

# Debt Decomposition for India

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# Scenario

- ▶ Watershed moment in India's post Independence era: economic reforms and liberalization in 1991
- ▶ Subsequently, GDP growth rate rises, reaching close to 10% during 2006-2007
- ▶ Government of India institutionalizes fiscal discipline by passing the Fiscal Reform and Budget Management Act (FRBM) in 2003
- ▶ India becomes an inflation-targeter in 2016
- ▶ Despite the above, India, an emerging economy, currently faces a debt-GDP ratio of about 57% (and total liabilities as a share of GDP at 67%)
- ▶ In comparison, gross debt-GDP ratio for advanced (G7) countries is 89%, for Euro Area 69% and that of emerging and middle income economies is 34% as of 2017 (IMF, Fiscal Monitor)

## Question

- ▶ In the light of above it becomes important to analyze the components that stand to affect the debt-GDP ratio for India
- ▶ Typical factors affecting debt-GDP ratio between any two time periods: nominal interest rate, inflation, growth rate of GDP, primary deficit/surplus and maturity structure of debt
- ▶ In this paper we decompose and account for the debt-GDP ratio across different sub-periods between 1972-2017 into various components
  - ▶ Consider the decomposition for public debt portion of the liabilities
  - ▶ Undertake the decomposition for par-value/face value of the debt

# India Public Debt: Centre & States

- ▶ Central Government liabilities include debt issued against the Consolidated Fund of India (technically, defined as **Public Debt**) and **Liabilities in the Public Account** (as of end-March 2017, Liabilities was about 6% of GDP)
- ▶ Public Debt is further divided into:
  - ▶ **Internal debt:** About 38% of GDP, constituted 93% of total public debt, as of end-March 2017
    - ▶ **Marketable debt:** Dated securities and Treasury bills.
    - ▶ **Non-Marketable debt:** NSSF, international financial institutions, POLIF and RPOLIF, compensation and other bonds and 14-day Intermediate Treasury Bills
  - ▶ **External debt:** Debt raised from outside of the territory of India (currently, 6% of Total Liabilities)
    - ▶ Predominantly borrowed in three currencies, SDR, USD and Yen (about 96% of total external debt) and 4% borrowed in Euro

# State Liabilities & General Debt

*“The Constitution of India empowers State Governments to borrow only from domestic sources (Article 293(1))...”, Status Paper, 2018*

**State Liabilities** are structured as follows:

- ▶ Public Debt:
  - ▶ Marketable debt: Market Loans: SDLs(no Treasury bills issued by States)
  - ▶ Non-marketable debt: borrowings from NSSF, loans from Centre, power/UDAY bonds, loans from Banks and other financial institutions, ways and means advances and others
- ▶ Public Accounts: State Provident Fund, Reserve Funds, Deposits and Advances, Contingency Fund

## **General Government Debt**

- ▶ Represents indebtedness of Government sector (Centre and States)
- ▶ General Government Debt = Centre debt + States debt - States investment in Treasury Bills of Centre - Loans from Centre to States

## Summary of General, Centre, States Debt-to-GDP across various sub-periods

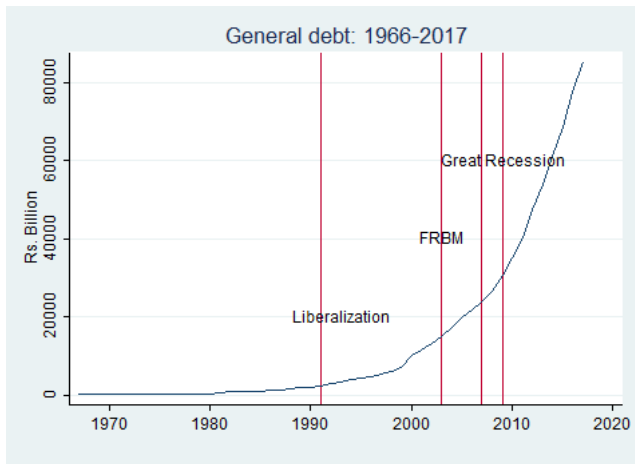
Summary pertains to the par-value/face value of general debt

**Table 1: Summary Statistics: Debt-GDP**

Variable (Percent)	N	Mean	SD	Min	Max
<b>Entire period:1966-2017</b>					
General debt-GDP	51	43.04	11.15	25.77	61.5
Centre debt-GDP	51	36.01	7.46	22.6	49.65
States debt-GDP	51	16.83	2.54	13.92	23.57
<b>Pre-FRBM: 1966-2003</b>					
General debt-GDP	36	37.67	8.55	25.77	56.81
Centre debt-GDP	36	33.93	7.88	22.6	49.65
States debt-GDP	36	15.85	1.57	13.92	20.98
<b>Post-FRBM: 2003-2017</b>					
General debt-GDP	14	55.65	2.92	51.91	61.5
Centre debt-GDP	14	40.58	1.78	37.96	44.96
States debt-GDP	14	18.93	2.84	15.7	23.57

