Optimism about the medium term and gathering anxiety about near-term deflationary impulses simultaneously reign over the Indian economy. Optimism stems from the launch of the historic Goods and Services Tax (GST), the decision in principle to privatize Air India; actions to address the Twin Balance Sheet (TBS) challenge; and growing confidence that macro-economic stability has become entrenched. Optimism, even exuberance, is manifested in financial markets' high and rising valuations of bonds, and especially stocks. At the same time, anxiety reigns because a series of deflationary impulses are weighing on an economy yet to gather its full momentum and still away from its potential. These include: stressed farm revenues, as non-cereal food prices have declined; farm loan waivers and the fiscal tightening they will entail; and declining profitability in the power and telecommunication sectors, further exacerbating the TBS problem. For the year ahead, the structural reform agenda will be one of implementing actual and promised actions— GST, Air-India, and critically the TBS. The macro-economic challenge will be to counter the deflationary impulses through key monetary, fiscal, and agricultural policies. The opportunities created by the "sweet spot" that recent Economic Surveys have highlighted must be seized and not allowed to recede.

I. INTRODUCTION

1.1 At this juncture, the Indian economy elicits reactions that span the continuum: from fundamental optimism (and its frothy variant, exuberance) about the medium term to gathering anxiety about near-term deflationary impulses. So, there is:

- rekindled optimism on structural reforms with the launch of the Goods and Services Tax (GST), which has been in the making for nearly a decade and a half; the decision in principle to privatize Air India; further rationalisation of energy subsidies and actions to address the Twin Balance Sheet (TBS) challenge;
- growing confidence that macro-economic stability has become entrenched, partly because of a series of government and RBI actions, and partly because structural changes in the oil market have reduced the risk of sustained price increases that would destabilize inflation and the balance of payments;
- extraordinary financial market confidence, reflected in high and rising bond, and especially stock, valuations;
- demonetization's long-term positive consequences combined with recognition of its short-term costs;
- rising concern that state government

finances will be disrupted because of farm loan waivers; and

a sense that deflationary tendencies are weighing on an economy yet to gather its full growth momentum and still away from its potential. These include: (i) stressed farm revenues, as non-cereal foodgrain prices have fallen sharply; (ii) fiscal tightening by the states to keep budget deficits on track-a recent illustration is Uttar Pradesh which has slashed capital expenditure by 13 per cent (excluding UDAY) to accommodate the loan waiver; (iii) declining profitability in the power and telecommunication sectors, further exacerbating the TBS problem; and (iv) transitional frictions from implementation of the GST.

1.2 The Indian economy's longer term economic challenges and priorities were discussed in the Economic Survey 2016-17, Volume I. For the year ahead, the structural and macro-economic agenda is clearer. The structural reform agenda will be one of implementing promised actions (GST, TBS, and Air-India) and decisions taken.

evidence Cross-country abounds 1.3 that structural reforms are more successful the healthier the macro-economic context; indeed, the latter may be a pre-requisite. Macro-economic dynamism provides the lubrication and resources to minimize unavoidable disruptions and finance structural reforms. That is why overcoming the nearterm demand shortfalls will be critical. Here, important policy choices may need to be considered: the timing and magnitude of monetary easing, the magnitude and composition of fiscal consolidation in the context of commitments made, and actions to deal with the non-cereal farm sector where conditions this year-good monsoon and soft demand-may resemble last year's.

1.4 This chapter is organized in three

sections: an analytical discussion of key recent macro-economic developments in Section A is followed by an assessment of the economic outlook for 2017-18, and the appropriate macro-economic policy stance in Section B. Recent economic developments are described in Section C.

A. ANALYTICAL REVIEW OF RECENT DEVELOPMENTS

1.5 Optimism about the medium-term prospects for the Indian economy has been engendered by a number of structural reform actions and developments, and manifested, above all, in financial market confidence.

II. HISTORIC TAX REFORM: THE GOODS AND SERVICES TAX (GST)

1.6 The launch of the GST represents an historic economic and political achievement, unprecedented in Indian tax and economic reforms, summarized in Table 1 below and elaborated in Chapter 2. Here the way ahead is outlined, misconceptions are clarified, and some relatively unnoticed benefits are highlighted.

1. Increased complexity of tax structure?

1.7 Much of the commentary has suggested that the GST has a complicated tax structure, implicitly comparing the new system with an ideal GST tax structure while implying that the comparison is with the past. It is inaccurate to suggest that the GST is more complicated than the system it replaced, for two related reasons.

1.8 Previously, every good faced an excise tax levied by the Centre and a state VAT. There were at least 8-10 rates of excises and 3-4 rates of state VATs, the latter potentially different across states. So, a structure of multiple rates (as much as 10 times 4 times 29 states) has been reduced to a structure of 6 rates.

1.9 More important, uniformity or the

1.	Furthering cooperative federalism	•	Nearly all domestic indirect tax decisions to be taken jointly by Centre and states
2.	Reducing corruption and leakage	•	Self-policing: invoice matching to claim input tax credit will deter non-compliance and foster compliance. Previously invoice matching existed only for intra-state VAT transactions and not for excise and service tax nor for imports
3.	Simplifying complex tax structure and unifying tax rates across the country	•	8-10 central excise duty rates times 3-4 state VAT rates itself applied differentially across states to be consolidated into the GST's 6 rates, applied uniformly across states (one good, one Indian tax) Other taxes and cesses of the states and the Centre subsumed in the GST
4.	Creating a common market	•	Will eliminate most physical restrictions and all taxes on inter-state trade
5.	Furthering 'Make in India' by eliminating bias in favour of imports ("negative protection")	•	Will make more effective and less leaky the domestic tax levied on imports (IGST, previously the sum of the countervailing duty and special additional duty), which will make domestic goods more competitive
6.	Eliminating tax bias against manufacturing/reducing consumer tax burden	•	By rectifying breaks in the supply chain and allowing easier flow of input tax credits, GST will substantially eliminate cascading (paying taxes at each stage on value added and taxes at all previous stages, such as with the Central Sales Tax)
7.	Boosting revenues, investment, and medium-term economic growth	•	Investment will be stimulated, because scope of input tax credit for capital purchases will increase Tax base will expand through better compliance Embedded taxes in exports will be neutralized

Table 1. Key Benefits of the GST

principle of "one good, one tax" all over India is now a reality. Previously, different states could impose different taxes on any given product and these could be different from that levied by the Centre.

1.10 So, relative to the past, there is now uniformity rather than multiplicity as well as considerably less complexity.

2. Additional compliance burden?

Goods

1.11 It is true that there will be additional documentation requirements on all those who are now part of the GST net. But the filing requirements will comprise filling one

set of forms per month (not three as has been alleged because filling the first automatically fills the two others). This will not be an additional burden because similar, sometimes more onerous, requirements existed under the previous state VAT and central excise regimes (Table 2). For example, as the Table below shows, under the pre-GST regime, three separate returns to three different authorities had to be filed in respect of the three major taxes that are now subsumed under the GST.

Services

1.12 Previously, since only the Centre

imposed the service tax, agents had to register with, and hence file to, only one authority. Now, agents will have to register in all states that they operate in and file in each of them. In the discussions in the GST Council, attempts were made to preserve the previous, simpler system, but states were nearly unanimous in insisting for multiple registration as a way to ensure that they receive their due share of revenues. That said, the increased compliance requirements will be faced only by a small number of agents with a pan-India presence whose ability to comply will be commensurately greater. Going forward, there is scope for more centralized procedures to minimize the compliance burden.

Table 2. Number and Frequency of Returnsto be Filed: Before and After GST

Be	fore GST	GST structure
State VAT	1 per month plus 1 annual	
Service Tax	2 half yearly	1 per month plus 1 annual
Central Excise	1 per month plus 1 annual	

Small Traders

1.13 Much has been made of the additional compliance burden on small traders and agents. This overlooks some important changes in the other direction. The GST has significantly raised turnover thresholds for inclusion in the tax net, as Table 3 shows. As a result, out of about 87 lakh agents that were previously in the tax net (states VAT, central excise and service tax) about 70 lakh remain in the GST net. A significant number of small traders with turnover less than 20 lakh may have opted out. Moreover, even though the new threshold is 20 lakh, agents with a turnover of up to 75 lakh can choose to pay a small tax on their turnover (not valued added), which they can file every quarter instead of every month with fewer documents having to be submitted.

Table 3: Turnover Threshold for Inclusion in	n
the Tax Net: Before and After GST (in Rs.))

Befo	ore GST	GST structure		
State VAT	Rs. 5-10 lakh	• Minimum Rs. 20		
Service Tax	Rs. 10 lakh	lakh • Rs. 20-75 lakh subject to lower		
Central Excise	Rs. 1.5 crore	compliance burden		

1.14 On the concerns that the antiprofiteering provisions might lead to overzealous administration, the Government has indicated that they will be sparingly used. In any case, a sunset clause was introduced to ensure that the provisions will expire no later than two years.

3. Hidden benefits

1.15 One important hidden benefit of the GST is that the textile and clothing sector is now fully part of the tax net. Previously, some parts of the value chain, especially fabrics, were outside the tax net, leading to informalisation and evasion. Some anomalies favoring imports of fabrics over domestic production will need to be rectified but overall the tax base has expanded.

1.16 Similarly, one segment of land and real estate transactions has been brought into the tax net: "work contracts", referring to housing that is being built. This in turn would allow for greater transparency and formalization of cement, steel, and other sales, which tended to be outside the tax net. The formalization will occur because builders will need documentation of these input purchases to claim tax credit.

1.17 Third, the GST will rectify the inadequacies of the previous system of domestic taxes levied on imports—the countervailing duty to offset the excise tax and the Special Additional Duty (SAD) to offset the state VAT. For example, the SAD was levied at 4 percent, even though the standard VAT was 12.5 percent in most states; while in principle firms that paid VAT on inputs could reclaim the tax, in practice there were difficulties getting the tax credits. Under the GST, the full taxes on domestic sales levied by the Centre and the states (the IGST) will be levied when imported goods first arrive into the country with full tax credits available down the chain to a greater extent than previously. This will lead to more transparent and more effective taxation of imports.

1.18 There are early signs of tax base expansion. Between June and July 2017, 6.6 lakh new agents previously outside the tax net have sought GST registration. This is expected to rise consistently as the incentives for formalization increase. Preliminary estimates point to potentially large increases in the tax base as a consequence.

1.19 Another benefit will be the impact of GST and the information it throws up on direct tax collections. This could be substantial. In the past, the Centre had little data on small manufacturers and consumption (because the excise was imposed at the manufacturing stage), while states had little data on the activities of local firms outside their borders. Under the GST, there will be seamless flow and availability of a common set of data to both the Centre and states, making direct tax collections more effective.

1.20 The longer-term benefits include the GST's impact on financial inclusion. Small businesses can build up a real time track record of tax payments digitally, and this can be used by lending institutions for credit rating and lending purposes. Currently, small

businesses are credit-constrained because they cannot credibly demonstrate their financial capability.

1.21 Finally, even within the first few days of the GST's launch there are reports of elimination of inter-state check-posts. So far, 24 states have abolished these check-posts while others are in the process of eliminating them. If this trend continues, the reduction in transport costs, fuel use, and corruption could be significant.

1.22 There is ample evidence to suggest that logistical costs within India are high. For example, one study suggests that trucks in India drive just one-third of the daily distance of trucks in the US (280 km vs 800 km). This raises direct costs (especially in terms of time to delivery), indirect costs (firms keeping larger inventory), and location choices (locating closer to suppliers/customers instead of the best place to produce). Further, only about 40 per cent of total travel time is spent driving; while one quarter is taken up by check points and other official stoppages. Eliminating check point delays could keep trucks moving almost 6 hours more per day, equivalent to additional 164 kms per day pulling India above global average and to the level of Brazil.

1.23 Overall, logistics costs (broadly defined, and including firms' estimates of lost sales) are 3-4 times the international benchmarks. Studies show that inter-state trade costs exceed intra-state trade costs by a factor of 7-16, thus pointing to clear existence of border barriers to inter-state movement of goods¹. The implementation of GST will dramatically reduce these costs and give a boost to inter-state trade in the country.

4. Challenges ahead

1.24 Table 4 shows the structure of GST

Report of the Committee on Revenue Neutral Rate and Structure of Goods and Services Tax: http://www.cbec.gov.in/resources//htdocs-cbec/gst/cea-rpt-rnr-new.pdf

IGST (%)			Number of Goods categories*	Major Goods/Secrtor excluded		
CGST (%)	SGST (%)	Total (%)		• Alcohol		
0	0	0	88	• Petroleum and energy		
1.5	1.5	3	Gold and jewelry	• Electricity		
2.5	2.5	5	173	• Land and real estate		
6	6	12	200	Healthcare		
9	9	18	521			
14	14	28	229			
Ce	esses (multiple)					

Table 4. GST Rates and Exclusions from GST Base

IGST is the sum of the GST levied by the Centre (CGST) and the states (SGST).

*Measured as number of Harmonized System (HS) lines defined under the tariff code

rates and goods/sectors that are outside the GST net. The rate structure and exclusion from the base, shown in Table 4, have scope for improvement. Alcohol, petroleum and energy products, electricity, and some of land and real estate transactions are outside the GST base but are taxed by the Centre and/or states outside the GST. Health and education are outside the tax net altogether, exempted under the GST and not otherwise taxed by the Centre and states.

1.25 Bringing electricity into the framework would GST improve the competitiveness Indian of industry because taxes on power get embedded in manufacturers' costs, and can be claimed back as input tax credit. Inclusion of land and real estate and alcohol in GST will improve transparency and reduce corruption; keeping health and education completely out is inconsistent with equity because these are services consumed disproportionately by the rich. Moreover, the tax on gold and jewellery products-items that are disproportionately consumed by the very rich-at 3 percent is still low.

1.26 The multiplicity of rates was a response to meeting a variety of objectives, including

the need to keep rates down for a number of essential items to protect poorer sections from price rises.

1.27 The GST Council—a remarkable institutional innovation in the governance of cooperative federalism, and one that has proven to be so already in its first ten months of existence—will need to take up these challenges in the months ahead to take India from a good GST to an even better one.

III. PARADIGM SHIFT TO LOW INFLATION?

1.28 Is India undergoing a structural shift in the inflationary process toward low inflation?

1.29 Research indicates that consumer price inflation has undershot professional forecasts fairly consistently over the last 5 years or so, globally as well as in the advance economies. In the Indian context, evidence seems to be pointing to same conclusion- though the errors have been on both side over longer time horizon. More recently such shifts seem to have been missed (Figure 1 and Figure 2, respectively); for example, in the last 14 quarters, inflation has been overestimated by more than 100 basis points in six quarters



Sources: RBI and Survey Calculations

(three in 2014 and three in the most recent period) with an average error of 180 basis points (and that too for a very short-term forecast, just three months ahead) (Figure 1). It must also be noted that during this period the forecast was within 50 bps of the outcome in 4 out of 14 quarters (March 2014, June, September and December 2015) and within 25 bps in 1 out of 14 quarters (December 2015). The record of professional forecasters is similar (Figure 2). Actual lesser inflation than forecast could well reflect the extraordinary developments such as the durable collapse of international oil prices.

