled to give an idea of the human capital investment programs that are targeted at various ages. Two things are noticeable from the graphs: first, returns to

investment appear highest for programs that target young children and in-utero health. This is consistent with a large literature, not least the work of Nobel Laureate James

Heckman⁸. Second, programs targeting younger children also appear relatively cheap in comparison to investments made in older children. Iodine supplementation is relatively cheaper compared to improving teacher quality or re-designing institutions to raise school accountability, and also arguably requires less service delivery capacity from the state. As such, on both the benefit and the cost side, early-life investments represent a real opportunity for fiscal and capacity-constrained governments⁹.

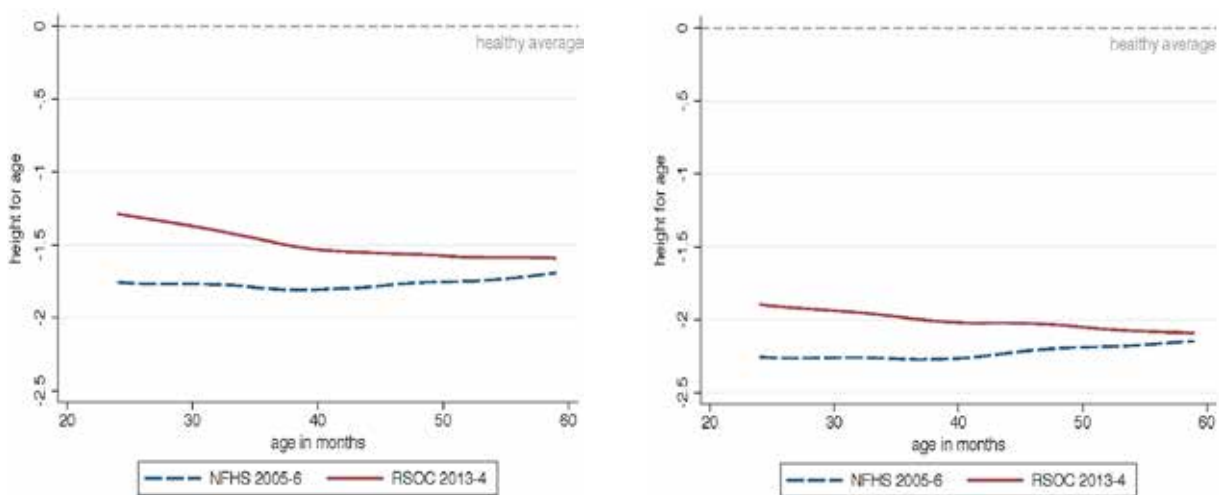
5.6 It is timely to discuss how India should allocate its human capital investments, because she is currently in the middle of her demographic dividend—a period of time when population changes give economic growth a boost by expanding the working-age share of the population. Research has suggested that capitalising on the demographic dividend accounted for one-third of the East Asian growth miracle¹⁰. Projections suggest that India's working-

age population share will continue rising till about 2035-2040, meaning that India has another 25 years—one more generation—to exploit this dividend. Demography in other words is opportunity not destiny.

THE STATE OF (CHILD'S) PLAY IN INDIA

5.7 Height is a good proxy for early-life conditions, and a predictor of later-life outcomes, because both height and cognitive development are partly determined by early-life environment and net nutrition¹¹. Figure 5 shows height-for-age scores over time in urban and rural India. Three things are noteworthy: first, there has been improvement over time in both urban and rural India: children surveyed during the RSOC 2013-14 round are on average taller than those surveyed during NFHS 2005-06. Second, there is a persistent rural-urban height gap which has not closed over the past decade. Third, despite the progress made, India remains a negative outlier—our children are

Figure 5: Height-for-age in urban (left) and rural (right) India



Source: National Family Health Survey (NFHS-3) and Rapid Survey of Children 2013-14.

⁸ See in particular Heckman (2013) for a review of literature on the downward-sloping return on human capital investment by age.

⁹ See Currie and Vogl (2013) for an excellent review of the literature.

¹⁰ Bloom and Williamson (1998) and Bloom, Canning, and Malaney (2000)

¹¹ A child's "net nutrition" is defined as the sum total of (i) the nutrition available from the mother in the womb and during breastfeeding, (ii) the quantity and quality of the food that complements breast milk from 6-24 months, and (iii) energy losses due to disease and infection, and poor absorption of nutrients.

on average 2 standard deviations shorter than the healthy average.

5.8 These indications of poor early-life health have later-life human capital consequences. Most countries show a height-cognitive development gradient¹², but Figure 6 shows that it is particularly steep in India—twice as steep as in the US in fact¹³. Two things stand out from Figure 6¹⁴. First, taller Indian children are considerably better readers than shorter ones: the fraction of boys able to read increase by from 40 to 60 per cent as height goes from 115 to 135 centimetres. This gradient has also been relatively stable over time. Second, the levels—absolute reading ability has not increased over time.

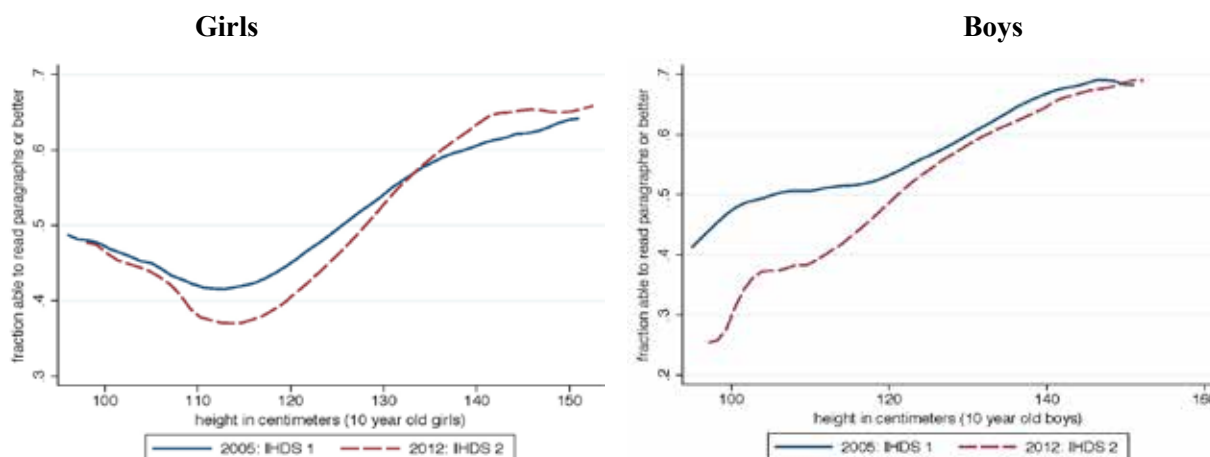
THE STATE OF MATERNAL HEALTH

5.9 A child's first 1000 days on earth are thought to be a “critical period” of physical and cognitive development with long-run consequences. A child's life chances during this period are ultimately dependent on his

or her mother. The main causes of mortality in the first month of life differ substantially from the determinants of demise in the subsequent 11 months. Neonatal mortality—the number of infants that die in the first 30 days of life—is an important indicator of *in utero* nutrition. Relative to its level of economic development, India has a high neonatal mortality rate. Out of all the infants who die in India, 70 per cent die in the first month. A leading cause of this is low birth weight. Babies with low birth weight are more prone to dying in the first few days of life¹⁵; and women who begin pregnancy too thin and who do not gain enough weight during pregnancy are far more likely to have low birth weight babies who die in the first few days of life than women who are better nourished during pregnancy.¹⁶

5.10 Data¹⁷ suggests that 42.2 per cent of Indian women are underweight at the beginning of pregnancy. By contrast, only 35 per cent of non-pregnant women

Figure 6: Height and cognitive development are positively correlated



Source: Indian Human Development Survey (IHDS) 2005 and 2012.

¹² See Deaton (2007), Schick (2010), Paxson (2008).

¹³ Spears (2011).

¹⁴ The flattening of the lines for girls at the bottom of the height distribution may merely reflect statistical noise, as fewer than 5% of measured 10 year old girls were less than 107 centimetres tall; allowing for a quadratic term does not improve the fit of a linear regression.

¹⁵ See Ota et al (2011).

¹⁶ A woman is considered to be underweight if her body mass index, or weight in kilograms divided by her height in meters, squared, is less than 18.5.

¹⁷ From the Demographic and Health Surveys.

of childbearing age are underweight. So pregnant women are perversely more likely to be underweight. Not only are Indian women too thin when they begin pregnancy, they also do not gain enough weight during pregnancy to compensate for low pre-pregnancy body mass. Women in India gain only about 7 kilograms during pregnancy, which is substantially less than the 12.5–18 kg gain that the WHO recommends for underweight women¹⁸.

5.11 Figure 7 depicts weight gain during pregnancy against initial weight for a sample of developing countries. The figure shows that lighter women generally gain more weight during pregnancy. Despite recent progress, Indian women have relatively low pre-pregnancy weights compared with other countries, and should be expected to gain more weight during pregnancy. Figure 8 shows initial weight and during-pregnancy weight gain across 3 wealth terciles, plotted against number of months pregnant. Women from richer households in India start pregnancy heavier, but do not gain more weight during pregnancy. This suggests that

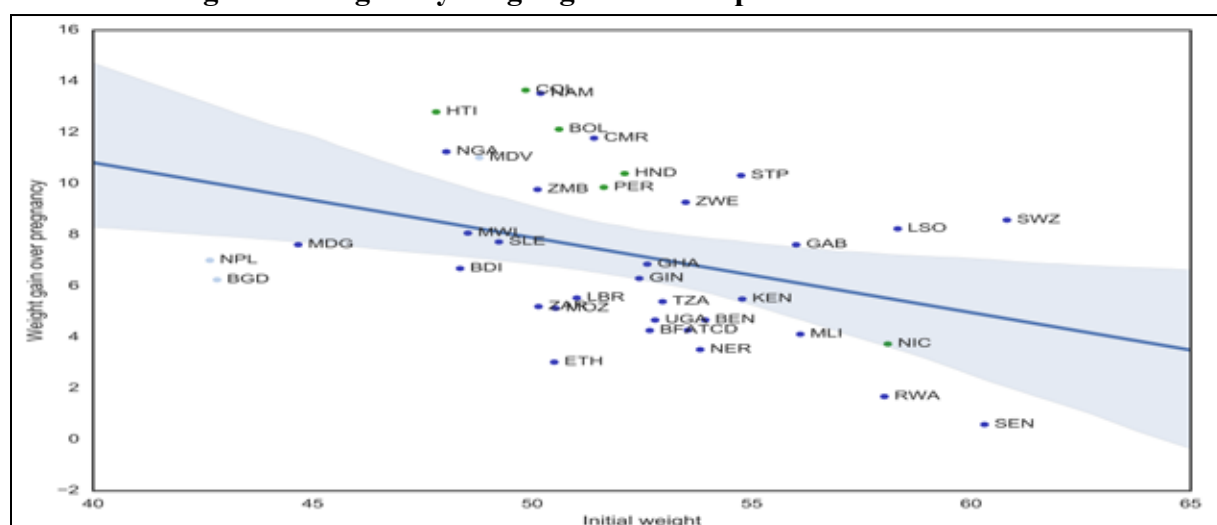
resources are at least part of the reason for low pre-pregnancy weight.

5.12 Another reason for poor maternal health is that social norms accord young women low status in joint households. It is telling that we see much higher underweight rates for young women than older men—40 per cent of young women are underweight while only 25 per cent of middle-aged men are. These within-household nutritional differentials are stark¹⁹. A recent study shows that children of younger brothers in joint family households are significantly more likely to be born underweight than children of their older brother. This is attached in part to the lower status of younger daughter-in-laws in families²⁰.

IMPROVING MATERNAL HEALTH IN INDIA

5.13 Given that maternal health casts a long shadow on an individual's cognitive development and life chances, investing in maternal health could become a top policy priority of the government. The National Food Security Act of 2013 legislated a universal cash entitlement for pregnant women of at

Figure 7: Pregnancy weight gain with respect to similar countries

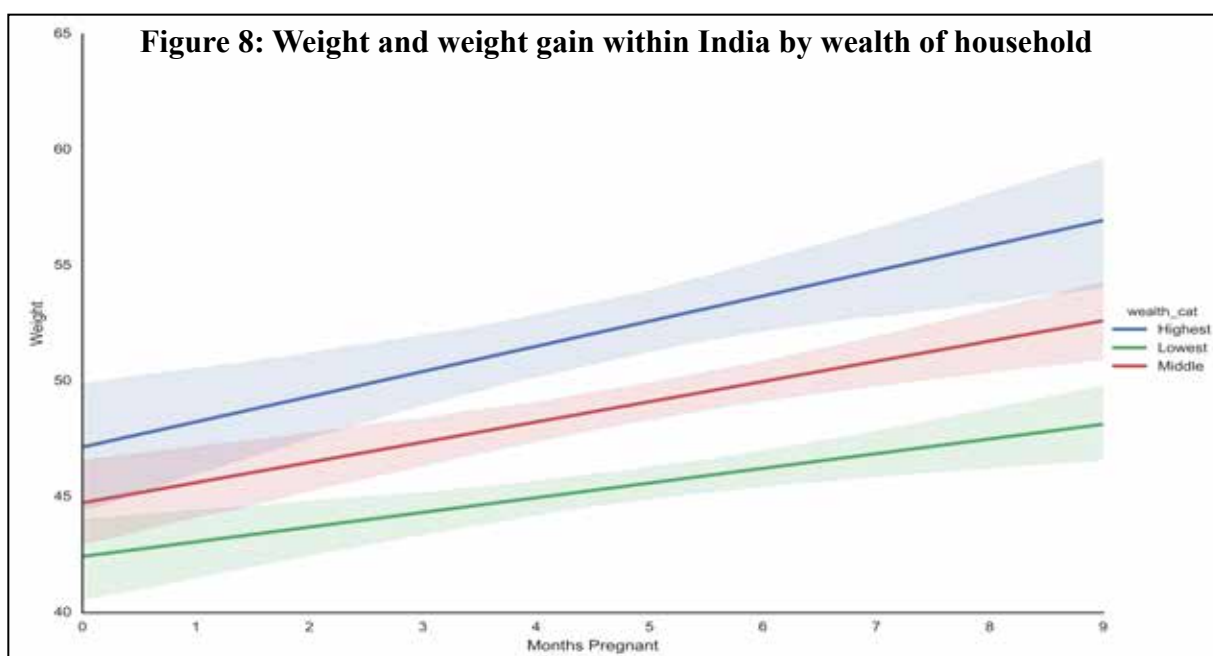


Source: Demographic and Health Surveys and Rapid Survey of Children

¹⁸ All numbers in the paragraph are based on Coffey (2015).

¹⁹ When compared across the same ages, till about age 35, fraction of underweight women exceeds that of men by at least 5 percentage points.

²⁰ See Coffey, Khera and Spears (2013).



Source: Rapid Survey of Children 2013-14.

least 6,000 rupees. This program presents a promising opportunity to help improve nutrition during pregnancy, a problem which affects both urban and rural women, and the middle-class and the poor.

5.14 If pregnant women receive cash payments from the government, and if families convert these payments into more, higher-quality food and more rest for pregnant women, maternity entitlements will improve infants' birth weights. This would have lasting benefits for health and human capital.

5.15 However, getting government funds into the hands of pregnant women is not a straightforward task, nor is it certain that the extra cash will be converted into more, better food and rest. Therefore, the cash transfer could be paired with education about how much weight a woman should gain during pregnancy and why weight gain during pregnancy is important. The cash transfer should be given in a single, lump-sum payment early in pregnancy to avoid delays, reduce administrative costs, and ensure that it is possible for the household to spend the

money on better food during pregnancy.

5.16 Is it doable? In a recently conducted study in 261 (treatment) villages women were provided conditional cash transfers (CCTs) of ₹250 at the end of every month.²¹ While easy to monitor aspects such as attendance at village health, sanitation and nutrition days, and weight gain during pregnancy and child weight monitoring showed a significant increase in treatment value to the tune of 30 percent, behavioural patterns like breast-feeding, corrective treatment during diarrhoea were around 4-5 percent. With careful design and significant investment of state capacity, maternal health could be significantly improved during pregnancy.

Disease Externalities: Open defecation

5.17 A growing literature in development economics is documenting the importance of exposure to disease in early life. In one well known example, Hoyt Bleakley has studied the effects of the eradication of hookworm from the historical United States, when it more closely resembled today's developing countries. Bleakley found that children who

²¹ Conducted by Oxford Policy Management and shared with the Ministry of Finance.

benefited from a sanitation and hookworm treatment campaign went on to learn more in school and to grow into adults who earned more income.

5.18 There are a host of disease externalities one must closely consider including drinking water, sanitation and air pollution amongst others. This section considers one of the biggest problems hurting early-life health in today's India: enteric infection due to open defecation.

The problem of open defecation

5.19 One significant and internationally unique source of early life disease in India is open defecation, especially in rural India. As Table 1 documents, open defecation in India is much more common than in even much poorer countries. India has the largest rural open defecation rate in South Asia by a very large margin. It is interesting to note that in Bangladesh open defecation has almost been fully eliminated.

Table 1: Open defecation in India from the South Asian perspective

	Rural open defecation (2015, Per cent)	GDP per capita (2013, World Bank)
India	61.3	1,498
Nepal	37.5	694
Pakistan	21.4	1,275
Afghanistan	17.4	665
Bhutan	3.8	2,363
Bangladesh	1.8	958
Sri Lanka	0	3,280

Source: Hathi et al (2014).

5.20 According to WHO and UNICEF Joint Monitoring Programme estimates, 61 per cent of rural Indians defecate in the open in 2015, compared with only 32 per cent of rural people in sub-Saharan Africa. Even sanitation laggards perform better than India, with 17 per cent rural open defecation in Afghanistan and 15 per cent in Kenya. Moreover, many

people in rural India who live in households that contain working latrines that are in use by other household members nevertheless defecate in the open.

5.21 These facts indicate that income constraints may not be the main determinant of open defecation. Research suggests that rural Indian households reject the types of latrines promoted by the World Health Organization and the Indian government partly because their pits needed to be emptied every few years. Latrine pit emptying, which is routine in other countries, is substantially complicated by rural India's history of untouchability- work of disposing of human faeces is associated with severe forms of social exclusion and oppression.

5.22 Open defecation spreads germs into the environment, and therefore makes growing children sick. One form of this sickness is diarrhoea, which robs growing children of the food that they eat. Another resulting disease could be environmental enteropathy, a chronic inflammatory response of the intestines to repeated exposure to the germs spread by open defecation; it reduces the ability of children's intestines from absorbing nutrition²².

5.23 In fact, the consequences of open defecation for Indian children may be worsened by high population density than simple international comparisons may suggest. Figure 9 presents new evidence of this important association; the problem of child stunting is worse in villages where a higher percentage defecate in the open. It plots the height for age indicator against the fraction of village that defecates in the open. The gap between red (dashed) and the blue (solid) line is the private health benefit of a toilet: households who do not defecate in the open have higher height-for-age scores than households who openly defecate, no matter the village's level of open defecation. The

²² See Korpe (2012).

downward slope of both lines shows that as the number of people who openly defecate in the village increases, height-for-age indicator falls further below its healthy level. There sharpest falls in height-for-age are seen as the fraction of village households who openly defecate approaches 100 per cent. This is an example of a social externality.

Addressing open defecation

5.24 All this evidence points to the vital importance of the Prime Minister's Swachh Bharat Mission, which has raised the profile of the pressing problem of open defecation especially in rural India, and has committed to ending it as quickly. In the last year alone, the government built over 80 lakh toilets. Similarly, the UN's Sustainable Development Goals commit to ending open defecation worldwide by 2030. The success of these goals will naturally depend largely on the pace of reduction in open defecation in rural India, because this is where most people who defecate in the open live.

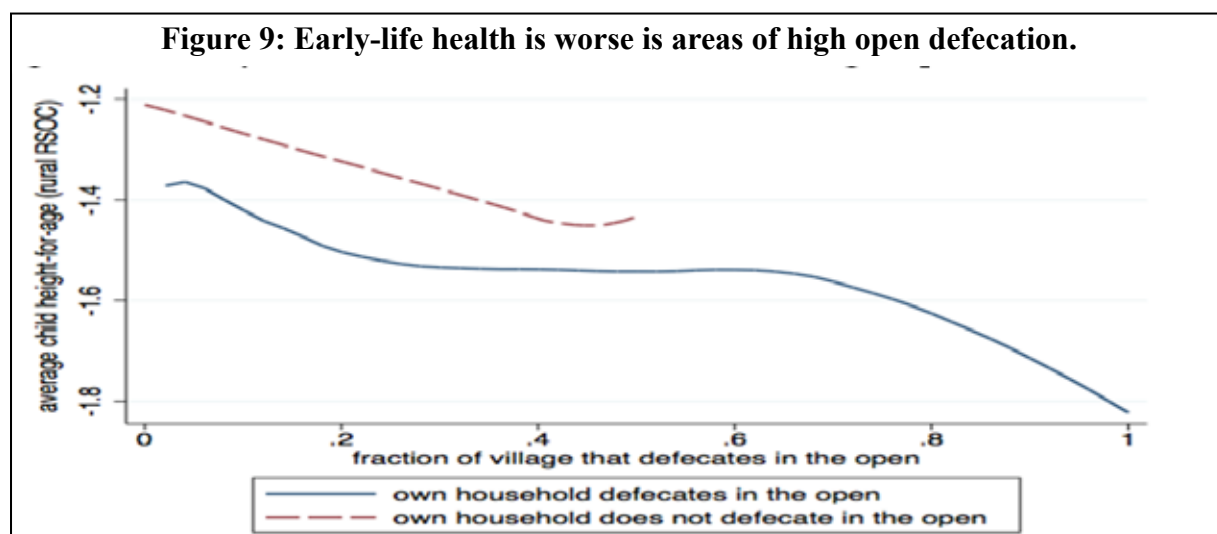
5.25 Historically, open defecation in India has declined by about one percentage point per year. If the Sustainable Development

Goal of eliminating open defecation by 2030 is going to be met, this historical rate of decline must be more than tripled, and that acceleration must be sustained over fifteen years. It is clear that this represents a major challenge.

5.26 Evidence from a variety of sources shows that the next challenge in rural India is behavioural²³. Going forward, it is important to understand barriers to toilet adoption in rural India and promote latrine use.

CONCLUSION: WHAT OTHER HIGH-RETURN INVESTMENTS CAN THE GOVERNMENT MAKE?

5.27 Early life interventions can be an important policy tool for improving the health and human capital of the Indian population, and in this way be a critical investment in long-run economic growth. A big challenge here as in many other instances is deeply entrenched norms and facilitating behavioural change. One can build clinics in villages or transfer money to pregnant mothers or build latrines, but how does one bring out the right usage of all this physical capital is the next



Source: Rapid Survey of Children (2013-14).

²³ A salient lesson of the SQUAT survey (squatreport.in) is that achieving latrine use requires behaviour change. A large scale randomized trial by Water and Sanitation Program in Madhya Pradesh (<http://www.wsp.org/sites/wsp.org/files/publications/WSP-India-Madhya-Pradesh-IE-Research-Brief.pdf>) documents substantial increments of latrine use through education and information.

task in front of the government.

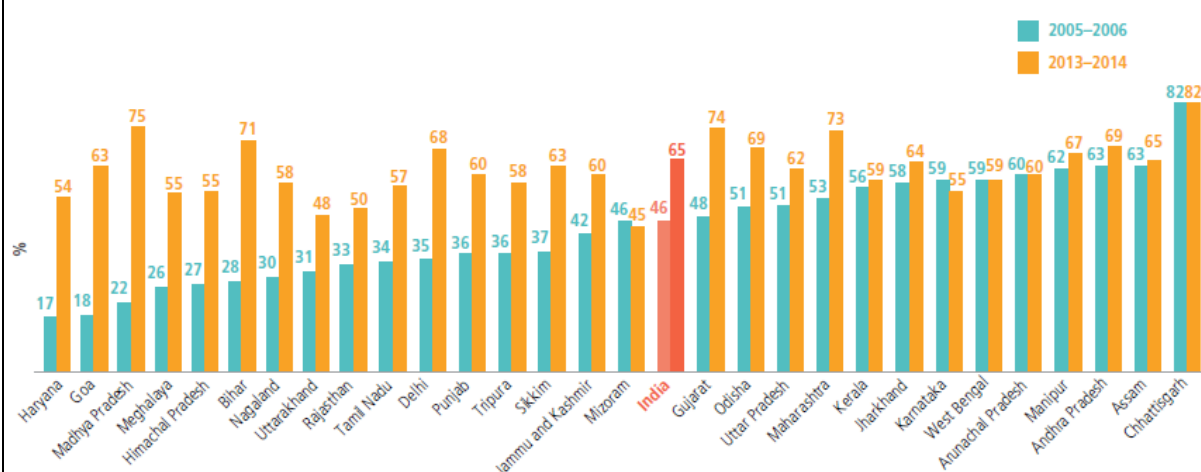
5.28 Two such interventions are already part of the government's policy agenda – providing food to pregnant mothers under the National Food Security Act and addressing open defecation via the Swachh Bharat Mission. Table 2 shows interventions that have been supported by rigorous evidence to significantly improve maternal and early-life health.

5.29 The breastfeeding example illustrates how some investments by the state can lead to tangible changes in changing norms in a relatively short period of time. Government action has significantly raised the percentage

of mothers who exclusively breastfeed their children during the first 6 months of life. This has been due to programmes like the Janani Suraksha Yojana and other schemes under the Integrated Child Development Scheme that are delivered via Anganwadi programmes. The proportion of breast feeding mothers is now 62 per cent, with the largest improvements in the worst states.

5.30 The government has recognised the importance of influencing social norms in a wide variety of sectors—persuading the rich to give up subsidies they do not need, reducing social prejudices against girls, educating people about the health externalities

Figure 10: Changes in breastfeeding rates over the past decade, Per cent



Source: Authors, based on data from India, Ministry of Women and Child Development (2015).

Table 2: High Impact Interventions

Stage	Intervention	Reason
Pre-pregnancy	Folic acid supplementation	Improves maternal nutrition, reducing low birth-weight and neonatal mortality
During pregnancy	Calcium supplementation	
During pregnancy	Protein supplementation	
Pre-pregnancy	Compulsory iodising of salt	Reduces stunting
Postnatal	Encouragement to breastfeed	Reduces neonatal and post neonatal mortality
Postnatal	Vitamin A supplementation	Reduces infant mortality
Postnatal	Zinc supplementation and treatment for diarrhoea	
Postnatal	Deworming	Reduces stunting and wasting

Source: World Bank.

of defecating in the open, and encouraging citizens to keep public spaces clean. The government has a progressive role to play in changing norms, and indeed governments all over the world have embarked on systematic ways of studying how to promote behavioural change. Creating such a *Nudge* unit within government as other countries have done may be a useful way of taking this agenda forward.

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Bounties for the Well-Off

Subsidies for the poor tends to attract policy attention. But a number of policies provide benefits to the well-off. We estimate these benefits for the small savings schemes and the tax/subsidy policies on cooking gas, railways, power, aviation turbine fuel, gold and kerosene, making assumptions about the definition of “well-off” and the nature of neutral policies. We find that together these schemes and policies provide a bounty to the well-off of about ₹1 lakh crore. We highlight that policies that are based on providing tax incentives will, in India, benefit not the middle class but those at the very top end of the income distribution. For example, the average income of those in the 20 percent tax bracket places them roughly in the 98.4th percentile of the Indian income distribution, and the corresponding figure for the 30 percent tax bracket is the 99.5th percentile.

INTRODUCTION

6.1 The government spends nearly 4.2 per cent of GDP¹ subsidising various commodities and services. Public discussion of these subsidies focuses on their importance in the economic lives of the poor. This chapter shows that the Indian state’s generosity is not restricted to its poorest citizens. In fact, in many cases, the beneficiaries are disproportionately the well-off. In at least one area – corporate taxes – the government has recently taken decisive action, by identifying and quantifying exemptions amounting to about ₹62,000 crore² and announcing a clear path for phasing them out. A move to GST would also eliminate leakages due to rationalisation of indirect tax

exemptions estimated to cost ₹3.3 lakh crore.³ These commendable efforts could be extended to other areas where the poor and vulnerable are not exposed.

6.2 The aim of this chapter is to document some of this largesse, in areas that often attract policy attention. Our list is neither exhaustive in scope, nor precise in its estimates. But it nonetheless allows a broad understanding of how much government subsidises the better-off.

6.3 We focus on seven areas: small savings schemes, kerosene, railways, electricity, LPG, gold, and aviation turbine fuel (ATF). In each case, we highlight salient facts and estimate the subsidy’s magnitude.

¹ Economic Survey 2014-15, Vol. 1, Chapter 3.

² This is projected number for 2014-15 as per budget 2015-16.

³ Subramanian Committee Report on the Revenue Neutral Rate and Structure of Rates for the Goods and Services Tax (GST), available at http://finmin.nic.in/the_ministry/dept_revenue/Report_Revenue_Neutral_Rate.pdf. The exemption amount is calculated as 2.7 per cent of GDP at current market price for the year 2014-15.

“SMALL” Savings

6.4 “Small” savings schemes were initially created to mobilise saving by encouraging “small earners” to save, and offered above-market deposit rates in accessible locations like post offices for this purpose. Recent discussions have focused on one efficiency cost of “small” savings schemes – how they hinder monetary policy transmission. Because small savings schemes offer high and fixed deposit rates (within year) and compete with banks, it is difficult for banks to reduce their own deposit rates and hence pass on policy rate cuts to consumers in form of lower lending rates. Recently, the government has reduced rates on some small savings schemes to make them more responsive to market conditions.

6.5 But questions also arise about the equity of small savings schemes: what is the rate offered on these instruments, who benefits from them, and how large are these implicit subsidies? These findings are highlighted in Tables 1 and 2.

6.6 It is misleading to characterise these savings schemes as “small”, because in fact

there are at least three types of schemes, only one of which can really qualify as “small.” This first set of “actually small” schemes ranges from postal deposits to schemes for the elderly and women. The second set is of “not-so-small” schemes, which includes the most important of all – the Public Provident Fund (PPF). And the third category is “not-small-at-all” schemes, which includes tax-free bonds issued by designated public sector companies like IRCL, IIFCL, PFC, HUDCO, NHB, REC, NTPC, NHPC, IREDA, NHAH and others, supposedly to finance infrastructure projects.

6.7 The interest rates on most of these schemes are fixed (for year), but they vary in magnitude and periodicity. Whatever the terms, the key determinant of their real return is their tax treatment. Ideally, savings schemes should be taxed according to the “EET principle”. The first “E” stands for tax exemption of the contribution, the second E for exemption of interest income, while T stands for taxation of the principal (and interest) when it is withdrawn. The logic of this principle is explained in the Box 1 at the end of this section.

Table 1: Characteristics of savings schemes

Scheme	Tax Treatment (\$)	Compound- ing of Interest	2011-12@	2012-13@	2013-14@	Interest Rate*
Post Office Savings Account	TTT**	Yearly	868.4	921.9	953.4	4.0%
Post Office Savings Time Deposit##	TTT	Quarterly	470.9	531.9	611.6	8.4%
Post Office 5-year Time Deposit	ETE	Quarterly	10.5	18.5	21.7	8.5%
Post Office Monthly Income Account Scheme	TTT	Monthly	284.2	190.5	179.9	8.4%
Senior Citizen Savings Scheme	ETE	Quarterly	37.2	22.8	23.5	9.3%
5 Years National Savings Certificate (VIII Issue)	ETE	Half yearly	103.3	191.0	167.2	8.5%
10 Years National Savings Certificate (IX Issue)	ETE	Half yearly	0.0	19.6	35.6	8.8%
15 year Public Provident Fund Account	EEE	Yearly	366.6	443.6	506.7	8.7%
Tax Free Bonds #	TET	-	61.0	34.9	144.0	7.6%

Notes:

\$ The tax treatment of any scheme has three stages- first at the time of deposit, second on the interest accrued on the deposits, and third at the time of withdrawal. For example, under an EEE scheme deposits, interest accrued, and withdrawal of money are all tax exempt.

* Interest rates are for the year 2014-15.

** Any scheme which attracts tax at the first stage (at the time of contribution) is deemed as taxed at the time of withdrawal.

Includes post office 1-year, 2-year, 3-year time deposit and 5 year recurring deposits.

@ Amount is gross deposit in ₹ Billion.

Interest rate on NHAH 15Y bond of 2015-16.

6.8 Most schemes in the “actually small” category are TTT – neither the interest nor the contribution to the scheme are exempt from tax under Section 80C⁴ of the Income Tax Act. By contrast, the PPF, which is a “not-so-small” scheme is EEE: the interest is tax exempt, contributions are tax exempt, but up to a limit of ₹ 1.5 lakhs, and tax exempt at the time of withdrawal. Finally, schemes in the “not small at all” category are TET – the contribution is taxable but the interest is tax exempt and there are no limits (unless otherwise indicated at the time, they are issued) on the permissible subscription to these bonds.

6.9 The effect of all these special treatments can be summarised into one metric—the effective rate of return on these instruments compared with the return on a comparable savings instrument, say saving account deposits in the case of post office savings,

and 15-year G-Sec in the case of PPF and tax-free bonds. Table 2 shows that the return on PPF contributions and tax-free bonds are particularly high (Table 2).

6.10 We can indirectly infer how well-off beneficiaries of the PPF scheme are. Roughly 62 per cent of total 80C deductions in FY 2013-14 were accounted for by taxpayers with gross taxable income more than ₹4 lakh (47 per cent by those earning more than ₹5 lakh). These individuals are at the 97.3rd and 98.4th percentiles of the income distribution respectively – hardly “small”.