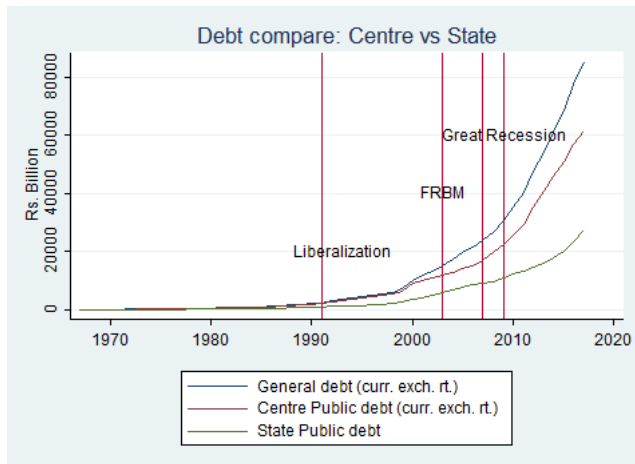
# India General Debt: 1966-2017

Figure 1: General debt: 1966-2017



# Centre vs. State

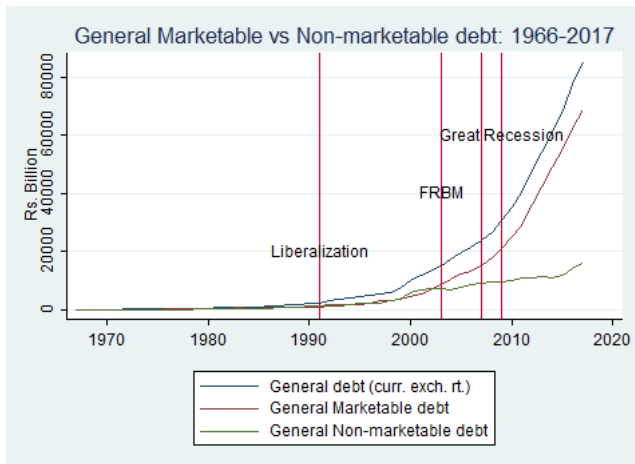
Figure 2: Debt: Centre vs States





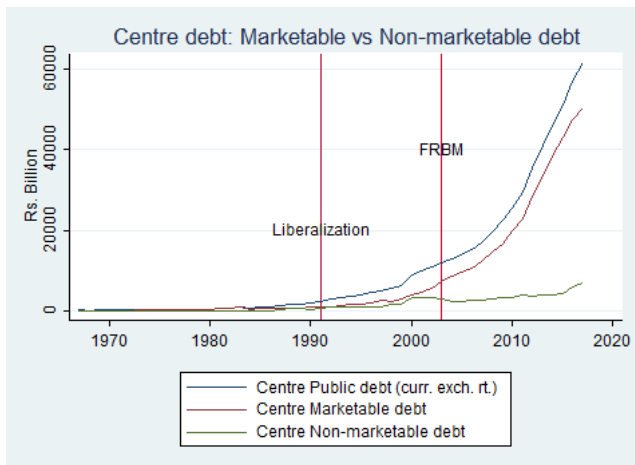
# General debt: Market vs. Non-Marketable

Figure 3: General Debt: Market vs Non-market



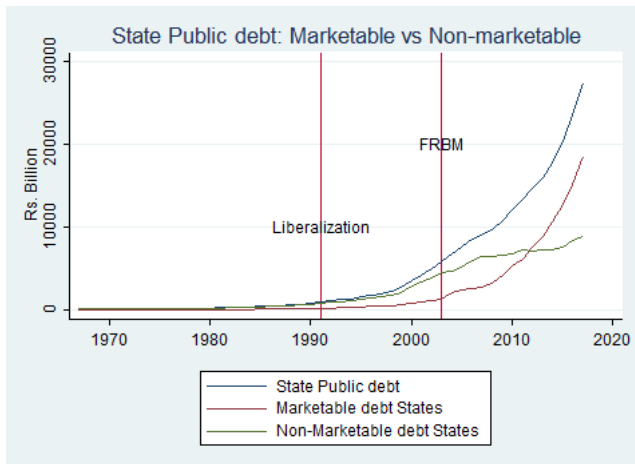
# Centre debt: Market vs. Non-Marketable