1.30 The question going forward is whether there is a paradigm shift in inflation and what it implies for monetary management.

1.31 Consider first a long term perspective on inflation in India shown in Figure 3. Over the last four decades (beginning 1977), there have been broadly four phases: high inflation, averaging 9 percent, for about 23 years; low inflation of about 4 percent for 5 years between 2000 and 2005; a resurgence

Figure 2. CPI Inflation -Professional² Forecast and Actual



of inflation back to about 9 percent during the period 2006-2014; and now a new phase of relatively low, possibly very low, inflation.³

1.32 Figure 3 helps identify the drivers of inflation. Broadly, high inflation, and especially inflation peaks, coincide with surges in commodity prices, especially for oil and food; in some cases, they are caused by one-off factors such as sharp exchange rate depreciation.

1.33 So, if there are structural changes in the oil market and in domestic agriculture, the inflationary process could also experience structural shifts. As elaborated below, there are reasons to believe that both changes are underway.

Oil

1.34 It has become almost an involuntary reflex to cite geopolitics in the list of risks to oil prices, and hence to domestic inflation. But these risks may well be diminishing substantially. The oil market is very different today than a few years ago in a way that

² In Figure 1, the inflation forecast is estimated as the mid-point of the confidence bands in the fan charts of respective monetary policy statements. Figures 1 and 2 start in March 2014 because 3-months ahead projections (embodied in the "fan charts") are not available for previous periods.

³ Headline CPI inflation is now below 2 percent but even refined core (which strips out all the volatile food and fuel components), has now gone below 4 percent. This compares very favorably with India's long-run inflation performance of close to 9 percent and with the average of refined core inflation of 6.8 percent in the CPI-New Series from January 2011 onwards.



Figure 3. Long term Inflation⁴ (1977-2017)

Sources: Labour Bureau, Reserve Bank of India and World Bank.

⁴ Inflation based on the Consumer Price index for Industrial Workers (CPI-IW) released by the Labour Bureau is used since it is available for a longer period. The new series of Consumer Price Index – Combined (CPI-C) released by the Central Statistics Office (CSO) is only available since 2012-13. However, the two series move very closely with a correlation coefficient of 0.94 (for 2012-13 to 2016-17, the period when both the series are available).

imparts a downward bias to oil prices, or at least has capped the upside risks to oil prices.

1.35 The exploitation of shale oil and gas courtesy of sophisticated new technologies such as hydraulic fracturing—have increased the supply of oil from non-OPEC countries, especially from North America. Moreover, this supply has two significant properties. It is profitable at prices close to \$50 per barrel and supply responds more quickly to price changes because of much lower capital costs than for conventional oil. As a result, OPEC has less control over oil prices than it used to. Figure 4 plots OPEC's swing capacity and oil prices. Before 2014, the two moved closely together but since then, the two have completely decoupled.





1.36 Figure 5 plots the worldwide count of rigs and oil prices. Here too the relationship is striking, with rig capacity declining in response to lower oil prices and quickly expanding as oil prices rise.⁵ This accordion-like quality of shale oil and gas combined with estimates that viability is achieved close to \$50 per barrel means that oil prices are broadly capped.



Source: Baker Hughes

1.37 Going forward, therefore, it is not that oil prices will not be volatile nor is it the case that they will never rise above the \$50 "ceiling." Rather, shale technology will ensure that prices cannot remain above this ceiling for any prolonged period of time because of rapid supply responses which will take the prices toward the marginal cost of production of shale. The dramatic decline in the cost and prices of renewables will only re-inforce this tendency.

1.38 In sum, geopolitical risks are simply not as risky as earlier. Technology has rendered India less susceptible to the vicissitudes of geo-economics (OPEC) and geo-politics (Middle East). If, and to the extent that, changes prove permanent, the consequences for the inflationary process need to be taken into account.

Agriculture

1.39 Assessed over longer spells of time (decades), Indian agricultural performance has been moderately successful. One achievement is that production, especially of

⁵ A broadly similar relationship holds between the flow of rigs and oil prices.

cereals—the major item of consumption has become less volatile and more resilient to poor monsoons.

1.40 Figure 6 plots real growth in agricultural GDP. Average growth has remained in the 3 percent range but the volatility of output growth as measured by the coefficient of variation has declined from 1.87 percent in the period 1988-2004 to 0.75 since.

1.41 Figures 7 & 8 plot the growth of cereals and pulses production respectively. Here too, the remarkable decline in volatility

is evident for pulses and especially for cereals (Table-5). The coefficient of variation has declined dramatically in the last decade. What is striking about Figures 6 to 8 is that there are fewer troughs (growth rates of 1 percent or less)—in the key periods of inflation threat. Reasonably high support prices combined with effective procurement in the high-production, irrigation-intensive states (Punjab, Haryana, Uttar Pradesh, and recently also Madhya Pradesh) have contributed to stability in cereal production.



Figure 6. Agriculture GDP Growth in India (per cent)

Source: CSO Note: CV – Coefficient of Variation





Source: Directorate of Economics & Statistics, Ministry of Agriculture

Figure 8. Annual growth of Pulses Production (per cent)



Table 5. Variability in Pulses and Cereal
Production

	Mean		Coefficient of variation			
	Pulses	Cereal	Pulses	Cereal		
1951-2017	2.6%	3.6%	5.88	2.69		
1951-1965	2.2%	3.4%	6.86	3.19		
1966-1989	2.8%	5.6%	6.03	2.04		
1990-2004	0.7%	1.5%	20.35	5.01		
2005-2016	5.3%	2.7%	2.42	1.64		

Source: Directorate of Economics & Statistics, Ministry of Agriculture

1.42 What then explains the burst of food inflation during 2007-2011? That episode owed to a combination of a surge in global oil and agricultural prices combined with domestic agriculture policy. On the latter, the current government has responded by changing the framework in which agricultural prices are determined. It has rationalized Minimum Support Price (MSP) awards, liberalized agricultural marketing arrangements, and institutionalized the targeting-cum-Monetary inflation Policy Committee framework.

1.43 In recent months, falling food prices have driven inflation down to historically low levels, reaching 1.5 percent in June. This situation is surely temporary; soon, food prices will normalize. But even when this normalization occurs, inflation is unlikely to go back to its pre-2014 levels. To the contrary, the deep, technologydriven shifts in international energy markets and improvements in domestic policy and agricultural markets may be heralding a new era of low inflation in India.

IV. CONFIDENCE/EXUBERANCE: THE WEDGE BETWEEN ASSET PRICES AND REAL ECONOMY

1.44 As described in detail in Section C later,

a variety of indicators—Gross Value Added (GVA), Index of Industrial Production (IIP), credit, prices, capacity utilization and investment—all commonly point to a possibly short-run deceleration of economic activity over the course of 2016-17 (Figure 9). Yet, during this period, especially since February 2017, asset prices have risen. For example, the decline in G-sec yields from a high of 7.12 percent to 6.5 percent implies higher bond valuations.

1.45 More strikingly, over the same period, stock prices have risen to record levels, with the Sensex climbing from 28,743 to 32,020, a gain of 11 percent (Figure 10), equivalent to 15 percent in US dollar terms.

1.46 Moreover, the price-earnings (P/E)ratio of the Indian stock market reached a level of 23 in May 2017, and is estimated to have reached about 25 by mid-July. This is substantially greater than the long-run average of 18, and not far from the frothy levels reached in 2007. It is well known from the finance literature that a key condition for sustaining unusually high P/E levels is for future economic and, especially profit, growth to be rapid, and/or for investors to be willing to accept a lower return for holding stocks over other less risky assets (the so-called equity risk premium). Failing these, there is a strong tendency for mean reversion all over the world, illustrated for India in the aftermath of the boom of the mid-2000s (Figure 10).

1.47 Whether profits and growth surge because the recent deceleration proves transitory, or asset valuations adjust—in other words, rational confidence or overexuberance—remains to be seen. Historical evidence suggests that there is mean reversion towards more realistic valuations, especially when global excess liquidity is driving high valuation in the first place.





Source: CSO

V. FARM LOAN WAIVERS: MACRO-ECONOMIC IMPACT⁶

1.48 Recently, announcements or promises of farm loan waivers have been made in some form by Uttar Pradesh, Karnataka, Maharashtra, Punjab, and Tamil Nadu. The Supreme Court of India has stayed the decision of the Madras High Court to provide loan waivers to all farmers instead of only to small and marginal farmers. There is the possibility of a contagious spread to other states. This is in contrast to the previous episode in 2007-08 when farm loan waivers were awarded India-wide by the Centre.

1.49 Proponents have seen waivers as a means of helping farmers who have been subject to stress from successive shocks to agriculture: two years of inadequate rain followed by a year of large price declines. Others, including the Governor of the RBI, have pointed out that these waivers will have a long-term impact on the culture of loan repayments and induce moral hazard: waivers favor those who have borrowed relative to those who have been more thrifty, and those who have borrowed relative to those who





Sources: RBI & BSE

have repaid their loans; and they also favor those who have borrowed from formal sources relative to those who have borrowed, often at more usurious terms, from informal sources. Some have also suggested that there are more efficient and targeted ways of helping farmers.

1.50 This section does not assess the normative dimensions of farm waivers. Instead, it undertakes a macro-economic analysis to understand their immediate consequences for an economy yet to gather full momentum. To the extent that the cyclical impact has been discussed, it has been presumed to be inflationary. But in fact, the analysis below shows that the short-term consequences are likely to be quite deflationary.

1. Potential magnitudes of loan waivers

1.51 Demands for farm loan waivers have emerged at a time when state finances have been deteriorating. The UDAY scheme has led to rising market borrowings by the states (Figure 11), expected soon to overtake central government borrowings. As a result, spreads on state government bonds relative to g-secs have steadily risen by about 60 basis points

⁶ The basic facts on farm indebtedness are provided in Appendix 1.



Sources: RBI, JP Morgan

Note: NSSF refers to National Small Savings Fund that represents non-market borrowings.

Figure 12. State Development Loans (SDL)-Gsec Spread (5-month rolling average, bps)⁷



Sources: RBI and HSBC.

in the last six months (Figure 12). In turn, spreads on corporate bonds are estimated by J.P. Morgan to have risen by about 40 basis points, which could lead to reductions in corporate spending.

1.52 Estimating the macro-economic impact requires assumptions about the magnitudes of waivers. Three states have

been specific about the waiver schemes: UP has announced waivers of up to Rs. 1 lakh for all small and marginal farmers; Punjab's limit is Rs. 2 lakh for small farmers without defining who these are; and Karnataka has limited the waiver amount to Rs. 50,000 (Maharashtra's waiver terms are still unclear). The waiver announcements also do not make clear whether the amounts will apply to households or loans: typically, a household will have more than one loan.

1.53 It is assumed that waivers will apply at the loan rather than household level, since it will be administratively difficult to aggregate loans across households. It is also assumed that other states will follow the UP model. On this basis, an upper bound of loan waivers at the All-India level would be between Rs. 2.2 and Rs. 2.7 lakh crore (Appendix 1, Table 1). A state-wise assessment of the loan waivers is in Box 1⁸.

2. Macro-economic impacts

1.54 At its most basic, farm loan waivers simply transfer liabilities from private sector to public sector balance sheets. The impact on aggregate demand will then depend on which sector has the greater propensity to consume out of wealth. Of course, states don't actually have a propensity to consume out of wealth, but there is a link between the two because their spending is influenced by their need to respect their Fiscal Responsibility Legislation (FRL) targets. So, if they assume higher debt, they will in many cases need to cut other spending (or increase taxes). Once these spending changes take place, there will be second-round effects.

1.55 The analysis below assumes that the farm loan waivers spread throughout the country, along the lines of the discussion

⁷ Average SDL yield is the monthly average of yields of all states that issued state paper in that month.

⁸ Even if only the five states that have made the announcement to implement it, the estimated impact will be Rs.1-1.25 lakh crore.

Box 1. State-wise Fiscal Assessment of Loan Waivers

What is the fiscal ability of states to implement the farm loan waivers? Assessing this requires estimating the potential cost of the waivers, quantifying the fiscal space for the states relative to their FRL limits, and comparing the two. The analysis is shown in Table below.

States are ranked by the extent of fiscal space. The fiscal limit for most states is 3 percent of GSDP. However, six states (Odisha, Chhattisgarh, Telangana, Madhya Pradesh, Karnataka, and Bihar) have higher limits of 3.5 percent of GSDP because they have strong overall fiscal positions, as deemed by the Fourteenth Finance Commission's (FFC's) criteria.

Comparing limits with the BE estimates for 2017-18, only seven states have fiscal space exceeding 0.5 percent of GSDP. The states with the most space in rupee terms are Maharashtra, Gujarat, West Bengal, Karnataka and Madhya Pradesh. In relative terms, Jharkhand also has considerable space, amounting to 0.7 percent of GSDP. States with no additional deficit capacity include Uttar Pradesh, Telangana, Rajasthan, Andhra Pradesh, and Odisha.