6.11 While not all 80C deductions are PPF deposits, they appear very sensitive to 80C contribution rules. In 2014-15, when the limit for the 80C deductions was increased by ₹ 50,000 there was an almost a one to one increase in 80C claims for those in the 20 and 30 per cent tax brackets (Figure-1A and B). From independent data from State Bank

Table 2: Implicit Subsidies in Savings schemes

	Outstanding as on 31st March 2015 (in ₹ crore)	Interest Rate* (%)	Effective Interest Rate** (%)	Comparable Market instrument rate (%)	Implicit subsidy rate @	Implicit Subsidy (in ₹ crore) ^
Actually Small						
Post office Saving Account	47422	4.0	4.0	4.0	0.0%	0
Not-So-Small						
PPF	319549	8.7	16.0	10.0	6.0%	11900 (##)
Not-Small-at-All						
Tax Free bonds (2011-12/2015-16) #	2997	7.6	13.7	10.0	3.7%	111

Notes:

* Rate of interest is for the year 2014-15.

** The effective interest rate is the internal rate of return (IRR) on the scheme after incorporating the impact of tax treatment on the deposit and interest accrued. The assumed average tax rate for the IRR calculation is 15 per cent.

\$ Comparable market instrument is saving account deposits in the case of post office savings and 15 year G-Sec in the case of PPF and tax free bonds.

@ Implicit subsidy rate is difference between the effective interest rate and comparable market instrument.

^ Implicit subsidy is the subsidy rate multiplied by the outstanding balance of the scheme as of 31st March 2015.

Interest rate on 2015-16 NHA 15-year bond.

As per income tax return data, around 62 per cent of 80C claims are from the people who have gross income greater than ₹4 lakh, therefore the implicit subsidy to well-off for PPF is 62 per cent multiplied by ₹19182 (which is 6 per cent multiplied by outstanding amount in PPF).

⁴ 80C is a section in Income tax Act of India, which allows deduction from Gross Income for various savings schemes.

of India, we found that this increase was associated with increases in PPF deposits.

6.12 In sum, the effective returns to PPF deposits are very high, creating a large implicit subsidy which accrues mostly to taxpayers in the top income brackets. The magnitude of this implicit subsidy is about 6 percentage points – approximately ₹12,000 crore in fiscal cost terms.

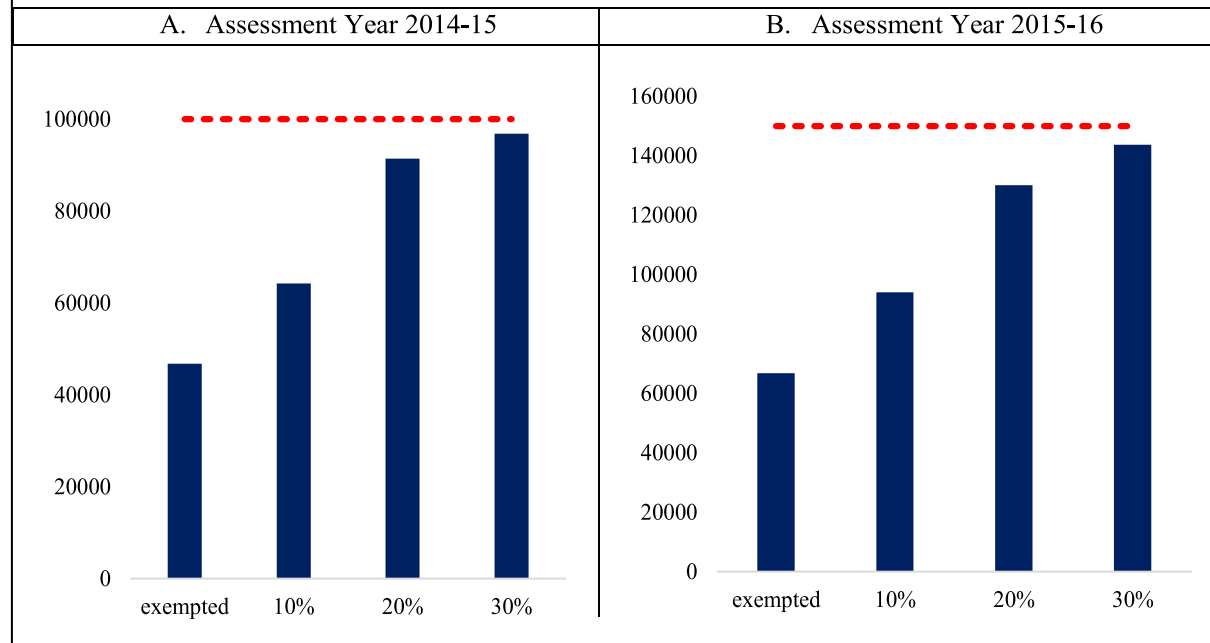
6.13 The interest subsidy on tax-free bonds is slightly smaller—about 3.7 percentage points—but because there are no limits on permissible contributions (other than that dictated by the supply of such instruments), the main beneficiaries are large savers who can set aside large amounts. For example, the average size of the investment in tax-free bonds by the individuals was nearly ₹ 6 lakhs in FY 2013-14, which was six times the total exemption limit under Section 80C.

6.14 In light of a number of tax incentives for savings given to individuals it is worth asking how wealthy they are in relative terms. So, we identify the tax thresholds for the 10, 20 and 30 percent tax bracket which

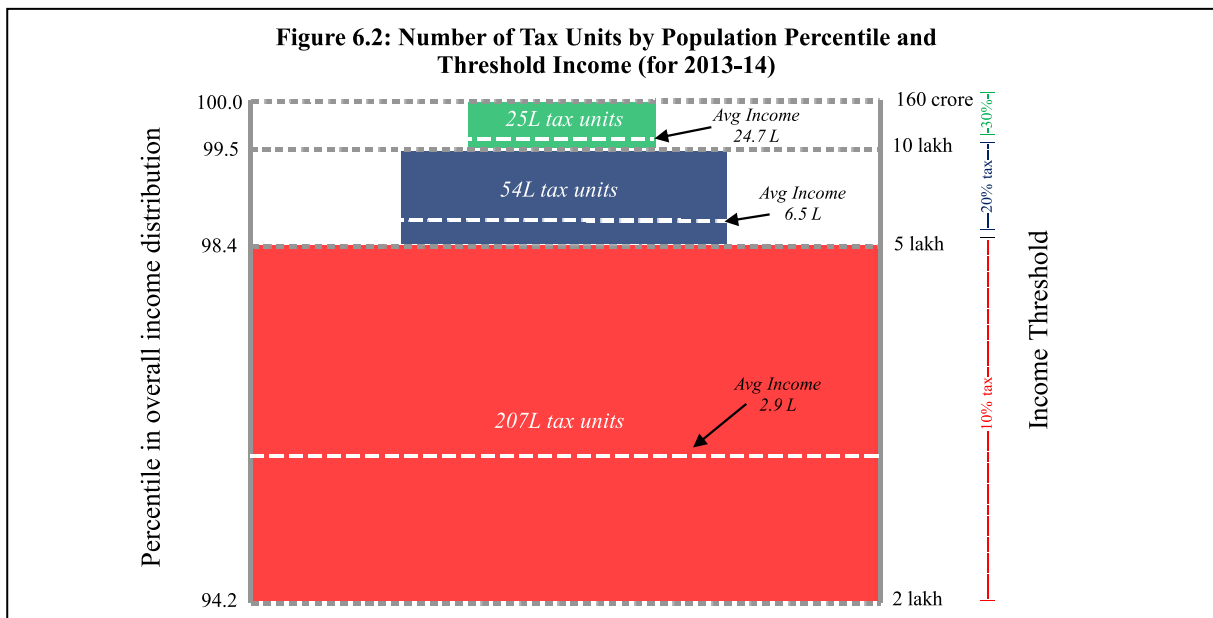
were 2, 5, and 10 lakhs, respectively in FY 2013-14. We then compute the average incomes of the people in these tax brackets and see where they stood in the overall income distribution (Figure 6.2). The results are striking. In 2013-14, the average income in the 30 percent threshold was ₹24.7 lakhs and these earners were roughly 25 lakhs in number (1.1 percent of all taxpayers) and placed in the top 0.5 percent of the overall Indian income distribution. Similarly, the 54 lakh income earners in the 20 percent tax bracket represented the top 1.6 percent of the Indian income distribution.

6.15 These numbers are striking and have one policy implication: any tax incentives that are given, for example, for savings, benefit not the middle class, not the upper middle class but the super- rich who represent the top 1-2 percent of the Indian income distribution. Now, it is by definition true that top taxpayers will be beneficiaries of tax incentives. However, in most countries, they will range from being middle class to very rich. In India, they are the super-rich.

Figure 6.1: Average 80C claim under different tax brackets



Source: Department of Revenue



Box 6.1: Tax Treatment of Savings

Income tax is inherently biased against savings; it leads to double taxation in so far both the savings and the earnings are taxed. In general, the tax system provides for a mechanism to eliminate this bias and promote savings in the economy. This mechanism takes the form of a tax incentive by way of a deduction for contribution to specified savings instruments. In India, savings in several instruments are further incentivised by exempting fully, or partially, the earnings at the accumulation stage as well as the withdrawals from tax (both the contribution and the earnings). In effect, savings are subject to exempt-exempt-exempt (EEE) method of taxation i.e. they are exempt at all three stages of contribution, accumulation and withdrawal.

The case for concessional tax treatment of savings is built on the consideration that a tax concession for savings leads to higher post-tax return for the investor. The higher returns, in turn, create a positive substitution effect whereby, in favour of savings rather than current consumption. However, what is missed out is the fact that it also creates a disincentive for savings (income effect), since the higher returns now require lower savings to meet the lifetime savings target.

There is some empirical evidence to suggest that the positive and the negative effects are neutralized at the economy level. Further, the tax incentives for savings, as designed in India, do not encourage net savings (contribution plus accumulation minus withdrawals) since withdrawals are also exempt from tax. In addition, national savings comprise of household savings, government savings and corporate savings. To the extent, tax incentives for savings lead to fiscal loss, government savings are adversely impacted, thereby partially neutralizing the increase in household savings.

Further, tax incentives for savings distort the interest structure and choice of saving instruments, and merely help mobilize funds to specified savings instruments. They also increase the interest rate at which households are willing to lend funds to banks (i.e., make deposits), thereby adversely affecting investment. They are also regressive in as much as they provide relatively higher tax benefits to investors in the higher tax bracket; in fact, the real “small savers”, who are largely outside the tax net, do not enjoy any form of tax subsidy on their savings. Overall, tax incentives for savings, more so as designed in India, are economically inefficient, inequitable and do not serve the intended purpose. Hence, there is a strong case for review of the design of the tax incentives for savings schemes.

While there should be no tax incentive for savings, the question is what should be the tax treatment of savings so as to eliminate the inherent bias under income tax. The emerging wisdom is that savings should be taxed only at the point of contribution (TEE) or withdrawal (EET); the latter being the best international practice on several counts.

First, savings (contribution) reduce cash flow and therefore, the ‘ability’ to pay. Therefore, taxation at the point of contribution would create hardship and act as a disincentive to save. However, taxation at the point of withdrawal

Contd....

(principal or earnings) occurs when the ability to pay is greater and therefore, justified on principles of taxation. Second, under the TEE method, taxation at the point of contribution does not provide any immediate incentive to save nor does exemption of withdrawals discourage dissavings. However, under the EET method of taxation of savings, full deduction from income at the point of contribution and accumulation acts as an incentive for savings while taxation at the point of withdrawal penalizes dissavings. The combined effect is that it encourages the saver to build a self-financing old age social security system.

Third, under the TEE method, there is no incentive for consumption smoothening since withdrawals are exempt irrespective of the amount. However, the EET method allows for consumption smoothening particularly in old age since taxation of withdrawals incentivizes postponement of consumption. Under a progressive personal income tax rate structure, there is an in-built incentive to restrict withdrawals to meet necessary consumption only since lower withdrawals imply taxation at lower marginal tax rate and hence, lower tax liability. Consequently, the potential for old-age poverty is minimized.

Fourth, the EET method provides discretion to the saver for tax smoothening and minimize the tax liability arising from any bunching of gains. Fifth, because taxation is at the last point in the savings process, there is no uncertainty about the potential tax liability unlike in the case of TEE method where the saver is uncertain whether the Government would impose a tax at the point of accumulation or withdrawal to raise revenue to overcome the fiscal crisis.

Sixth, the EET method is extremely simple in terms of compliance and administration since it can be operationalized by opening an account with a designated fund which, in turn, can invest in a mix of a broad range of debt and equity instruments depending upon the risk appetite of the saver. All earnings are required to flow into the same account and withdrawals, if any, can be subject to withholding tax. It does not require any complex tracking mechanism to prevent leakage of revenue. It is not necessary for the saver to maintain details of savings and earnings to claim tax benefit.

Finally, most developed countries and many developing countries are implementing the EET method of taxation of savings.

In view of the foregoing, India should move, in a phased manner, to the EET method of taxation of savings. Interestingly, the New Pension Scheme (NPS) is already being subjected to the EET method of taxation. Therefore, deductions under Section 80C and 80CCD should be re-assessed to move toward a common EET principle for tax savings.

OTHER BOUNTIES

6.16 For a number of commodities including gold, LPG, kerosene, electricity, railway fares, aviation turbine fuel, we have calculated the implicit subsidy or tax rates. We define the “poor” as those whose consumption is in the bottom three deciles (lowest 30 per cent) of the population, and the “better off” as the rest⁵, except in case of electricity and railways where this classification is different.

Gold

6.17 Gold is a strong demerit good: the ‘rich’ consume most of it (the top 20 per cent of population account for roughly 80 per cent of total consumption) and the poor spend almost negligible fraction of their total expenditure

on it. Yet gold is only taxed at about 1-1.6 per cent (States and Centre combined), compared with tax of about 26 per cent for normal goods (the central government’s excise tax on gold is zero compared with 12.5 per cent for normal commodities.) In other words, there is a huge subsidy of about 25 percentage points (the difference between average tax on other commodities and tax on gold). About 98 per cent of this subsidy accrues to the better-off and only 2 per cent to the bottom 3 deciles. And this is an underestimate because the data on consumption is from the NSS, which is known not to capture those at the very top end of the income and expenditure distribution.

⁵ The decile classes in the population are calculated from 68th Household Consumer Expenditure Survey of NSS (2011-12) data.

Railway

6.18 There is a difference between the subsidy for the better-off and the poor in railways, because fares vary in different classes of travel. We combine the categories of A/C, first class, second class, sleeper as the primary modes of rail travel by rich and unreserved category as mode of travel used primarily by the poor. We then compute the implicit subsidy rate for these categories, by comparing the actual fare charged to the consumers with the marginal cost of supply (i.e. difference between earning per km and cost per km)⁶. On this basis, the subsidy rate (implicit subsidy as a ratio of actual cost of journey to railways) amounts to 34 per cent for the better-off and 69 per cent for the poor. Note that there is no provision for covering fixed costs, so the calculation understates, perhaps significantly, the subsidy.

LPG

6.19 LPG consumers receive a subsidy of ₹238.51 per 14.2 kg cylinder⁷ (as in January 2016), which amounts to a subsidy rate of 36 per cent (ratio of subsidy amount to the market price). It turns out that 91 per cent of these subsidies are accounted for by the better-off as their share of consumption of LPG in the total consumption is about 91 per cent; while the poor account for only 9 per cent of LPG consumption and hence only 9 per cent of subsidies go to them.⁸ So, this subsidy, aimed at benefitting the poor, is hardly being used by them. Another important point to note is that LPG is subsidized heavily, as compared to other energy related commodities like petrol, diesel etc which are taxed at very high rates, hence the effective subsidy to the better-off on account of LPG is much more

than the actual direct subsidy of 36 per cent (more details in next section).

Electricity

6.20 In the case of electricity, like railways, tariffs vary on levels of consumption, so there is *de facto* targeting of the subsidy. Based on data available for two states (Tamil Nadu and Delhi), we have estimated the subsidy for the better-off and poor by comparing the average billing rate, which depends on levels of consumption, with the average cost of supply of power. Implicit subsidy rate is the subsidy given per unit to domestic consumers as a ratio of the cost of supply per unit. The rates charged to the better-off are subsidized to the extent of 32 per cent, and the poor, 49 per cent (average for Delhi and Tamil Nadu). But given the magnitude of relative power consumption of the better-off in the total consumption of electricity (84 per cent), the better-off appropriate a substantial amount of the total subsidy.

ATF

6.21 Aviation fuel is taxed at about 20 percent (average of tax rates for all states), while diesel and petrol are taxed at about 55 per cent⁹ and 61 per cent¹⁰ (as in January 2016). The real consumers of ATF are those who travel by air, who essentially are the well-off. Hence there is an implicit subsidy for air passengers (the difference between taxes on diesel/petrol and aviation fuel) amounting to about 30 percentage points.

Kerosene

6.22 There is a subsidy of ₹9.16/litre (as in January 2016) on kerosene distributed under the public distribution system, which translates into a subsidy rate of about 38

⁶ Both of these have been calculated by the Ministry of Railways.

⁷ Petroleum Planning and Analysis Cell.

⁸ Consumption from 68th Household Consumer Expenditure Survey of NSS (2011-12).

⁹ The tax rate is a sum of centre's excise duty and state taxes (average of state tax rates).

¹⁰ The tax rate is a sum of centre's excise duty and state taxes (average of state tax rates).

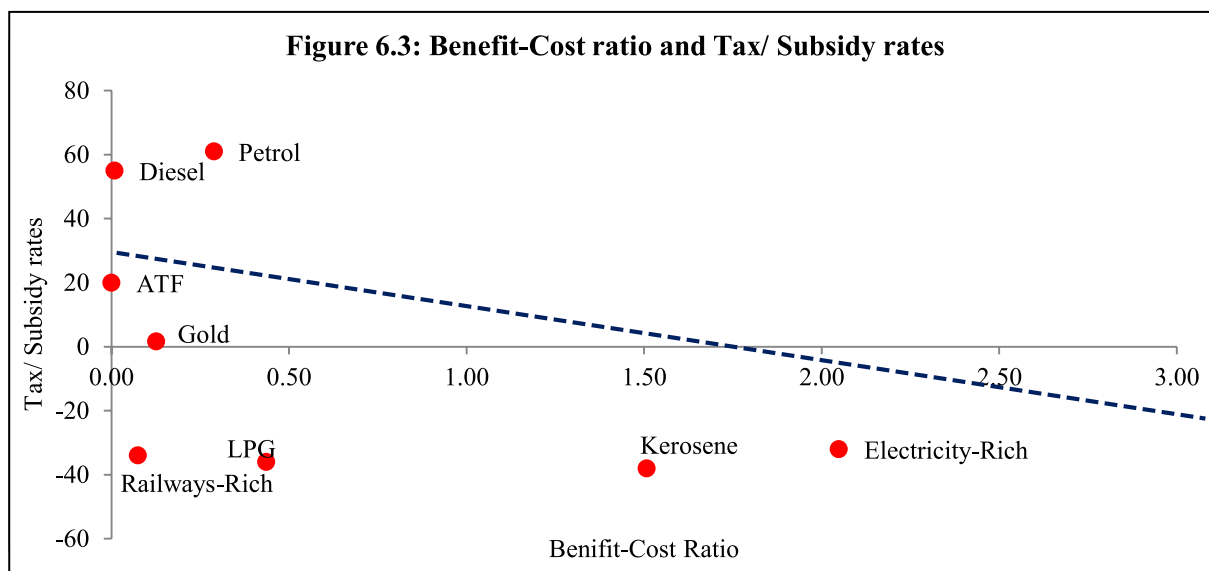
per cent (subsidy per litre as a ratio of non-subsidized market price per litre) for both rich and poor. Kerosene makes up about 1 per cent of the consumption basket of the poor; however about 50 per cent of the Kerosene given under PDS is consumed by the well-off and the rest by the bottom 3 deciles, showing that half of the subsidy benefit goes to the well-off section.

6.23 We can combine all this information into one comparative assessment of the bounties/subsidies given by governments by invoking two criteria: equity and effectiveness. Goods that account for a large share of expenditures of poorer households, such as food, will typically be merit goods, and should therefore be taxed at low rates, made exempt from taxation, or even subsidized. Conversely, from an equity perspective, if a large share of expenditure on a good is by the better-off, then the good should be taxed at higher rates.

6.24 But even if a good is a merit good, warranting a low tax/exemption/subsidy, policy makers will want to ask how effective such a decision would be, based on how well

targeted the implicit subsidy would be, where the implicit subsidy is the difference between allowing the targeted group to face a different price from some notional market price. If the poor also account for a large fraction of total expenditure on the merit good, then the low tax/subsidy will be well targeted; if, on the other hand, they account for a small share of the total expenditure of that good, then the subsidy decision will come with the cost that most of the benefits of the subsidy will accrue to the relatively better off.

6.25 So, one can think of a commodity-wise benefit-cost analysis for determining the efficacy of government interventions on taxes and subsidies. The benefit could be thought of as the share of the subsidy going to the target (poor) group. The cost is simply that proportion that “leaks” to the non-target group. More precisely, the benefit/cost ratio is defined as a share of expenditure of that commodity in the household budgets of the poor, divided by the share of consumption of that particular commodity by the non-target group.



Source: NSS, PPAC, World Bank, Ministry of Railways

Notes:

Railways (Rich) and Electricity (Rich) denotes the subsidy rates on these for the well-off section of population.

The line drawn is a normative one to indicate that higher the benefit cost ratio, the lower is the case for subsidization or low taxation of that commodity; however, tax systems opt for few rates on administrative grounds, hence the calculation of implicit subsidies in the next section takes only two normative rates—higher rates on energy related commodities (due to negative externalities) and a standard rate for all others.

Table 3: Effective subsidy rates and implicit subsidies to rich

Commodity	Share of consumption		Subsidy /Tax rates		Effective subsidy rates(@)	Implicit subsidy to rich (in ₹ crore) (*)
	Rich	Poor	Rich	Poor		
Kerosene	49	51	-38	-38	88	5501
Electricity	84	16	-32	-49	51	37170
LPG	91	9	-36	-36	86	40151
Railways	92	8	-34	-69	53	3671
Petrol	95	5	61	61	—	—
Diesel	98	2	55	55	—	—
ATF	100	0	20	20	30	762
Gold	98	2	1.6	1.6	17.4	4093
Sum of Subsidy						91349
Subsidy on account of PPF						11900
Total subsidy to well-off						103249

Source: NSS, Ministry of Railways, PPAC, World Bank, Delhi Electricity Regulatory Commission

Notes:

- 1 All the figures are in percentage terms, except the last column (which is in ₹ crore).
 - 2 Poor refer to the bottom 30 per cent of the population and rich refer to top 70 per cent population, divided based on expenditure distribution as per NSS data.
 - 3 Negative sign in the column of subsidy/tax rates denotes subsidy rate.
 - 4 Kerosene here refers to the consumption of kerosene under PDS only and not from other sources.
 - 5 There is a blank () in the effective subsidy rate for the category Petrol and Diesel as the tax rate on these categories is already higher than the normative 50 per cent.
- @ Effective subsidy rate (for the rich) is the difference between normative tax rate (50 per cent for energy related commodities and 19 per cent for others) and actual subsidy/tax rate for better-off.
- * Implicit subsidy to rich is the effective subsidy rate multiplied by consumption of that commodity by rich.

6.26 We depict this benefit-cost analysis for a number of commodities, and then compare it against the actual structure of taxes/subsidies for a few commodities (Figure 6.3). The benefit-cost ratio is shown on the x-axis while the tax/subsidy rate is shown on the y-axis. In an ideal system of incentives that gives greater weight to the welfare of the poor, taxes should be greater and subsidies lower for richer households: hence the line should be downward sloping as shown. Ideally, the higher the benefit-cost ratio the more is the rationale for a subsidy/lower tax on that commodity and vice-versa. Points below the line indicate the measure of the implicit bounties given to the relatively better off. And the further away from the line, the greater the bounty. From the chart, it can

be seen, as discussed above, that the largest bounties (for the better off) are provided for railways, LPG, gold, and to some extent ATF.

TOTAL SUBSIDY APPROPRIATED BY THE WELL-OFF

6.27 The implicit effective subsidy to the well-off is not just the actual subsidy or tax (which may be lower than what it should be) on that commodity, but the difference between what the tax burden on that commodity should be on the rich and the actual subsidy/tax rate. To find the normative tax rate on the well-off, we assume that average tax on normal commodities to be the standard rate recommended by the Subramanian panel on a Revenue Neutral Rate (RNR) for GST, i.e. 19

¹¹ http://finmin.nic.in/the_ministry/dept_revenue/Report_Revenue_Neutral_Rate.pdf

per cent¹¹, and average tax on energy related commodities to be 50 per cent (an appropriate carbon tax). Then the implicit effective subsidy rate for the well-off is calculated as the difference between this normative rate (19 per cent or 50 per cent) and the actual subsidy (measured as a negative number) or the (positive) tax rate on that commodity/service. Then based on the consumption by the well-off, the implicit effective subsidy to rich on gold, kerosene, LPG, electricity, railways, and ATF is calculated. The total amounts to a total of no less than ₹91,350 crore (Table 3); not to forget that this is an underestimate of the actual subsidy to the better-off because of the underestimation of the consumption by the rich in the NSS. If we add the subsidies inherent in just the PPF schemes, the total subsidy to the well-off amounts to above ₹1 lakh crore.

CONCLUSION

6.28 There are a fair amount of government interventions that help the relatively better-off in society. In many cases, this help takes the form of explicit subsidization, which is surprisingly substantial in magnitude. Addressing these interventions and rectifying some egregious anomalies may be good not only from a fiscal and welfare perspective, but also from a political economy welfare perspective, lending credibility to other market-oriented reforms. The ₹1 lakh crore of subsidy going to the better-off merely on account of 6 commodities plus the small savings schemes represent a substantial leakage from the government's kitty, and an opportunity foregone to help the truly deserving.

Fiscal Capacity for the 21st Century

Fiscal capacity—spending and especially taxation—is key to long run economic development. Taxation is not just about financing spending, it is the economic glue that binds citizens to the state in a two-way accountability relationship. Against this background, we assess India’s fiscal capacity. Simple tax-GDP and spending-GDP ratios suggest that India under-taxes and under-spends relative to comparable countries. But, controlling for the level of economic development, India neither under-taxes nor under-spends. India does tax and spend less than other politically developed nations, but given that most other democracies took time to strengthen tax capacity, perhaps India is not an outlier on this dimension, either. India does stand out in the number of individual income taxpayers, currently about 4 percent, far from our desirable estimate of about 23 percent. Building long-run fiscal capacity is vital. One low hanging fruit would be to refrain from raising exemption thresholds for the personal income tax, allowing natural growth in income to increase the number of taxpayers. Beyond that, building fiscal capacity is also about creating legitimacy in the state. This can be acquired by prioritizing improved delivery of essential services that all citizens consume.

INTRODUCTION

7.1 The Indian tax system is about to witness dramatic changes. Consider first the GST. Implementing a new tax, encompassing both goods and services, to be implemented by the Centre, 28 States and 7 Union Territories, in a large federal system, via a constitutional amendment requiring broad political consensus, affecting potentially 2-2.5 million excise and service taxpayers, and marshalling the latest technology to radically improve collection efficiency, is a reform perhaps unprecedented in modern global tax history.

7.2 Take next corporate taxes. The rate is scheduled to come down from 30 percent to

25 percent and a wide range of exemptions will be phased out in an orderly manner. In addition, the legacy of contentious, adversarial tax issues from the past is being cleaned up. Tax administration is being improved: now around 95 per cent of filings are electronic, tax refunds are now being issued in a record 7-8 days, and a new Tax Policy Council and Tax Research Unit are being created.

7.3 To be sure, a number of important issues in tax policy as well as in tax administration (as detailed for example, in the report of the Tax Administration Reforms Commission) need to be addressed. But ongoing developments warrant taking stock of a simple but fundamental question: *Given that state*

capacity and taxation are crucial determinants of long run development, how can India move from its current situation to one of increasing taxes and government spending as part of the process of building state capacity ?¹

7.4 The findings are nuanced but striking.

- i. A simple comparison of aggregates with other countries indicates that India under-taxes and under-spends.
- ii. Controlling for the level of economic development, India neither under-taxes nor under-spends.
- iii. India does tax and spend less than other politically developed nations, but given that most other democracies took a long time to strengthen tax capacity, perhaps it is not an outlier on this dimension, either.
- iv. Where India does stand out is in the number of individual income taxpayers. The ratio of taxpayers to voters is only about 4 percent, whereas it should be closer to 23 percent.

7.5 We explore the policy implications of these findings in the concluding section.

7.6 Consider first, *why taxation is key to long run political and economic development*. If spending is about the *entitlements* of citizenship in a democracy, taxation is about the *obligations* of citizenship. Taxation and military service (or some other form of compulsory national service) are two core elements of modern citizenship. India has chosen taxation as the key obligation that it can demand of its citizens. The obligations of citizenship are the foundations of nation building and democracy. Bringing more and more people into the tax net via some form of direct taxation, will help in realizing the promise of Indian democracy.

7.7 Democracy is a contract between the state and its citizens. This contract has a vital

economic dimension: the state's role is to create the conditions for prosperity for all by providing essential services and protecting the less well-off via redistribution. The citizen's part of the contract is to hold the state accountable when it fails to honour the contract (Besley and Persson [2013]²). But a citizen's stake in exercising accountability diminishes if he does not pay in a visible and direct way for the services the state commits to providing. If a citizen does not pay - through taxes or user fees - he either becomes a free rider (using the service without paying) or exits (not using the service at all). Both reduce the accountability of the state. Hence the expression: no representation without taxation. Taxation is not just about financing public spending, it is the economic glue that binds citizens to the state in a necessary two-way relationship.

7.8 One can think of tax paying and political participation as two important accountability mechanisms wielded by citizens. *The precocious India phenomenon is that economic development lags political development*. One can hypothesize that this difference in taxpaying and voting might explain the phenomenon in India of there being reasonably effective episodic accountability as opposed to ongoing accountability. Independent India has averted famines but chronic malnutrition is still a challenge. The Indian state can organize mega-events but routine safety for women has turned out to be more difficult to achieve. The Indian state responds effectively to floods and tsunamis but finds water and power metering more challenging.

7.9 Consider next the challenge of moving to a better equilibrium. There are no real low hanging fruit here because of two reasons: first, India is not really an outlier, contrary to much popular perception, in terms of its

¹ In this chapter, government spending, henceforth spending, and taxes, are for the general government unless mentioned otherwise.

² Besley, T. J. & T. Persson, 2013, "Taxation and Development", *CEPR Discussion Paper* No. DP9307.

overall level of taxation and spending—facts that we establish unambiguously. It is easy to exhort the government to, say, increase spending on health and education or remove exemptions on the tax side. But it must be remembered that the ability to spend and tax is in part endogenous to the perceived legitimacy of the state. Citizens will be willing to pay their dues as taxes only if they feel that the state is adhering to its side of the contract by delivering essential services. In other words, tax and spending policy are related to actions by the state to increase its legitimacy. State and tax capacity are as much about state legitimacy as they are about technical details relating the design of policy and its implementation.

CROSS-COUNTRY TAXATION AND EXPENDITURE PATTERNS

7.10 In this chapter we assess, in a simple cross-country framework, whether India taxes and spends enough. How does India, a democracy with (PPP adjusted) per-capita GDP at about one-seventh of the OECD average compare internationally on spending and taxation patterns? A caveat: we do not consider property taxation not because it is unimportant. Rather, the omission owes to data challenges, stemming in part from the fact that property is taxed, albeit differently, at all three levels of government in India. This also means that the Centre has fewer policy levers at its disposal so that improving property taxation will require greater cooperation between all three levels of government. But given the extent to which property is a critical constituent of wealth and a potential source of local government revenues, property taxation reforms should be an important part of the country's tax reform agenda.

7.11 In the simple cross-section, India appears to be an outlier: it taxes and spends less than OECD countries and less than its emerging market peers (Table 1). India's spending to GDP ratio (as well as spending in human capital i.e. health and education)

is lowest among BRICS and lower than both the OECD and EME averages. India's tax to GDP ratio at 16.6 per cent also is well below the EME and OECD averages of about 21 per cent and 34 per cent, respectively.

7.12 India's spending and tax ratios are the lowest even among economies with comparable (PPP adjusted) per-capita GDP e.g. Vietnam, Bolivia and Uzbekistan. The two ratios stand at 28 per cent and 22.2 per cent, 43.3 per cent and 25.5 per cent, 33.4 per cent and 25.6 per cent for Vietnam, Bolivia and Uzbekistan respectively for the latest year available. Table 1 also shows that India's share of income and property tax in GDP are also comparatively low (with the exception of China in case of direct taxation).

7.13 Over time too, it seems, India has made limited progress in increasing its tax and spending capacity. Besley and Persson (2013) document that rich countries have consistently invested in tax collection capacity and collect a larger share of income in taxes vis-à-vis poor nations (and much higher revenues vis-à-vis poor countries despite comparable tax rates). In comparison to the United States (which introduced income taxes over the first half of the 20th century) India's tax to GDP ratio has increased at a much slower pace over the comparable time period following the introduction of income taxation. India's tax to GDP ratio has increased by about 10 percentage points over the past six decades from about 6 per cent in 1950-51 to 16.6 per cent in 2013-14. Figure 1 shows ten-year snapshots of the trends in aggregate spending as well as the indirect and direct tax to GDP ratios for India starting 1960-61.

7.14 However, it may not be appropriate to make such simple cross-country comparisons since there is a strong relationship between a country's fiscal capacity and the level of economic development. The correct question to ask therefore is: *whether India's fiscal capacity is low given its level of economic*

Table 1: Share as per cent of GDP

Country	Total Tax	Total Expenditure	Expenditure in human capex*	Direct tax	Individual Income tax	Property tax	Indirect Tax
China	19.4	29.7	7.2	5.3	--	2.0	12.7
India	16.6	26.6	5.1	5.6	2.1	0.8	10.1
Brazil	35.6	40.2	11.0	7.3	2.3	2.0	15.7
Korea	24.3	20.0	8.4	7.1	3.7	2.5	7.5
Vietnam	22.2	28.0	8.8	8.4	--	--	--
South Africa	28.8	32.0	10.7	15.0	--	1.4	10.2
Turkey	29.3	37.3	7.2	5.9	4.1	1.4	13.5
Russia	23.0	38.7	7.2	7.2	--	1.1	7.1
UK	32.9	41.4	13.4	11.7	9.1	4.0	10.8
US	25.4	35.7	13.3	12.0	9.8	2.9	4.4
EMEs Avg	21.4	30.9	7.5	7.4	2.2	1.0	10.8
OECD Avg	34.2	42.8	11.6	11.5	9.5	1.9	11.0

Note: *: Expenditure in health and education, --: Not available. *Source:* OECD, World Bank, IMF databases and Ministry of Education, People's Republic of China.