	GSDP current MP (2017-18)	FD without UDAY in 2017-18 (BE)	Fiscal Ceiling post FFC	Fiscal Space	FD without UDAY in 2017-18 (BE)	Fiscal Ceiling post FFC	Fiscal Space
State	Lakh crore	In Rupee Thou	sandCrore		Per cent o	of GSDP	
Andhra Pradesh	7.7	23.1	23.1	0.0	3.0	3.0	0.0
Uttar Pradesh	14.2	42.6	42.6	0.0	3.0	3.0	0.0
Rajasthan	8.3	24.8	24.8	0.0	3.0	3.0	0.0
Kerala	7.5	25.8	22.4	0.0	3.4	3.0	-0.4
Himachal Pradesh	1.4	4.9	4.2	0.0	3.5	3.0	-0.5
Odisha	4.1	14.4	14.4	0.0	3.5	3.5	0.0
Chhattisgarh	2.8	9.7	9.7	0.0	3.5	3.5	0.0
Maharashtra	25.4	38.8	76.2	37.4	1.5	3.0	1.5
West Bengal	10.8	19.4	32.4	13.1	1.8	3.0	1.2
Gujarat	12.8	23.2	38.3	15.1	1.8	3.0	1.2
Jharkhand	3.0	6.9	9.1	2.2	2.3	3.0	0.7
Haryana	6.2	16.2	18.6	2.4	2.6	3.0	0.4
Karnataka	12.8	33.4	44.8	11.5	2.6	3.5	0.9
Tamilnadu	15.0	42.0	45.1	3.2	2.8	3.0	0.2
Uttarakhand	2.3	6.6	6.8	0.2	2.9	3.0	0.1
Punjab	5.0	14.6	15.1	0.5	2.9	3.0	0.1
Bihar	6.3	18.1	22.1	4.0	2.9	3.5	0.6
Madhya Pradesh	7.4	21.1	25.7	4.7	2.9	3.5	0.6
Telangana	7.6	26.1	26.6	0.5	3.5	3.5	0.0
TOTAL	160.6	411.6	502.2	94.6	2.6	3.1	0.6

State-Specific Fiscal Space for Farm Loan Waiver

Notes: Fiscal ceiling is calculated based on the 14th Finance Commission (FFC) recommendations. The necessary condition for being allowed to use additional fiscal space is a zero revenue deficit in the current and preceding years. Then, 0.25% of GSDP worth of fiscal space is available if the interest payment to revenue receipt ratio is less than or equal to 10 %; and an additional 0.25% of GSDP if the debt to GDP ratio is less than 25% of GSDP. The fiscal deficit number for Uttar Pradesh, Punjab and Uttarakhand is for 2016-17 BE.

above. In that case, total loan waivers could reach Rs. 2.7 lakh crore. At the same time, it is assumed that the Centre will not—as emphasized by the Finance Minister assume any responsibility for the waivers. So the state governments will have to finance the waivers on their own.

1.56 The waivers will have four effects on aggregate demand:

- Private consumption impact via increases in private sector net wealth
- Public sector impact via changes in government expenditure/taxes
- Crowding out impact via higher borrowings by state governments
- Crowding in impact via higher credit availability as bank NPAs fall

1.57 Consider each in turn.

consumption impact: 1.58 *Private* Loan waivers will increase the net wealth of farm households. Wealth data is not available, it is assumed that net income will increase by the amount of loans waived off (whereas in fact this year's disposable income rises by only the debt service forgiven). Using cross-sectional data on farm households, a consumption elasticity out of (temporary) income of about 0.25 is estimated.9 Since loan waivers are assumed to increase aggregate income by 28 percent, consumption is estimated to increase by 7 percent or about Rs. 55,000 crore. This estimated consumption impact is on the higher side because a World Bank study on the "Agricultural Debt Waiver and Debt Relief Scheme" of 2008-09 found that consumption did not rise after the loan waivers.10

1.59 Public sector impact: This impact will in turn depend upon the extent of fiscal space that state governments have under their respective FRLs. Box 2 elaborates on the public sector impact methodology. The key intuition is that loan waivers involve spending that does not add to demand (because these are liability transfers to the states' balance sheets) but the actions taken to meet FRL targets (higher taxes and/or lower expenditure) will reduce demand. It is estimated that for states with fiscal space, loan waivers would add about Rs. 6,350 crore to demand via the additional interest costs. For states without space, waivers could reduce demand by about Rs. 1.9 lakh crore. The net effect of aggregating over the two cases state by state yields a reduction in aggregate demand of close to Rs. 1.9 lakh crore.

1.60 Now, for the second round effects.

1.61 *Crowding out impact:* Loan waivers will result in higher borrowing by the states with fiscal space. This could squeeze out private spending by firms. Analysis by J.P Morgan suggests that yields on corporate bonds have already risen by about 40 basis points post UDAY.

1.62 *Crowding in impact:* Bank balance sheets will improve to the extent that non-performing farm loans are taken off their books. So they might be able to provide additional financial resources to the private sector, leading to greater spending. The World Bank study found that lending increased following the 2008-09 waiver even if not in the districts with greater exposure to the waiver.

1.63 It is estimated that these two effects would almost cancel each other.

⁹ This might seem a low number because marginal propensities to consumer are, typically, high. But behavioral economics suggests that a reaction to an actual increase in income might be very different from a notional increase based on an expenditure avoided.

¹⁰ Giné, X and M. Kanz, 2014, "The Economic Effects of a Borrower Bailout Evidence from an Emerging Market," World Bank Policy Research Paper, WPS7109.

Box 2. The Macro-Economic Accounting of Loan Waivers

Consider loan waivers for two polar cases: where states have no space and have some space. In both cases,

FD = E - R

Where FD is a state's fiscal deficit, E and R are its total expenditures and non-debt revenues, respectively. Suppose states grant loan waivers to the extent of LW.

(2)

(1)

Now FD = E - R + LW

If before the waiver states were at their deficit limits, then in equation 2, they will either need to reduce E (by cutting expenditures) or increase R in order to accommodate higher LW for an unchanged FD.

The key insight is this: while the measured fiscal deficit might not change, aggregate demand will change significantly. From the perspective of the economy, LW is just an asset transaction (in macro-accounting parlance "below-the line") in which states effectively make payments to the banks on behalf of the farmer. At the same time, the increase in R or reduction in E necessary to respect the FRL target will have a real macro impact, reducing aggregate demand. So in this case, granting loan waivers would reduce aggregate public sector demand, potentially by large amounts.

Now the second case: If states had fiscal room before the waiver, then an increase in LW will not require changes in R or E, except to the extent that the higher borrowing will entail additional interest costs. So in this case the macro impact will be minor, comprising not the increase in LW (which has no impact) but the extra interest arising from the additional borrowing.

1.64 *Total impact:* Adding up these effects yields an impact on aggregate demand of minus Rs 1.1 lakh crore¹¹. In other words, loan waivers could reduce aggregate demand by as much as 0.7 percent of GDP, imparting a significant deflationary shock to an economy yet to gain full momentum. Note, however, that this is an upper bound. The actual impact will depend on the number of states that actually decide to grant waivers, and how they distribute them over time.

VI. AGRARIAN STRESS AMIDST SURFEIT?

1.65 What explains the sudden demand for loan waivers? Is it possible that farm stress has actually intensified when weather conditions are the best they've been in years? After all, incomes and weather conditions are normally highly correlated. When weather was good and international demand was booming during 2006-12, farm incomes soared. Then, when rainfall proved severely deficient, harvests were poor and hardship emerged. But last two years have received adequate rains and good crops, raising the puzzle of why there is stress at a time of plenty.

1.66 Agrarian stress is difficult to measure objectively. The manifestations are easy to see—demands for loan relief and restiveness in a number of states—but it is difficult to disentangle their political and economic origins. For example, the widespread demand for loan waivers could simply be a demonstration effect from the UP loan waiver.

1.67 Nevertheless, there seem to be proximate economic causes for stress, reflected in lower prices and lower farm revenues.¹²

1.68 To assess the situation, the Ministry of Agriculture's Agmarknet database was used. This contains daily data on the arrivals of farm produce in the major mandis and the prices received by suppliers. For a number of major commodities—wheat, arhar, moong, tomatoes, potatoes, and onions—estimates

¹¹ This impact is estimated to be around Rs. 57,900 crore for the states who have already announced farm loan waivers.

¹² Farm income cannot be estimated because of lack of detailed data on costs; instead revenues as the product of quantities and prices are measured.

are provided for prices, quantities, revenues, and, where relevant (wheat and pulses), the percentage of crop that was sold at prices below the Minimum Support Price (MSP). The database has information on an all-India basis, as well as for the individual states. All the calculations are for the agricultural year (July-June).¹³

1.69 Some broad patterns are discernible. Economic distress—as measured by real revenues (prices times the quantity of arrivals deflated by the rural CPI)—is not a generalized phenomenon.¹⁴ For example, it does not afflict wheat and Bengal gram ("chana"), where market quantities and prices have risen, resulting in rising real revenues.

1.70 But there does seem to be a decline in real farm revenues in pulses and some vegetables like potato(Figure 13). In the agricultural year ending in June 2017, relative to the previous year, real revenues have declined most in the case of moong (30 percent) and least in the case of potatoes (4 percent) with arhar and moong posting declines of around 10 and 28 percent, respectively. However the prices of onion and tomato started rising recently.

1.71 There have also been interesting regional variations. Uttar Pradesh appears to have done reasonably well in most crops, including wheat and potatoes. In the case of wheat, there was a substantial increase in procurement, reflected in a decline in the magnitudes sold at prices below MSP. In contrast, Madhya Pradesh, which had recently been favoring wheat, saw an increase in the amount of sale at prices below MSP. Pulses witnessed large reductions in prices over the previous year, especially moong, although the price declines were steeper in some states (Rajasthan in moong and arhar in Karnataka and Madhya Pradesh).

1.72 Clearly, increased supply led to large declines in prices. The puzzle is why it reduced prices so much that it depressed farm revenues. After all, in 2014 output surged in a number of crops including arhar, potatoes, and onions without yielding revenue declines. This year appears to have been atypical in the magnitude of price decline.

1.73 Two possible explanations suggest themselves. First, outlets for farmers were narrow on account of stock limits on wholesalers and retailers and there were restrictions on exports whereas imports were more liberal on some commodities. Suggestive evidence comes from the contrasting experiences of Bengal gram, on the one hand, and arhar and moong on the other. Fewer restrictions for the former may have helped shore up market prices received by farmers. Second, weaker demand than in previous years could have weighed on prices.

1.74 In contrast to expectations of some observers, demonetization did not reduce supply of the rabi crop. The cash shortages were particularly pronounced in the rural areas, and they were reinforced by a credit squeeze, which saw loan growth (the blue line in Figure 14) slowing from 16 percent in September to 8-9 percent in the first quarter of this year and further until end-May.

1.75 This cash and credit squeeze could have reduced acreage and the use of fertilizer. Yet rabi plantings last year which coincided with the peak period of demonetization—and output were unscathed (growth of 5.7 percent in area

¹³ Data on arrivals do not account for all of production. Agmarknet covers 48.7 per cent of the regulated markets and covers unregulated markets as well. The coverage is, however, representative at both state and All-India levels. The estimates are based on a common sample of states across time.

¹⁴ If there is money illusion, nominal incomes would be the right measure to monitor. Since rural CPI inflation was lower in 2016-17 compared to 2015-16, declining real revenues would signal larger declines in nominal revenues.



Figure 13. Selected Agricultural Commodities: Real Revenues, Quantities and Prices

Notes: Agriculture year 2016 stands for 2016-17 and like wise others too. Prices are weighted averages. Real revenue and quantity are indexed with base agriculture year 2015-16=100

sown and 7 percent in production).

1.76 Finally, there may also be some behavioral factors at play. Increased planting of pulses last year was a response both to record high market prices as well as large increases in MSP with promises by the government of more effective procurement. But prices at the time of marketing have been well below those last year. Despite record increases in procurement (the procurement of Kharif pulses increased from negligible levels in 2015-16 to 1.5 million tonnes on 2016-17), a significant fraction of sales of some pulses has been below MSP. Thus, the distress could have been because received

Sources: Agmarknet and Survey estimates





Source: RBI and Survey Calculations

prices were lower than those last year, and mostly lower than MSP prices.

VII. LONG-TERM BENEFITS AND SHORT-TERM COSTS OF DEMONETIZATION: AN UPDATE

1.77 The Economic Survey 2016-17, Volume I had discussed the potential consequences of demonetization, mostly in theoretical terms because data available at the time was limited. Six months on, there is more data to add to the discussion. The discussion is organized around a few indicators that were highlighted in Volume I.

1. Cash and Digitalization

1.78 Reducing the use of cash and increasing the use of digital modes of payment were major aims of demonetization. What has been the progress so far?

1.79 As shown in the Economic Survey 2016-17, Volume-I, India relied to a greater extent on cash than comparator countries, reflected in a high cash-GDP ratio of about 12 percent and a rising cash-GDP ratio over time (Figures 2 and 3 in Chapter 3 of

Economic Survey 2016-17, Volume I). It has been nine months since demonetization went into effect. Assuming—and this is a critical assumption—that remonetization has happened fully and that the supply of cash is now fully reflective of demand, then today's level of cash can be compared with predemonetization levels.

1.80 Figure 15 plots the level of cash since 2014 and also shows a trend line, pointing to where cash might have been in the absence of demonetization (it is not accurate to compare levels today with levels prevailing on Demonetization day). In levels, and as a share of GDP and money, there seems to have been a sharp and equilibrium decline in the use of cash: as of July, the holding of cash is about Rs. 3.5 lakh crore (20 percent) less than what might have been the case had predemonetization trends prevailed, consistent with the calculations presented in Volume I. This reduced cash holding is illustrated in Figure 16 which plots cash as a share of GDP and money (M1). The former has declined by about 1.6 percentage points down from 11.3

Figure 15. Demonetization and Cash Holdings (Rs. Trillion)



Source: RBI and Survey Calculations



Figure 16. Currency in Circulation to GDP and M1 (per cent)

Source: RBI and Survey Calculations

percent of GDP to 9.7 percent, and the latter by 5 percentage points.

1.81 Of course, a definitive judgment can only be passed if current levels of cash relative to GDP persist over time but so far, reliance on cash appears to have declined sharply. This decline suggests that a considerable portion of cash holdings was used for savings, which has now been transferred to the banking system. In addition, post-demonetization a new enforcement and compliance regime and increased digitalization have reduced the use of cash for transactions.

1.82 Whataboutdigitalization? Digitalization can broadly impact three sections of society: the poor, who are largely outside the digital economy; the less affluent sections, who are becoming part of the digital economy, having acquired Jan Dhan accounts and RuPay cards; and the affluent, who are fully digitally integrated via debit and credit cards. Different indicators capture the impact on each of these categories: Aadhaar enabled payments (AEPS) for the 'digitally excluded'; Rupay cards for the intermediate category; and credit and debit cards for the digitally connected. These Figures are presented in Figures 17-20.

1.83 It is clear that there has been a substantial increase in digitalization across all categories. And even though the immediate post-demonetization surge has moderated in some cases, the level and pace of digitalization are still substantially greater than before demonetization. This is also true for a category of large customers whose transactions are captured in Figure 20.¹⁵

1.84 Demonetization was expected to reduce black market transactions in real estate which would be manifested in reduced real estate prices (Figure 21, which depicts the weighted average price in India's seven major cities). Even prior to demonetization, there was a deceleration in house price inflation, and there was a further reduction in prices postdemonetization. The decline has since been reversed, and prices appear to be rising again.

Figure 17. AEPS Digital Transactions (Rs Billion) for "Digitally Excluded"



¹⁵ Data based on the number of digital transactions (as opposed to their value) conveys a similar picture to that shown in Figures 17-20.



Figure 18. Digital Transactions for the Less Affluent Consumers (Rs Billion)

Figure 19. Digital Transactions for Affluent Consumers (Rs Billion)



Figure 20. Digital Transactions for Large Customers (Rs Trillion)



Source: NPCI

Note: NEFT – National Electronic Funds Transfer; RTGS –Real Time Gross Settlement, BHIM- Bharat Interface for Money





Source: Knight Frank

It remains to be seen whether the impact of demonetization on the housing market will be permanent.

2. Income Tax Compliance

1.85 Did the signaling effect of demonetization—namely that there would be decreased tolerance of tax non-compliance highlighted in the Union Budget for 2017-18—have an impact on tax compliance? According to the tax data, the number of new individual tax payers (based on returns filed) increased from 63.5 lakh in 2015-16 to 80.7 lakh in 2016-17. But all this increase cannot be attributed to demonetization because there is some natural trend increase in new taxpayers. Instead, this impact by measuring the increase in taxpayers in the post-demonetization period (Nov. 9, 2016-end-March 2017) relative to the increase in the same period the previous year is estimated.

1.86 As the Table 6 shows, the growth taxpayers post-demonetization of was significantly greater than in the previous year (45 percent versus 25 percent). The addition amounted to about 5.4 lakh taxpayers or 1 percent of all individual taxpayers in just a few months. The addition to the reported taxable income (of these new payers) was about Rs.10,600 crore. So, the tax base did expand after demonetization. It is, however, interesting that the average income reported of the new taxpayers-Rs. 2.7 lakh- was not far above the tax threshold of Rs. 2.5 lakh, so the immediate impact on tax collections was muted. The full effect on collections will materialize gradually as reported income of these taxpayers grows.

1.87 Overall, demonetization should continue to pay dividends over time, as the

	FY 2015-16	FY 2016-17
Growth in New Tax Payer (%)	25.1	45.3
Possible additional taxpayers due to Demonetisation (in Lakh) (calculated as excess over previous year's growth)		5.4
Growth in Returned Income (%)	38.6	54.3
Possible addition of Returned Income (in Crore)		10,587
Average Taxable Income (in lakh)	2.5	2.7

Table 6. Estimate of Additional Tax Payers Post-Demonetization (Nov. 9-Mar. 31)

¹⁶ The forecast trend has been derived from a triple exponential smoothing (i.e. Holt-Winters) approach applied to pre-demonetization seasonally adjusted data. The seasonal adjustment is performed using the 'seas' package in R; The data on prices is an average of real estate prices of NCR, Mumbai, Pune, Chennai, Bengaluru, Kolkata, and Ahmedabad, weighted by the value of property sales in each city.

impetus toward formalizing the economy and expanding the tax base that it has set in motion continues.

3. GDP

1.88 Real GDP growth declined from 8 percent in 2015-16 to 7.1 percent in 2016-17, as momentum slowed over the course of the fiscal year. Real GDP growth slipped from 7.7 percent in the first half of 2016-17 to 6.5 percent in the second half. Quarterly real GDP growth also shows a deceleration in the third and fourth quarters relative to the first two quarters. The slowdown in these indicators predated demonetization but intensified in the post-demonetization period.

1.89 High frequency monthly indicators e.g., real credit growth to industry and IIP manufacturing—suggest a similar pattern. The figure also shows that in the last few months the impact seems to have bottomed out, reflected in the bounce-back of these indicators (Figure 22).

1.90 But a demonetisation puzzle is raised by the GDP estimates. While real growth decelerated, the slowdown was much smaller than expected: growth for the year as a whole was much higher than range of 6.5-6.75



Figure 22. High Frequency Macro Economic Indicators

Source: CSO

percent estimated in the Economic Survey 2016-17 Volume I. Even more striking as explained in Box 3, nominal GDP growth actually accelerated after demonetization.

4. Informal sector impact: MGNREGS

1.91 The Survey Volume I had pointed out that demonetization would impose short-term costs. Volume I also pointed out that conventional economic indicators which source data from formal sector firms that might be more insulated from demonetization—were unlikely to capture these costs. A proxy for informal sector effects is two-wheeler sales which showed a rapid decline following demonetization but has, after more than six months, almost returned to pre-demonetization levels (Figure 23). The cumulative shortfall between actual sales and the trend lines is a proxy for the short-run informal costs.

1.92 An alternative way of capturing costs on the informal sector is to analyze data on the demand for insurance. Negatively affected households may have demanded insurance either informal insurance from family and friends, or more formal social insurance such as that provided by government employment

Figure 23. Number of Two Wheelers Sold in the Domestic Market (Seasonally Adjusted)



Source: Society for Indian Automobile Manufacturers

Box 3. The Demonetization and Nominal GDP Puzzle

Volume I of the Economic Survey in February had argued that in assessing the short-term impact of demonetization on GDP growth, the better indicator would be nominal rather than real GDP growth: "After all, demonetization is mostly a nominal demand shock, so its effect in the first instance will be on nominal magnitudes."

Nominal magnitudes paint an entirely different picture from real ones. Whether the comparison is annual or quarterly, the numbers suggest an acceleration in nominal GDP growth after demonetization. Annual nominal GDP growth in 2016-17 was about 1.1 percentage points greater than in 2015-16; and growth in the second half of 2016-17 was also 1.1 percentage points greater than in the second half relative to the first.

To understand how big a puzzle this is, it is worthwhile recalling the corresponding monetary shocks: on an annual basis cash growth declined from 12 percent to (-) 4 percent. So, a nearly 16 percentage point swing in cash growth led to an increase in nominal GDP growth of 1 percentage point.





Figure : Quarterly CIC & Nominal GDP growth (per cent)



Figure : Half-Yearly CIC & Nominal GDP growth (per cent)



This acceleration sits oddly with the explanation in the previous section that demonetization depressed agricultural prices. More fundamentally, it sits oddly with monetary theory. Cash growth declined from 16 percent in H1 2016-17 to (-) 23 percent in H2 2016-17, a 39 percentage point deceleration. Even allowing for the fact that some of the cash was "idle", any plausible version of the quantity theory of money would have predicted a reasonable decline in nominal GDP growth, even after factoring in a plausible rise in velocity. Instead, there was an acceleration. (Appendix 3 contains a detailed description of how real and nominal magnitudes are estimated in the National Income Accounts).

guarantee schemes like MGNREGS. Indeed, demand for MGNREGS work typically spikes in drought years, suggesting that it acts like a type of social insurance (Fetzer 2014)¹⁷.

1.93 So, the question is whether data on MGNREGS shows some evidence that demonetization induced greater demand for social insurance. To assess this, district-level data on MGNREGS employment in each week over the last 5 years was compiled. This data was made available by the Ministry of Rural Development.

1.94 Of interest here is whether there was increased MGNREGS employment in the weeks after November 8 relative to the weeks before November 8 – and whether this effect was particularly pronounced in 2016 (the demonetization year) relative to previous years. This is a commonly used empirical methodology known as differences-indifferences (Bertrand et. al. 2004, Appendix 4). The data was subjected to statistical analysis, controlling for factors that could have affected MGNREGS differentially this year and previous years. Details are presented in Appendix 4.

findings-depicted 1.95 The main in Figures 24-27 and based on the statistical analysis-are the following. There is suggestive evidence of increased demand for insurance over the demonetization period (early November 2016-March 2017). This is especially strong for the less developed states, comprising Bihar, Chattisgarh, Rajasthan, Jharkhand, West Bengal, and Odisha (Figure 25) which witnessed about a 30 percent increase in mandays worked. These results are sensitive to the time windows used for comparison purposes and to the comparison years.

1.96 Interestingly, there were four phases

in the demonetization-MGNREGS relationship: (a) For about 4 weeks after demonetization, there was a decline in the demand for MGNREGS work; (b) this was followed by a 4-week period of recovery, and then (c) a 10-week period where demand increased substantially; and finally, (d) since the middle of March, there was once again no differential impact on MGNREGS relative to previous years.

1.97 This broad pattern is especially noticeable in the less developed states, which saw a much greater surge in the third phase ("acceleration"), with Bihar showing a particularly large increase in MGNREGS demand. In contrast, there seems to have been no such pattern in Uttar Pradesh. (Figure 27).

1.98 Two patterns are especially noteworthy. The striking absence of any demonetization effect in Uttar Pradesh seems to have been related to what happened in the beginning of the year when MGNREGS employment surged relative to previous years (Figure 27). This differential pattern is less striking elsewhere (Figures 24, 25, and 26). One explanation is that if people came close to their maximum MGNREGS allowances in the early part of the year, mechanically there would be less of a surge in employment in the latter part, including during the demonetization period. Uttar Pradesh is perhaps less suitable to a post-pre analysis because the assumption that the pre-periods are broadly similar in all years does not hold.

1.99 Second, the pattern of reduced demand in the first four weeks following demonetization is puzzling. One interpretation is that demonetization increased demand for MGNREGS employment, but this was initially offset by

¹⁷ Fetzer, T. (2014), "Social Insurance and Conflict: Evidence from India", available at www.trfetzer.com/wp-content/uploads/JMP.pdf



Sources: Ministry of Rural Development and Survey Calculations.

constraints on the ability of local government to supply MGNREGS work. In this view, demonetization affected both the supply and demand for insurance, and in the first few weeks, the decrease in supply overwhelmed the increase in demand. Over time, as cash began to flow and financing constraints lifted, the demand for insurance was more clearly identifiable in the data.

1.100 Alternatively, it is possible that better agricultural performance in 2016-17, which was especially marked in those four peakharvest weeks after demonetization, offset any demonetization impact.

1.101 In sum, three tentative conclusions suggest themselves. First, demonetization's impact on the informal economy increased demand for social insurance, particularly in less developed states with the striking exception of Uttar Pradesh. Second, this impact peaked between December and March, and has since disappeared, consistent with the evidence on 2-wheeler sales shown in Figure 24. And, finally, that MGNREGS and its implementation by the Government have met the programme's stated role of being a social safety net during times of need.

1.102 It needs to be stressed that results are not conclusive. For example, the longer the window of pre-demonetization weeks used to measure the post-pre difference, the weaker the results become. More research is needed to disentangle all the rich and complex interactions between demonetization and its impact on the informal sector.

5. Can the current growth configuration be maintained?

1.103 In the last 2 years, real GDP growth has averaged about 7.5 percent. But this has been achieved against the context of weak investment, export volume and credit growth. This wedge between steady growth and its underlying (relatively weak) drivers raises a question and also poses a puzzle. To shed light on this a cross-country comparison was undertaken to investigate whether in the last 25 years there have been similar experiences in other emerging market countries (that is, of successive two-year periods where Indian levels of growth were achieved with such a combination of factors, i.e. Indian levels of real investment, export volume, and credit growth witnessed in 2015-16 and 2016-17). The focus is on the last 25 years because of data availability.

1.104 First, Indian performance on real investment (gross fixed capital formation), export volume and credit during the last two years (2015-16 and 2016-17) is identified.¹⁸ These were 4.5 percent (real) growth in investment, 2 percent growth in export volumes, and decline in credit-to-GDP ratio of 2 percentage points (all averages over the two years). A sample of 23 other comparable countries (listed in Appendix 5) is then considered to infer how many times this combination of investment, export volume, and credit has led to growth of at least 7 percent. The results are shown in Table 7.

1.105 Since there are three criteria, there are seven possibilities: three cases where any one of the criteria are met, three cases where any two combinations are met, and one case where all the three criteria are met. The Table shows that never in the last 25 years has there been another case of 7 percent growth with investment, exports and credit corresponding to the current Indian combination. In fact, there have also been no cases when two of the three criteria have been met. Only in a very few cases, has 7 percent been consistent with only one of the three criteria having been met.

1.106 The next question is whether the Indian combination of investment, export volume, and credit is consistent with a weaker growth performance of 5 percent (Table 7). Again the answer is never. In fact, 5 percent real GDP growth has been consistent with two of the three criteria having been met only four percent of the time.

1.107 Therefore, the Indian experience of the last two years has been exceptional. Another way of seeing this is to note that the average investment and export volume growth in the 7 per cent sample is 13.8 and 12 percent respectively, well above India's. From a strictly accounting perspective, there is no difficulty in explaining Indian exceptionalism. By definition, consumption and, to a lesser extent, Government investment have powered the economy. But the purpose of the cross-country comparison is to move from accounting to plausible economic explanations.

1.108 One lesson is the following. While the current configuration is certainly unprecedented in cross-country experience, sustaining current growth trajectory will require action on more normal drivers of growth such as investment and exports and cleaning up of balance sheets to facilitate credit growth.

6. Banking: Declining Profitability in Power and Telecom and the Twin Balance Sheet Challenge

1.109 Significant developments have taken place in two sectors that cloud the outlook for resolving the TBS problem and hence for credit, investment and economic growth.

¹⁸ The focus is on the last two years because of the sharp divergence between WPI and CPI series that has complicated GDP estimation.

Criteria	Number of instances of real GDP growth >=7%	Number of instances of real GDP growth >=5%
	108	285
A. Percent of growth instances attained with any one criterion satisfied	16	29
B. Percent of growth instances attained with any two criteria satisfied	0	4
C. Percent of growth instances attained with all three criteria satisfied	0	0

	Table 7. Cross-Country	v Record of	Current Indian	Growth	Configuration	(1991 - 2015)
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**Note:* The criteria are (for every 2-year period over 1991 to 2016): (i) Real investment growth <=4.5%, (ii) Export volume growth <=2 %, and (iii) Fall in the credit to GDP ratio by at least 2 percentage points. The threshold for export volume growth has been assumed to be 2% even though the average growth in the same for India over FY 16 and FY 17 has been below 1%. Credit to GDP ratio data is from the World Bank and includes non-bank sources of credit.

1.110 In the power sector, a number of significant developments are affecting the short and medium term outlook. As shown in Figure 28, the price of renewables has been declining significantly. This is a positive long run development for India and the global effort to combat climate change. But it will pose a number of short-term challenges.

1.111 Figure 29 shows a rapid increase in private thermal capacity of 833 percent which accounts for 57 percent of the total increase in thermal capacity. A predominant share has been tied up via long-term power purchase

Figure 28. Per Unit Electricity Prices for Solar Energy in India (Rs per KWh)



Source: Solardae.com

agreements (PPAs) between generators and discoms. However, demand has not kept up in part, due to the over-exuberance in building capacity and reduced demand owing to the health of discoms. Reduced demand for thermal-based power is increasingly also a result of renewables becoming more competitive. As a result, average plant load factors have declined steadily to around 60 percent (Figure 29).

Figure 29. Private Sector Thermal Generation Capacity & Plant Load Factor (RHS)



Source: Central Electricity Authority

1.112 This implies that in the current distribution of private sector thermal generation capacity, a number of plants are operating at well below viable levels of capacity utilization. If a rough benchmark of 60 percent and above is deemed viable, then Figure 30 shows that nearly 50 percent of current capacity is unviable.