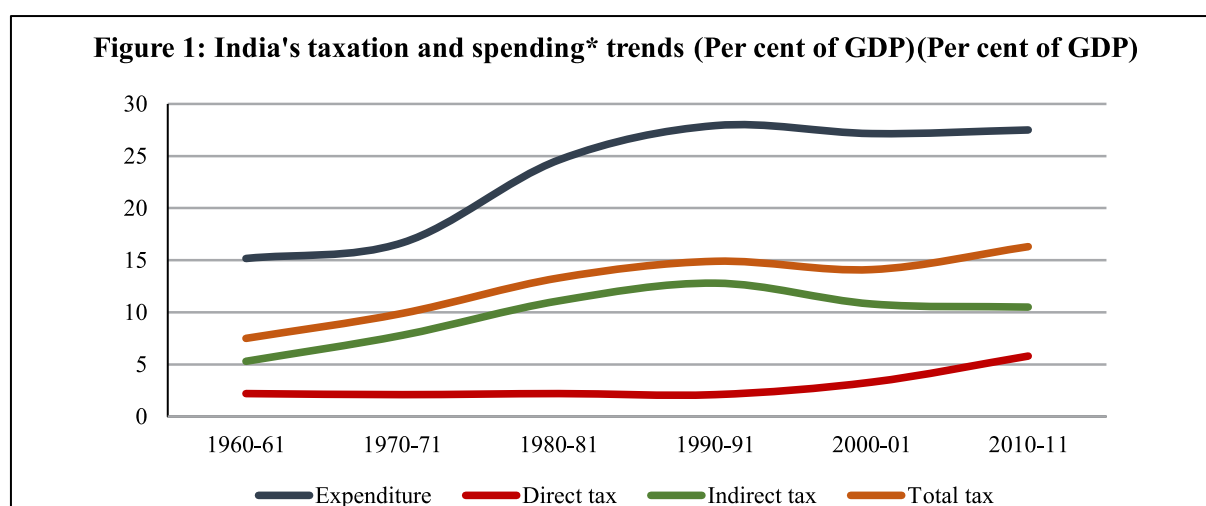
development (proxied by its PPP adjusted per capita GDP).

Analysis of Taxation and Expenditure Patterns: *Is India an outlier?*

7.15 One way to answer this question is simply to plot the relationship between various indicators of fiscal capacity and per capita GDP and see where India stands. In this section, we do this for five indicators—overall

tax to GDP, direct tax to GDP, individual income tax to GDP, overall expenditure to GDP, and human capital expenditure to GDP.

7.16 To do this we collect consistent data for these indicators at the general government level from multiple sources viz. the OECD database, World Development Indicators (World Bank), Government Finance Statistics (IMF) and Fiscal Monitor (IMF). Our dataset³ looks at variables including the total tax to



*: *Source:* Various Economic Surveys and Indian Public Finance Statistics 2014-15.

³ The database also includes the number of taxpayers and voting age population for each country. Data on voting age population is from the International Institute for Democracy and Electoral Assistance (IDEA) based on the most recent elections held in these countries. Number of taxpayers are available for 56 countries and is taken from the OECD 2011 Report titled "Tax Administration in OECD and Selected Non-OECD Countries: Comparative Information Series (2010)". Data on individual income taxes are for 54 countries.

Figure 2A: Tax to GDP (Per cent) and per-capita GDP

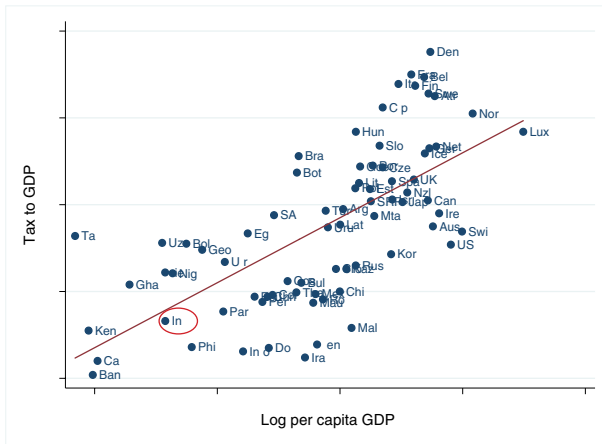


Figure 2B: Direct tax to GDP and per-capita GDP

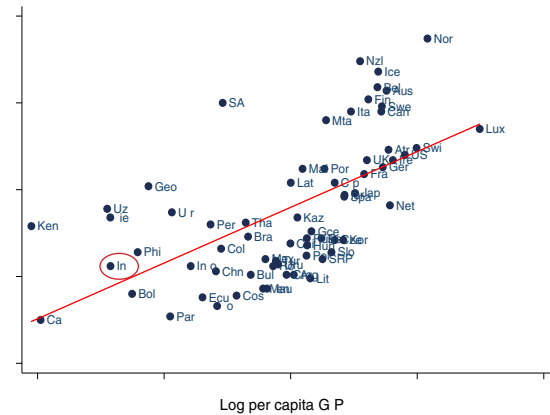


Figure 2C: Indiv. income tax to GDP and per-capita GDP

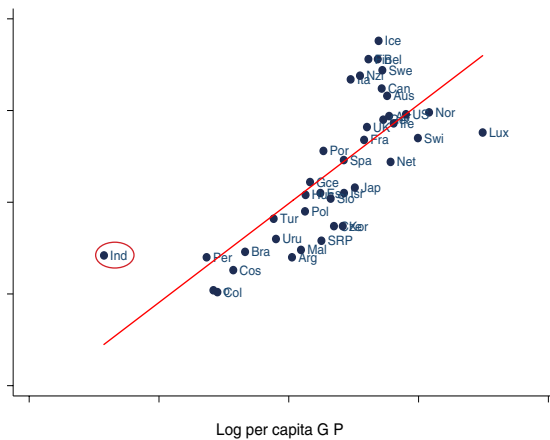


Figure 2D: Total expenditure to GDP and per-capita GDP

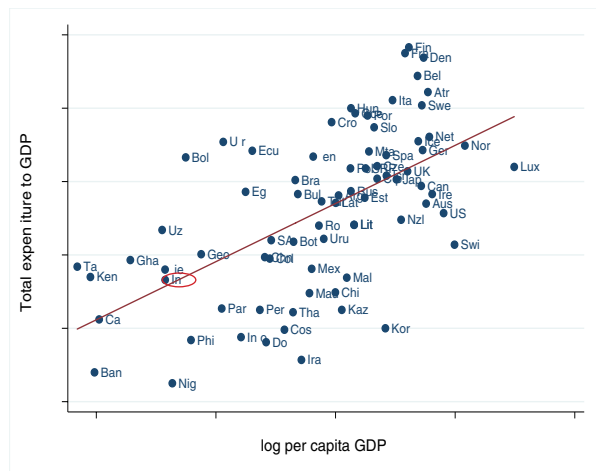
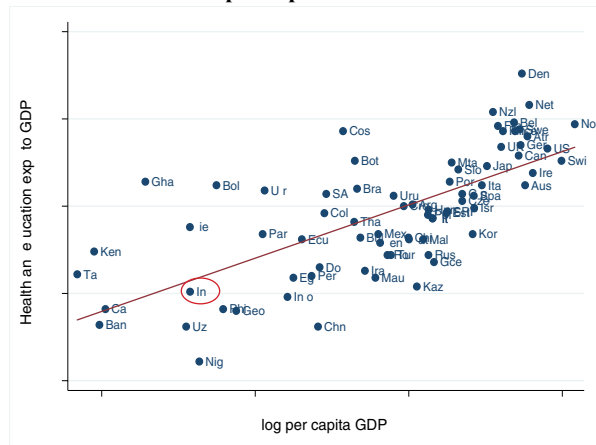


Figure 2E: Health & education expenditure to GDP and per-capita GDP



GDP, total general government expenditure as per cent of GDP and expenditures on education and health in a sample of 77 countries including all OECD countries and major EMEs for the latest available year. The results are shown in Figures 2A—2E.

7.17 The results are striking: *contrary to popular perception that India has low fiscal capacity, each of the charts show that India does not. It is close to the line of best fit (shown in red) in all the figures*⁴. In case of direct tax and personal income tax, counter to conventional wisdom, India's fiscal capacity seems to be significantly better than the average.

7.18 The response to this striking finding could be that it is not enough to control for

lower levels of economic development. There is a well-known regularity that democracies tax and spend more, in part because they face greater pressures to redistribute. As is well known from the literature and more recently

⁴ The regression results reported here are robust to outliers.

Acemoglu *et al.* ("Democracy, Redistribution and Inequality", NBER, 2013), democracies by extending franchise often create pressures of redistribution. The appropriate question therefore is: *whether Indian fiscal capacity is weak controlling for both the level of economic and political development.*

7.19 We run regressions of each of the indicators of fiscal capacity on PPP adjusted per capita GDP and a measure of democracy⁵ and plot the resulting relationship in Figures 3A—3E. The results are equally striking and

Figure 3A: Tax to GDP (Per cent) and per-capita GDP controlling for democracy

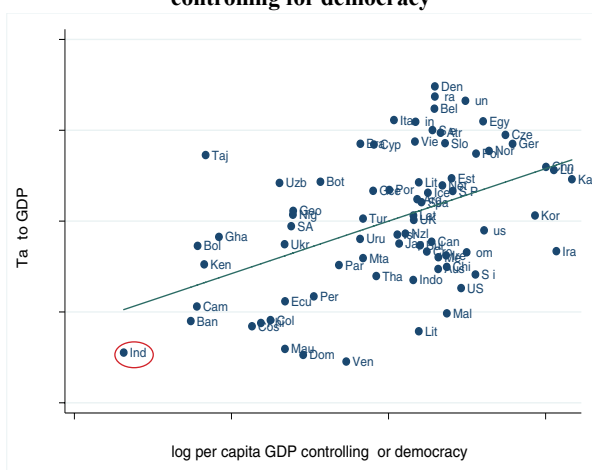
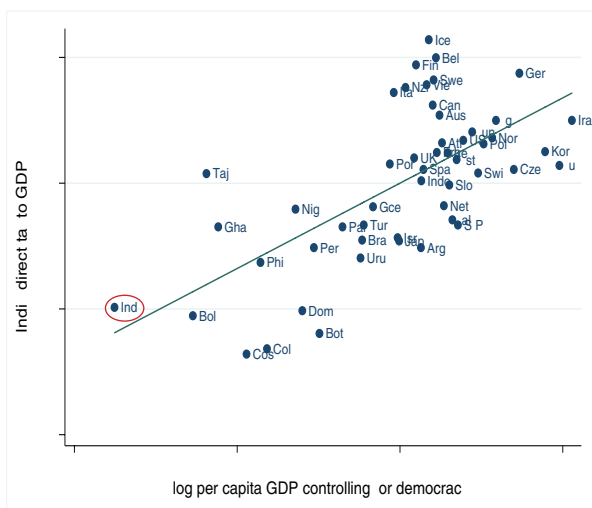


Figure 3C: Individual income tax to GDP (Per cent) and per-capita GDP



unambiguous: *controlling for both India is a significant negative outlier when it comes to the tax to GDP ratio and significantly so with respect to expenditures on health and education.* In other words, controlling for democracy, India taxes less and spends less (especially on human capital) as can be clearly seen in figures 3A and 3E⁶. However, it is not an outlier, even controlling for democracy, with respect to collection of total direct taxes and, more specifically, individual income taxes.

Figure 3B: Direct tax to GDP (Per cent) and per-capita GDP

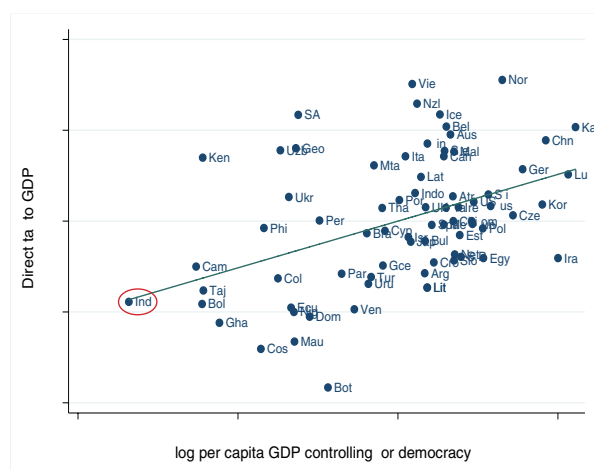
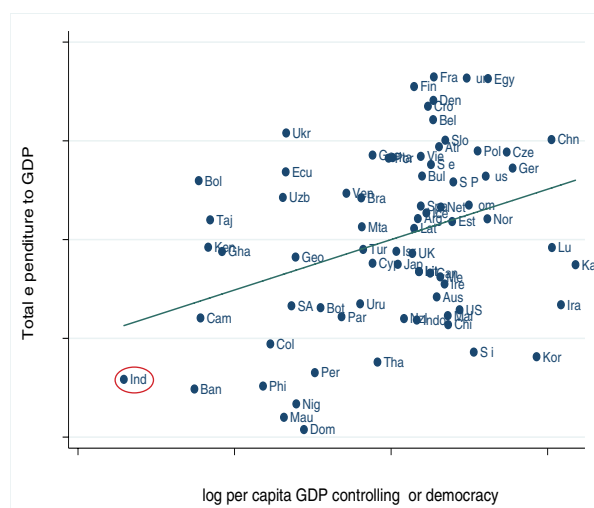


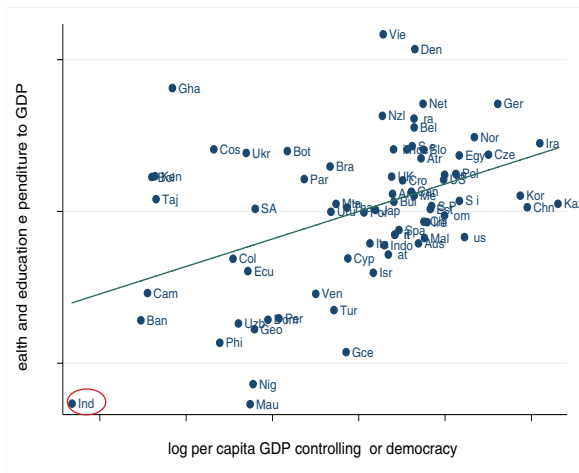
Figure 3D: Total expenditure to GDP (Per cent) and per-capita GDP



⁵ We construct an index of democracy using the PolityIV database for each of these countries that takes the average democracy scores of these countries for a period of 40 years (1974-2014).

⁶ These charts are partial correlation plots (referred to as 'avplots' in STATA) between the dependant and the independent variable controlling for a third independent variable.

Figure 3E: Health and education expenditure to GDP (Per cent) and per-capita GDP



7.20 To give a sense of the magnitudes, controlling for both the level of economic development and democracy, India's overall tax to GDP is about 5.4 percentage points less than that of comparable countries. India spends on average about 3.4 percentage points less vis-à-vis comparable countries on health and education (Table 2).

Table 2: How different is India?

Variable	Magnitude	t-statistic
1. Tax to GDP ratio	-5.41	-2.24
2. Direct taxes as share of GDP	-0.15	-0.11
3. Individual income tax as share of GDP	1.26	0.96
4. Total expenditure as share of GDP	-6.24	-1.75
5. Health & education expenditure as share of GDP	-3.44	-3.33

7.21 These stark findings can nevertheless be seen as an indictment of the Indian development experience since India has been a democracy for nearly 70 years and therefore should be judged by the standard of other democracies. By that standard India underperforms.

7.22 But this too is an inappropriate standard. In most of today's advanced democracies

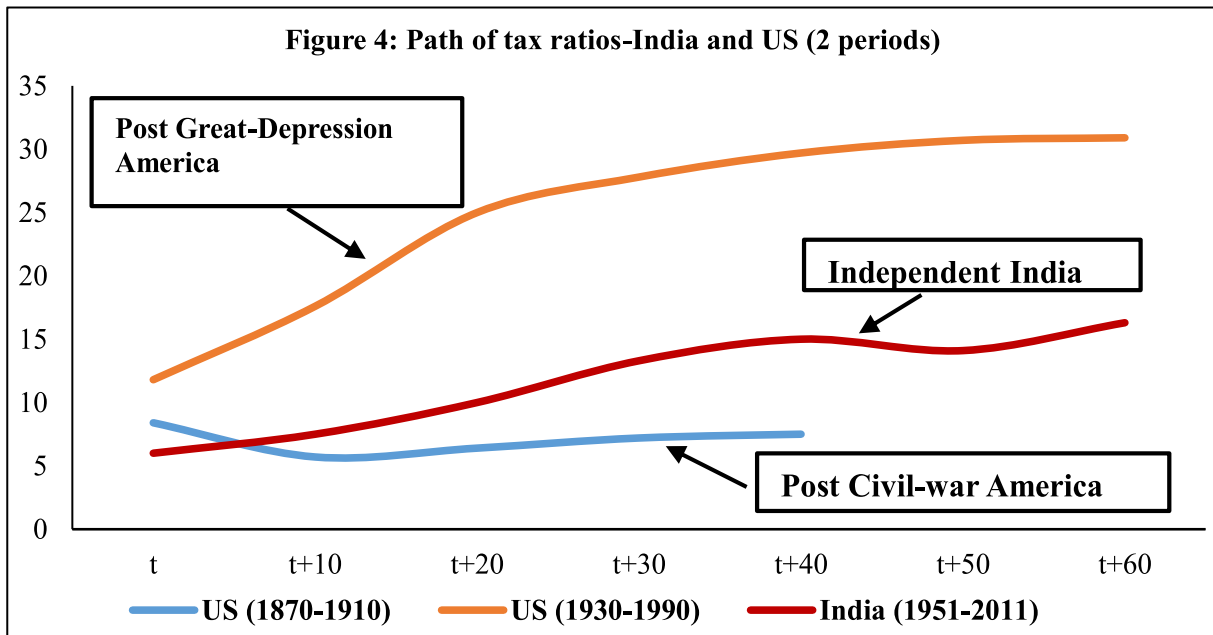
the big increases in fiscal capacity have been in response to wars (World Wars I and II), affirming the insight of Charles Tilly that "states make wars and wars make states." They also occurred in response to extreme crises (such as the Great Depression of the 1930s) which led to a sharp expansion of the welfare state and the need to finance it. Independent India has not experienced shocks of such large magnitudes that created pressures to enhance state capacity.

7.23 Figure 4 compares the taxation history of India vis-à-vis that of the US starting roughly from the year in which taxation picked-up in the two democracies. For the US two periods are shown – first, 1870-1910, the post-civil war period prior to the introduction of income taxation in 1913; and second, 1930-1990, after introduction of income taxation and capturing the boost to fiscal capacity brought about by the Second World War. These two periods are contrasted to taxation experience of independent India starting 1951. It is clear that even though India (middle line) has lagged behind the US in having a lower tax to GDP ratio when compared to the second period in US (1930-1990), India has done better than the US did in the initial stage (1870-1910).

7.24 Moreover, western democracies have had a much longer period of political evolution allowing them to build state capacity. This is important in assessing India's fiscal performance as highlighted by Professor Indira Rajaraman⁷.

7.25 The history of Europe and the US suggests that typically, states first provide essential services (physical security, health, education, infrastructure, etc.) *before* they take on their redistribution role. *That sequencing is not accidental.* Unless the middle class in society perceives that it derives some benefits from the state, it may be largely unwilling to finance redistribution. In other words, the

⁷ Business Standard, "The Entitlement State", February, 2013.



Source: The World Wealth and Income Database, J. J. Wallis ('American Government Finance in the long Run: 1790-1990', JEP, 2000), and IPFS.

legitimacy to redistribute is earned through a demonstrated record of effectiveness in delivering essential services.

7.26 A corollary is that if the state's role is predominantly redistribution, the middle class will seek - in Professor Albert Hirschman's famous terminology - *to exit from the state*. They will avoid or minimise paying taxes; they will cocoon themselves in gated communities; they will use diesel generators to obtain power; they will go to private hospitals and send their children to private education institutions. All these pathologies are evident in India. By reducing the pressure on the state, middle class exit will shrink it, eroding its legitimacy further, leading to more exit and so on. A state that prioritises or over-emphasises redistribution without providing basic public goods, risks unleashing this vicious spiral.

7.27 Therefore, any harsh judgement of India's performance must be tempered by these historical differences in the evolution of India compared with other democracies.

Number of Taxpayers: *Is India an outlier?*

7.28 Taxes and expenditures should be viewed not just from a fiscal but also an institutional perspective. It is well-known that citizenship and building the economic connection between citizens and the state happens more via direct rather than indirect taxes which do not affect taxpayers as immediately and saliently as direct taxes.⁸ It appears that citizens feel the pinch of taxation most when their incomes or assets are taxed. Especially in a country like India, indirect taxes are not immediate or direct enough to be perceived by citizens as their contributions to the state. For that reason, the implementation of the GST - while highly desirable and necessary - will have a limited impact in furthering the broader objective of citizen participation, state building, and democratic accountability. As Besley and Persson (2013) show, countries with a higher share of income taxes in total tax collections tend to have more accountable governments.

7.29 This directly relates to the point noted

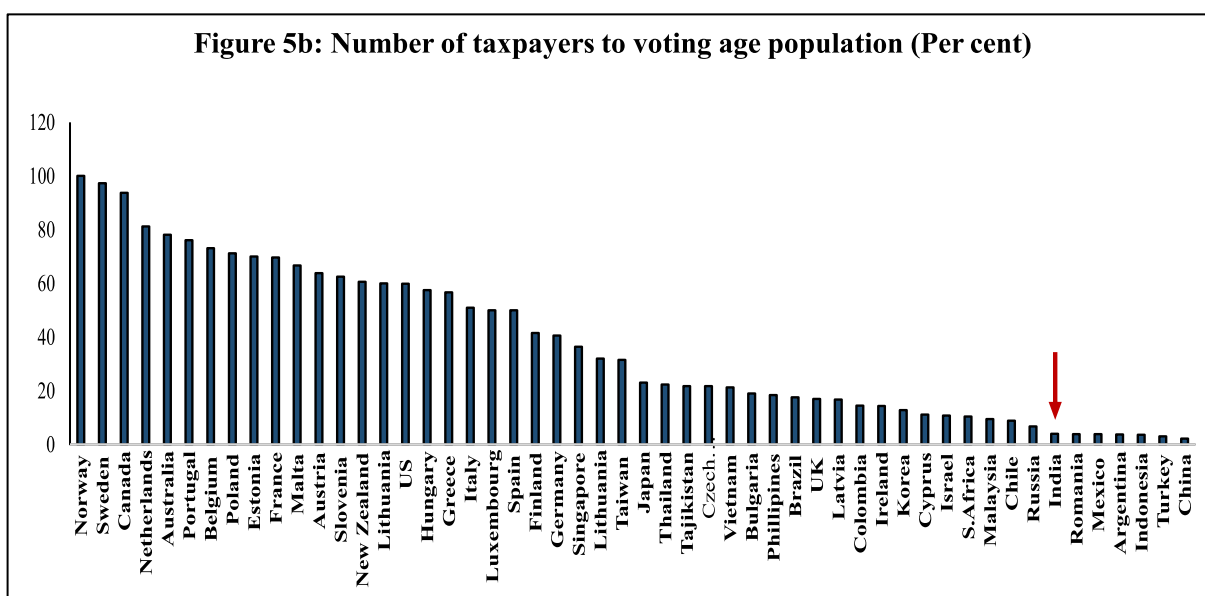
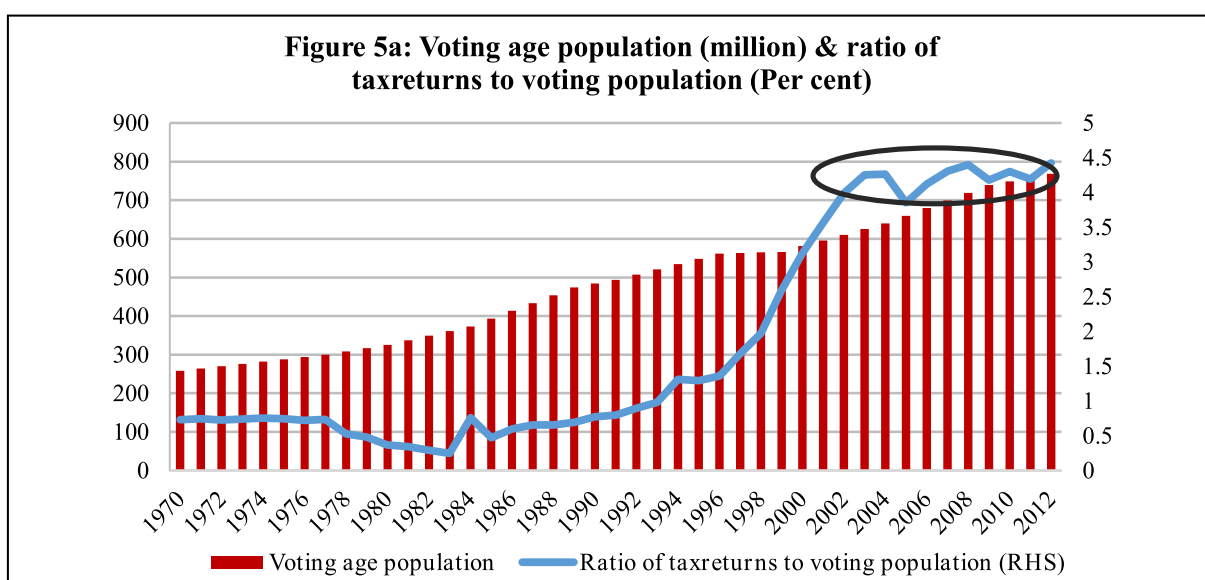
⁸ In "The Pale King," David Foster Wallace's posthumously published 2011 novel, set in an I.R.S. office, a high-level agency official laments: "We've changed the way we think of ourselves as citizens. ... We think of ourselves now as eaters of the pie instead of as makers of the pie."

earlier, that accountability of citizens weaken if they do not pay directly for the services the state provides. This is likely to render citizens as free riders or compel them to exit thereby diluting the accountability of the state itself. Hence the number of taxpayers is a key indicator of fiscal capacity. *Does India have too few or approximately the right number of citizens paying taxes given its level of economic and political development?*

7.30 In India today, roughly 5.5 percent of earning individuals are in the tax net. This statistic gives an idea of the gap that India

needs to cover to become a full tax-paying democracy. Based on recent tax data, and using the methodology in Banerjee and Piketty (2005), we estimate that about 15.5 percent of net national income excluding taxes (which is the national income accounts counterpart of the personal income accruing to households) was reported to the tax authorities as gross taxable income. In the late 1990s, this number was 8.3 percent. In other words, nearly 85 percent of the economy is outside the tax net.

7.31 Turn next to the cross-country



Source: Data on India's voting age population is from IDEA.

comparisons. Here too at first blush India seems an outlier. As figures 5a and 5b show, despite the number of tax returns filed picking up from mid-1980 onwards, India currently has amongst the lowest number of taxpayers (as a ratio of voting age population).

7.32 However, a more rigorous cross-country analysis leads to interesting results. When we examine the number of taxpayers (as a ratio of voting age population) controlling for the level of economic development, India is not an outlier. It is only when we control for the level of political development (using the democracy index) does India turn out to be an outlier (Figures 6a and 6b). Controlling for the level of democracy, India's ratio of taxpayers to voting age population is significantly less than that of comparable countries. This implies that while at present about 4 per cent of citizens who vote pay taxes, the percentage should be about 23.

7.33 Piketty and Qian (2009)⁹ compare China and India to argue that Chinese success in bringing more citizens into the individual income tax net owes to setting

a reasonable threshold for paying taxes and not changing it unduly. In contrast, in India, exemption thresholds for income taxes have been consistently raised. In fact, as Figure 7 shows, thresholds have been raised much more rapidly than underlying income growth so that today, the wedge between average income and the threshold has widened.

7.34 We can calculate in some sense the "missing taxpayers" in India—not those who are evading taxes altogether or under-reporting taxes but those who have legitimately gone under the tax radar due to "generous" government policy. We ask how many taxpayers there would have been in 2012-13 if the threshold had been maintained at Rs. 1,50,000 (the threshold limit in 2008-09). We find that there would have been an additional 1.65 crore units incorporated within the taxation system (an addition of about 39.5 percent) and tax revenues would have been about ₹31,500 crores greater. India's tax-GDP would have increased by 0.32 per cent just by not having raised the threshold so generously.

Figure 6a: Taxpayers to voting age population and per-capita GDP

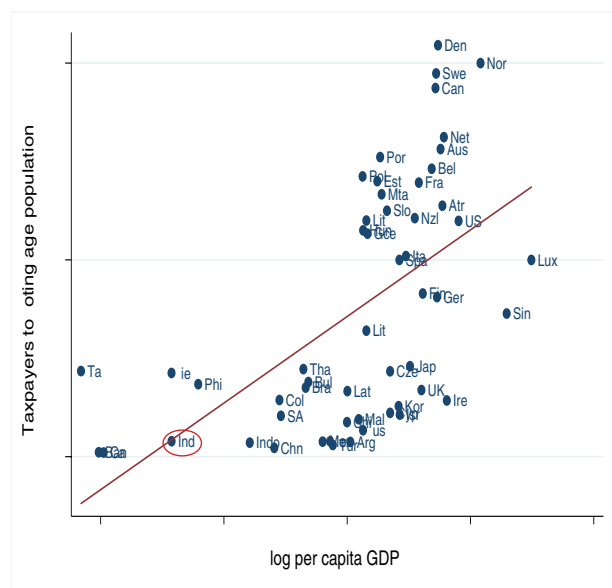
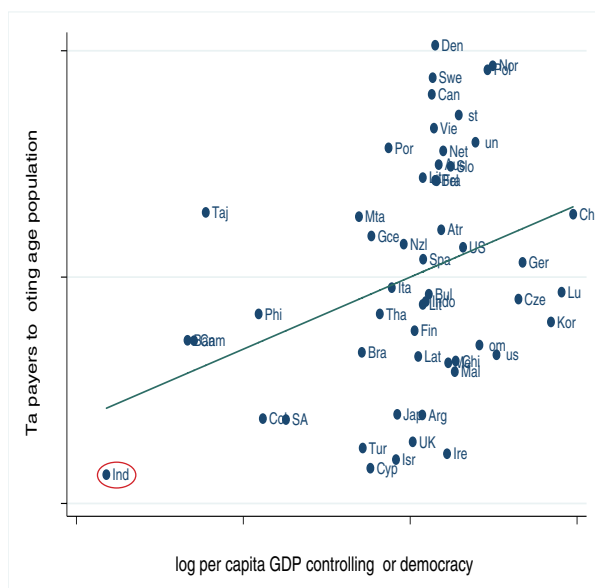
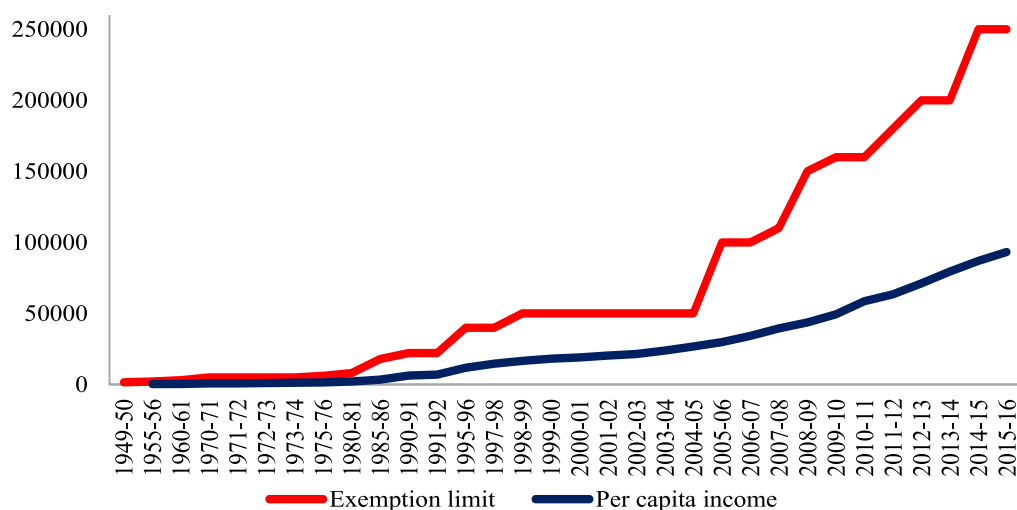


Figure 6b: Taxpayers to voting age population and per-capita GDP controlling for democracy

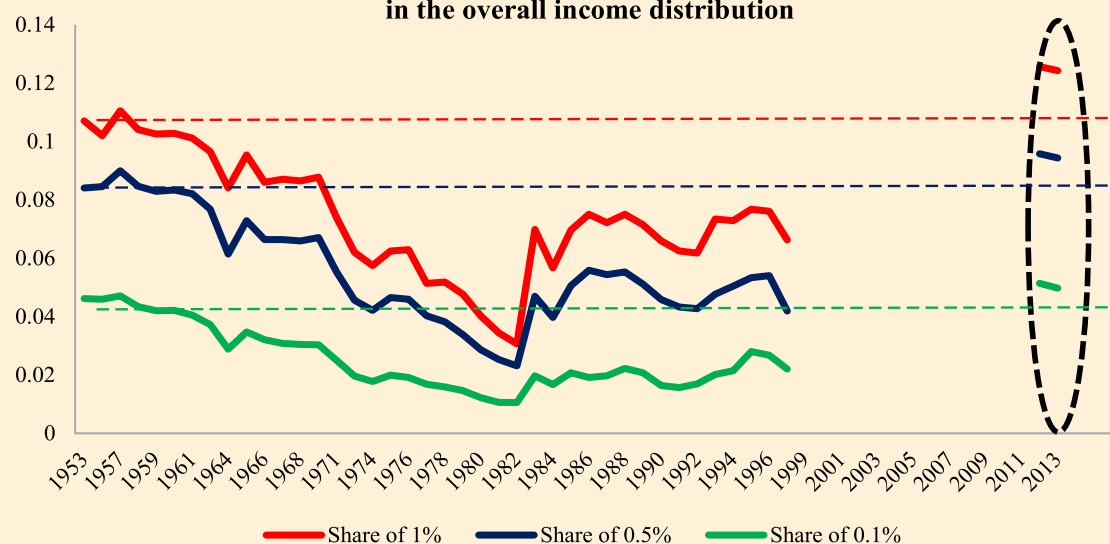


⁹ Piketty, Thomas, & Nancy Qian, 2009. "Income Inequality and Progressive Income Taxation in China and India, 1986-2015." *American Economic Journal: Applied Economics*, 1(2): 53-63.