1.113 Reflecting this, Credit Suisse estimates that the ratio of stressed companies in the power sector (defined as the share of debt owed by companies with an interest coverage (IC) ratio of less than 1) has been steadily rising this year, reaching 70 percent, with an associated vulnerable debt of over Rs. 3.6 lakh crore (Figure 32).

Figure 30. Private Sector Coal and Gas Generation Capacity-PLF Distribution



Source: Central Electricity Authority

Note: The different colours represent incremental additions to capacity





Note: IC refers to interest coverage. If IC<1, earnings are not sufficient to cover interest obligations.

1.114 But there is also a less understood medium-term problem. As discoms realize that there are cheaper, alternative sources of power than their current PPA rates with generators, there will be a growing rush to seek to renegotiate tariffs downwards. Nascent signs are evident already as Uttar Pradesh and Rajasthan have announced that they might want to renegotiate some of their existing contracts. This makes matters more complicated especially in the context of the Supreme Court of India's recent ruling that contracts are sacrosanct (the irony being that in this case, it was the private sector that sought to abrogate the contract and seek its renegotiation). Quite apart from the fact that India does not quite have a workable

Figure 31. Average Revenue Per User (ARPU)



Source: TRAI



Figure 33. Telecom sector Debt with IC*<1

Source: Credit Suisse estimates.

framework for contract renegotiations, future workouts—in the direction of lower prices—might render more capacity unviable and hence more debt to be unsustainable.

telecommunications sector 1.115 The has experienced its own version of the "renewables shock" in the form of a new entrant that has dramatically reduced prices for, and increased access to, data, thereby benefitting-at least in the short runconsumers¹⁹. But like with the renewables shock, the near term implications for the viability of incumbents are serious: their profitability has come down dramatically. As Figure 31 shows, after launching of services by the new entrant in September 2016, the average revenue per user (ARPU) for the industry on aggregate has come down by 22 percent vis-à-vis the long term (December 2009-June 2016) ARPU, and by about 32 percent since September 2016.

1.116 For this reason, Credit Suisse estimates that the share of telecom debt owed by companies with interest coverage (IC) < 1 has more than doubled since late 2016, climbing above 55 percent, with an associated vulnerable debt of Rs. 1.5 lakh crore (Figure 33). In the telecommunications case, not only is the banking system exposed but so too is the government to whom the companies owe a variety of fees and taxes.

1.117 The Mid-Year Economic Analysis of December 2014 first highlighted India's Twin Balance Sheet (TBS) challenge while the Economic Survey 2016-17, Volume I examined it in great detail. Successive Surveys have emphasized that tackling this challenge will require 4 Rs: *Recognition, Resolution (which targets corporate balance sheets), Recapitalization (which targets bank balance sheets), and Reform.*

1.118 Over the past few years, the

Government and RBI have moved decisively on recognition and most recently on resolution. In May 2017 the Government passed an ordinance to promote resolution. The RBI followed up decisively by identifying on June 13, 2017, 12 loan accounts to be taken up under India's new Bankruptcy Law. Meanwhile, to facilitate reform, the RBI has placed 6 weak banks under the Prompt Corrective Action (PCA) framework, forcing these banks to start reducing the scale of their banking operations, amongst other measures.

1.119 It is to be hoped that these actions will decisively address the TBS challenge. Some doubts have been expressed by observers on the scope for delay in, and stymieing of, the resolution process because of the relatively untested procedures and the inherent difficulty in writing off debts to the private sector. Early and prominent successes will help quell these doubts and policy-makers are closely monitoring progress.

1.120 Even as the new measures aimed at resolution unfold, it is worth thinking about the other 'R's in the context of a strategic approach to the banking sector. Burdened by stressed assets and the atmosphere of uncertainty that has existed for some considerable time, banks, especially those in the public sector, have had to focus on their NPA problem than on new lending. The Figure 34 shows inadequate demand cannot be the full explanation for the credit slowdown because the growth in lending by private sector banks is robust and much greater than for the PSBs.

1.121 The problem is that public sector banks are in damage limitation mode rather than seeking out new clients and opportunities. So, how can they regain their true function

¹⁹ Average mobile data usage has increased 6.5 fold from 154 MB to 2000 MB between June 2016 and March 2017. The price per GB has fallen from Rs. 121 to Rs. 17.



Figure 34. Growth in Corporate Lending* Across Bank Groups

Source: Estimated based on extrapolating Rajan (2015) - https://www.rbi.org.in/scripts/BS_SpeechesView. aspx?Id=1013.

End- March 2017 numbers need to be viewed with caution because of surge in all monetary aggregates for that date.

of providing credit to support economic growth? What actions will be necessary to ensure that problems will not recur?

1.122 The most important element, surely, is the 4th R: reform. Three elements will be key to any reform package. First, rescues can be selective. The PCA framework can be invoked to ensure the worst performing banks are winnowed out of future lending and shrunk in size over time. Rescues could then be extended solely to the group of viable and near-viable banks. Second, the role of private sector discipline could be expanded, including by allowing, in some cases, majority private sector ownership. Third, these measures should be coupled with specific actions, for example recapitalizing banks and strengthening their lending procedures and risk management frameworks.

1.123 The Government and the RBI have taken important actions to address the Twin Balance Sheet challenge. It is to be hoped that they will work expeditiously. But even as they play out, thinking about a strategy—of complementing resolution with reform and recapitalization—to create a banking sector that can help revive credit, investment, and growth must be an ongoing priority.

B. OUTLOOK AND POLICIES FOR 2017-18

1.124 This critical review has highlighted a few important points that affect the economic outlook for the rest of 2017-18, and influence the stance of macroeconomic and other policies.

1. Outlook for real activity for 2017-18

1.125 Any growth outlook must be informed by an understanding of the broader context. The latter implies a moderation of expectations about the growth recovery.

1.126 For some time now, India has been in the throes of what Carmen Reinhart and Kenneth Rogoff have called balance sheet "recessions" ("weaker than potential growth" rather than "recessions" is a more appropriate characterization for India).

1.127 The legacy of the credit and investment part-boom-part-bubble of the mid-2000s lingers. Figure 35 provides a cross-country context. In most countries, booms are accompanied by rapid increases in credit growth, followed by deleveraging (or credit decline) after which growth can-not necessarily will-pick up. Thailand, the US, and Spain have followed this pattern to varying degrees. China has followed a different path: it has chosen to re-leverage with a vengeance in order to stave off a growth slowdown. This works in the short run, although at the expense of decreasing capital efficiency and building up financial sector vulnerabilities that could lead to dramatic growth slowdowns in the future. Interestingly, the Indian boom of the mid-2000s has not been followed by serious deleveraging. While the slow growth of bank-credit in the last two years has been a

source of concern, the question may well be not the slowdown but whether there has been enough of it. If deleveraging is a necessary condition for the resumption of rapid growth perhaps India needs less credit growth or to be precise more debt resolution and reduction—in the short run.

1.128 As described earlier, and illustrated in Figures 43-49 in Section C, a number of indicators—GDP, core GVA (GVA excluding agriculture and Government), IIP, credit, investment and capacity utilization point to a deceleration in real activity since the first quarter of 2016-17, and a further deceleration since the third quarter. Real GVA growth for Q4 2016-17 was 5.6 per cent. Unless potential output growth is much lower than is commonly assumed (around 7 percent or more), output gaps are expected to widen.

1.129 Looking ahead, the question is how the outlook has changed relative to that outlined in the Volume I of the Survey published nearly six months ago. Volume I had predicted a



Figure 35. Credit Peaks and Real GDP Growth

Sources: Bank for International Settlements (BIS) and International Monetary Fund. The Figure plots the credit-GDP ratio over time; numbers in the chart refer to real GDP growth 5 years before and after the credit to GDP ratio peak, except for China and India range for GDP growth of between 6.75 and 7.5 percent, factoring in more buoyant exports as global recovery gathered steam, a postdemonetization catch-up in consumption, and a relaxation of monetary conditions consequent upon demonetization.

1.130 Since then, all the new factors real exchange rate appreciation, farm loan waivers, increasing stress to balance sheets in power, telecommunications, agricultural stress, and the transitional challenges from implementing the GST—impart a deflationary bias to activity.

1.131 Since February 2017, the rupee has appreciated by about 1.5 percent in real effective terms according to the RBI's 36-currency basket– and by more against a basket with higher weights for China and Asian currencies. The reason is that the Chinese Yuan has declined broadly, including against the rupee by 2.7 percent (Figure 57 & 58 in Section C).

1.132 The deflationary impact of farm loan waivers will obviously depend upon how many states imitate the actions of UP, Maharashtra, Madhya Pradesh, and Karnataka, how much relief they provide, and how this relief is phased in. On some reasonable assumptions, the deflationary impact this year could be as much as 0.35 percent of GDP (assuming that the magnitudes estimated in earlier Section are distributed over two years).

1.133 In addition, the real policy rate was tighter than anticipated in Volume I of the Survey. Under such circumstances, and assuming that the current broad (repo rate was reduced by 25 bps on August 2, 2017) stance of monetary and fiscal policies is maintained, the forecast for GDP reflects the greater risks to the downside.

1.134 On the upside, since the previous Economic Survey, the government and the RBI have taken prominent steps to address the Twin Balance Sheet challenge. This has boosted market confidence in the short run. Deleveraging of corporate balance sheets will be necessary to restore investment and credit demand. Deleveraging of bank balance sheets will be essential to unblock the choked channels of the supply of credit. However, the substantive growth impact of the steps taken will depend on the scope, effectiveness, and timeliness of resolution of stressed assets.

1.135 There is also some upside from the GST. The removal of checkposts and the consequent easing of transport constraints can provide some short-term fillip to economic activity.

1.136 In February, the Survey (Volume I) had forecast a range for real GDP growth of 6.75 percent to 7.5 percent for FY 2018. The preceding discussion indicates that the balance of risks seem to have shifted to the downside. The balance of probabilities has changed accordingly, with outcomes closer to the upper end having much less weight than previously.

2. Outlook for prices and inflation for 2017-18

1.137 The section on 'Paradigm Shift to Low Inflation' argued that India might already be in the throes of a structural disinflationary shift, driven by more permanent developments in both the international oil market and domestic agriculture reflected in unanticipated inflation developments (Figure 36a).

1.138 Turning to the near term, headline CPI inflation number has come down dramatically, posting a low of 1.5 per cent in June 2017, well below the medium term target of 4 per cent (Figure 36b). It was below the March 2017 target for seven months from September 2016 to March 2017 at an average of 124 bps. It is running below the March 2018 target for all 3 months of 2017-18 at



Sources: RBI and Survey Calculations





Sources: MOSPI and Survey Calculations

an average of 175 bps, with the June number being 246 bps. Refined core—a measure of underlying inflationary trends stripped of the volatile oil and food components and mentioned in the February meeting of the MPC—has also declined steadily and is now at 3.9 percent, below the medium term target of 4 percent.

1.139 Against this background, the outlook for inflation in the near-term will be determined by a number of proximate factors, including:

• the outlook for capital flows and the

exchange rate which in turn will be influenced by the outlook and policy in advanced economies, especially the US;

- the recent nominal exchange rate appreciation;
- the monsoon;
- the introduction of the GST;
- the 7th Pay Commission awards;
- likely farm loan waivers; and
- the output gap

1.140 The IMF and others institutions have noted that a broad-based global recovery is under way. But the implications for policies in advanced economies—and hence for capital outflows from India and for the rupee—are unclear.

1.141 The dilemma for advanced country monetary policy is that while economic activity has picked up and volatility indicators are unusually low—portending looming financial sector risks, which calls for monetary policy normalization, inflation remains well below target (except in the UK), as it has been for a considerable period of time since the global financial crisis. Moreover, longrun yields are declining and the yield curve is flattening, signaling recessionary possibilities. So it looks for now that any monetary tightening will be modest, implying that the risks of capital flows out of India are not as pronounced as earlier this year.

1.142 Reflecting these developments, the nominal exchange rate appreciated by 2.6 percent in nominal effective terms since Volume I of the Economic Survey was published (i.e., between February and June 2017). Estimates for India suggest that a 10 percent exchange rate appreciation will reduce CPI inflation by 0.8 percent ('What is Responsible for India's Sharp Disinflation?' by Sajjid Chinoy, Pankaj Kumar & Prachi Mishra, IMF Working Paper No. WP/16/166). The downward momentum imparted to inflation will accordingly be about 0.25 percentage points.

1.143 With respect to food prices, rainfall this year is expected to be at or above the long period average and as of July 12, both the level and its regional distribution are reassuring. Sowing data until July 21 is very encouraging. With the exception of arhar, the acreage under production is up over last year for all major crops, including rice (4.6 percent), pulses (3.4 percent), sugar cane (8.7 percent), and cotton (20.1 percent).

1.144 The GST is expected, on balance, to reduce prices because of the lower incidence of taxation compared to the combined incidence of central and state taxes previously. The Ministry of Statistics and Programme Implementation estimates that the 7th Pay Commission housing award is expected to increase inflation on average by between 0.4 and 1.2 percentage points, depending on whether just the Centre or the Centre and all the states implement the award. Moreover, this average impact will be phased over time, peaking six months after the actual award itself.²⁰ Apart from the fact that the GST and Pay Commission impacts might broadly neutralize each other in the short run, they are both one-off events affecting the price level not inflation. Monetary policy is normally expected to see through-rather than respond to-these temporary price level impacts, except to the extent that there are second-order effects on wealth and inflation expectations.21

1.145 As described earlier, farm loan waivers are more likely to be deflationary than inflationary and hence impart a downward not upward bias to prices.

1.146 Output gaps are important for inflation and the earlier discussion points to a weakening economy and widening output gaps.

1.147 This assessment of the outlook, combined with the previous analysis pointing to a structural shift in the underlying inflation dynamics, in addition to the fact that current inflation is running well below the 4 percent target, suggests that inflation by March 2018 is likely to be below the RBI's medium term target of 4 percent.

3. Policy Stance

1.148 These GDP and inflation forecasts are, of course, conditional, and conditional especially on monetary and fiscal policies. The question is their appropriate stance given the economic outlook.

Monetary Policy

1.149 Three key features have characterized monetary policy since the Survey Volume I was released. Real policy interest rates are currently high, there has been unusual volatility in G-sec rates, and a glut of liquidity in banks has persisted for about nine months. The latter two are discussed in greater detail in Chapter 3.

1.150 Figures 37a and 37b provide two indicators of the monetary policy stance. Real interest rates (based on current inflation) at 4.7 percent are high, the highest they've been in the recent past (Figure 37a).²² Rates are also substantially higher than in comparable emerging market countries (Figure 38).

²⁰ These inflation impacts are purely statistical, rather than economic

²¹ This differential response to transient versus permanent factors has been expressed recently by several members of the Monetary Policy Committee.

²² Real interest rates can be computed based on both current and expected inflation rates. In the current circumstance (Figure 37a), it is appropriate to use current inflation rates.







Source: RBI and Survey Calculations

Note: Real interest rate is obtained by subtracting inflation from the nominal repo rate;

*- MCI for every month is plotted by adding the percentage change in the Real Effective Exchange Rate (one-third weightage) as calculated by the RBI and the percentage point change in the real policy rate (two-third weightage) with April 2014 as the base.

Figure 38. Cross-country Real Bond Yield (per cent) as of May 2017



Source: Bloomberg

1.151 Another indicator, real monetary conditions²³—which also factors in exchange rate developments, because they impact foreign demand for domestic goods and services— have also been steadily rising and stand at their highest level for a long time (Figure 37b).

1.152 High real interest rates do not per se imply an excessively tight policy stance.

Figure 39. Repo Rate and Nominal Neutral Rate



Source: RBI, Survey Calculations

After all, the inflation targeting-cum-MPC framework is new, and establishing credibility for it is imperative. So, it is important that inflation be kept close to its target level. The question, then, is whether the current level of interest rates are truly needed to ensure that this occurs. Economic theory suggests that the answer to this question depends on the economic outlook. Broadly, if cyclical

²³ For example, Monthly Bulletin (June 2002) of the European Central Bank (page 23 at the link www.ecb.europa.eu/ pub/pdf/other/mb200206_focus03.en.pdf?f62fae8f6b163749307cfa99ff6c824d) argues for the relevance of using such a real Monetary Conditions Index.

conditions are strong, real interest rates should be higher than "normal", while if conditions are weak, they should be lower. But what is "normal" and are current conditions weak or strong?

1.153 Normal or neutral interest rates are those that prevail when inflation is close to target and real GDP close to potential. Neutral rates are not easy to measure but for India there are several estimates of neutral real interest rates from the RBI. These are shown in Table 8. Broadly, real neutral interest rates hover around 1.25-1.75 percent. That implies neutral nominal rates (assuming a target inflation of 4 percent) of 5.25-5.75 percent. Today's rate is 6.00 percent or about 25-75 basis points above neutral rates (Figure 39).

1.154 How should cyclical conditions be factored in? According to the so-called Taylor rule, the key indicators of the cycle is the inflation gap, or how far away current inflation is from target and the output gap, how far current GDP growth is from potential. If expected inflation and growth are greater than their equilibrium levels, nominal interest rates should be higher than normal, and vice versa.

1.155 The discussion of the outlook suggested that in fact both expected inflation and GDP are subdued relative to their equilibrium levels. Current inflation, at 1.5 percent, is running well below the 4 percent target, with the domestic economy lacking the dynamism to push this back toward the target. For example, average capacity utilization for the economy as a whole at 72.7 percent in Q3 2016-17 is indicative of sizable slack in the economy.

1.156 Cyclical conditions, then, suggest that the policy rate should actually be below—not 50-100 basis points or so above—the neutral rate. The conclusion is inescapable that the scope for monetary easing is considerable, more than that suggested by comparison with neutral interest rates. Also, the earlier the easing, complemented with other reform actions especially to address the

Study	Type of Monetary Policy Rule	Period	Real 'Neutral' rate	'Neutral' nominal rate with inflation target of 4%	Space for cut vis-à- vis current policy rate (6%)
1. Speech by Executive Director, RBI (2013)	Standard Taylor Rule & Taylor Rule with smoothing	2012-13Q3	0.5-0.9 per cent	4.5-4.9 percent	110-150 bps
2. RBI Working Paper No. 05/2015 (2015)	Standard Taylor Rule & Structural Taylor Rule	2014-15Q4	1.6-1.8 per cent (core estimates)	5.6-5.8 percent	20-40 bps
3. RBI Post Policy Conference Call with Media (February 2015)		2014-15	1.5-2 per cent	5.5-6.0 percent	0-50 bps
4. MPC: RBI Post-Policy Conference Call with Media (October 2016)		2016-17Q3	~1.25 per cent	~5.25 percent	~75 bps

Table 8. Estimates of Neutral Interest Rates for India

TBS challenge, the quicker the economy can approach its full potential.

1.157 Moreover, it is worth remembering that the real rates that affect decisions for consumers and investors are yearly averages not those prevailing at certain points in time. In 2016-17, the average real policy interest rate was 1.8 percent. Even if inflation reaches 4 percent by end-March 2018, the average inflation for 2017-18 will likely be around 3 percent. The resulting average real policy rate would then be substantially greater than suggested by the target inflation rate.

1.158 One argument against monetary easing is weak passthrough: why should policy rates be cut if lending rates are not going to decline? It is true that base rates have not declined commensurately with policy rate reductions (80 versus 175 basis points, Figure 40) but passthrough at private banks has been much higher than at public ones, conferring a competitive advantage that should be encouraged. Also, for all banks passthrough has been high for new loans (Since April 1, 2016 all rupee loans are Marginal Cost of Funds based Lending Rate linked). Figure 41 shows that for these loans





Source: RBI, Survey Calculations

Figure 41. Repo Rate and Base Rate (per cent)



Source: RBI, Survey Calculations

lending rates have declined by as much as policy rates and these reductions have been greater for private (200 bps) than public sector banks (175 bps). These reductions benefit all borrowers, including small and medium enterprises (SMEs).

1.159 Moreover, even if passthrough is inadequate as some argue, there are financial stability benefits from cutting policy rates, since the reduction in the cost of funds without a commensurate decline in lending rates will help restore banks' profitability. Lower rates will also facilitate the TBS problem resolution process.

Fiscal policies

1.160 The budget for 2017-18 targeted a fiscal deficit of 3.2 percent of GDP which represented a steady rather than sharp fiscal consolidation. This choice was in the spirit of the alternative not majority view proposed in the FRBM Review Committee report (Box 2 in Chapter 2 provides a comparison of the majority and alternative views).

1.161 The fiscal outlook for this year is uncertain. Downside risks (beyond those expected at the time of the Budget) include:

• Reduced tax revenues from slower nominal growth than anticipated;

- reduced GST collections on account of the lower GST rates compared with the pre-GST taxes, and transitional challenges from GST implementation;
- reduced spectrum receipts on account of the structural jolt to the viability of incumbent firms; and
- higher expenditures from the 7th Pay Commission estimated at Rs. 30,000 crore.

1.162 There is also upside potential to revenues both from the compliance benefits of the GST and the compliance possibilities opened up by demonetization. Accordingly, the magnitude and pace of final consolidation relative to the committments made may need to be assessed going forward.

Other policies

1.163 Agricultural stress will need appropriate policy responses. Given that 2017 will also be a year of surplus rather than scarcity, and to the extent that firming up prices will be essential to boost agricultural incomes, it is imperative to learn the lessons from the experience of 2016. One such lesson-highlighted in the Pulses Report²⁴ of September 2016 — is that farmers respond to prices. Lower prices in one year affect sowing and prices in the next, which creates a cobweb cycle. Figure 42 highlights this for the case of tur, where production is highly correlated with prices received in the previous year. Policy must be driven by the recognition that, over longer horizons, there is no necessary opposition between farmer and consumer interests: remunerative and stable minimum support prices (and the procurement to back them), as well as access to export markets, that help farmers can obviate the risks of production swings and price spikes that are painful for consumers.

Figure 42. The Cobweb: Arhar Production and Lagged Inflation (per cent, YoY)



Sources: CSO, Ministry of Agriculture.

1.164 Hence, all the impediments that come in the way of realizing better prices for farmers—stock limits imposed under the Essential Commodities Act, export restrictions, impediments to the implementation of e-NAM—need to be removed.

1.165 Conditions of continuing surplus may well be an opportune moment to revisit the archaic Essential Commodities Act that was enacted decades ago to cope with conditions of severe scarcity when markets were less well developed. The time is also ripe to consider whether direct support to farmers can be a more effective way to boost farm incomes over current indirect, ineffective, and inefficient forms of support.

C. REVIEW OF DEVELOPMENTS IN 2016-17

1. GDP

1.166 According to the Central Statistics Office (CSO) May 2017 estimates, real GDP

²⁴ "Incentivising Pulses Production Through Minimum Support Price (MSP) and Related Policies", September 16, 2016 - http://finmin.nic.in/sites/default/files/Pulses_report_16th_sep_2016.pdf

grew by 7.1 per cent in 2016-17 compared with 8 percent the previous year. This performance was higher than the range predicted in the Economic Survey (Volume I) in February (Figure 43). This growth suggested that the economy was relatively resilient to the large liquidity shock of demonetization which

Figure 43. Annual growth in real and nominal GVA and GDP



reduced cash in circulation by 22.6 percent in the second half of 2016-17. The apparent resilience was even more marked in nominal growth magnitudes because both nominal GVA and GDP growth accelerated by over 1 percentage point in 2016-17 compared with 2015-16.

1.167 Apart from the favorable monsoon propelled agricultural which growth, government also made а significant contribution, registering growth of 11.3 percent (Table 9), reflecting the impact of salary increases awarded by the Seventh Pay Commission (Table 9). These sectors contributed nearly one-third of the total GVA growth as against their contribution of about one-sixth of the GVA growth in the period FY 2013 to FY 2016.

1.168 While suggesting resilience, the latest GDP figures—in addition to a number of other indicators—also raised concerns about the growth trajectory during the course of FY2017. Real GDP and GVA growth

Sector	2013-14	2014-15	2015-16	2016-17
Agriculture, forestry & fishing	5.6	-0.2	0.7	4.9
Mining & quarrying	0.2	11.7	10.5	1.8
Manufacturing	5.0	8.3	10.8	7.9
Electricity, gas and water supply	4.2	7.1	5.0	7.2
Trade, hotel, transport, communication etc	6.5	9.0	10.5	7.8
Financial, real estate and prof. services	11.2	11.1	10.8	5.7
Public Administration, defence and others	3.8	8.1	6.9	11.3
GVA	6.1	7.2	7.9	6.6
Core GVA	6.6	9.0	9.8	6.2
GDP	6.4	7.5	8.0	7.1

Table 9. Growth in value added and GDP (per cent, constant prices)

Source: CSO and Survey Calculations

Note: Core GVA=Aggregate GVA - GVA of agriculture & allied, and, public administration, defence and other services

declined for four consecutive quarters. The growth in core GVA—total GVA excluding agriculture and allied sectors and public administration, defence and other services decelerated by 3.6 percentage points from FY 2016 to FY 2017 (Table 9) and by 6.8 percentage points between Q4 FY 2016 to Q4 FY 2017 (Figure 44 & 45). Manufacturing GVA growth started declining from Q4 FY 2016 and the new and revised IIP numbers showed a similar decelerating trend (Figure 46).

1.169 The growth in real fixed investment

Figure 44. GVA and GDP growth (per cent in constant prices)

11

10

9

8



Figure 46. Growth in manufacturing (in per cent)- GVA and IIP



Sources for Figures: CSO and Survey Calculations

was low since the second half of FY 2013 and declined steeply after a temporary spurt in the second half of FY 2016, shored up to some extent by public investment (Figures 47, & 48). As per Survey calculations private investment growth is estimated to be negative in 2016-17. The only demand boost came from consumption, which accounted for about 96 per cent of GDP growth in FY 2017.

2. Inflation

1.170 The economy has undergone a dramatic

Figure 45. GVA and GDP growth (per cent in current prices)



Figure 47. GFCF growth at constant prices



Figure 48. Growth in fixed capital formation (per cent, constant prices)



Sources for Figures: CSO, RBI and Survey Calculations

transition from high to low inflation (Section below); Annual inflation averaged 5.9 per cent in 2014-15 and has since declined to 4.5 per cent in FY 2017. More dramatic have been developments during 2016-17. Perhaps reflecting in part the growth deceleration, inflation declined sharply from 6.1 percent in July 2016 to 1.5 percent in June 2017. Food inflation had hardened during the first few months of FY 2017 due to upward pressure on prices, mainly of pulses and vegetables, but softened subsequently with improvement in seasonal availability and particularly after demonetization.

1.171 Headline CPI inflation has now



Figure 50. Headline CPI inflation (per cent)





been below the RBI's 2017 target for ten consecutive months by about 1.7 percentage points on average (Figure 50). Not only headline but refined core inflation—which strips out agriculture and oil as well as the oil-component in transportation services declined steadily from over 5 percent in June 2016 to 3.9 percent in June 2017 (Figure 51).

1.172 The sharp dip in WPI inflation in late FY 2015 and throughout FY 2016 owed to the deceleration in global commodities prices, especially crude oil prices. With global commodity prices recovering and the 'base effect' (low inflation in the previous year) giving an upward push, wholesale

Figure 51. Core and Refined core CPI inflation (per cent)



inflation perked up during FY 2017. The vast divergence between the retail and wholesale inflation that, *inter alia*, led to serious measurement challenges in the national accounts, especially in FY 2016, has now been eliminated (Figure 52). (Appendix 3 summarizes how national income estimates are constructed in each of the major subsectors, clarifying the indicators and deflators used as well as procedures for nominal and real calculations).

3. External Sector

1.173 With the green shoots slowly becoming visible in merchandise trade, and robust capital flows, the external position appears robust, reflected *inter alia* in rising reserves and a strengthening exchange rate.

1.174 The current account deficit narrowed in 2016-17 to 0.7 percent of GDP, down from 1.1 percent of GDP the previous year, led by the sharp contraction in trade deficit which more than outweighed the decline in net invisibles (Figures 53 and 54). With both net services and net private transfers declining, net invisibles receipts at US\$ 97.1 billion fell by 10.0 per cent in FY 2017. Subdued activity in source countries, particularly in the Gulf





Figure 53. Exports and Imports (US \$ billion) & trade balance (US \$ billion and per cent of GDP)



Figure 54. Saving (S) and Investment (I) rates and Current Account Balance (CAD) as per cent of GDP



region, reduced the flow of net remittances to India substantially, from US\$ 63.1 billion in 2015-16 to US\$ 56.6 billion in 2016-17.

1.175 Export growth turned positive after a gap of two years and imports contracted marginally, so that India's trade deficit narrowed to 5.0 per cent of GDP (US\$ 112.4 billion) in FY 2017 as compared to 6.2 per cent (US\$ 130.1 billion) in the previous year. After many quarters, volume growth in exports remained consistently positive since February 2016, while import volume growth became positive in October 2016. Gold imports have been surging since August 2016, possibly representing a shifting forward of purchases by jewelers ahead of expected increases in the tax on gold and jewelry under the GST (Figure 60).