Figure 7: Exemption limit and per-capita income (Rs, current prices)**Box 7.1: Indian Top Personal Income Distribution**

Recent work by Piketty¹⁰ (2014) and his co-authors has raised a number of questions related to personal income distribution at the very top of the income spectrum. We are now able to provide some tentative estimates based on detailed tax data for the years 2012-13 and 2013-14 and compare them with the estimates produced by Piketty and Banerjee (2005)¹¹. The methodology for computing these estimates is far from watertight and should hence be viewed with some circumspection.

We reproduce the methodology in Piketty and Banerjee (2005) and compare our estimates with theirs. The results are shown in Figure-2 for the share of the top 1 percent, top 0.5 percent and the top 0.1 percent of the people in the overall income distribution. We do not have data for the intervening years (between 1999-2000 and 2011-12) and hence the blank spaces in the figure below.

Figure: Share of Top 1%, Top 0.5 % and Top 0.1% of people in the overall income distribution

¹⁰ Piketty, Thomas, 2014, "Capital in the Twenty-first Century", Harvard University Press.

¹¹ Banerjee, A., & T. Piketty, 2005, "Top Indian Incomes, 1922-2000", *World Bank Economic Review*. We have updated Piketty & Banerjee (2005) share of P99, P99.5, P99.9 & P99.99 using NSS net national income data at factor cost & population from same source. Thus our estimates may appear to be a little different from theirs even though we replicate their methodology.

As in many countries, there has been a growing concentration of income at the top: in 2013-14, these three groups accounted for 12.4 per cent, 9.4 per cent and 5.0 per cent¹ of the income of the entire Indian economy respectively. These numbers are close to comparable shares in the United Kingdom and a below those in the United States. But the change between the late 1990s and today in income shares is greater than the change in the UK and similar to that in the US (Piketty [2014]).

Table: Top Personal Income Distribution

	Share of top 1 percent		Share of top 0.5 percent		Share of top 0.1 percent	
	1998	2012	1998	2012	1998	2012
USA	15.2	18.9	11.6	14.7	6.2	8.4
UK	12.5	12.7	9.1	9.2	4.4	4.6
India	9.0	12.6	7.0	9.6	3.6	5.1

It seems that the fast growing years in the 2000s were in fact associated with rising inequality at the very top end of the Indian income distribution.

1. The presumption in these calculations, as in Banerjee and Piketty (2005), is that what has been measured is the actual income share of the rich. This may not be true given time-varying incidences of tax evasion which would imply that our estimates of income shares are prone to measurement error. Banerjee and Piketty (2005), and Atkinson, Piketty and Saez ("*Top Incomes in the Long Run of History*", Journal of Economic Literature, 2011) address the impacts of evasion on the income shares using wage data which is less prone to evasion. Such data however shows evasion to be insufficient in fully accounting for the rise in income shares over the years. In our updated data, we do not have wage data and therefore rely on earlier studies to address the issue of evasion.

CONCLUSION: MOVING TO A BETTER EQUILIBRIUM ON TAXATION AND SPENDING

7.35 All that said, the foregoing analysis merely assessed the adequacy of India's tax base at a point in time, the present. Even today, it is evident from the analysis in this chapter that India has not fully translated its democratic vigour into commensurately strong fiscal capacity. In the long run, if India is to stay "on the line" as its per capita income grows, it will need to build fiscal capacity. One low hanging fruit that we suggested was to refrain from raising exemption thresholds and allowing natural growth in income to increase the number of taxpayers. In some ways, this would be reform through inaction.

7.36 Beyond that, what might be done, given that building fiscal capacity is essentially about creating legitimacy in the state? Four points seem relevant here.

7.37 First, the government's spending priorities must include essential services that

all citizens consume: public infrastructure, law and order, less pollution and congestion, etc.

7.38 Second, reducing corruption—fiendishly difficult as it is—must be a high priority not just because of its economic costs but also because it undermines legitimacy. The more citizens believe that public resources are not wasted, the greater their willingness to pay taxes. In that sense, the government's efforts to improve transparency through transparent and efficient auctioning of public assets will help create legitimacy, and over time strengthen fiscal capacity.

7.39 Third, subsidies to the well-off (amounting to about ₹1 lakh crore as documented in Chapter 6) need to be scaled back. Regaining legitimacy must be as much about phasing down these bounties as it is about better targeting of subsidies for the poor. Similarly, the tax exemptions Raj which often amount to redistribution towards the richer private sector will also need to be

reviewed and phased out. And, reasonable taxation of the better-off, regardless of where they get their income from—industry, services, real estate, or agriculture--will also help build legitimacy.

7.40 Fourth, property taxation needs to be developed. The very fact that systematic data on property taxation across the country is so sparse is a measure of just how little attention has been given to this tax. Property taxes are especially desirable because they are progressive, buoyant (at least in the Indian

context), and difficult to evade, since they are imposed on a non-mobile good, which can with today's technologies, be relatively easily identified. Higher rates (with values updated periodically) can be the foundation of local government's finances, which can thereby provide local public goods and strengthen democratic accountability and more effective decentralisation. Higher property tax rates would also put sand in the wheels of property speculation. Smart cities require smart public finance and a sound property taxation regime is vital to India's urban future.

Preferential Trade Agreements

While remaining committed to multilateralism, India like many other countries, has negotiated a series of free trade agreements (FTAs), notably with trading partners in Asia. Since the mid-2000s, India's FTAs have doubled to about 42 today. At a time of seismic changes in the international landscape in the form of mega-regional agreements, involving the largest traders—USA, Japan, and the European Union—we review the experience of a few of India's FTAs. Using updated data and methodologies, we find that the economic impact is what might be expected. FTAs have led to increased imports and exports, although the former has been greater. We find that the average effect of an FTA is to increase overall trade by about 50 percent over roughly four years. We also find that the ASEAN FTA has had the greatest impact, possibly because tariff reduction by India has been greater under it. The results also suggest a bigger impact on metals on the importing side and textiles on the exporting side. More work is required to enrich this analysis and to extend it to services so that a definitive assessment can be made of the overall impact of India's FTAs.

INTRODUCTION

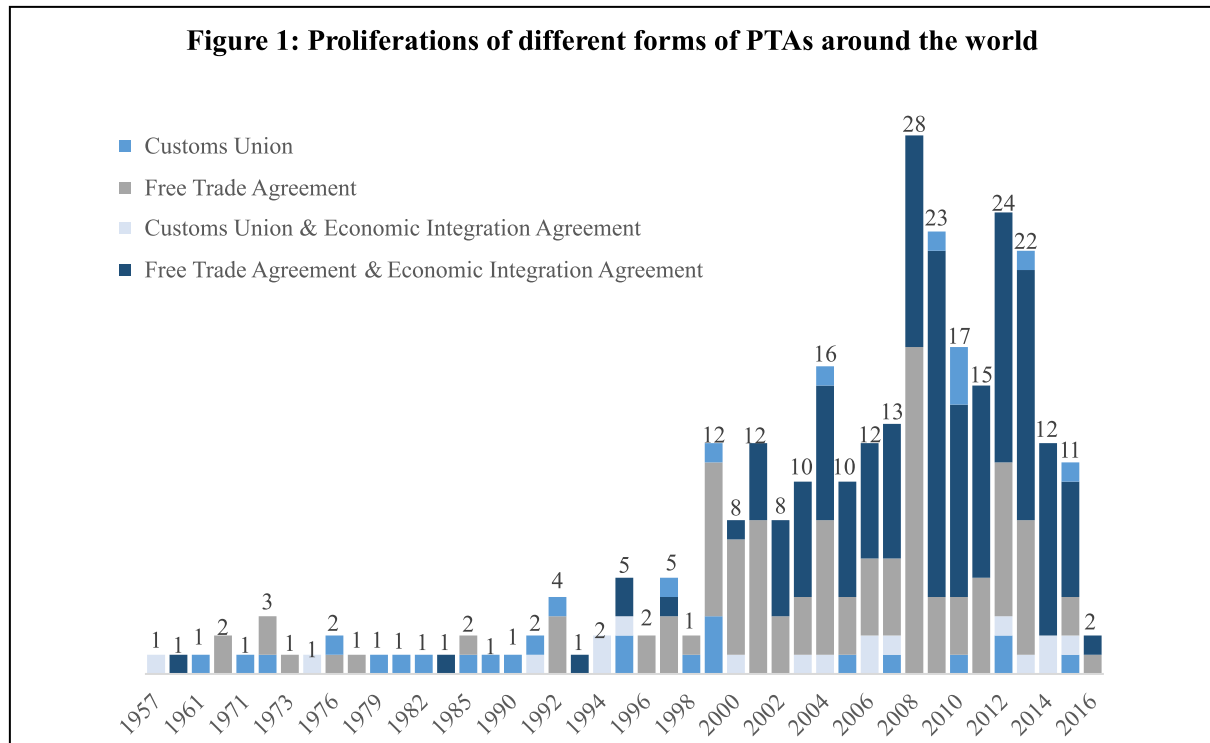
8.1 Preferential Trade Agreements (PTAs) have been proliferating, especially since the establishment of the World Trade Organisation (WTO) in 1994. As of 1st December 2015, the WTO had received notifications of no less than 619 PTAs (disaggregated by goods, services, or accessions), of which 413 were already in force. Clearly, then, PTAs are popular. But are they economically beneficial? More specifically, have the PTAs signed by India been good for the country? This chapter examines the evidence and considers the implications for trade strategy going forward.

8.2 Figure 1 traces the trends in PTAs around the world. Between 2008 and 2012, PTAs grew at an average year-on-year rate of 24 percent. All WTO members except

Mongolia have concluded at least one PTA, while some, such as the European Union, Chile, and Mexico, have concluded more than 20. In the mid-1990s, about 75 percent of PTAs were regional; by 2003, this share had dropped to about 50 percent

8.3 Within the broad category of PTAs, one can distinguish five forms, listed below, with each subsequent arrangement being a deeper form of integration, requiring more coordination and a greater loss of autonomy

- A. *Partial Scope Agreement (PSA)*: A PSA is only partial in scope, meaning it allows for trade between countries on a small number of goods.
- B. *Free Trade Agreement (FTA)*: A free trade agreement is a preferential arrangement in which members reduce tariffs on trade

Figure 1: Proliferations of different forms of PTAs around the world


among themselves, while maintaining their own tariff rates for trade with nonmembers.

- C. *Customs Union (CU)*: A customs union (CU) is a free-trade agreement in which members apply a common external tariff (CET) schedule to imports from nonmembers.
- D. *Common Market (CM)*: A common market is a customs union where movement of factors of production is relatively free amongst member countries.
- E. *Economic Union (EU)*: An economic union is a common market where member countries coordinate macro-economic and exchange rate policies.

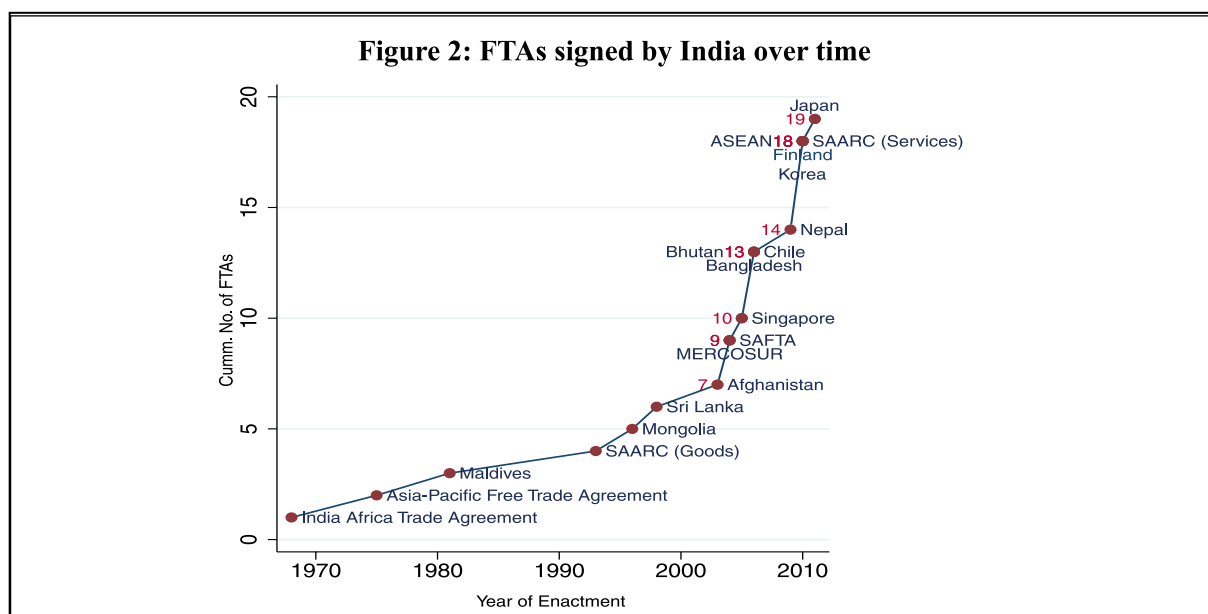
INDIA AND FREE-TRADE AGREEMENTS

8.4 In addition to its long-standing commitment to multilateralism under WTO agreements and in line with global trends, India has made use of FTAs as a key component of its trade and foreign policy, especially from 2003-04 onwards (Figure 2).

8.5 Hitherto, India has mainly focused on

partnering with other Asian countries, and in goods more so than in services. Within Asia, India has signed bilateral FTAs with Sri Lanka (1998), Afghanistan (2003), Thailand (2004), Singapore (2005), Bhutan (2006), Nepal (2009), Korea (2009), Malaysia (2011) and Japan (2011). There have also been two regional trade agreements, the South Asian Free Trade Agreement (SAFTA, 2004) and the India-Association of Southeast Asian Nations Agreement (ASEAN, 2010). Outside Asia, FTAs have been agreed with Chile (2006) and MERCOSUR (2004).

8.6 The depth of integration offered by these FTAs both in goods and services is highlighted in Table 1 and Table 2. An earlier study on FTAs commissioned by the Ministry of Finance and authored by Rupa Chanda of the Indian Institute of Management, Bangalore notes that there are differences in the coverage of products and degree of integration across recent FTAs. For example, the India-Korea CEPA contains chapters on Origin Procedures, Telecommunication and Audio-Visual Co-production, but these are not included in the India-Japan CEPA. On



the other hand, the India-Japan agreement has chapters on Technical Regulations, Standards and Conformity Assessment Procedures and Sanitary and Phytosanitary Measures, Government Procurement and Improvement of Business Environment but these chapters are not included in the India-Korea CEPA. In

other words, all FTAs are not the same, and these differences need to be recognized when analyzing their impact.

MEGA-REGIONALISM

8.7 Recently, PTAs have begun to morph into mega-regional agreements, which would

Table 1¹: Degree of Integration for Goods Trade under major FTAs

Scope of Chapters	Korea CEPA	Singapore CEPA	Japan CEPA	ASEAN
FTA				
National Treatment	√	√	√	
Rules Of Origin	√	√		√
Non-tariff Measures	√	√		√
Customs Value	√	√	√	
Customs Duties	√		√	√
Exceptions	√	√		
Classification	√	√	√	
Trade Remedies	√			
Anti-dumping	√	√	√	
Safeguard Measures	√	√	√	√
TBT And SPS Measures	√			
Subsidies And Countervailing Measures	√	√	√	√
Tariff Reduction Tracks				√
Exchange Of Information And Petition	√	√		
Import Export Restrictions			√	

¹ Chanda, Rupa. Indian Institute of Management Bangalore. November, 2014. *Impact Analysis of India's Free Trade Agreements*. Submitted to- Department of Economic Affairs, Ministry of Finance Government of India. Table 1.1, page 14.

Table 2: Degree of Integration for Services Trade under major FTAs

Scope of Chapters	Korea CEPA		Japan CEPA		Singapore CEPA	
	India	Korea	India	Japan	India	Singapore
Business Services	√	√	√	√	√	√
Communication Services	√	√	√	√	√	√
Construction And Related Engineering Services	√	√	√	√	√	√
Distribution Services	√	√	√	√	√	√
Educational Services	√	√	√	√		√
Environmental Services	√	√	√	√		√
Financial Services	√	√	√	√	√	√
Health Related And Social Services	√		√	√	√	√
Tourism And Travel Related Services	√	√	√	√	√	√
Recreational Cultural And Sporting Services	√	√	√	√	√	√
Transport Services	√	√	√	√	√	√

encompass a large share of world GDP and trade. Mega-regionals, in other words, are PTAs on steroids. The two major mega-regionals are the Trans-Pacific Partnership (TPP), which has been signed but not yet ratified by member countries, and the Trans-Atlantic Trade and Investment partnership (TTIP), which is currently being negotiated (Figure 3). The TPP comprises twelve member countries: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, United States, and Vietnam, as shown in the map below. The TPP will cover 40 percent of global GDP² and 33 percent of world trade³.

8.8 TTIP, when concluded, will be a PTA between the United States and the European Community of 27 member states and representing “30 percent of global merchandise trade, about 40 percent of world trade in services, and nearly half of global GDP”⁴. India is not part of these groupings

(although it has its own PTAs with members of TPP and TTIP) and will hence be outside these large trade zones.

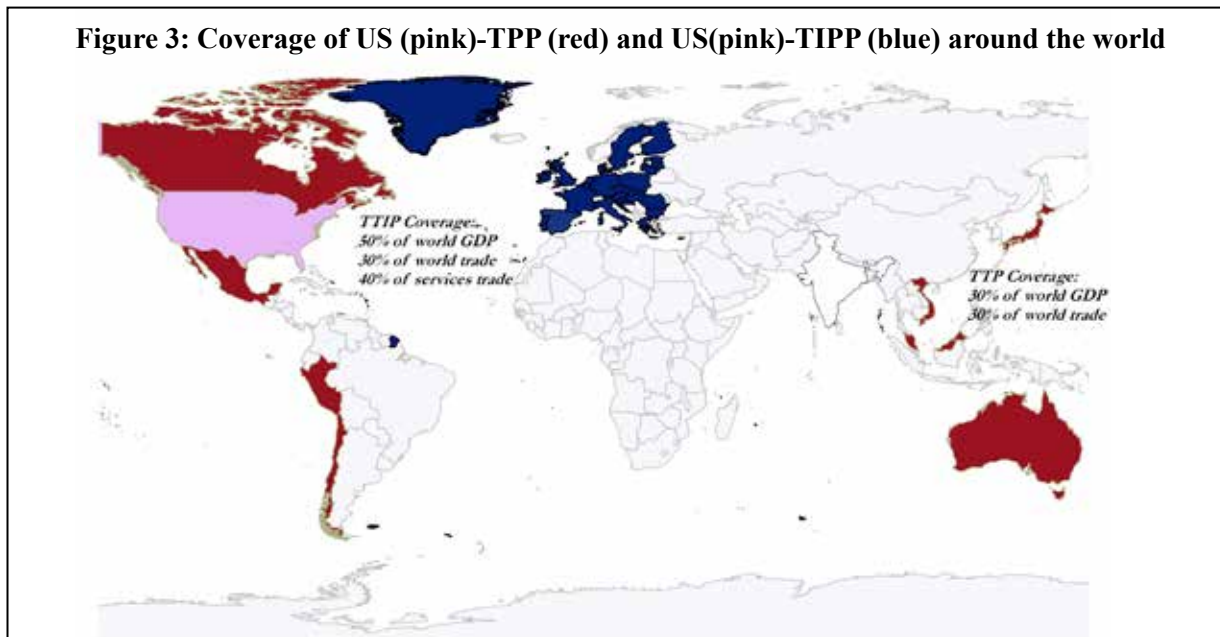
8.9 Consider the possible impact of the TPP. The World Bank estimates that by 2030 the TPP will raise member country GDP by 0.4-10 percent, and by 1.1 percent, on a GDP-weighted average basis, mainly owing to measures to reduce non-tariff barriers.⁵ Vietnam and Malaysia would be amongst the TPP member countries benefiting the most. At the same time, the Bank also estimates that non-members will suffer a marginal reduction in GDP (Figure 4). For example, activity in Korea and Thailand could be set back as a result of shrinking market access and greater competition in export markets. Perhaps surprisingly, some non-member countries such as Russia could benefit, because standards in export markets will be harmonised. In India’s case, the effect on exports is marginally positive, but its effect

² Overview of the Trans-Pacific Partnership. United States Trade Representation (USTR). <https://ustr.gov/tpp/overview-of-the-TPP>

³ The Trans-Pacific Partnership Trade Accord Explained. *New York Times*. Oct. 5, 2015. <http://tinyurl.com/q8lp1lf>

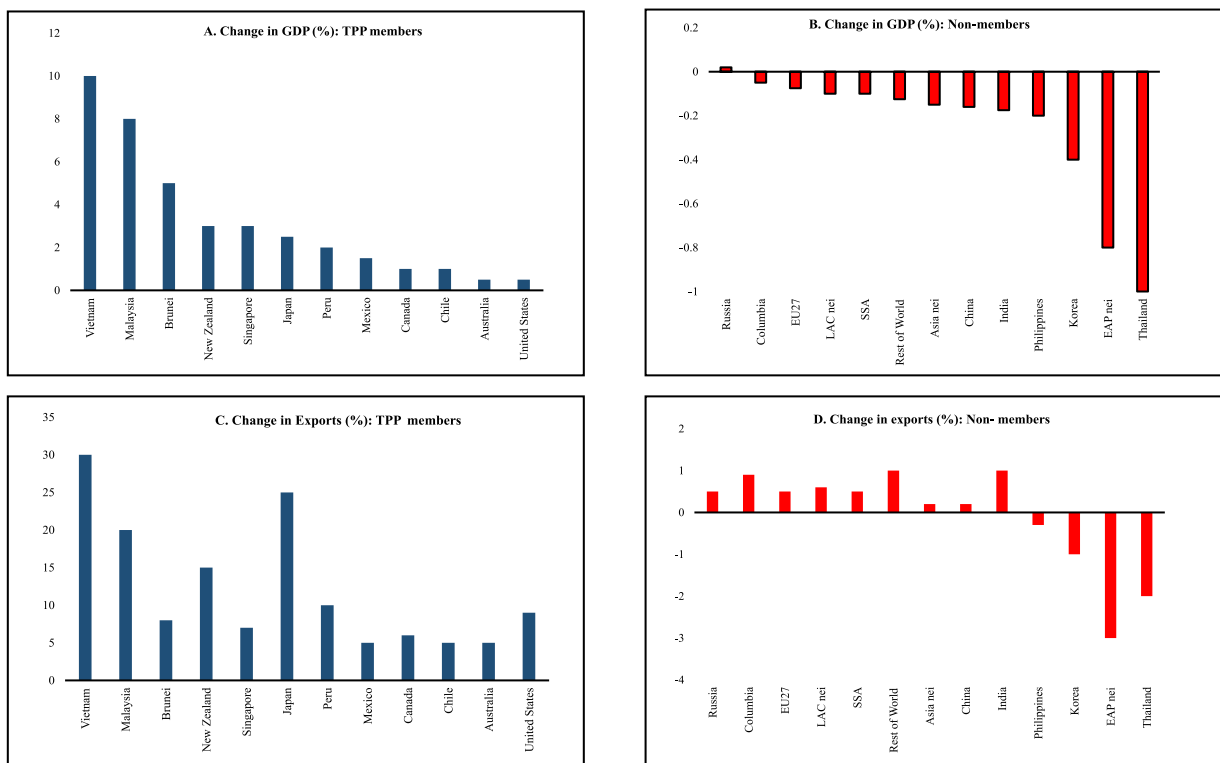
⁴ European American Chamber of Commerce. <http://www.eaccny.com/international-business-resources/what-you-need-to-know-about-ttip/>

⁵ Global Economic Prospects, World Bank. Potential Macroeconomic Implications of the Trans-Pacific Partnership, January 2016. <http://tinyurl.com/guyavpk>

Figure 3: Coverage of US (pink)-TPP (red) and US(pink)-TIPP (blue) around the world

on the country's GDP is about -0.2 per cent. Meanwhile, Petri and Plummer⁶ (2016), suggest an increase of 0.3 per cent in real

income for members and a decrease of 0.1 per cent for India by 2020.⁷

Figure 4: Estimated effects of FTAs on member and non-member countries

⁶ Petri, P.A. and Plummer, M.G.; The Economic Effects of the Trans-Pacific Partnership: New Estimates. Working Paper, Peterson Institute of International Economics. January 2016. <http://tinyurl.com/zr8w4j9>

⁷ Real income gains are similar, but not identical, to gains in real GDP. The relationship between real GDP and real incomes depends on relative prices. For example, if the TPP lowers output prices relative to consumer goods prices, then a given GDP increase will correspond to a smaller real income increase.

TO PTA OR NOT TO PTA?

8.10 Against this background of proliferating FTAs and the emergence of mega-regionalism, a review of India's FTAs is overdue. Any reduction in tariff barriers should spur trade between partners, by offering greater market access for firms and encouraging specialization within industrial subsectors. However, the impact of an FTA on the trade *balance* is unclear, as it may favor one region over the other. Similarly, the impact on welfare can be uncertain, as Jacob Viner's seminal analysis showed.⁸ That's because FTAs, in contrast to unilateral trade liberalization, give rise not only to beneficial trade creation but also to trade diversion.⁹ Trade diversion occurs when tariff preferences offered under an FTA causes a shift of imports from firms in non-FTA member countries to less efficient firms within the trade bloc, which now become competitive due to tariff reliefs.¹⁰

8.11 FTAs therefore require a careful empirical analysis, as their implications for the country's policy are wide-ranging. Do they actually improve welfare? Are the effects heterogeneous across the different types of FTAs, between imports and exports, or across subsectors?

Before we attempt to answer these questions, we briefly review the literature for India:

1. *Impact of India-ASEAN Free Trade Agreement: A cross-country analysis using applied general equilibrium modelling* (Chandrima Sikdar & Biswajit Nag. 2011, UNESCAP). The authors employ a CGE modelling framework to conclude that the trade balance for India after the ASEAN FTA became even more negative. In terms of exports, India obtained the largest market access

in Cambodia, Lao PDR, Malaysia, Philippines, Thailand and Vietnam.

2. *Impact Analysis of India's Free Trade Agreement* (Rupa Chanda. 2014, IIM Bangalore). The author, using a before and after comparison for selected commodities under selected FTAs, concludes that the country has not effectively made use of the trade agreements to increase its exports. The author finds a significant increase in imports through the Most Favoured Nation (MFN) route, and recommends "relaxation of structural and regulatory factors" to promote exports.
3. *India-Korea CEPA: An Appraisal of Progress* (V S Seshadri. 2015, Research and Information System for Developing Countries (RIS) Study): Meeting stakeholders, regulatory bodies, and officials in India and Korea, the author observes a heterogeneous impact on exports. For agriculture in particular, the author reports negligible effects.
4. *Economy-wide Impact of the Trade Integration between Japan and India: A Computable General Equilibrium Analysis* (Biswa Nath Bhattacharyay and Kakali Mukhopadhyay. 2013). Using a CGE model, the authors estimate a marginal increase in output growth for India due to tariff reductions. Contrary to earlier studies, the authors also estimate greater exports from India and positive net welfare for both countries.
5. *Reassessing the impact of the ASEAN-India Free Trade Agreement* (Tham Siew Yean and Andrew Kam Jia Yi. 2014): Using a gravity model, the authors estimate an increase in GDP and bilateral

⁸ Viner, Jacob. *The Customs Union Issue*. New York: Carnegie Endowment for International Peace, 1950.

⁹ Krishna, Pravin. *Are Regional Trading Partners "Natural"?*. 2012. *Journal of Political Economy*

¹⁰ J J Schott. *Free Trade Agreements: Boon or Bane of the World Trading System*. Peterson Institute of International Economics (PIIE). <http://tinyurl.com/hqloq6t>

trade between the two regions. One of the biggest barriers to trade according to the study are distance costs.

EMPIRICAL FRAMEWORK

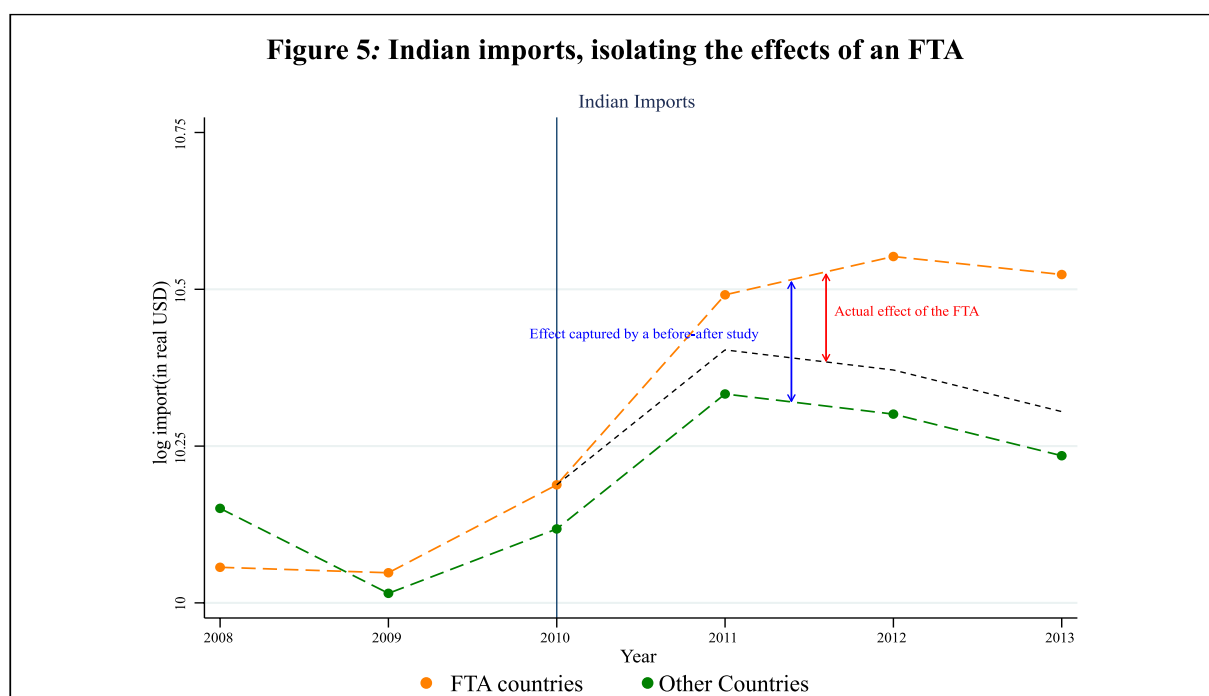
8.12 A second reason to review India's PTAs is that most studies on Indian FTAs are based on a simple analysis, a before-after study, which compares outcomes based on the pre-and-post effects of an FTA. The drawback of such an approach is that it fails to isolate the effect of the policy change from trends which would have happened even without the policy change. For example, trade between India and Korea could have grown post-2010 even in the absence of the FTA because of other reasons, including factors such as demand and supply conditions in the two countries.

8.13 We use instead a difference-in-difference¹¹ identification technique that will better help us isolate the effect of the FTA on trade, controlling for other confounding factors. The key idea is having a set of "control" countries which did not sign an FTA

with India and look at how trade with them evolved controlling for various parameters. This helps us construct a counterfactual for how trade would have evolved with FTA partners in the absence of the FTA. Comparing the true evolution of trade with FTA partners relative to the counterfactual allows us to isolate just the effect of the FTA.

8.14 For example, in the Figure 5 below, the orange line is log of Indian imports from FTA countries and the green line from non-FTA countries. The grey dotted line shows how imports from FTA countries would have evolved if they had followed the same path as imports from non-FTA countries. Comparing the orange to the grey line allows us to isolate only the effect of the FTA. In contrast, a comparison of the orange to the green line would overstate the effects of the FTA.

8.15 The next issue is to specify what parameters determine trade in the absence of an FTA. Here we rely on the gravity model of trade, which is arguably one of the most empirically robust relationships in economics



¹¹ See Angrist, Joshua D., and Jörn-Steffen Pischke. *Mostly harmless econometrics: An empiricist's companion*. Princeton University Press, 2008. and Plummer, Michael G., David Cheong, and Shintaro Hamanaka. *Methodology for impact assessment of free trade agreements*. Manila: Asian Development Bank, 2010. for details.

and is also well-founded in theory.¹² The gravity model, attributed to Tinbergen (1962), relates bilateral trade flows between countries to country-specific characteristics. The two basic axioms are that trade flows between countries are directly proportional to the “size” of the two countries - as measured by GDP - and inversely proportional to the distance between them. Distance is a proxy for all trade costs between countries, including not just transport costs, but also those related to language, currency, policy etc. The idea being that countries having a similar language, currency, political system or colonial links are more likely to trade with each other because all costs other than transportation will be lower.¹³

BASIC FACTS AND TRENDS

8.16 For the purpose of this analysis, we focus on three major FTA partners: ASEAN, Korea and Japan. We refer to these nations as FTA countries. The other countries are called non-FTA since the bulk of trade with

such countries is not under an FTA with India. Before we present the main results, we describe the broad trends in our data¹⁴.

8.17 Table 3 looks at three year year-on-year growth rates of imports and exports. As expected, post-FTA growth rate of exports and imports in FTA countries is higher than Non-FTA countries. Within the set of FTA countries, ASEAN growth rate of trade after the enactment of FTA is much higher than other FTA countries.