1.176 Net capital inflows were slightly lower at 1.6 per cent of GDP (US\$ 36.8 billion) in FY 2017 compared to 1.9 per cent of GDP (US\$ 40.1 billion) in the previous year, mainly due to decline in NRI deposits, reflecting the sizeable redemption of FCNR (B) deposits in late 2016 (Figure 55). Net FDI, however, remained strong at US\$35.6 billion in FY2017 and comfortably financed the current account deficit.

1.177 The capital account surplus exceeding the current account deficit led to reserve accumulation (on BoP basis) to the extent of US\$ 21.6 billion in 2016-17 which was

Figure 55. Trends in Major Components of Capital Inflows (US\$ billion)



Figure 57. Exchange Rate: Rupee Dollar & Rupee Yuan



higher than the increase of US\$ 17.9 billion in FY 2016. Spot foreign exchange reserves stood at US\$ 370 billion at the end of March 2017 as compared to 360.2 billion as at end March, 2016 (Figure 56). As on July 7, 2017 the foreign exchange reserve reached US\$ 386.4 billion. As a result, most reservebased external sector vulnerability indicators have improved. Extensive forward market intervention (which is effectively sterilized) reflected the RBI's attempt to manage excess liquidity in the wake of demonetization (Figure 61).

1.178 There was a transitory downward pressure on the Indian rupee following the uncertainty related to US presidential election

Figure 56. Foreign Exchange Reserves (US \$ billion)



Figure 58. Nominal Effective Exchange Rate & Real Effective Exchange Rate: (2014=100)





Figure 59. Export and Import Growth (per cent) (3 month moving average)

Sources for Charts: RBI, CSO, DGCIS and Survey Calculations





results that triggered sizable depreciation in currencies around the world. The rupee recovered quickly since December 2016 and strengthened further since February 2017 as portfolio inflows turned positive with receding global risk aversion, changed perception of US policies, and confidence in government policies and political stability in the wake of the Uttar Pradesh (UP) elections. The rupee remained in a range of Rs. 65.9 to Rs. 68.1 per US dollar during FY 2017, and on an average depreciated by 2.4 per cent between 2015-16 and 2016-17. In terms of real effective exchange rate, the rupee appreciated indicating that exports became slightly less competitive (Figure 58). The magnitude of this appreciation is greater relative to Asian currencies on account of the decline in the Chinese yuan (Figure 57).

IV. Fiscal Developments

1.179 Despite the expenditure compulsions on account of implementation of the Seventh Pay Commission and the Defence One Rank One Pension Scheme, the Union Budget 2017-18 aimed to consolidate its fiscal position. At the end of the year, the government adhered to its fiscal deficit target (Figure 62), despite spectrum auction and disinvestment receipts falling short of the targets.

1.180 Overall, the fiscal outcome of the Central Government in FY 2017 was marked by robust growth in tax revenue—stemming largely from excise taxes on petroleum and consolidation of non-salary/pension revenue expenditure and of borrowing. The efforts of mobilizing additional tax resources from excise duty and service tax considerably helped buoyant collections in the last two years. The collections from Swachh Bharat Cess and Krishi Kalyan Cess accounted for more than one-third of the growth in service tax collections. The growth in collections from petroleum products contributed more

Figure 62. Borrowings by the Centre, States and CPSEs (per cent of GDP)



Source: Budgets of Centre and States, RBI



Figure 63. Fiscal deficit of States (per cent of GDP)

Source: RBI





Source: Survey Calculations

than two-thirds of the growth in total excise collections.

1.181 The deficit position of the States deteriorated, reflecting their assuming the DISCOM liabilities under the UDAY program in the last two years. During FY 2016, the consolidated fiscal deficit of the States increased by about 1 percentage point (Figure 63). However, including UDAY, consolidated state fiscal deficit moderated by 0.2 percentage points, from 3.6 per cent in FY 2016 to 3.4 per cent of GDP in FY 2017. UDAY bonds approximately accounted for 0.7 per cent of GDP in FY 2016 and FY 2017.

1.182 Public investment—approximated by investment by Centre, States plus CPSEs improved on the back of accelerated efforts by CPSEs in 2016-17 (Figure 64). The Survey calculations show that, but for relatively high level of public investment growth, the decline in the fixed investment rate would have been steeper (Figure 48). The investment spending of the general government, relative to GDP, is likely to decline in 2017-18 as per available Budget information.

1.183 The Union Budget for 2017-18 introduced a number of procedural reforms. First, discontinuing the practice since 1924, the Railway Budget was integrated with the Union Budget, bringing railway finances into mainstream budgeting. Second the date of the Union Budget was advanced to February 1, almost by a month, to help Central ministries and State governments plan and spend their full budget from the beginning of the financial year, whereas previously they had to wait till well into the financial year (typically end-May) for the Budget to secure legislative passage. Third, the classification of expenditure into 'plan' and 'non-plan' was eliminated to allow focus on the more economically meaningful capital-revenue distinction. Fourth, the Medium Term

Expenditure Framework Statement was restructured to give projected expenditures (revenue and capital) for each demand for the next two financial years.

1.184 The Union Budget for 2017-18 opted for a steady consolidation path. Thus, the fiscal deficit is expected to decline to 3.2 percent of GDP in FY2018 compared with the outcome of 3.5 percent of GDP in FY2017. The consolidation path adopted by the Central Government prudently balanced competing objectives. On the one hand, there were the requirements of a cyclically weakening economy, afflicted by the Twin Balance Sheet problem and manifested in declining investment and credit growth, arguing for counter-cyclical policy. And, on the other, the imperatives of maintaining credibility, especially in the wake of potential disruptions to state government finances, warranted continuing consolidation.

APPENDIX 1. FARMER INDEBTEDNESS: BASIC FACTS

What is known about the magnitude and distribution of farm loans?

To answer this question the 2012-13 Situation Assessment Survey of Agricultural Households of the National Sample Survey Office which provides detailed estimates of the composition of outstanding loans in agriculture is used.²⁵

An agricultural household is defined as a household receiving an annual value of produce greater than Rs.3000 from agricultural activities—including allied activities—and having at least one member self-employed in agriculture either in the principal status or in subsidiary status during the last 365 days.

Tables 1 and 2 below summarize the estimates for farm loans by state and land holding for 2016-17. The 2012-13 numbers are inflated by CPI inflation for the period 2012-13 to 2016-17. A few facts stand out.

For India as a whole, total farm loans amount to about Rs. 5.5 lakh crore, of which Rs. 3.25 lakh crore (60 percent) is owed to formal institutions and the rest to informal ones. About Rs. 2.4 lakh crore or nearly 75 percent of all formal loans are owed by small farmers (holdings less than 2.5 hectares). But nearly 85 percent of all informal loans are also owed by small farmers. In other words, small farmers depend much more on the informal sector than the larger farmers for whom informal loans account for only 25 percent of total loans.

The states with the largest formal sector farm loans (in absolute terms) are Uttar Pradesh, Maharashtra, Kerala, Tamil Nadu, Karnataka, and Rajasthan. Perhaps surprisingly, Punjab and Haryana are not amongst the states with the highest farm loans. Punjab, however, does have high farm debt levels relative to GSDP, along with Kerala and Andhra Pradesh.

The states with the highest informal lending operations in farming are Andhra Pradesh, Rajasthan, Uttar Pradesh, and Telangana. On average, less developed states tend to have a higher volume of informal sector lending. For example, for these four states, informal loans, at close to 1 lakh crore, account for 56% of overall indebtedness of farmers: official farm loan waivers will still leave them with a lot of debt.

²⁵ There is an alternative and more current source of data from the RBI, but it does not disaggregate by farm size or capture informal sector lending. The RBI numbers on agricultural loans are higher than those from the NSSO study because the latter is sample-based. However, as discussed in the Economic Survey 2014-15, Chapter 5, Box 5.2, a substantial share of RBI-defined agricultural loans do not appear to go to the agricultural sector.

Appendix Table 1

Estimated Outstanding Loans by Land Holding Size and Source of Loan for 2016-17 (Rs Crore)

	No land and Small Farmer			Medium		Large			Grand Total			
	Formal	Informal	Total	Formal	Informal	Total	Formal	Informal	Total	Formal	Informal	Total
Uttar Pradesh	32,246	24,061	56,308	5,376	356	5,732	1,662	111	1,773	39,284	24,529	63,813
Andhra Pradesh	18,727	25,872	44,599	3,439	3,949	7,388	2,986	2,556	5,542	25,152	32,377	57,529
Tamilnadu	26,649	16,619	43,269	3,144	682	3,826	1,380	250	1,631	31,174	17,552	48,726
Rajasthan	14,948	27,597	42,544	6,221	2,649	8,870	4,626	3,215	7,841	25,795	33,461	59,255
Karnataka	24,949	16,230	41,179	4,943	2,773	7,716	3,815	737	4,552	33,706	19,740	53,447
Kerala	32,529	3,901	36,429	1,900	32	1,932	407	53	461	34,835	3,986	38,821
Maharashtra	22,292	8,352	30,645	8,426	2,129	10,554	7,777	1,372	9,149	38,495	11,853	50,348
Telengana	9,075	17,925	27,000	991	1,565	2,556	555	642	1,197	10,620	20,133	30,753
Madhya Pradesh	9,094	7,627	16,720	4,064	1,693	5,756	1,951	528	2,480	15,109	9,848	24,957
Odisha	4,811	10,020	14,830	1,009	22	1,030	419	161	579	6,238	10,202	16,440
Bihar	3,912	10,511	14,423	295	63	358	129	100	229	4,336	10,675	15,010
West Bengal	8,295	6,034	14,329	116	50	166	107	41	148	8,518	6,125	14,643
Punjab	8,167	4,480	12,647	5,643	1,183	6,825	1,829	522	2,351	15,638	6,185	21,823
Haryana	9,023	3,588	12,611	1,526	1,192	2,718	605	141	746	11,154	4,922	16,075
Gujarat	8,707	3,586	12,293	3,766	438	4,204	2,905	19	2,925	15,378	4,044	19,422
Uttarakhand	3,522	639	4,161	331	4	335	228	165	393	4,081	808	4,889
Himachal Pradesh	2,548	485	3,033	74	8	83	58	28	87	2,681	522	3,202
Chhattisgarh	1,762	1,242	3,004	284	35	319	71	2	73	2,116	1,280	3,396
Jharkhand	416	1,173	1,588	37	6	43	5	-	5	458	1,178	1,636
TOTAL	41, 670	189,942	31,612	51,583	18,829	70,412	31,515	10,645	42,160	324,768	219,417	544,185

Source: Estimated from Unit level data on Situation Assessment Survey of Agriculture Households 2012-13.

Note: (1) Land holding categories are based on "Land Owned" and includes homestead land.

(2) Estimates for 2016-17 is based on 2012-13 number. The 2012-13 number are inflated by CPI inflation.

(3) Formal loans includes loans from Bank, Cooperative socities and Government.

Definition of Land Size: No land and Small - upto 2.5 hectare Medium - 2.5-5.5 hectare Large - >5.5 hectare

Appendix Table 2

	No land	and Small	Farmer		Medium			Large		(Grand Total	
	Formal	Informal	Total	Formal	Informal	Total	Formal	Informal	Total	Formal	Informal	Total
Uttar Pradesh	2.3	1.7	4.0	0.4	0.0	0.4	0.1	0.0	0.1	2.8	1.7	4.5
Andhra Pradesh	2.4	3.4	5.8	0.4	0.5	1.0	0.4	0.3	0.7	3.3	4.2	7.5
Tamilnadu	1.8	1.1	2.9	0.2	0.0	0.3	0.1	0.0	0.1	2.1	1.2	3.2
Rajasthan	1.8	3.3	5.1	0.8	0.3	1.1	0.6	0.4	0.9	3.1	4.0	7.2
Karnataka	1.9	1.3	3.2	0.4	0.2	0.6	0.3	0.1	0.4	2.6	1.5	4.2
Kerala	4.3	0.5	4.9	0.3	0.0	0.3	0.1	0.0	0.1	4.7	0.5	5.2
Maharashtra	0.9	0.3	1.2	0.3	0.1	0.4	0.3	0.1	0.4	1.5	0.5	2.0
Telengana	1.2	2.4	3.6	0.1	0.2	0.3	0.1	0.1	0.2	1.4	2.7	4.1
Madhya Pradesh	1.2	1.0	2.3	0.6	0.2	0.8	0.3	0.1	0.3	2.1	1.3	3.4
Odisha	1.2	2.4	3.6	0.2	0.0	0.2	0.1	0.0	0.1	1.5	2.5	4.0
Bihar	0.6	1.7	2.3	0.0	0.0	0.1	0.0	0.0	0.0	0.7	1.7	2.4
West Bengal	0.8	0.6	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.6	1.4
Punjab	1.6	0.9	2.5	1.1	0.2	1.4	0.4	0.1	0.5	3.1	1.2	4.3
Haryana	1.5	0.6	2.0	0.2	0.2	0.4	0.1	0.0	0.1	1.8	0.8	2.6
Gujarat	0.7	0.3	1.0	0.3	0.0	0.3	0.2	0.0	0.2	1.2	0.3	1.5
Uttarakhand	1.6	0.3	1.8	0.1	0.0	0.1	0.1	0.1	0.2	1.8	0.4	2.2
Himachal Pradesh	1.8	0.3	2.2	0.1	0.0	0.1	0.0	0.0	0.1	1.9	0.4	2.3
Chhattisgarh	0.6	0.4	1.1	0.1	0.0	0.1	0.0	0.0	0.0	0.8	0.5	1.2
Jharkhand	0.1	0.4	0.5	0.0	0.0	0.0	0.0	-	0.0	0.2	0.4	0.5
TOTAL	1.5	1.2	2.7	0.3	0.1	0.4	0.2	0.1	0.3	2.0	1.4	3.4

Estimated Outstanding Loans by Land Holding Size and Source of Loan for 2016-17 (% of 2017-18 GSDP)

Source: Estimated from Unit level data on Situation Assessment Survey of Agriculture Households 2012-13.

Note: (1) Land holding categories are based on "Land Owned" and includes homestead land.

(2) Estimates for 2016-17 is based on 2012-13 number. The 2012-13 number are inflated by CPI inflation.

(3) Formal loans includes loans from Bank, Cooperative socities and Government.

Definition of Land Size: No land and Small - upto 2.5 hectare Medium - 2.5-5.5 hectare Large - >5.5 hectare

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Appendix 2. Details of Data used for Estimating Prices, Quantities, and Revenues for Selected Crops

The data for Figure 13 in the section on agrarian stress has been obtained from the Ministry of Agriculture and Farmers' Welfare's Agricultural Marketing Information Network (AGMARKNET). The data links important agricultural produce markets spread all over the country and the State Agriculture Marketing Boards and Directorates and provides different price and arrivals trend analysis for important markets in respect of major agricultural commodities transacted. The coverage is representative at both state and All-India levels.

Price and arrival data for Indian states and union territories are used. To maintain a balanced panel of states, those states for which data are available for all the years are included. States for which arrival data for a product are missing for even one year are dropped from the sample of that product. Table 1 lists the states that are excluded from each product.

Product	States Excluded
Onion	Andaman and Nicobar, Arunachal Pradesh, Dadra and Nagar Haveli, Daman and Diu, Lakshadweep, Meghalaya, Sikkim, Tamil Nadu, Tripura.
Potato	Andaman and Nicobar, Arunachal Pradesh, Bihar, Chandigarh, Goa, Lakshadweep, Nagaland, Puducherry, Sikkim, Tamil Nadu.
Moong	Andaman and Nicobar, Arunachal Pradesh, Bihar, Chandigarh, Dadra and Nagar Haveli, Daman and Diu, National Capital Territory of Delhi, Goa, Haryana, Himachal Pradesh, Jammu and Kashmir, Lakshadweep, Manipur, Meghalaya, Mizoram, Nagaland, Puducherry, Punjab, Sikkim, Tamil Nadu, Tripura, West Bengal.
Tur	Andaman and Nicobar, Andhra Pradesh, Arunachal Pradesh, Bihar, Chandigarh, Dadra and Nagar Haveli, Daman and Diu, Goa, Haryana, Himachal Pradesh, Jammu and Kashmir, Kerala, Lakshadweep, Meghalaya, Mizoram, Nagaland, Puducherry, Punjab, Sikkim, Tamil Nadu, Telangana, Tripura.
Wheat	Andaman and Nicobar, Andhra Pradesh, Arunachal Pradesh, Bihar, Chandigarh, Dadra and Nagar Haveli, Daman and Diu, Goa, Tamil Nadu, Himachal Pradesh, Jammu & Kashmir, Lakshadweep, Manipur, Meghalaya, Mizoram, Nagaland, Puducherry, Sikkim, Tamil Nadu, Tripura.

The requirement of a balanced panel does not distort results due to missing data. The states excluded from the sample constitute only a negligible portion of the total arrivals in each product. For example, Bihar has been dropped from the sample for wheat as there is no data for Bihar for two years. However, even for the year 2013, for which data for Bihar is available for wheat, the percentage of total arrivals in Bihar for that year only account for 0.009% of the total. Similarly, Bihar has also been dropped from the sample for potatoes but arrivals in Bihar only account for 0.027% of the total arrivals for the year 2014 for which the data was available.

Appendix 3. Methodology for Estimating Quarterly and Annual Advance Estimates of GVA and GDP

The table below lists the methodology of estimation of Quarterly and Advanced Annual Estimates of National Accounts, with the indicators and deflators or reflators used for sectors/ subsectors.

Sector	GVA share	Key Indicator used	Whether indicator is nominal or real?	Deflator for converting nominal to real/Reflator for converting real to nominal
Agriculture	13.3	Production data -crops and livestock (egg, milk and meat)	Real	WPI - crops and WPI -livestock products
Forestry	1.3	Past growth trends	Real	WPI - Industrial wood, Fodder
Fishing	0.8	Production of inland and marine fish	Real	WPI - Fish (Inland and Marine)
Mining & quarrying	3.1	Coal production , Production of crude and natural gas, IIP-mining	Real	Weighted average WPI of Coal, crude
		Private corporate growth from listed companies (BSE/NSE)	Nominal	petroleum and Natural Gas, metallic & other minerals, mineral oils
Manufacturing	13.7	Private corporate growth from listed companies (BSE/NSE)	Nominal	WPI-manufactured products (compilation category wise)
	4.1	IIP-Manufacturing for quasi corporate and unorganised Sector	Real	WPI-manufactured products
Electricity	1.6	IIP-Electricity	Real	WPI - Electricity
Gas and water supply	0.4	Past growth trends	Real	
Construction	8.4	For pucca construction: Production of cement, consumption of steel, IIP -other non- metallic mineral products; For kuccha construction, past growth trends	Real	Aggregate WPI
Trade and Repair services	10.9	Indicators used for annual estimatesare (a) Private corporate growth from listed companies (BSE/ NSE) for the private corporate sector (b) sale of motor vehiclesand service tax (for repair services) and sales tax (for whole sale and retail trade) for the unorganized sector. Indicators used for quarterly estimates areprivate corporate growth from listed companies (BSE/ NSE) and sales tax.	Nominal (corporate growth, taxes) and Real (sale of motor vehicles)	WPI of traded commodities

Sector	GVA share	Key Indicator used	Whether indicator is nominal or real?	Deflator for converting nominal to real/Reflator for converting real to nominal
Hotels & Restaurants	1.1	Private corporate growth from listed companies (BSE/NSE)	Nominal	WPI of traded commodities
Rail Transport	0.8	Net tonne km and passenger km	Real	CPI Transport and Communication (CPI- TC)
Other transport	4.2	Cargo handled (for water transport), passenger traffic and cargo handled (air transport) and number of commercial vehicles on road estimated using data on sale of commercial vehicles (road transport)	Real	CPI-TC
Communication & broadcasting	2.0	Indicators use for compiling Annual estimates are Private corporate growth from listed companies (BSE/NSE), Minutes of usage(for telecommunication) and service tax (courier and cable services). The annual estimates are quarterized using growth in number of subscribers.	Nominal (corporate growth, taxes) and Real (Minutes of usage)	CPI-TC
Banking	5.5	Growth in Aggregate credits and deposits at the end of quarter	Nominal	Non-financial sector GVA deflator
Insurance	0.9	Net premiums collected for life/ non-life policies	Nominal	Non-financial sector GVA deflator
Real estate	0.9	Private corporate growth from listed companies (BSE/NSE)	Nominal	CPI (Misc)/Aggregate WPI (Private corporate sector)
Ownership of dwellings	6.5	Annual estimates are compiled using growth in number of rural and urban dwellings; distributed equally in the four quarters	Real	Relevant CPI
Professional services	8.1	Private corporate growth from listed companies (BSE/NSE)	Nominal	CPI (Misc)/ Aggregate WPI (Private corporate sector)
Public administration and defence	5.4	Union and State Government Expenditure net of interest payments and subsidies	Nominal	CPI General Index (Combined)

Sector	GVA share	Key Indicator used	Whether indicator is nominal or real?	Deflator for converting nominal to real/Reflator for converting real to nominal
Other services	6.8	 (a) For the Private sector, annual estimateis compiled usingintersurvey growth in consumer expenditure on education, health and non-food items from NSS Consumer Expenditure Surveys and service tax. This annual estimate is distributed equally in four quarters (b) For public sector the indicatoris same as that used for Public Administration and Defence. 	Nominal	Relevant CPI
Indirect Taxes		Monthly data on tax revenue of centre and states.	Nominal	Constant price estimates of taxes on products are compiled by volume extrapolation. Volume extrapolation is done separately for different product taxes. Indicators used for extrapolation are growth in volume of output of manufacturing , services (excluding public administration and defence) and imports.
Subsidies		Expenditure on major subsidies available from Union Government accounts is used as an indicator .	Nominal	GVA deflator

Note: 1. MCA (Ministry of Corporate Affairs) database is used for First Revised estimates and not for Advance and quarterly estimates.

Appendix 4. Methodology for Estimating the Impact of Demonetization on MGNREGA and Regression Results

The impact of demonetization on man-days generated under the MGNREGS is being measured as a test of the hypothesis that demonetization led to increased demand for social insurance. To do so, a difference-in-difference strategy is used.²⁶ The MGNREGS man-days in weeks before vs after Nov 8 is compared, and whether this difference was especially large in 2016-17 as compared to previous years is studied. Any competing explanation for the change in mandays pre- and post-demonetization in 2016-2017 should explain why this occurred differentially in 2016-17 compared to previous years. These regressions also control for confounding factors that differentially affect districts across months and years.

Formally, the regression run is:

$Log(Man-days)_{d,w} = \alpha_1(Post) + \alpha_2(Post * Demonetization) + \alpha_3 FE_{d,m} + \alpha_4 FE_{d,v}$ (1)

Where Log(Man-days) indicates the log value of man-days generated in any given week in a district; d, w, m, and y subscripts refer respectively to district, weeks, months, and years. Post is a dummy that takes the value of 1 for all weeks after week 33 (irrespective of year). Demonetization is a dummy that takes the value of 1 for all weeks after week 33 (when demonetization occurred) in 2016-17 and 0 otherwise. FEd,m indicates district-month fixed effects. FEd,y indicates district-year fixed effects. The standard errors are clustered at the district-month level to control for errors being correlated.

The coefficient of interest is 2α which is the average effect across the demonetization period.

The pre-window includes the 8 weeks prior to demonetization. This was chosen because mandays generated in week 25 in 2016-17 is exactly equal to the man-days generated across the previous four years. Intuitively, this research design relies on what is known as the parallel trends assumption. This says that in the absence of demonetization, trends would have looked similar in 2016-17 compared to previous years. The 8-week cut-off appears to meet this criterion. But the results where this window is both expanded and compressed is also presented.Further, visual inspection of Figures 24-27 suggest that the parallel trends assumption does not seem to hold for Uttar Pradesh, where there was much more use of MGNREGA in the early part of the year in 2016-17 compared to previous years. So robustness is checked for with and without UP.

The following regression is also run:

$Log(Man-days)d, w = \alpha_1 (Post) + \alpha_{21}(4 weeks-Post * Demonetization) + \alpha_{22}(5-10 weeks-Post * Demonetization) + \alpha_{23}(Beyond 10 weeks-Post * Demonetization)\alpha_3 FEd, m + \alpha_4 FEd, y (2)$

In this specification, the post-demonetization period is broken down into three windows to assess whether there were different impacts over time.

Tables 1 and 2 formally present the results of our regressions for specifications 1 and 2, respectively.

²⁶ Bertrand, M., Duflo, E., Mullainathan, S., "How much should we trust in difference-in-difference estimates?", Quarterly Journal of Economics (2004), 249-275. http://www.utdallas.edu/~d.sul/Econo2/Marianne_etal_ QJE_04.pdf

In the baseline, which covers the entire country, it is found that demonetization increased the demand for MGNREGS employment by 10 percent (Column 1). Restricting the sample to the less developed states (Column 2), shows a larger impact of demonetization on MGNREGS of 39 percent. In Column (3), the sample is restricted to Uttar Pradesh and no effect is found. In columns (4) and (5), the pre-window is changed, narrowing it to 4 weeks in Column (4) and expanding it to 12 weeks in Column (5). The results become stronger and weaker respectively. In Column (6), the observations for the first weeks after demonetization are dropped and it is found that the result of a positive impact holds. In Column (7), the two drought years from the sample are dropped to restrict the comparison to similar agricultural years and the effects become statistically insignificant.

Table 2 is similar to Table 1 except for breaking down the demonetization period. There is evidence of three distinct periods: the "shock" period featuring the first 4 weeks when demand for MGNREGS declines (by 25 percent in the baseline), the "recovery" phase covering the following six weeks in which there is no discernible demand for MGNREGS; and the final "acceleration" phase covering the subsequent 10 weeks when there is a surge in demand for MGNREGS by 27 percent.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Baseline	Less developed States	UP only	Week 29 onwards	Week 21 onwards	Dropping weeks 33-36	Dropping drought years
Demonetization Effect	0.10*** (0.02)	0.39*** (0.03)	0.04 (0.07)	0.23*** (0.03)	-0.05** (0.02)	0.20*** (0.02)	0.02 (0.02)
R-Squared	0.81	0.81	0.77	0.83	0.8	0.82	0.84
# Observations	82607	28631	9688	69844	95397	69874	49425

Table 1. Possible	Impact of	Demonetization of	on MGNREGS	Employment
	1			

Table 2. Possible impact of Demonetization on MGNREGS Employment: Across Demonetization Windows

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Less developed States	UP only	Week 29 onwards	Week 21 onwards	Dropping drought years
First 4 weeks Demonetization effect	-0.25*** (0.03)	-0.09** (0.04)	-1.11*** (0.10)	-0.12*** (0.03)	-0.39*** (0.03)	-0.28*** (0.03)
Weeks 5-10 Demonetization effect	0.00 (0.03)	0.25*** (0.04)	-0.27*** (0.09)	0.13*** (0.03)	-0.14*** (0.03)	-0.06** (0.03)
Beyond 10 weeks Demonetization effect	0.27*** (0.02)	0.63*** (0.04)	0.60*** (0.07)	0.41*** (0.03)	0.13*** (0.02)	0.19*** (0.03)
R-Squared	0.81	0.82	0.8	0.83	0.8	0.85
# Observations	82607	28631	9688	69844	95397	49425

The results are suggestive not dispositive. But the broad results are both interesting and complex, warranting further research to disentangle the demonetization-MGNREGS links.

Notes to Tables 1 & 2: Outcome measured is the log of man-days per week per district. All regressions are run for all districts. Standard errors are in brackets. Weeks 25-52 of every financial year are the only ones considered in the baseline specification in column (1). This is done because in week 25, the average spending in current year and the average across past years was exactly the same. Weeks 40 and 41 are dropped from all the regressions because they feature an inexplicable dip in mandays for all pre-2016 years. Demonetization occurred on week 33. Hence the Post-demonetization variable indicates the differential impact on log of mandays for the period during and after week 33 in year 2016. Column (2) includes only districts in the states of Bihar, Madhya Pradesh, Chattisgarh, Jharkhand, Odisha, West Bengal and Rajasthan. Column (3) runs the regressions for districts in U.P. alone. Column (4) includes all weeks between 29-52. Column (5) includes all weeks between 21-52. Column (6) in Table 1 drops weeks 33-36 to account for the unusual dip in mandays in the 4 weeks after demonetization. Column (7) in Table 1 and Column (6) in Table 2 drop the two drought years of 2014-15 and 2015-16 so that the comparison is restricted to good monsoon years. All regressions include district-wear and district-month fixed effects. All standard errors are clustered at the district-month level to control for errors being correlated.

*p<0.01, **p<0.05, ***p<0.01

Appendix 5. Sample of emerging market economies for the growth configuration exercise in Section VI.5

1.	Argentina
2.	Korea
3.	Bolivia
4.	Chile
5.	India
6.	Brazil
7.	Indonesia
8.	Malaysia
9.	Mexico
10.	Philippines
11.	South Africa
12.	Thailand
13.	Turkey
14.	Vietnam
15.	Colombia
16.	China
17.	Poland
18.	Romania
19.	Peru
20.	Bangladesh
21.	Egypt
22.	Israel
23.	Mauritius
24.	Singapore