8.18 Average (simple averages calculated at a six-digit product level pooling export and import) pre-FTA tariffs (on India's imports and its exports to partner countries) were similar for trade with FTA and non-FTA countries (about 8½ per cent) as shown in Table 4. Unsurprisingly, there has been a greater reduction in tariffs for FTA countries, with an average decline of about 3½ percentage points in tariff rates, mainly on account of reductions in Indian import tariffs. The ASEAN FTA has seen the largest decline

Table 3: Trends in trade¹⁵

Exports					
Years	Non-FTA Countries	FTA Countries	ASEAN	Japan	Korea
2007-08	29%	29%	30%		14%
2008-09	14%	13%	17%	-22%	38%
2009-10	-4%	-4%	-5%	20%	-13%
2010-11	41%	37%	41%	40%	9%
2011-12	19%	38%	43%	24%	17%
2012-13	-1%	-9%	-10%	-4%	-3%
2013-14				12%	
	Non-FTA Countries	FTA Countries	ASEAN	Japan	Korea
Pre FTA	13%	13%	14%	13%	13%
Post-fta	20%	22%	25%	11%	7%
Differences	7%	9%	11%	-2%	-5%

¹² Anderson J.E., Wincoop, E. van. Gravity with Gravitas: A Solution to the Border Puzzle. National Beureau of Economic Research (NBER). January 2001. <http://www.nber.org/papers/w8079>

¹³ Appendix 4 of the Technical Appendix of Chapter-8 provides for a more detailed exposition of gravity's empirical framework

¹⁴ Appendix 4 of the Technical Appendix of Chapter-8 offers description of the data in greater detail.

¹⁵ Source: Ministry of Finance, Government of India. Japan FTA starts in 2011-12, indicated with a kink in the tables

Imports					
Years	Non-FTA Countries	FTA Countries	ASEAN	Japan	Korea
2007-08	37%	27%	25%		26%
2008-09	20%	22%	16%	25%	44%
2009-10	-5%	-4%	-2%	-15%	-1%
2010-11	29%	21%	19%	28%	22%
2011-12	32%	35%	38%	39%	22%
2012-13	0%	2%	2%	4%	2%
2013-14				-24%	

	Non-FTA Countries	FTA Countries	ASEAN	Japan	Korea
Pre FTA	17%	15%	13%	13%	23%
Post-fta	20%	19%	19%	6%	16%
Differences	3%	4%	6%	-7%	-7%

in India import tariffs (Table 5).

8.19 Figure 6 compares import flows for FTA and Non-FTA countries starting 2010.¹⁶ As a first pass, the figure indicates an increase in the median log value of imports from FTA countries as compared to non-FTA countries (Figure 6a). The value of exports however appears to be similar for FTA and Non-FTA countries as show in Figure 6b.

MAIN RESULTS

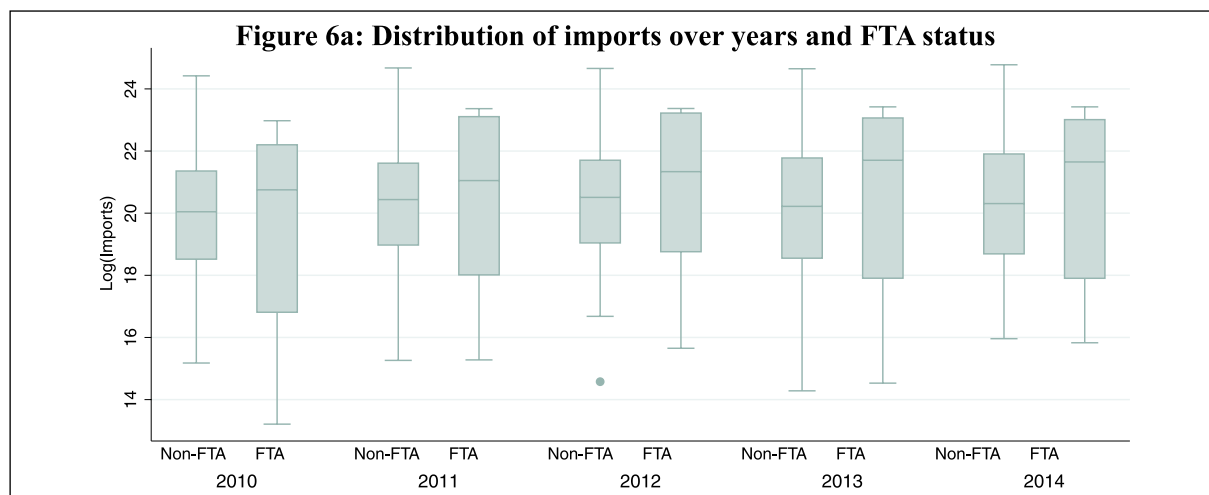
8.20 Now we consider our empirical findings regarding the impact of FTAs on trade. To preview the results, we find positive effects that are both substantial and persistent.

Table 4: Average tariffs for overall trade

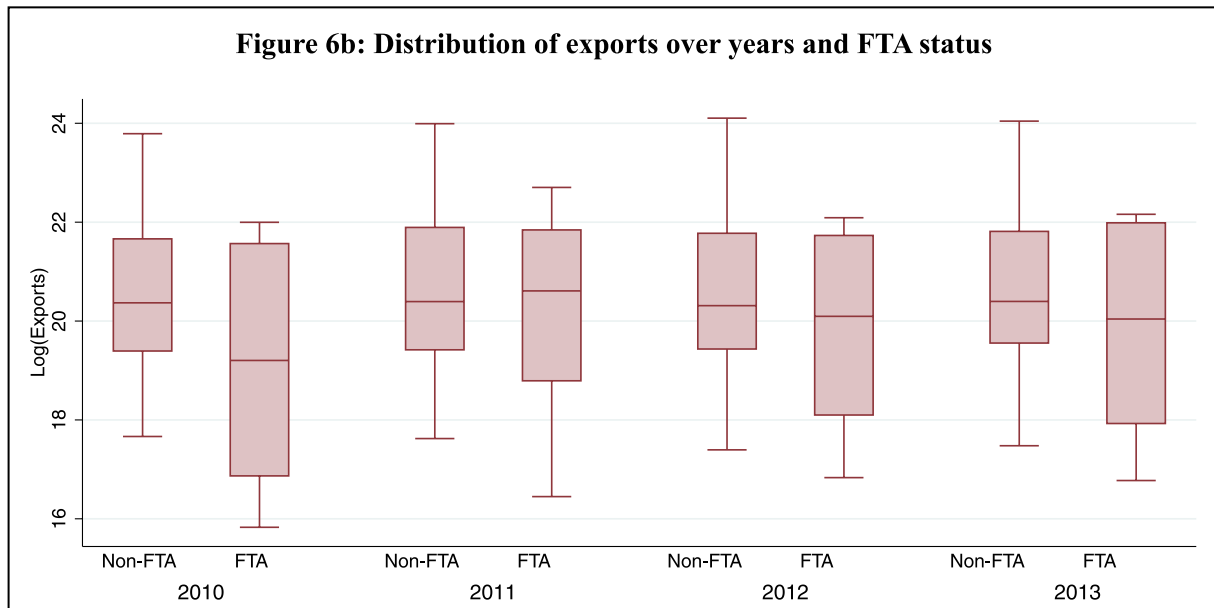
	Pre FTA	Post FTA
Non FTA countries	8.5%	7.7%
FTA countries	8.6%	5.0%

Table 5: Average tariffs disaggregated into export and import flows

	Imports		Exports	
	Pre FTA	Post FTA	Pre FTA	Post FTA
Non FTA	11.4%	10.1%	6.1%	5.4%
FTA countries	11.2%	5.8%	5.7%	4.0%
ASEAN	11.3%	4.7%	6.1%	4.0%
Japan	11.4%	7.5%	3.3%	3.5%
Korea	11.1%	8.3%	9.0%	6.0%



¹⁶ The data for exports for both group of countries is unavailable in the BACI dataset for the 2014



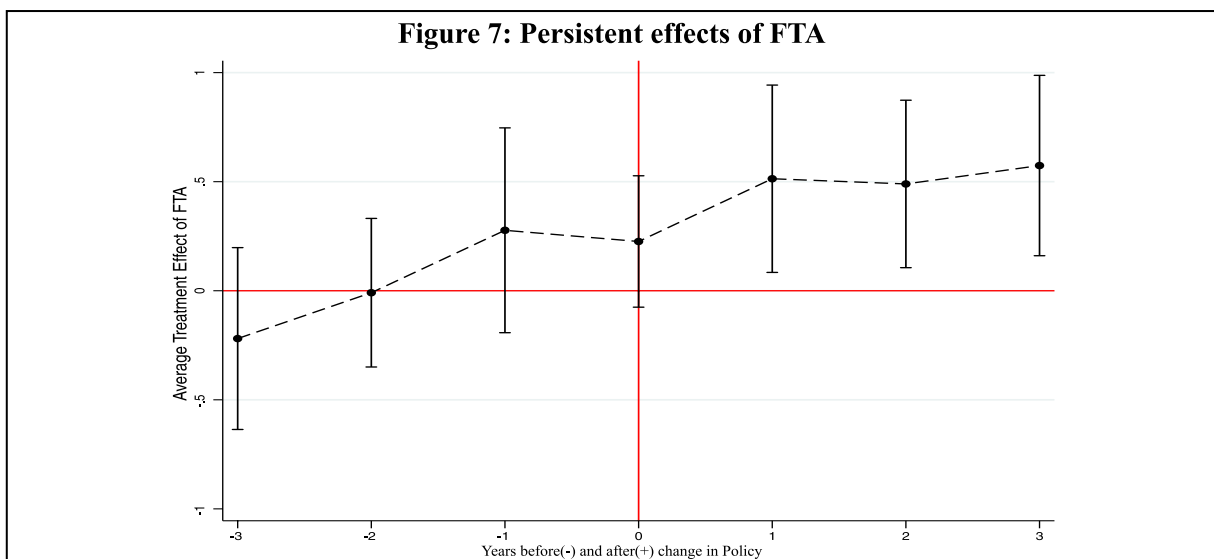
1. Increased Trade

The overall effect on trade of an FTA is positive and statistically significant. The regression results are reported in Table A1.1 in Appendix 1, Technical Appendix, Chapter-8.¹⁷ The cumulative effect - between the year of the FTA and 2013 - on trade with ASEAN, Japan, and Korea is approximately equal to 50 percent. This is substantial. We

test whether India's increased trade with FTA countries is due to diversion of imports from more efficient non-FTA countries and find that is not the case.

II. Persistent Effects

Figure 7 plots the FTA effect—and the statistical confidence interval—before and after FTAs are signed. The figure shows that within a year of the agreement coming into



¹⁷ We should also note that in the basic regressions trade with Singapore is omitted. This is because pre-FTA Singapore had a zero MFN tariff on all but 5 product lines. Having Singapore in the sample could lead to spurious correlation with the FTA dummy and bias the estimates. In the “product” level regressions later, when we regress trade on applied tariffs, we do include Singapore, because the tariff variable can explicitly take this factor into account.

force, the effect of FTAs become positive and significant, with effects even increasing in the subsequent few years. The figure also indicates that the anticipatory effects of an FTA are minimal.

III. *Especially for ASEAN FTA*

While ASEAN and the Korean FTA show statistically significant and positive effects on trade values, the effect of the Japanese FTA on trade is not statistically significant. However, this does not imply that the Japanese FTA did not have any effect—it could still have had an effect on specific product lines. We explore this possibility below. That said, the ASEAN FTA does seem to have the biggest trade impact, which makes sense, since this arrangement saw the greatest reduction in Indian import tariffs, as shown in Table 5.

IV. *Especially for Imports*

Table A1.2 in Appendix 1, Technical Appendix, Chapter-8 compares FTA effects on exports and imports separately. They are of the order of 27 per cent and 63 per cent, respectively (on the import side, the result is robust to adding Singapore into the sample). In case of the ASEAN FTA, the country has benefitted on both sides of trade flows with a statistically significant 33 per cent increase in exports and 79 per cent increase in imports. The effect of the Korean FTA is insignificant, whereas, the Japan FTA has had a significantly negative effect on exports (a fall of 18 per cent) and a statistically zero effect on imports. Similarly, Table A1.3, Technical Appendix, Chapter-8 indicates that the effect of FTAs on imports as a share of total trade is statistically 7 per cent higher as compared to non-FTA countries.

V. *Especially for Metals and Textiles*

In Table A3.1, Appendix 3, Technical Appendix, Chapter-8 we look at the effects

of FTA tariff reduction in four major sectors: textiles, metals, automobiles and machinery. The comparator group in this section consists of both non-FTA countries and all sectors other than the four major ones listed above.¹⁸ The top and the bottom panels show results for imports and exports respectively.

On the import side, a ten per cent reduction in FTA tariffs for metals and machinery increases imports by 1.4 per cent and 2.1 per cent respectively, compared to other products from FTA or all products from Non-FTA countries (note this is the marginal effect of importing metals and machines from FTA countries relative to all products from Non-FTA countries). However, the effect on auto imports is not significantly different from the comparator group.

On similar lines, textile exports to FTA countries increase by 2 per cent relative to comparator group for 10 per cent decrease in tariffs.

VI. *Disaggregated Effects*

Columns (1) of Table A2.1 in Appendix 2, Technical Appendix, Chapter-8 reports results for the effect of tariffs on trade holding gravity variables constant. As expected, a ten per cent reduction in tariff increases overall trade by 3.1 per cent, irrespective of whether the reduction occurs unilaterally or preferentially. In Column (2) we check the robustness of our earlier result by controlling for numerous confounding factors on the exporting and importing side. The trade elasticity reduces to 2.7 per cent for a 10 per cent tariff reduction but continues to have a strong significant effect. Column (3) isolates the effect of FTA tariff reductions from unilateral tariff reductions. While marginal effect of FTA tariff reduction is negative, on average FTA tariff reduction causes trade to go up by 2.9 per cent.¹⁹

¹⁸ All product categories other than the four major sectors are hereafter referred to as “other products”

¹⁹ The average effect of non-FTA tariff reduction is 0.3%. The average effect of FTA tariff reduction is calculated as = $-0.3\% + 0.16\% * (\text{average post tariff FTA (using table 4, column 2)}) = -0.2919\%$.

Table A2.2, Appendix 2, Technical Appendix, Chapter-8 shows the effect of reductions on imports and exports separately. Columns (1) and (2) show that a 10 per cent decrease in unilateral tariffs increases exports and imports by 0.7 per cent and 1.2 per cent, respectively. (Note that in the case of ASEAN, for example, a 10 per cent reduction in tariffs translates to a reduction from 6.1 per cent to 5.5 per cent on the export side, but a much larger reduction, from 11.3 per cent to 10.2 per cent, in import duties.)

We also find that FTA-based reductions have the same impact as non-FTA ones. That is, a 10 per cent import side reduction in tariffs has the same effect in FTA and non-FTA cases: imports increase by 0.9 per cent. Similarly, a 10 per cent reduction on the export side has the same effect in both cases: an average export increase of 0.5 per cent.

CONCLUSION: POLICY IMPLICATIONS

8.21 Our results are preliminary. More work is needed to enrich our analysis and extend it to services. Without that, it is difficult to come to any definitive conclusions about the overall impact of India's FTAs. With that caveat, the results yield the following implications. India's FTAs have worked exactly as might be expected. They have increased trade with FTA countries more than would have happened otherwise. Increased trade has been more on the import than export side, most likely because India maintains relatively high tariffs and hence had larger tariff reductions than its FTA partners.

8.22 The trade increases have been much

greater with the ASEAN than other FTAs and they have been greater in certain industries, such as metals on the import side. On the export side, FTAs have led to increased dynamism in apparels, especially in ASEAN markets. This is consistent whether one looks at aggregated partner level effects or at a disaggregated partner-product level effects.

8.23 Going forward, the big question for India is whether to continue negotiating FTAs and if so with whom? A related and perhaps even bigger question is how India should position itself relative to the new mega-regional agreements.

8.24 Multilateral trade liberalisation remains, of course, the best way forward. But the WTO process seems to have been overtaken by preferential trade agreements. Against this background, India has a strategic choice to make: to play the same PTA game as everyone else or be excluded from this process. The results of our preliminary analysis suggest that Indian PTAs do increase trade without apparently leading to inefficient trade. In the current context of slowing demand and excess capacity with threats of circumvention of trade rules, progress on FTAs, if pursued, must be combined with strengthening India's ability to respond with WTO-consistent measures such as anti-dumping and conventional duties and safeguard measures.

No matter what India ultimately decides, one thing is clear. Analytical and other preparatory work must begin in earnest to prepare India for a mega-regional world.

Reforming The Fertiliser Sector

Recent reforms in the fertiliser sector, including neem-coating to prevent diversion of urea to industrial uses, and gas-pooling to induce efficiency in production, are steps in the right direction. Fertiliser accounts for large fiscal subsidies (about 0.73 lakh crore or 0.5 percent of GDP), the second-highest after food. We estimate that of this only 17,500 crores or 35 per cent of total fertiliser subsidies reaches small farmers. The urea sector is highly regulated which: creates a black market that burdens small farmers disproportionately; incentivises production inefficiency; and leads to over-use, depleting soil quality and damaging human health. Reforms to increase domestic availability via less restrictive imports (“decanalisation”) and to provide benefits directly to farmers using JAM will address many of these problems.

INTRODUCTION

9.1 Since 2014, important reforms have been implemented in the fertiliser sector. These include the neem-coating of urea, which has likely reduced the diversion of fertiliser meant for Indian farmers; and gas-pooling, which should increase efficiency of domestic urea production. Both steps should help small farmers by improving their access to low cost fertiliser. They will also provide good building blocks for further fertiliser sector reform.

9.2 This chapter explores what the next reform steps should be. But before we get to the reform agenda, we first need to understand the long-standing features of the fertiliser sector that induce major distortions which need to be corrected.

9.3 The government budgeted ₹73,000 crore—about 0.5 per cent of GDP—on fertiliser subsidies in 2015-16. Nearly 70 per cent of this amount was allocated to urea, the most commonly used fertiliser, making it the largest subsidy after food.

9.4 Distortions in urea are the result of multiple regulations. First, there are large subsidies based on end use—only agricultural urea is subsidised—which creates incentives to divert subsidised urea to industry and across the border. In fact, subsidised urea suffers from 3 types of leakage: (i) 24 per cent is spent on inefficient urea producers (ii) of the remaining, 41 per cent is diverted to non-agricultural uses and abroad;¹ (ii) of the remaining, 24 per cent is consumed by larger—presumably richer—farmers. These leakages imply that only 35 per cent—about ₹17,500 crore of the total

¹ This leakage figure is estimated as the difference between urea allocations and urea consumption as measured by the Cost of Cultivation Survey 2012-13. The urea consumption estimated via the COC survey is scaled up by applying multipliers provided in the summary sheet to the unit level data. Comparing allocations with consumption, and measuring household consumption in this way, is a method that has been used to estimate leakages for kerosene, rice and wheat using NSS consumption and the PDS allocations.

urea subsidy of ₹ 50300 crore—reaches the intended beneficiaries, small and marginal farmers.

9.5 Second, under-pricing urea, relative to other fertilisers, especially P & K, encourages overuse, which has resulted in significant environmental externalities, including depleted soil quality.

9.6 Third, multiple distortions—price and movement controls, manufacturer subsidies, import restrictions—feed upon each other, making it difficult to reallocate resources within the sector to more efficient uses. The fertiliser sector is thus one example of the exit problem that bedevils the Indian economy (see Chapter II).

BASIC FACTS

9.7 This section reviews some basic facts

about the fertiliser sector. There are 3 basic types of fertiliser used—urea, Diammonium Phosphate (DAP), and Muriate of Potash (MOP). Box 9.1 provides more detail, and some basic price and quantity facts about each. In many ways, urea dominates the sector. Of all the fertilisers, it is the most produced (86 per cent), the most consumed (74 per cent share), and the most imported (52 per cent). It also faces the most government intervention. Urea is the most physically controlled fertiliser, with 50 per cent under the Fertiliser Ministry's movement control order compared with 20 per cent for DAP and MOP. It also receives the largest subsidies, in outlay terms (accounting for nearly 70 per cent of total fertilisers subsidy) and as proportion of actual cost of production (75 per cent per kg, compared with about 35 per cent for DAP and MOP).

Box 9.1: The ABC of Fertiliser

Fertiliser provides 3 major nutrients which increase agriculture yields:

Nutrient	Main source
Nitrogen (N)	Urea
Phosphorus (P)	DAP
Potassium (K)	MOP

The optimal N:P:K ratio varies across soil types but is generally around 4:2:1

Table 9.1: Basic Fertiliser quantity facts (2014-15)

	Production		Consumption		Imports	
	Volume ('000MT)	Value (₹ crore)	Volume ('000MT)	Value (₹ crore)	Volume ('000MT)	Value (₹ crore)
DAP	3445	12471	7626	27606	3853	13948
MOP	-	-	2853	7418	4197	10912
Urea	22593	43830	30610	59383	8749	16973

Table 9.2: Basic fertiliser price facts (2014-15)

	Domestic Subsidised Price (₹/50kg)	International price (₹/50kg)	Subsidy (₹/50kg)	Import restriction	% of volume that is under movement control
DAP	1200	1810	618	None	20%
MOP	800	1300	465	None	20%
Urea	270	970	807	Canalised*	50%

Source: Fertiliser Association of India (FAI)

Note: numbers in bold are fixed by the government. The others are market prices.

* Only 3 firms allowed to import.

9.8 Government interventions in urea and DAP/MOP differ not just in scale, but also in kind. DAP and MOP producers and importers receive a Nutrient Based Subsidy (NBS) based on a formula that determines the amount of N, P and K in a given amount of fertiliser. Per kg subsidies on DAP and MOP fertiliser are hence fixed—they do not vary with market prices. Imports of DAP and MOP are also not controlled. The prices farmers face are thus deregulated market prices adjusted by fixed nutrient subsidy. Government involvement in DAP and MOP is limited to paying producers and importers a fixed nutrient based subsidy which works out to be roughly 35 per cent of the cost of production.

9.9 The case of Urea is very different. The government intervenes in the sector in five ways:

1. It sets a controlled Maximum Retail Price (MRP) at which urea must be sold to farmers. This price is currently ₹ 5360 per metric tonne—approximately ₹268 per 50 kg bag—less than one-third the current imported price (₹18600 per tonne);
2. It provides a subsidy to 30 domestic producers that is firm-specific on a cost-plus basis, meaning that more inefficient producers get larger subsidies² ;
3. It provides a subsidy to importers that is consignment-specific;
4. Imports are canalised—only three agencies are allowed to import urea into India;

5. Finally, about half of the movement of fertiliser is directed—that is, the government tells manufacturers and importers how much to import and where to sell their urea.

9.10 Thus nearly all actors—consumers, producers, importers, distributors—are controlled. These distortions feed upon each other, and together create an environment that leads to a series of adverse outcomes which we describe below.

Leakage 1 – Black Market

9.11 Urea is only subsidised for agricultural uses. Subsidies like this violate what we call the *One Product-One Price* principle—the intuition that products which are essentially the same should be charged essentially the same price, else there will be incentives to divert the subsidised commodity from eligible to ineligible consumers. The 75 per cent subsidy on agricultural urea creates a large price wedge which feeds a thriving black market diverting urea to industry³ and possibly across the border to Bangladesh and Nepal⁴. Comparing urea allocation data with estimates of actual use from the Cost of Cultivation Survey⁵ 2012-13, we estimate that 41 per cent of urea is diverted to industry or smuggled across borders.

9.12 Figure 9.1 shows the extent of black marketing in urea in the year 2012-13. It is estimated that about 51 per cent of Indian farmers buy urea at above-MRP. Figure

² The government introduced the new urea policy in 2015 covering the period 2015-16 to 2018-19. Under this policy gas-based urea plants are placed in three categories based on energy norms. In the first 3 years, energy norms are plant specific but from 2018-19 plants are expected to adopt group/category specific energy norms.

³ Urea is used as one of the ingredients in chemical industry, explosives, automobile systems, laboratories, medical uses, flavour enhancing additive in cigarettes and others.

⁴ A 50kg bag of urea in India costs around ₹ 268 while it is Tk 800 (₹685) in Bangladesh and NPR 996 (₹622) in Nepal.

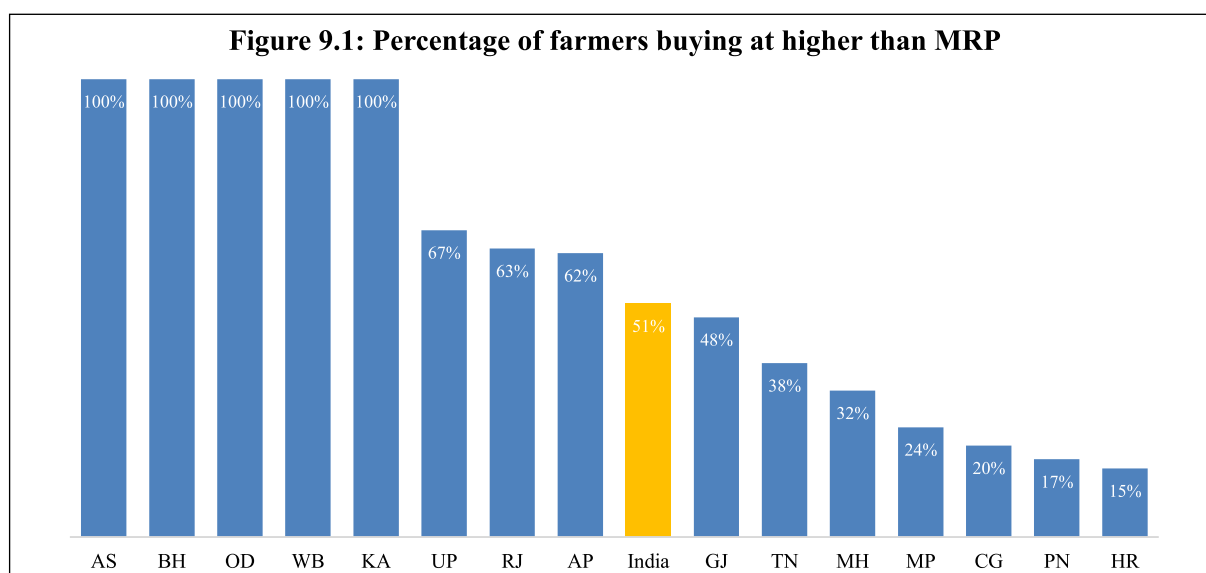
⁵ The Comprehensive Cost of Cultivation (CoC) Survey is a mechanism for data generation on cost structure of crops and various inputs which are used for cultivation of different crops in India. The survey has been designed by the Central Statistics Office (CSO) and the data collection is performed annually by the Department of Agriculture and Cooperation. The 2012-13 round of the CoC survey covered over 1000 villages spanning 17 different states in India. Each village comprised 10 preprational holdings and was sampled randomly under a stratified sampling scheme. We did not have a more recent round of CoC data and our estimates are for 2012-13.

9.1 also presents some evidence of cross-border smuggling. In the three eastern states bordering Bangladesh, 100 per cent of farmers had to buy urea at above MRP in the black market. Similarly, in Uttar Pradesh, which borders Nepal, 67 per cent of farmers had to buy urea in the black market at above the stipulated MRP.

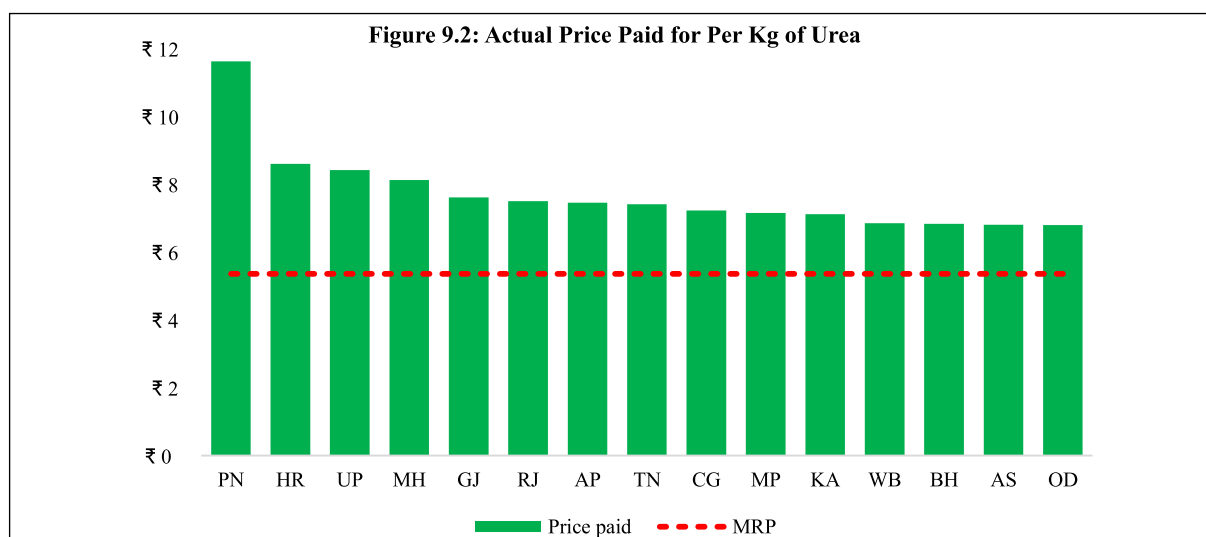
9.13 Figure 9.2 shows that these black market prices are, on average, about 61 per cent higher than stipulated prices (i.e. MRP plus local taxes), indicating that black marketing

imposes significant pecuniary costs on farmers—in addition to creating uncertainty of supply.

9.14 Black market effects are aggravated by a further regulation—canalisation. Only three firms⁶ are allowed to import urea into India, and the canalisers are also instructed when to import, what quantities to import, and in which districts to sell their goods. Every season the Fertiliser Department estimates how much imports are required by forecasting domestic supply and demand. Forecasting



Source: Calculated from Cost of Cultivation Survey (2012-13).



Source: Calculated from Cost of Cultivation Survey (2012-13).

⁶ State Trading Corporation of India (STC), Metals and Minerals Trading Corporation of India (MMTC) and India Potash Limited (IPL).

fertiliser demand is a difficult business, and misestimates— especially shortages— are difficult to correct because the system to procure imports is time consuming. The entire process—from the time the Fertiliser Department decides to import to the time urea reaches consumer centres—takes about 60-70 days. These delays can exacerbate shortages, and are particularly costly during the peak demand period when timely availability of urea is essential for proper plant growth. Farmers are thus pushed to purchase in the black market. In 2014, for example, slow imports are likely to have caused delays which triggered increases in black market prices.

Leakage 2 – Small Farmer Inability to derive full benefits

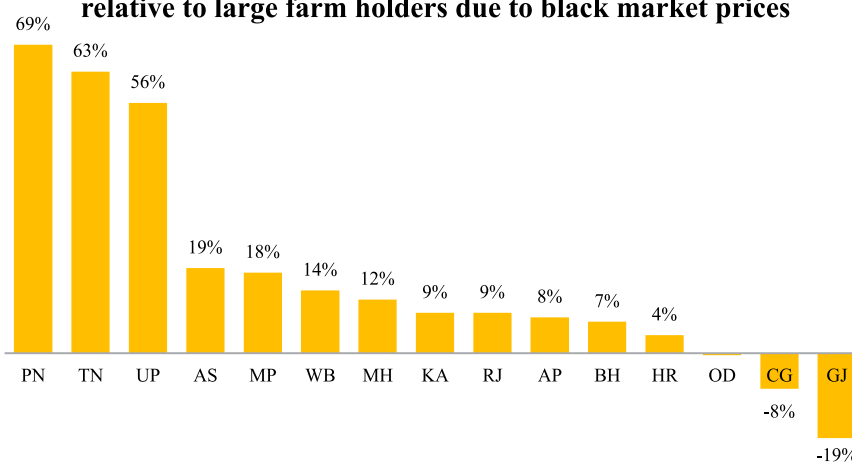
9.15 The black market hurts small and marginal farmers more than large farmers since a higher percentage of them are forced to buy urea from the black market. This regressive nature is characteristic of black market rationing and happens because large farmers are typically better connected and

therefore able to secure scarce subsidised urea. Figure 9.3 shows how much additional cost the black markets imposes on small farmers relative to larger farmers. On average this extra expenditure is 17 per cent, and in some states—Punjab, UP and Tamil Nadu—it is between 55 and 70 percent.⁷

Leakage 3 – Inefficient Fertiliser Manufacturers

9.16 A third source of leakage arises from some of the urea subsidy going to sustaining inefficient domestic production instead of going to the small farmer. Today, there are 30 manufacturing units with varying levels of efficiency. The objective of self-sufficiency has meant a preference for survival and an associated willingness to countenance inefficiency. This has led to a model where the subsidy a firm receives is based on its cost of production: the greater the cost, the larger the subsidy. As a consequence, inefficient firms with high production costs survive and the incentive to lower costs is blunted.

Figure 9.3: Share of additional expenditure incurred by small farmers relative to large farm holders due to black market prices



⁷ The Cost of Cultivation Survey uses five different classifications: less than 1 ha., between 1 and 2 ha., between 2 and 4 ha., between 4 and 6 ha., and greater than 6 ha. In Figure 9.3, we compare the percentage share of additional expenditure incurred due to black market prices for first two size classes (defined as small farmers) with the last two size classes (defined as large farmers). In other words:

$$\text{Share of additional expenditure}_i = \frac{\text{Total expenditure on urea}_i - (\text{Expenditure based on MRP} + \text{local taxes})_i}{\text{Total expenditure on urea}_i} * 100$$

$$\text{Regressivity} = \text{Share of additional expenditure}_i (i = \text{small farmer}) - \text{Share of additional expenditure}_i (i = \text{larger farmer})$$

9.17 Figure 9.4 depicts this practice. It plots the production cost of a firm against the subsidy it receives. The fit is perfect, signifying that the more inefficient the firm, the more subsidies it receives. This year, the government has revised its policy, taking steps in the right direction, but the essential features of being firm-specific and inversely related to efficiency remain as described in footnote-2.

9.18 We estimate that in 2012-13, about 24 per cent of the urea subsidies went to sustaining inefficient production. A consequence of fixing retail prices—combined with the cost-plus subsidy regime—is that even though urea consumption has increased steadily over the last 15 years, no new domestic production capacity has been added, leading to a large dependence on imports. A few plants stopped production, while some big conglomerates like Tata Chemicals, which owns one of the most energy-efficient urea units, have threatened exit.

EXTERNALITIES OF UREA PRICES

Worsening soil quality

9.19 The previous section argued that urea subsidies suffer from significant leakages—to the black market, large farmers, and inefficient manufacturers—which combine to hurt the small farmer. This section discusses

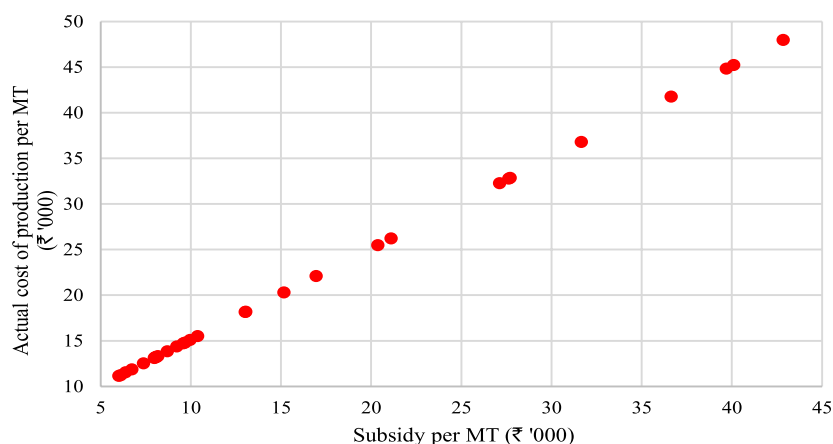
some environmental and health externalities of under-priced urea. The first is urea overuse which leads to the detriment of the soil. Agricultural scientists recommended that for Indian conditions, Nitrogen, Phosphorus and Potassium—N, P and K—should be used roughly in the ratio of 4:2:1.

9.20 Figure 9.5 indicates that in absolute amounts, there seems to be over-use of urea in many of the larger states, especially in Punjab, Haryana, and Uttar Pradesh. The over-use is pronounced compared with the US, the world and many Asian countries. Two exceptions are noteworthy: overuse in China is even greater than in India, while not all states overuse urea. Indeed many, especially in the North East, use less nitrogenous fertiliser per hectare than the world average.

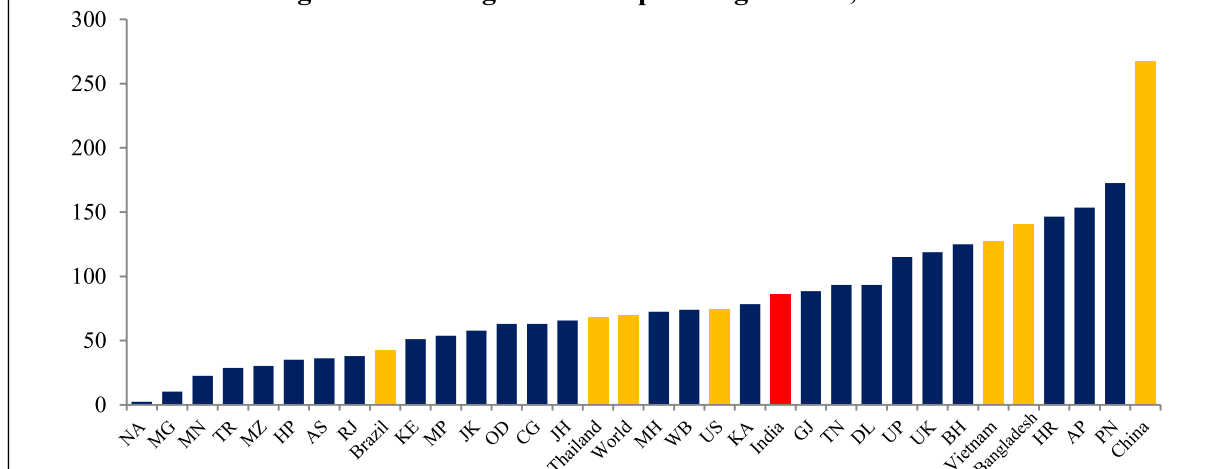
9.21 What is striking and uniform is the distortion in the proportions in which the fertilisers used are skewed. Figures 9.6-9.8 present actual fertiliser use in comparison with the 4:2:1 recommended.

9.22 Figure 9.6 plots deviations from the optimal N:P ratio. Most states use almost twice more nitrogen as compared to phosphorous than is recommended. This pattern is also observed in the most productive states like Punjab, Haryana, UP and Gujarat. The distortions are less in Maharashtra, Karnataka, and Kerala, which consume close

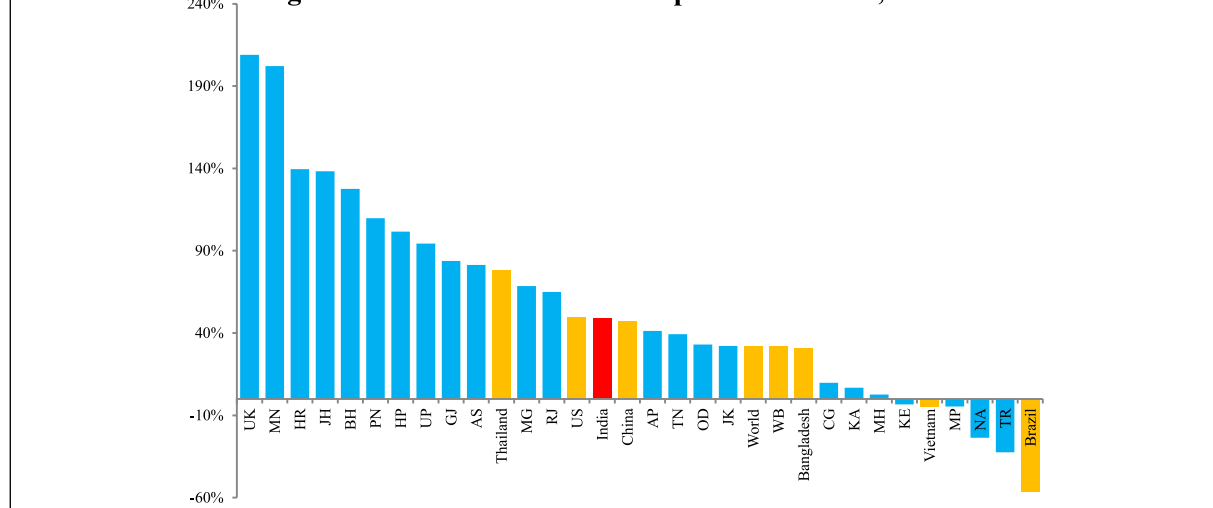
Figure 9.4: Incentivizing Inefficiency: The Urea Regime (Comparing Production Cost versus Subsidies)



Source: Department of Fertiliser

Figure 9.5: Nitrogen Consumption Kg/hectare, 2013-14

Source: Agriculture Statistics at a Glance 2014, Ministry of Agriculture. Data for other countries is for 2011-12.

Figure 9.6: Deviations from the optimal N:P ratio, 2013-14

Source: Agriculture Statistics at a Glance 2014, Ministry of Agriculture.

to the optimal ratio, although this could simply be the result of different crop mixes.

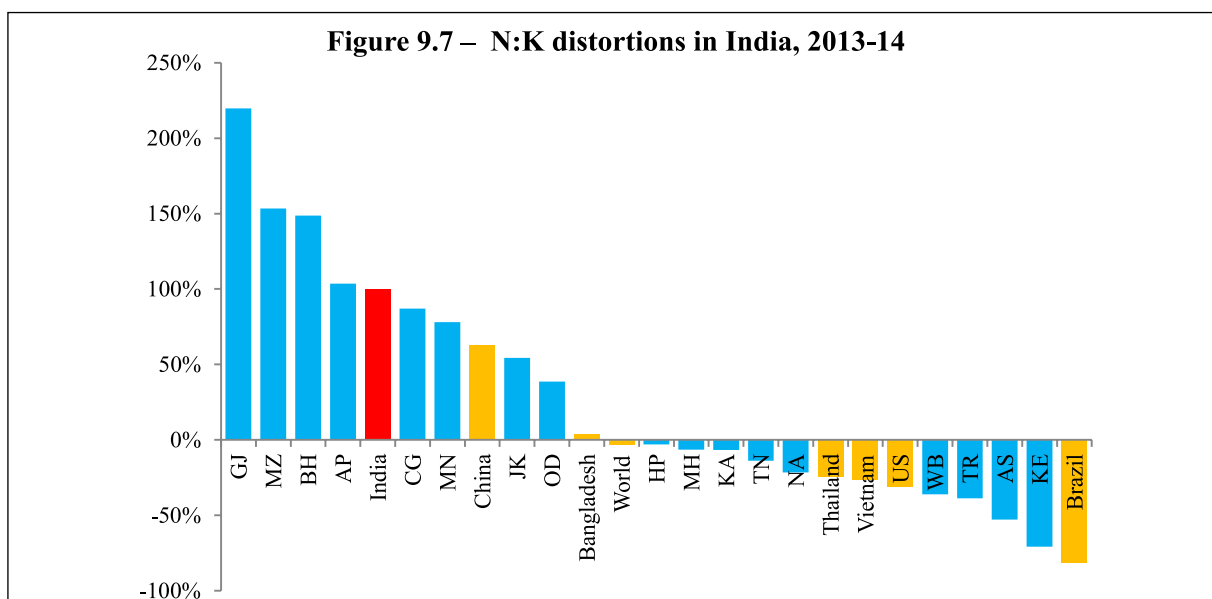
9.23 The overuse of nitrogen as compared to potash is even more extreme. Figure 9.7 shows India's nitrogen overuse in comparison to other countries. Bangladesh uses only 4 per cent more nitrogen than potash while on average India uses 100 per cent more than recommended. Figure 9.8 is necessary because in some Indian states the distortions are so extreme—4500 per cent more N than K in Rajasthan, 1300 per cent high in Punjab

and Haryana—that a separate graph and scale are required.

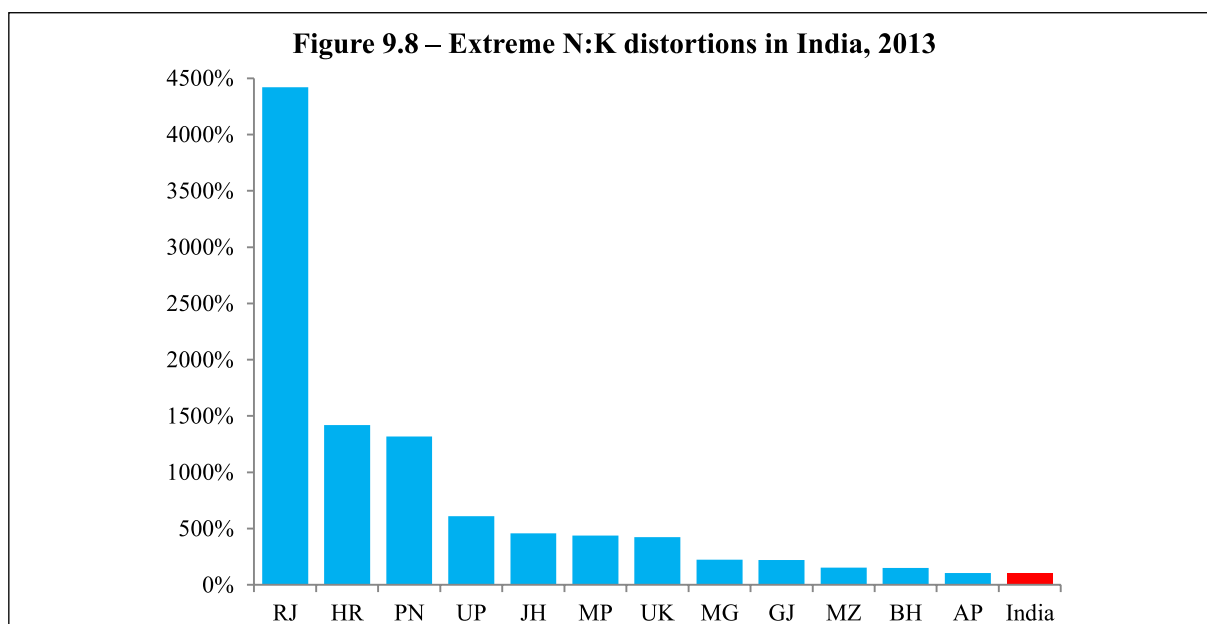
REFORMS

9.24 A reform package would address each of the problems identified above—the three leakages and skewed mix of fertiliser use—with the primary aim of benefiting the small farmer⁸. First, decanalising urea imports—which would increase the number of importers and allow greater freedom in import decision—would allow fertiliser

⁸ Fertiliser manufacturing is not an employment-intensive industry, as about 75-80 per cent of production costs are due to energy. In this sense, fertiliser is different from other sectors with exit problems—like banking or civil aviation—where employment is high.



Source: Agriculture Statistics at a Glance 2014, Ministry of Agriculture.



Source: Agriculture Statistics at a Glance 2014, Ministry of Agriculture.

supply to respond flexibly and quickly to changes in demand. This would be timely as climatic fluctuations are making it much more difficult for governments to forecast agricultural conditions and centrally manage supply. This would reduce the likelihood and severity of shortages, decrease black marketing and thereby benefit the small farmer.

9.25 Second, bringing urea under the

Nutrient Based Subsidy program currently in place for DAP and MOP would allow domestic producers to continue receiving fixed subsidies based on the nutritional content of their fertiliser, while deregulating the market would allow domestic producers to charge market prices. This would encourage fertiliser manufacturers to be efficient, as they could then earn greater profits by reducing costs and improving urea quality. And this in turn would benefit farmers.

Turning fertiliser into JAM

9.26 The case for implementing direct transfers in fertilisers is to reduce leakages to the black market. The government's policy of neem-coating urea is a step in exactly this direction. Neem-coating makes it more difficult for black marketers to divert urea to industrial consumers. Neem-coating also benefits farmers by reducing nitrogen losses from the soil by providing greater nutrient to the crop. As a result, farmers need less urea to achieve the same effect. Technology could be further used to curtail leakages and improve targeting of fertiliser subsidies. As discussed in Chapter III, fertiliser is a good sector to pursue JAM because of a key similarity with the successful LPG experience: the centre controls the fertiliser supply chain.

9.27 Ideally fertiliser subsidies would be targeted only at small and marginal farmers. But targeting the poor is difficult at the best of times, and assessing poverty—based on landholdings or some other measure—will be difficult. A second problem emerges with targeting tenant farmers and sharecroppers. The Situational Assessment Survey of Agricultural Households reveals that a little over 10 per cent of all farmers are tilling someone else's land, and cash transfer design should be careful not to exclude these typically landless farmers who would need the subsidy most. The relatively low levels of last-mile financial inclusion in much of rural India (see Chapter III) also suggest that it would be risky to replace subsidised fertiliser with cash, due to beneficiaries' weak connection to the banking system.

Universal subsidy with cap on number of bags

9.28 A preferred option would be to set a cap on the number of subsidised bags each household can purchase and require biometric authentication at the point of sale (POS). This is the approach adopted for kerosene and food in Andhra Pradesh. Requiring biometric

authentication would make it harder to conduct large-scale diversion. Imposing a cap on the total number of subsidised bags each farmer can purchase would improve targeting. Small farmers would still be able to get all their urea at subsidised prices but large farmers may have to pay market prices for some of the urea they buy. A number of states, like Andhra Pradesh and Gujarat, with high Aadhaar penetration and POS devices in rural areas might be good candidates to start pilots based on this model. Though we have discussed the effect for this policy for urea, it could easily be extended to DAP and MOP as well.

9.29 While many details will need to be worked out, the time is ripe for starting the DBT experiment in fertiliser. This would help the poor farmers, reduce leakage and also reduce the government's subsidy burden, releasing resources to plough back into agriculture in a way that can help a greater number of poor farmers.

CONCLUSION

9.30 Fertiliser subsidies are very costly, accounting for about 0.8 per cent of GDP (including arrears). They encourage urea overuse, which damages the soil, undermining rural incomes, agricultural productivity, and thereby economic growth. The current subsidy design—uncapped, varying by end use, and larger for more inefficient producers—incentivises diversion, creates a black market that hurts farmers most and does not encourage producers to operate efficiently.

9.31 Reform of the fertiliser sector would not only help farmers and improve efficiency in the sector. It would also show that India is prepared to address exit constraints that bedevil reform in other sectors. Decanalising imports will ensure timely availability of fertilisers, and universal Direct Benefit Transfer (DBT) to farmers based on biometric identification with physical offtake (see Chapter III) can

reduce diversion of urea. Given the sensitivity of urea, the DBT could be started for DAP and MOP to create confidence that DBT is workable in fertiliser. Rationalising subsidies to domestic firms would release fiscal funds to spend more effectively on schemes that help poor farmers, such as drip irrigation and connectivity through the Pradhan Mantri Gram Sadak Yojana.

9.32 Finally, to secure long term fertiliser supplies from locations where energy prices are cheap, it might be worth encouraging Indian firms to locate plants in countries such as Iran following the example of the Fertiliser Ministry's joint venture in Oman, which allowed India to import fertiliser at prices almost 50 per cent cheaper than the world price.

Structural Changes in India's labour markets

10 CHAPTER

To exploit its demographic dividend, India must create millions of “good”—safe, productive, well-paying—jobs. These tend to be in the formal sector. This chapter studies constraints on formalisation and reviews a number of ongoing developments which are responding to these challenges. First, the increasing use of contract labour supplied by specialised staffing companies, which allows large firms to grow, raising aggregate productivity. Second, the dynamic of competitive federalism is at work, with states competing to attract employment-intensive, high-quality companies. But what a company manufactures matters not only because it affects employment and growth today, but because it shapes the set of products a country can produce in the future. Some products, like cellphones, can help India produce other high-tech products and climb technology ladders, leading to faster medium-term growth. The third trend involves labour-intensive manufacturing—like apparel—firms relocating to smaller cities. This business model has both commercial and social advantages. Firms benefit from lower costs, and also create “suitable” jobs for women which can otherwise be rare in towns which have rapidly urbanised. The centre could complement these developments and boost formal sector job growth by expanding employees’ choice regarding their employment benefits.

INTRODUCTION

10.1 India is midway through its demographic dividend—a period of time when demography gives economic growth a boost by expanding the working-age share of the population. To exploit this dividend and meet the growing aspirations of those entering the labour force, India's economy needs to create enough “good jobs” – jobs that are safe and

pay well, and encourage firms and workers to improve skills and productivity.

10.2 Figure 1 shows employment growth between 1989 and 2010¹. Two things are notable. First, informal firms account for most employment growth and nearly all the increase in the number of establishments since 1989². Of the 10.5 million new manufacturing jobs created between 1989 and 2010, only 3.7 million—about 35 per

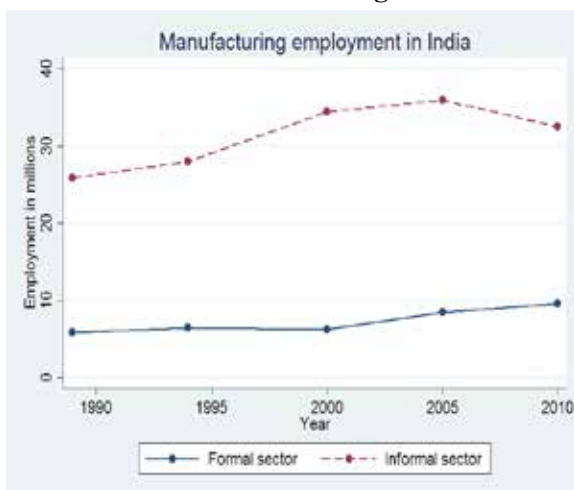
¹ We stop our analysis in 2010 because of data constraints. While there is annual data on formal enterprises, data on informal firms is only released every 5 years. The latest such NSSO round was in 2010.

² For the most part, following other authors, we consider the informal firms to be those which have little to no contact with the government. There are many possible alternative definitions of informality but this is perhaps the most relevant one for our purposes.

cent—were in the formal sector. This pattern is even starker when looking at growth in establishment counts: total establishments increased by 4.2 million from 1989-2010³, but the formal sector accounted for only 1.2 per cent of this growth. Second, trends seem somewhat different after 2000: informal sector establishment counts flatten and employment actually falls, while formal sector employment picks up. This might be related to the increasing use of contract labour, described in more detail in the next section.

10.3 The informal sector should thus be credited with creating jobs and keeping unemployment low. Yet, by most measures informal sector jobs are much worse than formal sector ones—wages are, on average, more than 20 times higher in the formal sector, though informal sector wages have grown somewhat faster between 1989-2010. Formal sector jobs also score better on some non-pecuniary grounds. For example, they allow workers to build employment history—which is important for gaining access to

Figure 1: Indian employment growth in manufacturing



Source: Segura et al (2015).

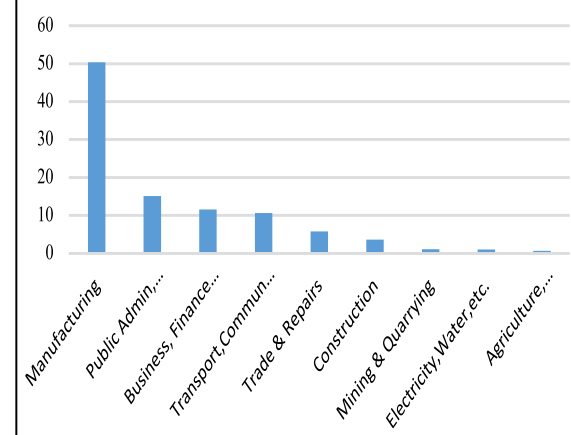
³ Both level and wage calculations are based on the ASI and NSS. The average annual formal sector wage in 2010 was ₹122,794 while the average informal sector wage was ₹6058.

⁴ Firms argue that Chapter VB of the IDA, which requires firms with >100 employees to seek government approval to retrench workers, encourages them to stay small and forego economies of scale. Of course, other research has suggested alternative reasons why firms stay small (Hsieh and Klenow 2014).

cheaper formal credit.

10.4 Thus the challenge of creating “good jobs” in India could be seen as the challenge of creating more formal sector jobs, which also guarantees worker protection. Indeed, Figure 2 shows that a large portion (about 50 per cent) of “good jobs” in the formal sector (excluding government-owned firms) are in manufacturing.

Figure 2: Industries where formal firms in the private sector create good jobs, 2012

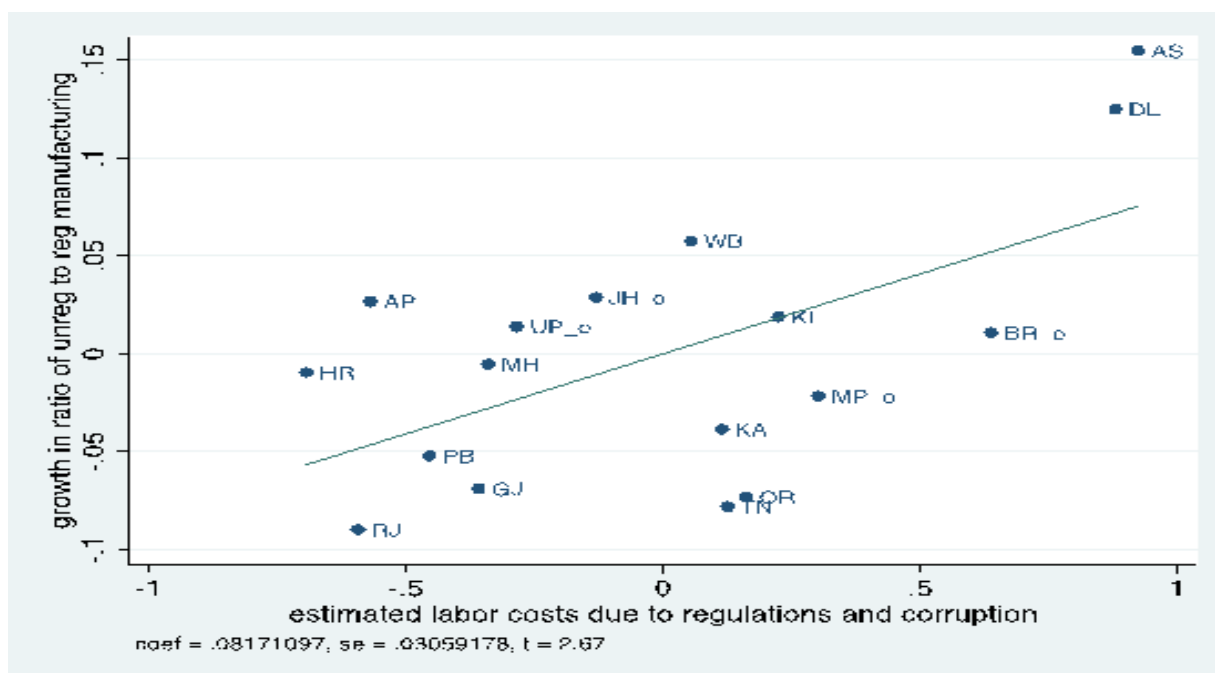


Source: Ministry of Finance calculations.

“REGULATORY CHOLESTEROL” AND THE RISE OF CONTRACT LABOUR FIRMS

10.5 In a recent survey, medium-sized formal sector manufacturing firms reported labour regulations to be a significant barrier to growth, and specifically “dismissal norms under the Industrial Disputes Act”⁴ and “the cumbersome nature of compliance with labour regulations in general” (Chatterjee and Rama, 2015). Numerous regulations also encourage rent-seeking behaviour. Figure 4 shows that higher rents predict lower growth in formal sector employment and higher future growth in informal sector employment.

Figure 3: Growth in Ratio of Unregistered to Registered Manufacturing Employment vs Regulatory Costs⁵



Source: Amirapu and Gechter (2016).

CONTRACT LABOUR

10.6 The slow pace of labour reform has encouraged firms to resort to other strategies to negotiate “regulatory cholesterol”. One popular strategy is to hire contract workers, which has two key benefits: first, the firm essentially subcontracts the work of following regulations and “managing” inspectors to the contract labour firm. Second, because contract workers are the employees of the contractor and are not considered workmen in the firm, the firm stays small enough to be exempt from some labour law.

10.7 Contract labour use has grown throughout the world over the last few decades, and India is no exception. Contract

workers increased from 12 per cent of all registered manufacturing workers in 1999 to over 25 per cent in 2010.⁶ That this growth is related to firms’ incentives to negotiate labour regulations is suggested by the fact that contract labour use grew faster in states that, by some measures, have relatively more rigid labour laws (Figure 4). Moreover, Figure 5 shows that these trends are particularly striking for plants with more than 100 workers—i.e. plants to which the IDA applies.⁷ As a result, large firms—previously the most constrained under labour laws—have benefited from the growth of contract labour. Recent research has found that districts which saw an increase in staffing agency employment also experienced

⁵ This graph is a partial residual plot which depicts the correlation between growth in the ratio of unregistered to registered manufacturing labour and regulatory costs as estimated by Amirapu and Gechter (2016), while controlling for net state domestic product per capita and the share of total employment in manufacturing.

⁶ Calculations from the Annual Survey of Industries.

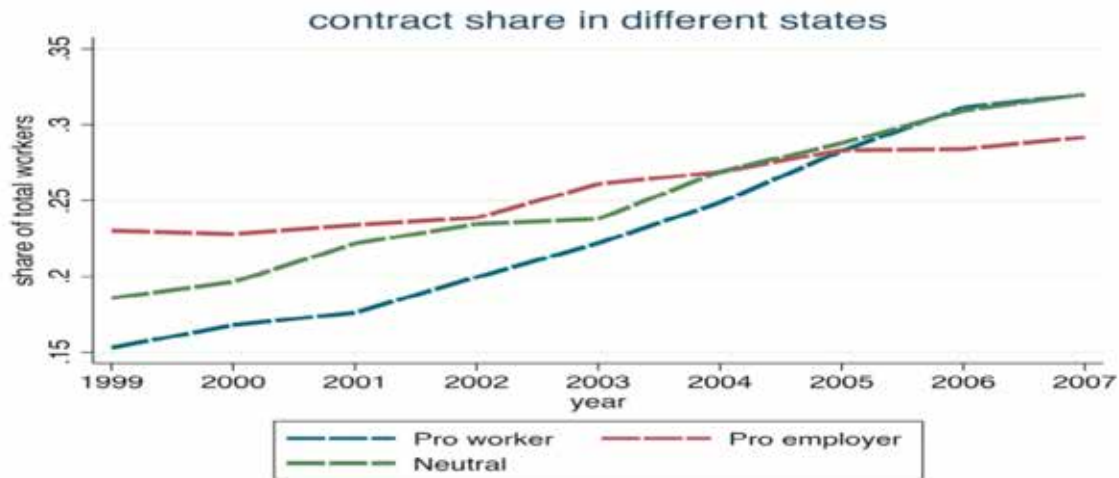
⁷ There is also evidence of the link between contract labour and labour regulations that is more than merely suggestive: Chaurey (2015) shows that manufacturing plants located in states with more rigid labour laws are more likely to respond to positive demand shocks by hiring contract workers than plants in less constrained states.

an increase in the proportion of large plants and a reduction in marginal labour costs and adjustment costs among large firms.⁸

10.8 The easing of constraints on larger firms has led researchers to estimate that contract labour has boosted manufacturing GDP annually by 0.5 per cent between 1998-99 and 2011-12.¹⁰ Yet, when asked, many

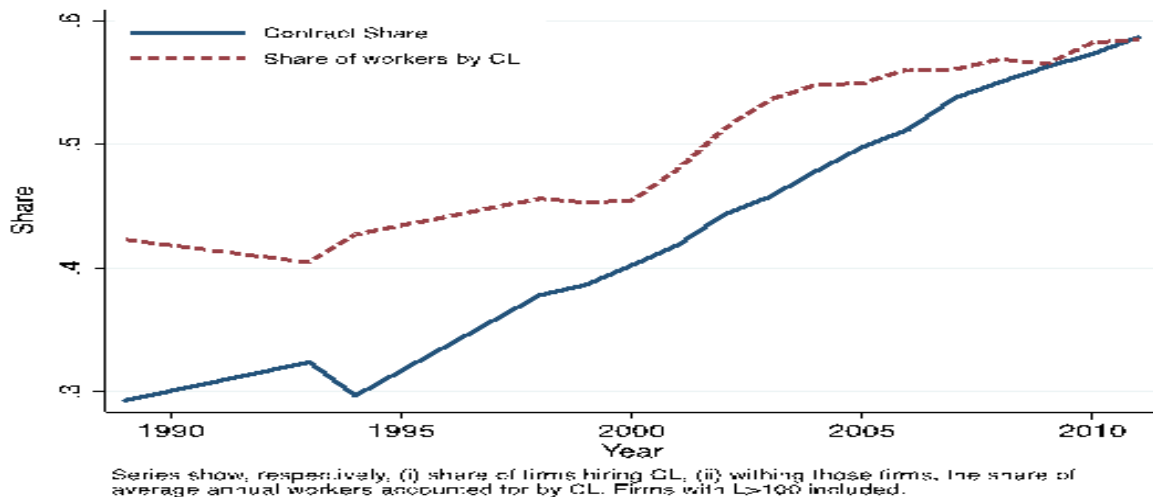
large firms say contract labour is not the ideal solution, and that they would prefer to hire regular workers if dismissal laws were different. Hiring workers through a contractor can be more expensive—14 per cent more expensive according to the Indian Cellular Association. Furthermore, contract workers do not feel as much loyalty to the company as regular workers would,

Figure 4: Share of Contract Workers by Labour Regime⁹



Source: Chaurey (2015).

Figure 5: Share of Contract Workers by Labour Regime



Source: Bertrand, et al (2015).

⁸ These facts are inferred from i) an increase in the thickness of the right tail of the firm size distribution, ii) a reduction in the average product of labour among large firms, and iii) an increase in the dispersion of employment growth and the number of new products produced by large firms. See Bertrand et al (2015).

⁹ In this figure and the next, states with more rigid labour laws are defined to be those that have made more “pro worker” amendments to the IDA, according to Besley and Burgess (2004) and Gupta, Hasan and Kumar (2009).

¹⁰ Bertrand et al (2015).

reducing employers' incentive to invest in their training. Indeed, there is evidence that hiring contract workers today hurts a firm's productivity tomorrow, precisely because contract workers do not accumulate "firm-specific human capital".¹¹ Finally, any overall assessment of contractualisation must also account for its impact on worker protection and workers' rights.

COMPETITIVE FEDERALISM

10.9 With private investment lagging (see chapter 1), states are under pressure to be seen as attractive destinations for investments that will create jobs and boost economic growth. Several states, such as Rajasthan, have responded by amending their labour laws with the goal of attracting large employers and high growth industries to their state, and other states like Gujarat and Maharashtra are considering steps in this direction.

10.10 Some companies have the potential to create many "good jobs" in the formal manufacturing sector for relatively unskilled workers. Indeed, improving employment prospects and wages was the primary motivation for countries like China and states like Tamil Nadu to embrace manufacturing products such as mobile phones.

10.11 Moreover, the benefits of the entry of a large manufacturing company to a state can go beyond scale, depending on the kind of products they manufacture. Recent economic research argues that "what you export matters", because exporting develops a country's local know-how and supply chain networks, bringing it closer to the global frontier for the exported good¹². These skills may be more transferable across certain industries than others. For example, it may be easier to make cars—a complex product—once a country has developed

expertise in making bicycles—a simpler but related product. In this sense, what a country manufactures today matters not just because it affects employment and growth today, but also because it shapes the set of products a country can profitably produce tomorrow.

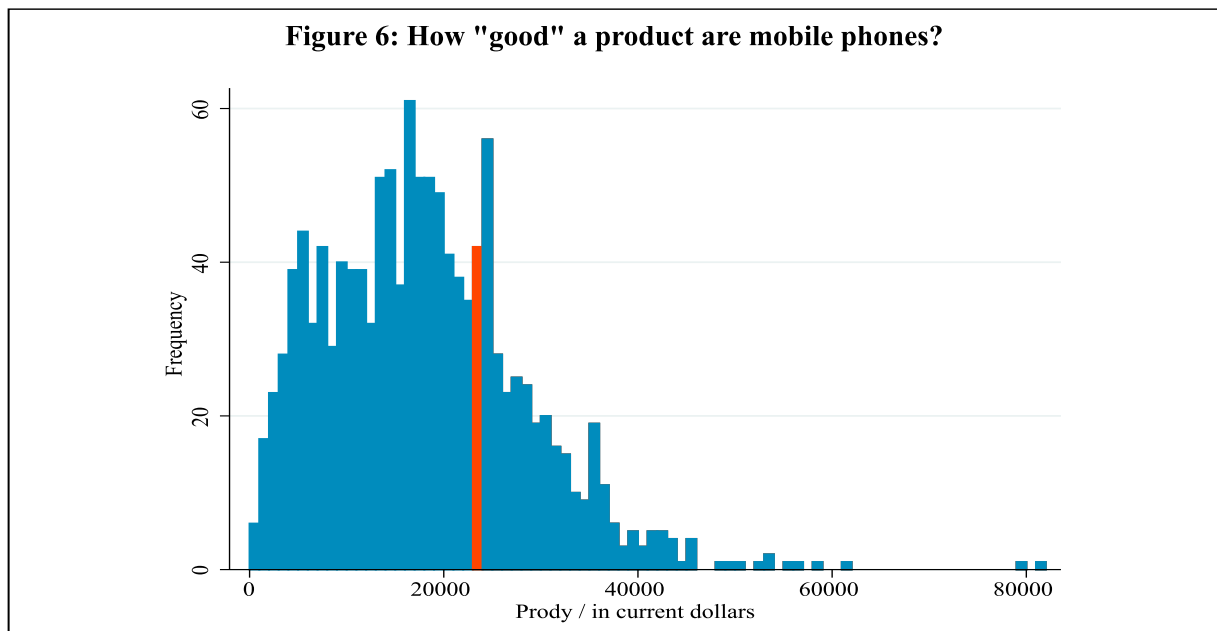
10.12 Where do products like mobile phones fit in this "Atlas of Economic Complexity"? We introduce two intuitive terms, based on Hausmann (2007): (1) PRODY, the average GDP of countries producing a particular product. PRODY is thus a measure of the "quality" of a particular product. Figure 6 shows the distribution of goods according to their PRODY scores. Cell phones fare relatively well, appearing in the 70th percentile of products. (2) EXPY is an analogous measure for the "quality" of a country's export mix. It is calculated as the average of PRODY for all products a country exports, and is a good predictor of subsequent economic growth.

10.13 India's EXPY is depicted in Figure 7, in which the red line is the PRODY value for cell phones. Cell phones are a much "higher quality" export item than the average Indian export, and hence increasing Indian cell phone exports would—loosely speaking—improve the quality of its export basket and enable it to transition to other high value-added products in future. The idea that producing certain goods may allow one to later branch out into other related but higher growth areas is borne out in China's history. When China first entered the mobile phone assembly space, it was producing only electrical connectors and cables; now it is producing sophisticated, high growth and high valued-added products such as smartphones and tablets.

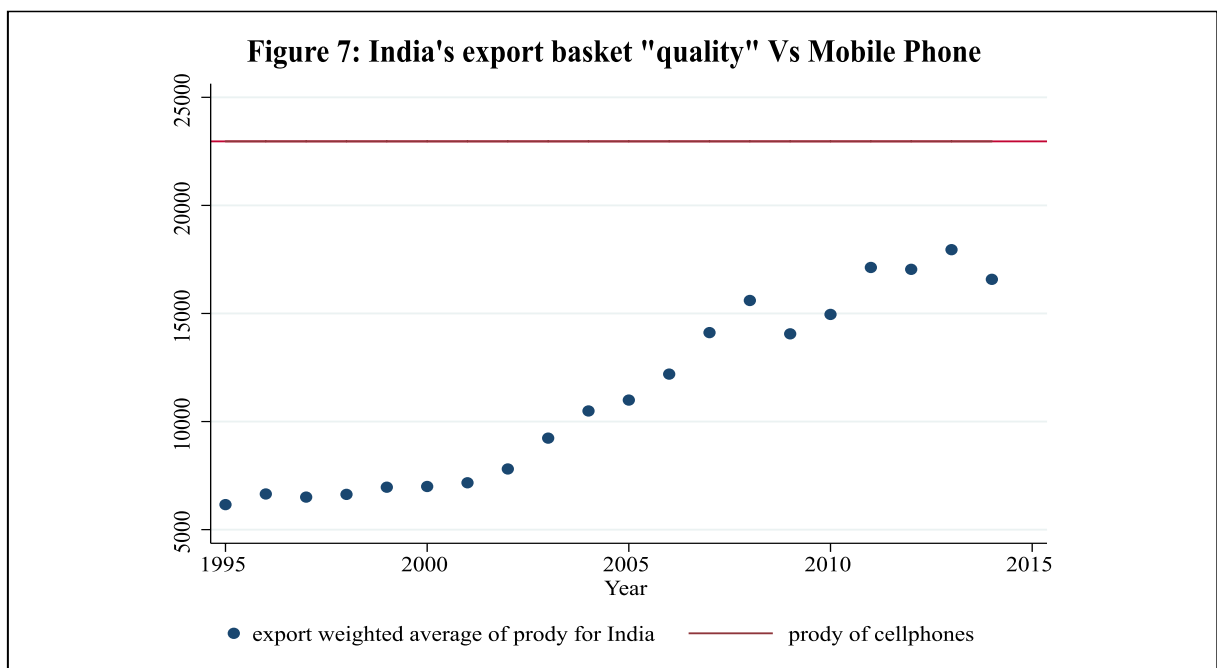
10.14 There may be a possibility of competitive federalism becoming "too competitive", inducing a race to the bottom

¹¹ Soundararajan (2015).

¹² Hausmann, Hwang and Rodrik, (2007); Hausman and Hidalgo, (2009). This can happen if the potential for learning spillovers is particularly great in some activities, and is perhaps limited by a network structure among industries.



Source: Author's calculations using data from Hausmann, et al (2007) and Hausmann and Hidalgo (2009).



Source: Ministry of Finance calculation using data from Hausmann, et al (2007) and Hausmann and Hidalgo (2009).

with states pushed into giving too many concessions. But India seems far from such a situation. For example, changes that certain states are considering—such as Haryana's proposed online filing of returns through a single form covering 12 separate labour laws and e-maintenance of all labour-related records—would likely improve compliance and worker welfare.

RELOCATION

10.15 Apparel is an industry in which India should be performing well. It is labour-intensive, with 30 per cent of costs from wages. Only 2-3 per cent of costs are due to capital-intensive inputs like power. And yet India is ceding market share in the global apparel industry to countries like Bangladesh

and Vietnam (Figure 8). How can India's productivity in apparel be improved? The insights in chapter 2 suggest that productivity could be substantially improved by reallocating capital from less-productive to more-productive firms.

10.16 Formal sector apparel firms are about 15 times more productive than their informal sector counterparts¹³. Yet Figure 9 shows that India's apparel sector is dominated by

informal firms: approximately 2.0 million establishments employing about 3.3 million workers (average size 1.5 workers), dwarfing the formal apparel sector's 2800 firms which employ 330,000 workers (average size 118 workers). Indeed, apparel firms now make up the largest share of establishments in the informal sector.

10.17 Much of this mushrooming is due to a very large increase in the incidence of

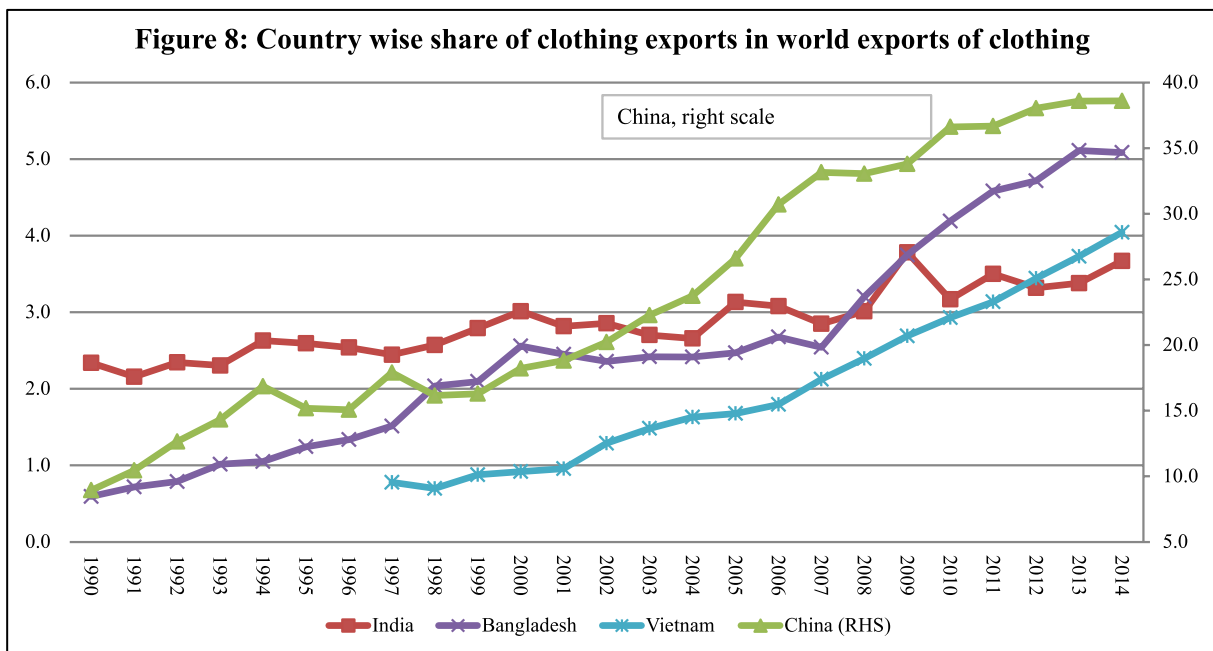
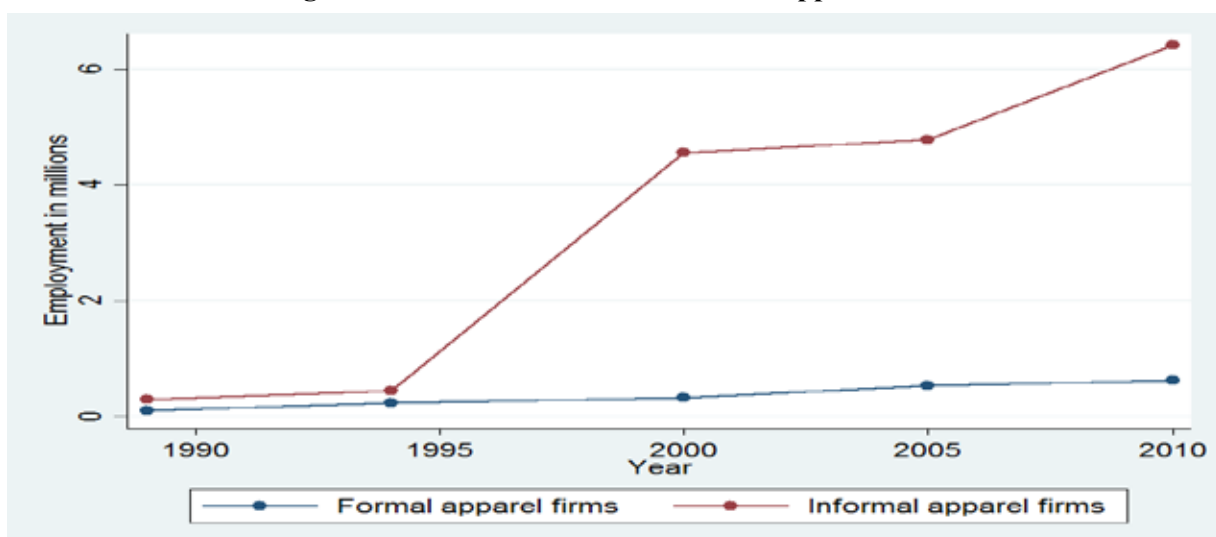
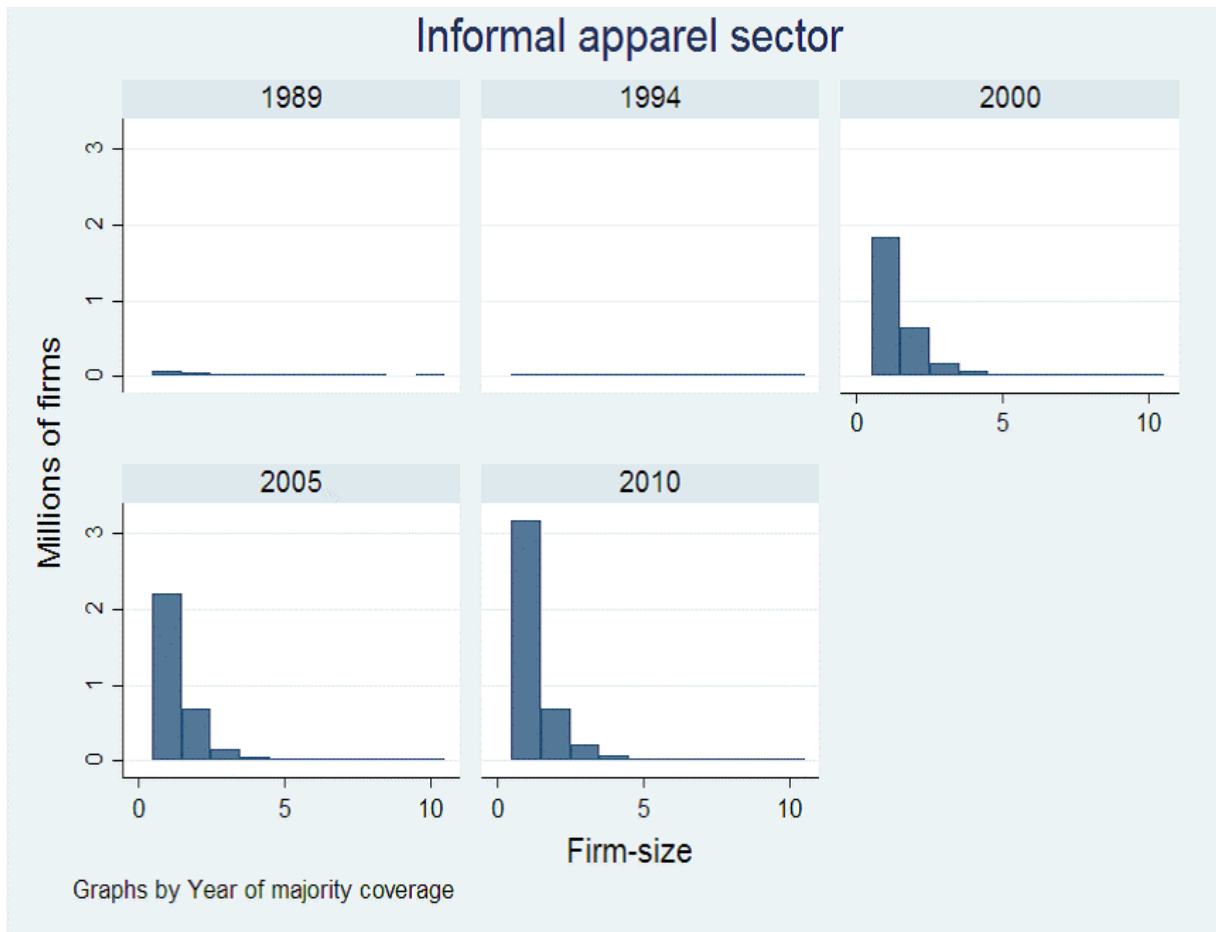


Figure 9: The Informalisation of India's apparel firms



Source: MoF Calculations.

¹³ The labour productivity of formal sector apparel firms is about ₹430,000 per worker compared to the informal apparel sector's ₹28,800 per worker.

Figure 10: The mushrooming of 1-person apparel firms

Source: Segura et al (2015).

1-person apparel establishments in urban areas, as Figure 10 shows. Spatial mismatch between firms and workers might explain why formal sector apparel firms might find it difficult to expand. Living costs are high in cities, rendering cost-sensitive, labour-intensive manufacturing uncompetitive. High transport costs and weak connectivity between metros and suburban areas preclude the possibility of living outside the city and commuting to work.

10.18 In this section, we highlight a business model that some formal sector apparel manufacturers are adopting—relocating in second- and third-tier towns and cities. This business model of moving factories to workers has a number of commercial and social advantages—it involves spreading economic development to underdeveloped

areas, reduces spatial mismatch in the labour market and can improve competitiveness by raising firms' access to lower cost labour.

10.19 The apparel industry typically employs many female workers: for instance about 70 per cent of the employees of India's largest apparel exporter are women. Therefore, apparel manufacturers locating in rural areas can help address the low rates of female labour force participation that prevent India from achieving its full economic potential. Most explanations of low labour force participation in India focus on supply-side factors like cultural norms that frown on women working outside the home. Less attention has been given to demand-side explanations, which essentially emphasise that a key determinant of female labour force participation (LFP) is the availability

of suitable jobs¹⁴. It is a striking fact that the areas in India that have seen the greatest decline in female labour force participation in the last decade are those villages that have rapidly urbanised and are now part of towns and small cities.¹⁵ Farming jobs in these areas are no longer available, but women-friendly service sector jobs are yet to take their place. From this perspective, female LFP can be expected to depend on the availability of ‘suitable jobs’, which are flexible and located close to home. In fact recent research suggests that more than half of the decline in female LFPR is explained by a deficit of suitable jobs at the local level.¹⁶

10.20 The “relocation” model addresses this concern by offering precisely the kind of suitable jobs—located in small cities, utilising women’s comparative advantage in garments, flexible working hours and childcare on site—that women in rapidly urbanising areas are looking for but often do not have. Thus the “relocation” model could be termed a win-win-win: commercially advantageous for the manufacturer, bringing women into the labour market, and boosting growth.

10.21 Recent studies have estimated that India’s GDP would grow by an additional 1.4 per cent every year if women were to participate as much as men in the economy¹⁷. In addition to higher economic growth, gainful work by women—and especially paid employment—is correlated with a host of positive outcomes, including more agency at the household level and in society more broadly, and greater investments in children’s health and education¹⁸. This illustrates the social externalities of the relocation model.

THE CENTRE’S ROLE IN CREATING “GOOD JOBS”—ENSURING WORKER-CENTRIC LABOUR REGULATION

10.22 The previous sections highlight how, via a mixture of *Jugaad* and competitive federalism, the private sector and States are taking initiatives to create “good jobs”. What levers does the Centre have to support this process? One key role is to ensure that labour regulation is worker-centric, by expanding workers’ choice and reducing mandatory taxes on formal sector employment.

10.23 Table 1 presents an illustrative example of the components of compensation for two hypothetical employees: one earning a basic salary of ₹5,500 per month, the other earning ₹55,000 per month. Two striking facts emerge from this table. First, there is a significant wedge between gross and take-home pay for lower earners—45 per cent if one counts employer contributions and deductions from employees’ pay. Second, the equivalent wedge is much smaller for higher earners—only 5 per cent owing both to fewer mandatory employer contributions and fewer mandatory deductions from gross pay. Of course, higher earners may still voluntarily contribute from their own take-home salaries to, say, the EPF—but lower earners have no such choice.

10.24 How should one think of mandated worker benefits like the EPF? The answer depends first on how highly the benefits are valued by workers. The answer also depends on who pays the cost, i.e. whether it is the employee or the employer who is contributing. However, economic theory makes clear that the true economic incidence—or burden—of

¹⁴ Kannan et al. (2012), Chand et al. (2014) and Klasen et al. (2015).

¹⁵ Chatterjee, Murgai and Rama (2015).

¹⁶ Chatterjee, Murgai and Rama (2015).

¹⁷ “The Power of Parity: Advancing Women’s Equality in India”, McKinsey Global Institute, 2015.

¹⁸ *Gender and Jobs* World Development Reports (World Bank, 2011 and 2012).

Table 1: Involuntary Contributions and Deductions to Wages

GROSS EARNINGS PER MONTH	₹ 5,500						₹ 55,000					
	Employer		Employee		Total		Employer		Employee		Total	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Provident Fund	201	3.67	660	12	861	15.67	-	-	0	0	0	-
Contribution to EPS	458	8.33	0	0	458	8.33	-	-	0	0	0	-
PF Admin Expenses	88	1.61	0	0	88	1.61	-	-	0	0	0	-
ESI	261	4.75	96	1.75	357	6.5	-	-	0	0	0	-
Employee Compensation	-	0	0	0	-	-	30	0.05	0	0	30	0.05
"Professional Tax @"	-	0	75	1.35	75	1.36	-	-	208	0.38	208	0.38
Labour Welfare #	19	0.36	19	0.36	39	0.73	19	0.04	19	0.04	39	0.07
Statutory Bonus	291	5.3	0	0	291	5.3	-	-	0	0	0	-
Gratuity	264	4.81			264	4.81	2,645	4.81	0	0	2,645	4.81
Total Deductions	1,585	28.83	851	15.48	2,437	44.31	2695	4.9	227	0.41	2923	5.32
NET TAKE HOME	₹ 3,062				55.7%		₹ 52,076				94.7%	

Source: A contract labour company.

a tax is shared by employees and employers regardless of the party from who legally pays the cost. The relative burden depends on the elasticities of labour supply and demand—how sensitive workers' willingness to work and firms' willingness to hire are to wages¹⁹. The incidence tends to be on workers, if firms actually pay them a lower wage to offset the higher taxes.

The Example of EPF

10.25 To better understand whether these involuntary contributions are really taxes, we consider the case of EPF in more depth. The EPF, which was created by The Employees' Provident Funds & Miscellaneous Provisions Act, 1952, is a fund to which most workers must involuntarily contribute at least 12 per cent of their basic salary²⁰. The money goes into an account managed by the Employees Provident Fund Organisation (EPFO) and

is meant to provide a lump sum benefit to workers upon retirement. Employers must also contribute 12 per cent of their employees' basic although about 70 per cent of the employers' contribution goes into the Pension Scheme (EPS) while about 30 per cent goes into the EPF.

10.26 In a survey conducted via phone with associates of one of India's largest contract labour companies, workers were asked whether, if given the choice, they would prefer to continue contributing part of their salary into their EPF account or receive the same amount in cash instead²¹. About 70 per cent of respondents said they would prefer to receive cash. This 30 per cent approval rating could signify that a large portion of workers are liquidity constrained—or it could suggest that the functioning of the EPF can be further improved²².

¹⁹ In a competitive labour market, a tax on labour will both increase the effective wage paid by the company and reduce the effective wage received by the employee. In particular, if labour demand is relatively more elastic than labour supply, the tax incidence will fall more heavily on the employee.

²⁰ More precisely, those who, when they first started working, had a basic salary below a certain threshold (which moved from ₹6,500/month to ₹15,000/month in September 2014) must contribute to EPF while those with initial salaries above the threshold may choose whether or not to contribute.

²¹ This survey was conducted over several weeks in January, 2016 by a contract labour company at the request of the Ministry of Finance.

10.27 To better understand their preferences, respondents were asked to explain why they preferred cash or EPF. The most common explanation for preferring cash was a simple preference on the part of workers to spend their money sooner, suggesting either that workers are liquidity constrained or impatient. The second most common reason was the transaction costs associated with withdrawing EPF monies, especially after workers have switched jobs. Indeed, 24 per cent of survey respondents who preferred cash said it was because PF account money was difficult to access. The difficulties are greatest for those workers who change employers frequently, for it has been the case that a new EPF account (with a new account number) was needed for each new job. Workers who changed employers frequently might have up to 20 different accounts and account numbers.

10.28 Further suggestive evidence of high transaction costs can be found in the large number (9.23 crore out of 15 crore total accounts) of inoperative accounts—accounts which have had no contributions or withdrawals for at least 3 years. Approximately ₹44,000 crore lie in these inoperative accounts. However, the EPFO should be commended for recent steps that will reduce transaction costs, such as allowing electronic transfers of money between accounts and creating universal account numbers for all employees that are portable between employers.

10.29 Firms may also face EPF-related transaction costs. Survey evidence has found that 35 per cent of firms find dealing

with EPF-related regulations challenging. The challenges are greatest for small firms without dedicated administrative units to deal with regulatory compliance issues.²³

10.30 Two other EPF-related issues are the relatively high administrative costs and the tax status of EPF accounts. The EPFO requires that employers pay an administrative charge of 0.85 per cent of the worker's salary (recently reduced from 1.10 per cent). This may not seem large, but it amounts to service charges of 3.54 per cent ($=0.85/24$) which are higher than the rates of most private mutual funds.

10.31 While mandatory for the poor, many rich people choose to contribute to EPF as well, though it seems they do so primarily for tax reasons. In many ways, the EPF is an example of a subsidy for the rich (see chapter 6 for other examples). EPF contributions have an EEE status—Exempt, Exempt, Exempt—meaning that contributions, interest earned and withdrawals are all exempt from tax. This offers little benefit to workers who are mandated to contribute, because even the richest such workers—who earn ₹15,000 a month—would be below the income tax threshold.

10.32 Policymakers should consider whether lower earners should be offered the same choice—of whether to contribute part of their salaries to the EPF—which the rich have. This would both introduce competition in the market for savings, which may improve EPFO's service standards, and allow the poor—some of whom may be liquidity constrained—to optimise as per their own personal requirements. To be

²² Another explanation is that people behave in a way that is consistently “short-sighted”, and they therefore do not put appropriate value on forced savings mechanisms. However, there is evidence that many people do recognize the value of forced savings mechanisms and will choose to opt in to such schemes if given the choice (e.g. Ashraf, Karlan and Yin, 2006).

²³ “Many firms felt that the compliance procedures were outdated. In one instance, although a firm had fully computerized its employee records it still maintained paper copies for the purposes of compliance under the EPF and ESI Acts” (Chatterjee and Rama, 2015). The survey was done in 2013, and some of these concerns may have already been addressed by the recent changes in EPF operation.

clear, the employer's 12 per cent contribution to EPF/EPS would be unaffected. The only difference would be that employees could choose whether or not to save 12 per cent of their salary into EPF or keep it as take home pay. Such a change would effectively reduce the tax on formal sector labour while leaving informal sector labour costs unchanged. In a relative sense, it would therefore reduce the cost of hiring workers in the formal sector and incentivize more people into formality, where productivity levels and growth are higher.

CONCLUSION

10.33 India's most pressing labour market challenge going forward will be to generate a large number of good jobs. These jobs tend to be formal sector jobs. Two obstacles to formal sector job creation are regulation-induced taxes on formal workers and spatial mismatch between workers and jobs. Encouragingly, firms and workers are finding solutions to deal with these obstacles that are even more varied than the obstacles themselves, as we have been described in this chapter. Meeting the challenges ahead will require more of such ingenuity, and the private sector, state governments and the Centre will all have important roles to play.

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Powering “One India”

Since 2014, sweeping changes have characterized the power sector, including: record addition to generation capacity and the comprehensive initiative—Ujwal DISCOM Assurance Yojana (UDAY)—to improve the health and performance of the distribution companies. These changes provide the basis for discussing issues of longer-term interest for the states and their power regulators. These include reducing the complexity of tariff schedules that may prevent consumers from fully responding to price signals, the impact of quality-adjusted tariffs on the competitiveness of Indian industry, and the impediments to creating one market for power. Finally, using insights from the optimal income taxation literature, we provide illustrative estimates of the structure of consumer tariffs. The results suggest the possibility of achieving reasonably greater progressivity in tariff structures, with lower tariffs for the poor, while also ensuring cost recovery.

INTRODUCTION

11.1 Against the background of the many positive changes that are sweeping the power sector, this chapter attempts to make a few analytical observations that are relevant for the states, their regulators, and other stakeholders.

11.2 Since the present government came to power, the following striking developments have taken place in the power sector:-

- There has been the highest ever increase in generation capacity (in 2014-15 the addition to plant capacity in utilities was 26.5 GW, much higher than the average annual addition of around 19 GW over the previous five years). These measures have helped in bringing down the peak

electricity deficit in the country to the lowest ever level of 2.4 percent.

- On 29th December, 2015, no congestion was observed in the electricity grid and a single price (₹2.3/kWh)¹ was discovered on the power exchange IEX². This is the first such instance after India achieved complete grid integration on 31st December 2013.
- The Indian Railways (IR) is attempting to shift to open access (OA) for power purchase. This is not only cost efficient, but also harbingers the possibility of making India one market in power. Box 11.1 provides further details.
- Central and State governments have come together to address problems related to

¹ http://www.business-standard.com/article/economy-policy/one-nation-one-grid-now-one-price-116010100010_1.html

² This was repeated subsequently on 14.01.2016 and 30.01.2016 to 01.02.2016.

the health of distribution companies, and the debt overhang problem via the Ujwal DISCOM Assurance Yojana (UDAY). Box 11.2 provides details of the various programs initiated by the government to bring electricity distribution back on track.

- Renewable energy targets have been revised from 32 GW to 175 GW by 2022

moving the country towards a sustainable development model. In the latest round of auctions under the National Solar Mission, tariffs reached an all-time low of ₹4.34/kWh. Grid parity for solar generation is on its way to becoming a reality.

11.3 Notwithstanding these major successes, the complexity of the power sector is such that

Box 11.1: The Indian Railways and Open Access¹

The Indian Railways (IR), one of the largest transportation networks in the world, consumes 17.5 billion units of energy (1.7 per cent of the country's total electricity consumption) for which it pays about ₹12,300 crore to distribution companies annually. This amounts to more than 25 per cent of total revenue budget of IR which is the second largest component of its revenue expenditure.

IR has embarked on a cost rationalisation strategy to migrate from existing arrangements with 14 state utilities/ NTPC and procure electricity through open access. These new arrangements are expected to result in an estimated cumulative saving of ₹ 742 crore in 2015-16 and ₹1600 crore in 2016-17.

To facilitate this arrangement, IR was given the status of deemed licensee by the Ministry of Power in May, 2014. As such, the cross subsidy charges levied by states may not be applicable to it, though charges for using states' transmission and distribution networks will continue to be paid.

¹ **Source:** Ministry of Railways. State governments have challenged the decision in the Appellate Tribunal for Electricity.

Box 11.2: Salient features of policy action on distribution front

A. Ujwal DISCOM Assurance Yojana (UDAY)

1. States shall take over 75 per cent of discom debt outstanding as of September 2015.
2. Reduction of Aggregate Technical & Commercial (AT&C) losses to 15 per cent by 2018-19.
3. Reduction in difference between average cost of supply and average revenue realized (ARR) by 2018-19.
4. Increased supply of domestic coal to substitute for imported coal.
5. States shall take over future losses of discoms in a phased manner.
6. Banks/FIs not to advance short term debt to discoms for financing losses.

B. Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)

1. Electrification of all villages.
2. Metering of unmetered connections for reducing losses.
3. Separation of feeders to ensure sufficient electricity to agriculture and continuous supply to other categories.
4. Improvement of sub-transmission and distribution network to improve the quality and reliability of supply.

C. Integrated Power Development Scheme (IPDS)

1. Strengthening of sub-transmission and distribution network in urban areas.
2. Metering of distribution transformers /feeders / consumers in urban areas.
3. IT enablement of distribution sector and strengthening of distribution network.

D. Domestic Efficient Lighting Program (DELP)

1. 77 crore LED bulbs to replace household and street light incandescent bulbs.

E. National Tariff Policy, 2016

1. Cross subsidy surcharge formula revised.
2. Regulator will devise power supply trajectory to ensure 24X7 power supply for all consumers latest by 2021-22 or earlier.

daunting challenges remain. In particular:

- Complexity of tariff schedules prevents economic actors from responding sufficiently to price signals.
- Average tariffs in some cases are set below the average cost of supplying electricity.
- High industrial tariffs and variable quality of electricity adversely affects 'Make in India'.
- Price and non-price barriers come in the way of single-nationwide electricity prices through open access.
- Determination of progressive tariff schedules for domestic consumers.

11.4 While discussing the Indian power sector it must be borne in mind that reforms in this sector are more challenging than in many others due to the clear demarcation in the roles and responsibilities of the states and centre under the constitution. Moreover, in a country with a per capita GDP that is one-seventh of the OECD average and an estimated 5 crore households without access to electricity, electricity policy, hitherto and in the future, must carefully balance economic efficiency with social benefits.

TRANSPARENCY AND SIMPLICITY IN RETAIL ELECTRICITY TARIFFS

11.5 Figure 1 presents excerpts³ from the tariff schedule of a state which is not atypical. As is evident, there are separate tariffs for poultry farms, pisciculture, wetland farms (above and below a certain size), mushroom and rabbit farms, etc. The complexity may prevent consumers from fully responding to tariffs due to the high cost of processing the price information, a behavioural effect referred to as *salience*. The basis of making

such fine and numerous distinctions across end users is not immediately apparent. After all, other energy products are characterised by a single price (or at most a few prices) across-end users.

11.6 Simplification of tariffs with, perhaps no more than 2-3 tariff categories, will improve transparency and may well yield consumption and collection efficiency, along with governance benefits.⁴

TARIFFS AND COST

11.7 Discoms have a key role in the power sector, acting as an interface between retail consumers and rest of the value chain. These companies act as intermediaries between generators and retail consumers, purchasing electricity from wholesale markets and marketing it to retail consumers. As with any other market intermediary, they recover returns on their equity investments (ROI) by charging a mark-up over their cost of supply. Given that these discoms are central to connecting both sides of the electricity market, their debt overhang has traditionally been a bottleneck for the sector. In what follows we briefly discuss the losses of discoms and their causes.

11.8 States with the highest losses are those where tariffs fail to cover costs on average. We compare the per unit average tariff⁵ (AT) and average cost of supply⁶ (ACS) for 2013-14 in Figure 2. In states such as Rajasthan, Tamil Nadu, Jharkhand, Madhya Pradesh and Uttar Pradesh (the top ranking states in loss distribution) AT is lower than the ACS. We adjust the ACS for Aggregate Technical and Commercial (AT&C) losses in these states in order to exclude these costs. Yet, AT continues to stay below this adjusted level of ACS in most states.

³ First three pages of the tariff schedule. The complete tariff schedule is longer, containing details of other charges which different categories have to pay.

⁴ Ito, Koichiro, 2014, "Do Consumers Respond to Marginal or Average Price? Evidence from Nonlinear Electricity Pricing." *American Economic Review*.

⁵ Data on AT from Niti Aayog, erstwhile Planning Commission Reports.

⁶ Data on ACS is from the Performance Report of State Power Utilities 2013-14, Power Finance Corporation (PFC).

Figure 1: Representative Tariff Schedule

Consumer Category	Energy Charge (₹ /Unit)	Consumer Category	Energy Charge (₹ /Unit)	Consumer Category	Energy Charge (₹ /Unit)
LT-I:DOMESTIC (Telescopic)		LT-V:AGRICULTURE **		SEASONAL INDUSTRIES (off season Tariff)	
LT I(A):Upto 50 Units/Month	1.45	LT-V(A):AGRICULTURE WITH DSM MEASURES		11 kV	7.25
LT I(B):>50 and upto 100 Units/ Month		Corporate Farmers & IT Assesses	2.50	33 kV	6.59
First 50 Units	1.45	Wet Land Farmers (Holdings >2.5 acre)	0.50	132 kV & Above	6.33
51-100 Units	2.60	Dry Land Farmers (Connections > 3 nos.)	0.50	TIME OF DAY TARIFFS (6 PM to 10 PM)	
LT I(C):>100 and upto 200 Units/ Month		Wet Land Farmers (Holdings ≤ 2.5 acre)	0.00	11 kV	7.07
First 50	2.60	Dry Land Farmers (Connections ≤ 3 nos.)	0.00	33 kV	6.62
51-100	2.60	LT-V(B):AGRICULTURE WITHOUT DSM MEASURES		132 kV & Above	6.20
101-150	3.60	Corporate Farmers & IT Assesses	3.50	HT-I(B):FERRO ALLOY UNITS	
151-200	3.60	Wet Land Farmers (Holdings >2.5 acre)	1.00	11 kV	5.68
LT I(D):Above 200 Units/Month		Dry Land Farmers (Connections > 3 nos.)	1.00	33 kV	5.23
First 50	2.60	Wet Land Farmers (Holdings ≤ 2.5 acre)	0.50	132 kV & Above	4.81
51-100	3.25	Dry Land Farmers (Connections ≤ 3 nos.)	0.50	HT-II:OTHERS	
101-150	4.88	LT-V(C):OTHERS		11 kV	7.25
151-200	5.63	Salt farming units upto 15HP	3.70	33 kV	6.59
201-250	6.70	Rural Horticulture Nurseries upto 15HP	3.70	132 kV & Above	6.33
251-300	7.22	LT-VI:STREET LIGHTING AND PWS		TIME OF DAY TARIFFS (6 PM to 10 PM)	
301-400	7.75	LT-VI(A):STREET LIGHTING		11 kV	8.30
401-500	8.27	Panchayats	5.64	33 kV	7.64
Above 500	8.80	Municipalities	6.16	132 kV & Above	7.38
LT-II:NON DOMESTIC/ COMMERCIAL		Municipal Corporations	6.69	HT-III:AIRPORTS,BUS STATIONS AND RAILWAY STATIONS	
LT II(A):Upto 50 Units/Month	5.40	LT-VI(B):PWS SCHEMES		11 kV	6.91
LT II(B):Above 50 Units/Month		Panchayats	4.59	33 kV	6.31
First 50	6.63	Municipalities	5.64	132 kV & Above	6.01
51-100	7.38	Municipal Corporations	6.16	TIME OF DAY TARIFFS (6 PM to 10 PM)	
101-300	8.54	LT-VI(C):NTR Sujala Padhakam	4.00	11 kV	7.96
301-500	9.06	LT-VII:GENERAL		33 kV	7.36
Above 500	9.59	LT-VII(A):GENERAL PURPOSE	6.86	132 kV & Above	7.06
LT II(C):ADVERTISEMENT HOARDINGS	11.58	LT-VII(B):RELIGIOUS PLACES (CL ≤ 2 KW)	4.70	HT-IV: Govt., LIFT IRRIGATION, AGRICULTURE AND CPWS	
LT-III:INDUSTRY		LT-VIII: TEMPORARY SUPPLY	9.90	Govt. Lift Irrigation & Agriculture	5.64
Industry (General)	6.38	HT-I:INDUSTRY		Composite Water Supply Schemes	4.61
Seasonal Industries (off season)	7.09	HT-I(A): INDUSTRY GENERAL		HT-V:RAILWAY TRACTION	6.68
Pisciculture/Prawn culture	4.63	11 kV	6.02	HT-VI:TOWNSHIPS AND RESIDENTIAL COLONIES	5.96
Sugarcane crushing	4.63	33 kV	5.57	HT-VII:GREEN POWER	11.32
Poultry farms	5.63	132 kV & Above	5.15	HT-VIII:TEMPORARY	
Mushroom & Rabbit Farms	5.63	INDUSTRIAL COLONIES		RURAL ELECTRIC CO-OPERATIVES	
Floriculture in Green House	5.63	11 kV	5.96	Kuppam	0.24
LT-IV:COTTAGE INDUSTRIES & OTHERS		33 kV	5.96	Anakapally	1.38
a) Cottage Industries upto 10 HP	3.75	132 kV & Above	5.96	Chipurupally	0.22
b) Agro Based Activity upto 10 HP	3.75				

11.9 Tariffs reflecting costs are a necessary condition for discoms to sustain themselves over the long-run. Several states are attempting to close this gap under the UDAY Scheme.

POLICIES IN THE POWER SECTOR: IMPACT ON ‘MAKE IN INDIA’

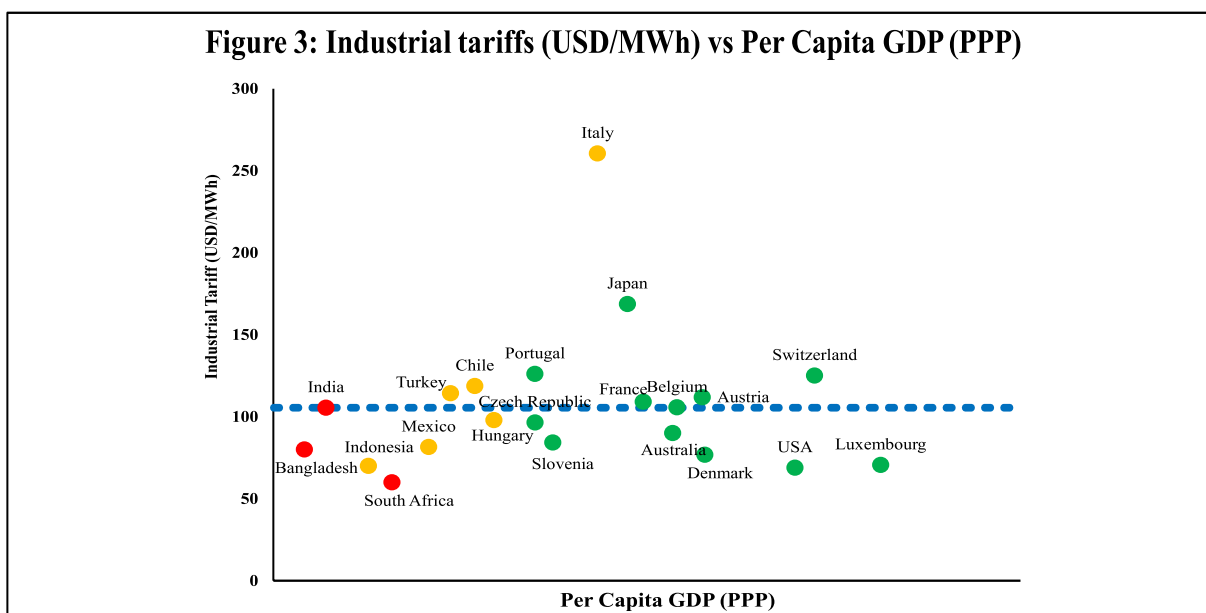
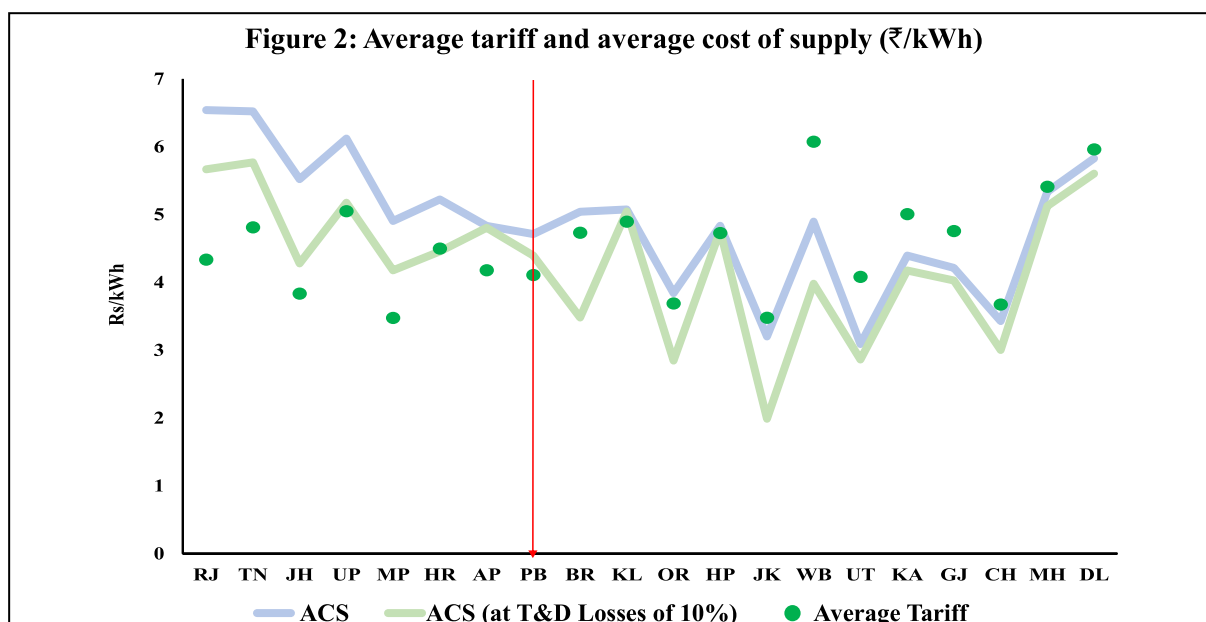
11.10 The ‘Make in India’ campaign is crucial to the structural transformation of the industrial sector, and the Indian economy in general. In this section, we study the impact

electricity supply and its quality may have on industrial output.

11.11 High tariffs and erratic supply for industry have led to a slow but steady decline in the growth of industrial electricity purchases from utilities and a gradual transition towards captive generation.

11.12 Figure 3 shows a cross-country comparison of industrial tariffs⁷ plotted against the per capita GDP taking into account the quality of power supply in different countries. The colours represent the quality of

⁷ International Energy Agency, 2015 and data provided by the World Bank (2015).



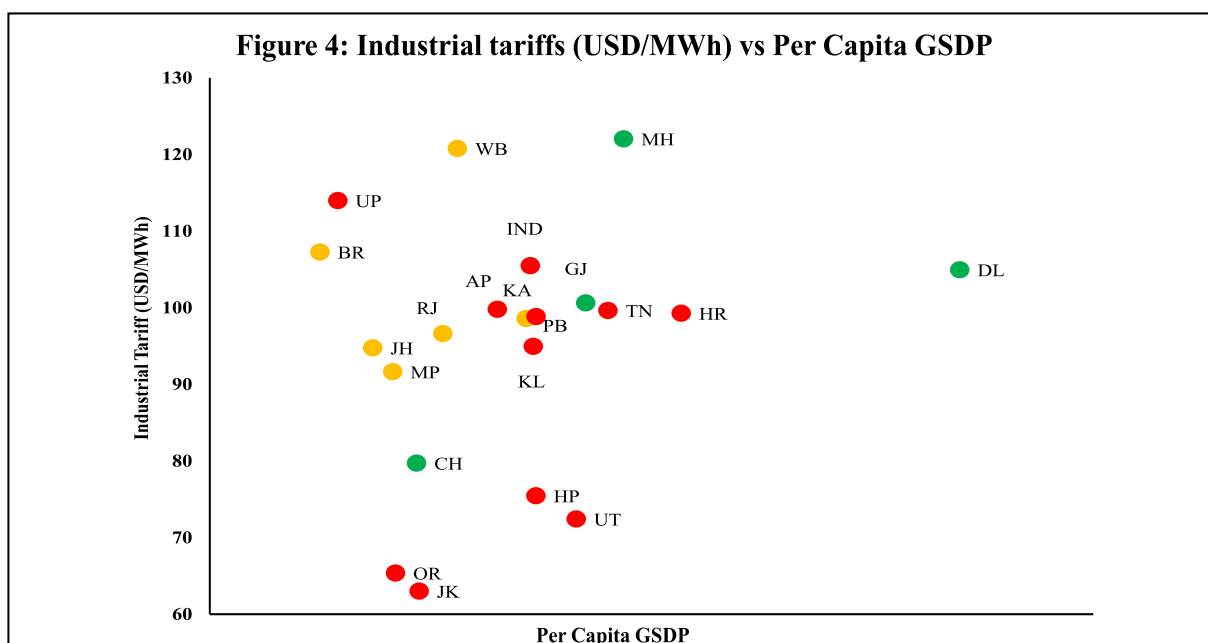
electricity supply⁸ : green (score >6), orange (4 < score < 6) and red (score < 4). It indicates that electricity tariffs are unusually high for Indian industry, especially when quality is taken into account.

11.13 Figure 4 shows that there is wide variation in industrial tariffs within India. In addition, the colours green (response < 10

per cent), orange (10 per cent < response < 20 per cent) and red (response > 20 per cent) highlight the share of firms identifying electricity as a major constraint in their state⁹. It can be seen that for the country as a whole the share is greater than 20 percent of firms. For some states, such as Uttarakhand, Uttar Pradesh, Tamil Nadu, Andhra Pradesh, and

⁹ World Bank's Enterprise Survey of Industries (2013-14). Industrial tariffs are from the Planning Commission/Niti Aayog.

⁸ In terms of quality of electricity supplied, India ranks 98 out of 140 countries in World Economic Forum-Global Competitiveness Report 2015-16. India has an overall ranking of 55 in this report. The scores are on a scale of 1 to 7.



Kerala, the share is higher than 40 percent.

11.14 To protect against uneven power supply, about 47 percent of firms report using a diesel generator.¹⁰ The total capacity of the diesel generators¹¹ (DG) in the country may be as high as 72 GW and growing at the rate of 5 GW per year. Central Electricity Agency¹² (CEA) data suggests that DG capacity for industrial loads greater than 1 MW is 14 GW. A substantial portion of the rest (58 GW) may be contributed by micro and small industries, with load capacities of less than 1 MW.

11.15 Figure 5 shows electricity generation from captive power plants and electricity procured from the utilities. The compound annual growth rate (CAGR) of captive power generation between 2006-07 and 2014-15 is 9.3 percent, compared to 4.6 percent for electricity procured from utilities. These trends could be exacerbated in the coming years, as the decline in oil prices and the cost of renewable energy alternatives may prompt a further shift to captive power.

‘MAKE IN INDIA’ BY ‘MAKING ONE INDIA’: THE OPEN ACCESS ISSUE

Status of Open Access in India

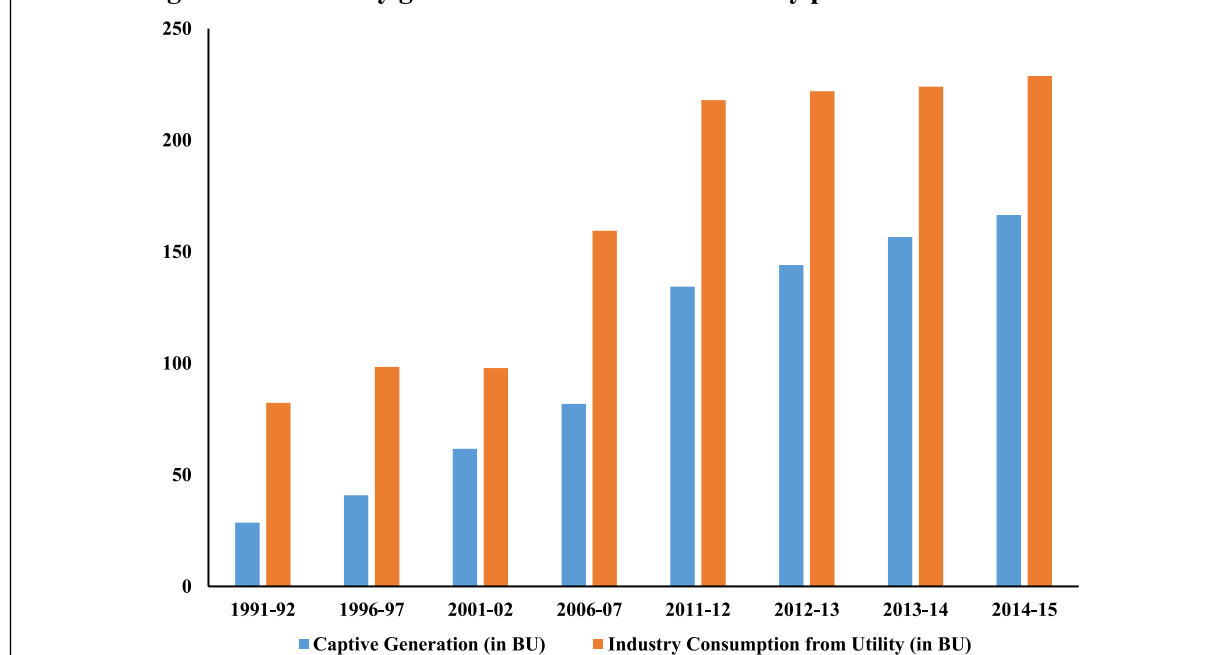
11.16 The Open Access (OA) policy introduced under Electricity Act 2003, allows consumers with electricity load above 1 MW to procure electricity directly from electricity markets. At its core, OA provides an aggregation of the country-wide supply and demand on the same platform. Therefore, this constitutes a first step towards discovering a single market price for power around the country.

11.17 In 2008, power exchanges were set up to operationalize OA and create a national electricity market where price discovery occurs through competitive bidding. The initial response to OA was strongly positive, evident in the growth trajectory of power exchanges shown in Figure 6. Prices recorded on these exchanges provide a daily signal of the demand, supply and congestion in the transmission network across the country.

¹⁰ World Bank’s Enterprise Survey of Industries (2013-14).

¹¹ http://www.cercind.gov.in/2014/advisor_commette/19.pdf.

¹² http://www.indiaenvironmentportal.org.in/files/file/growth_2015.pdf.

Figure 5: Electricity generation in CPPs vs electricity procured from utilities

11.18 Some states, however, have imposed significant barriers to OA. Figure 7 shows the cross-subsidy surcharge and additional surcharge for purchasing electricity from the power exchanges (PX) in 2015-16. This problem was meant to be addressed by the National Tariff Policy (2006), which established a methodology for determining

the cross-subsidy surcharge to be levied on OA consumers, with the goal of reducing it over time. Nonetheless, cross-subsidy surcharges over the years have gone up.

11.19 Significant non-price barriers exist in states that do not cross-subsidise to a great extent but where discoms derive the bulk of their revenues from industry.

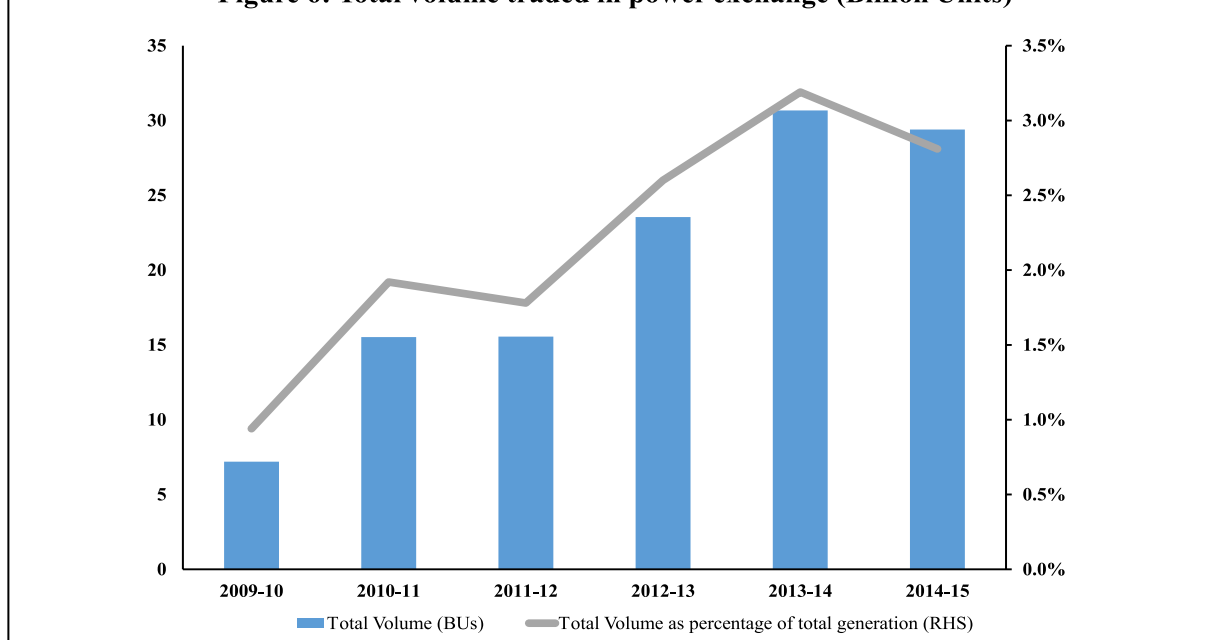
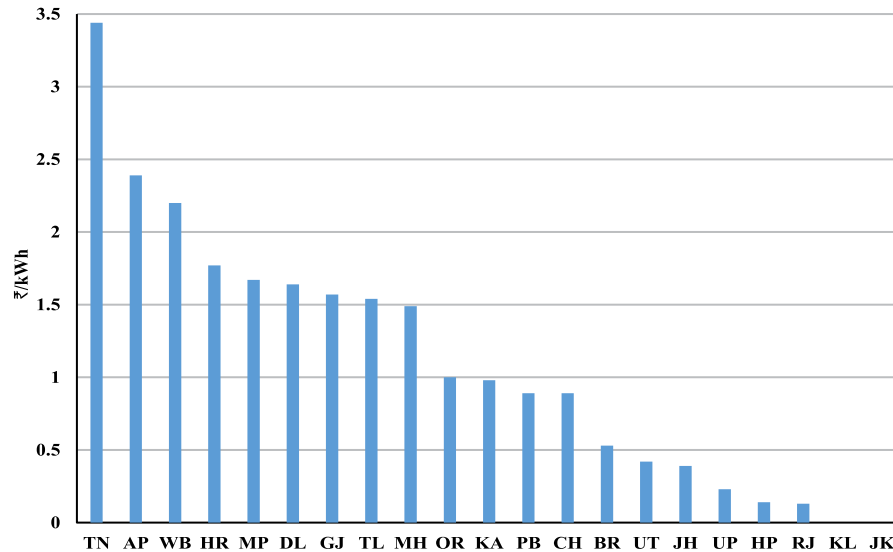
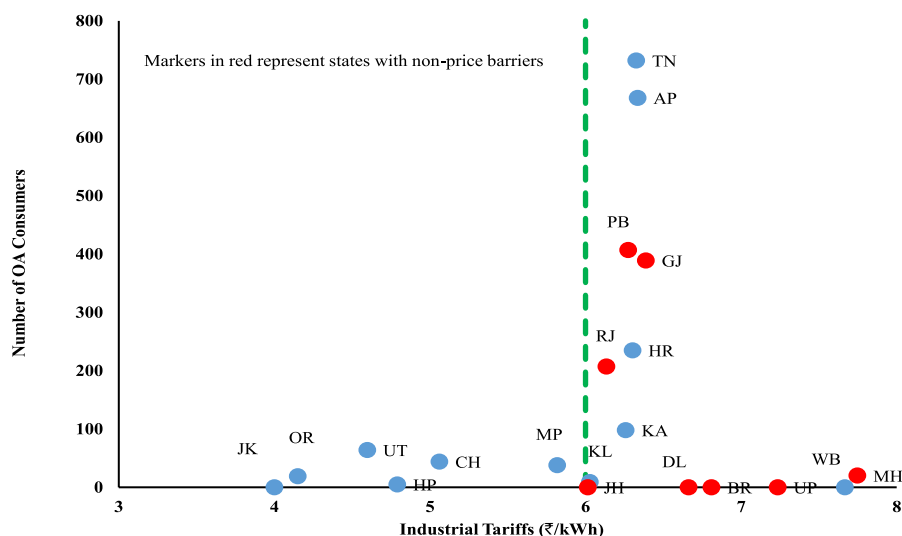
Figure 6: Total volume traded in power exchange (Billion Units)

Figure 7: Cross subsidy surcharge for purchasing electricity from PX, 2015 -16**Figure 8: Number of Open Access consumers and industrial tariffs (₹/kWh)**

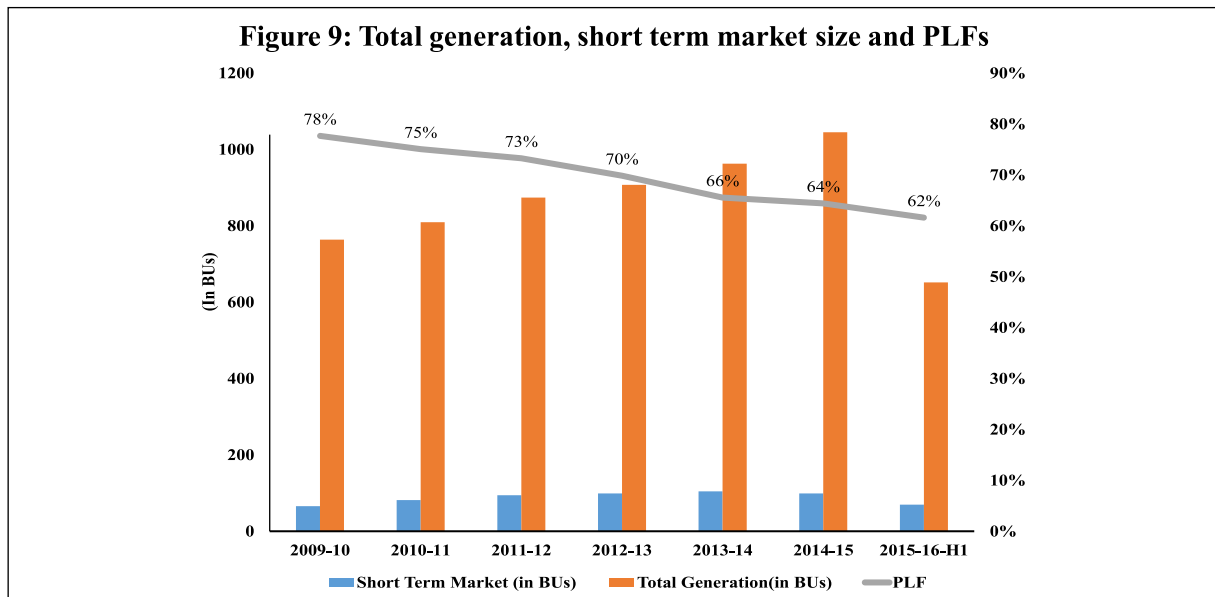
11.20 Figure 8 shows the number of consumers availing OA in different states against the average industrial tariff in a state. We observe that the trigger point for availing open access is tariff exceeding ₹6/kWh (US\$ 98/MWh). The number of consumers beyond this threshold in states viz. Maharashtra, Bihar, Uttar Pradesh, Delhi and Maharashtra (in red) is low because of non-price barriers.

11.21 Currently, power plant load factors are at their lowest ebb (about 60 percent), as generation capacity has increased while

the financial ability of discoms to purchase electricity has diminished (Figure 9). The time is thus ripe to allow industry, which has a high demand for power, to absorb the excess generation capacity through OA, providing a stimulus to industrial production under ‘Make in India’.

EXPLOITING PROGRESSIVITY TO LOWER TARIFFS FOR THE POOR

11.22 There is, at present, no specific policy guidelines on the intra-category cross subsidisation or subsidy provisioning. Figure 10 show the average billing rates



(ABR) (light green) for domestic category for a representative Indian state (one for which we have collected detailed data). The tariff schedule is progressive as the consumption increases, although, ABR for all the consumption categories lies below the average cost of supply (ACS) implying that costs are not be fully recovered.

11.23 Countries such as Bangladesh, Sri Lanka, South Korea, Vietnam and Brazil (Figure 11) appear to better exploit the progressivity of electricity tariffs in the domestic category (reflected in higher ratio of tariffs charged to the rich relative to poor). In contrast, the state that we have studied appears to discriminate much less between rich and poor, leaving scope for greater exploitation of progressivity.

11.24 The power regulator, while deciding on the tariff schedules and cross-subsidisation rate for different categories, has to undertake a broad welfare analysis. There is a rich literature in public finance which tries balancing exactly the same constraints:

greater revenue collection with greater welfare allocations. This literature, starting with James Mirrlees and more recently, Gruber and Saez (*The elasticity of taxable income: evidence and implications*, Journal of Public Economics, 2002), offers a methodology to arrive at an optimal tax and transfer policy based on consumers' behaviour. Given the parallels between the two problems, a similar approach can be adopted in electricity tariffs.

11.25 The question can be posed as follows: *Given the differential response of consumers to prices, and given that governments may wish to provide greater relief to the poorest sections, what should be the best structure of tariffs while also ensuring that power supply costs are recovered?* The differential responses are reflected in the price elasticities of demand (about which we make assumptions based on estimates from the literature¹³). Governments' preferences are captured by social welfare weights for different categories (about which we make assumptions). The results of these optimality exercise¹⁴ undertaken for the particular Indian

¹³ Filippini, M & S. Pachauri, 2004, "Elasticities of Electricity Demand in Urban Indian Households", Energy Policy. <http://tinyurl.com/jmhrqhl>

¹⁴ We have assumed that this optimization exercise should be accompanied by a simplification of the tariff schedule, reflected in the fact that there are only three rates in the final optimal structure. Time of Day Tariffs proposed in new National Tariff Policy provide a new degree of freedom in tariff design to the regulators.

11.27 A major advantage of this procedure is that cross-subsidisation occurs within the residential consumers itself— i.e. rich and

consumers with high consumption intensity within the residential sectors subsidise prices for consumers with lower consumption. Given their relatively inelastic price elasticity, rich consumers will continue to maintain their consumption even after price increase. The net effect is that the residential revenue collection becomes cost neutral for the discom and generates more revenues as compared to the current situation. Back of the envelope calculations show that the extra revenue of approximately ₹14400 crore (annually) for the state considered can be used by the distribution companies to reduce losses or rationalize cross-subsidies.

ACOS = Rs 6.27/kWh

Category	Actual ABR	Suggested ABR
1-50 kWh	2.9	2.7
51-100 kWh	2.9	4.1
<101kWh	3.4	6.8

4.4M 4.6M 4.3M

The graph illustrates the electricity consumption patterns for six countries. The X-axis represents consumption in kWh, ranging from 30 to 750. The Y-axis represents a value from 0 to 500. The legend identifies the following series:

- Bangladesh** (Light Blue line): Starts at 100, rises to 170 at 50 kWh, dips to 85 at 100 kWh, then rises to 260 at 150 kWh and remains constant.
- Sri Lanka** (Orange line): Starts at 100, remains flat until 50 kWh, then rises steadily to approximately 420 at 750 kWh.
- Indian State- Actual** (Black line): Starts at 100, rises to 115 at 100 kWh, and remains constant.
- Indian State- Suggested** (Dark Blue line): A constant horizontal line at 115 kWh.
- Korea** (Dark Blue line): Starts at 100, remains flat until 100 kWh, then rises to 170 at 300 kWh, 210 at 350 kWh, 230 at 400 kWh, 310 at 500 kWh, and reaches approximately 530 at 750 kWh.
- Vietnam** (Green line): Starts at 100, remains flat until 100 kWh, then rises to 115 at 150 kWh, 145 at 200 kWh, 170 at 250 kWh, and remains constant.
- Brazil** (Light Blue line): Starts at 100, rises to 170 at 50 kWh, dips to 85 at 100 kWh, then rises to 290 at 150 kWh and remains constant.

Table 1: Lowest tariff rates and ratio of highest to lowest tariff rates (USD cents/kWh)

	Ratio (H:L)	ABR (for 30 units in US Cent/kWh)
Bangladesh	1.9	4.5
Indian State (Actual)	1.2	4.8
Indian State (Suggested)	2.5	4.4
Sri Lanka	4.2	4.2
Korea	5.3	7.1
Vietnam	1.7	7.0
Brazil	2.9	6.4

CONCLUSION

11.28 Impressive strides have been made in the power sector over the last two years including: The addition of record generation capacity; moves to create ‘one market’ in power; long overdue reforms of discoms; and energizing the development of the renewables sector.

11.29 The new paradigm of surplus power sets the stage for continuing these reforms so that India can become ‘one market’ in power; the burden on industry can be relieved, allowing it to become internationally competitive as envisaged in ‘Make in India’; tariffs can be made simple and transparent, avoiding proliferating end-use charges; and by taking advantage of the possibility of greater progressivity in rate-setting, charges for the poor could be reduced while generating more revenues.

11.30 In all of this, state governments and state regulators will have a key role to play, with helpful facilitation from the centre. The power sector is a perfect crucible for making effective the cooperative-competitive federalism experiment that is now India.