Figure 4: Centre debt: Market vs Non-market



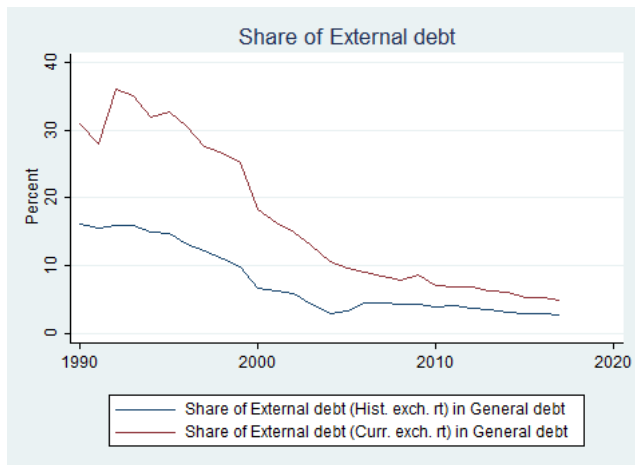
# State debt: Market vs. Non-Marketable

Figure 5: States debt: Market vs Non-market



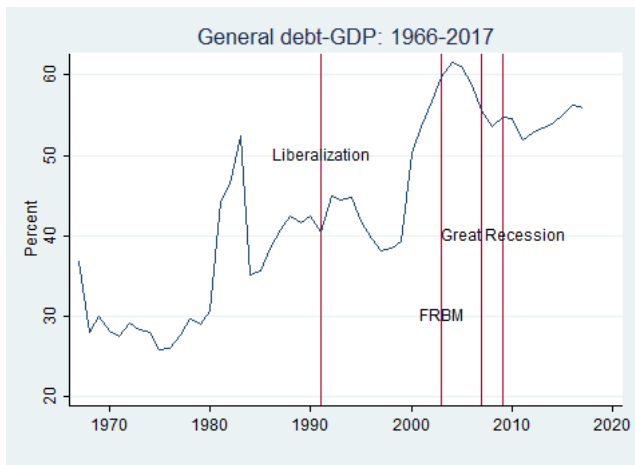
# External debt

Figure 6: External debt: 1990-2017



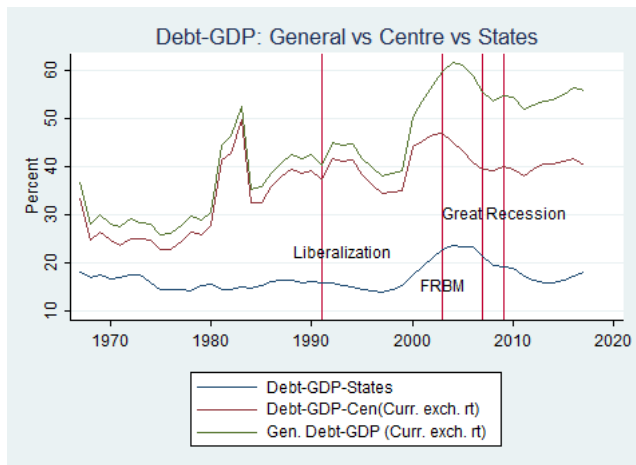
# General debt-GDP: 1966-2017

Figure 7: General debt-to-GDP: 1966-2017



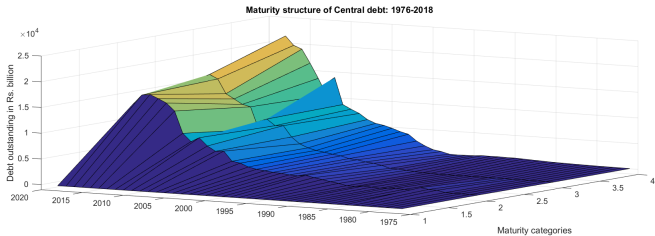
# Debt-GDP: Centre vs. State

Figure 8: Debt-GDP: Centre vs States



# Maturity structure of Centre debt: 1976-2018

Figure 9: Debt maturity: Centre



# Government Budget Constraint

$$\frac{B_t}{Y_t} = (r_{t-1,t} - \pi_{t-1,t} - g_{t-1,t}) \frac{B_{t-1}}{Y_{t-1}} + \frac{def_t}{Y_t} + \frac{B_{t-1}}{Y_{t-1}} \quad (1)$$

- ▶  $Y_t$  is the real GDP at time  $t$
- ▶  $B_t$  is the real value of debt issued by the government to the public
- ▶  $r_{t-1,t}$  is the nominal interest rate between time  $t$  and  $t - 1$
- ▶  $\pi_{t-1,t}$  represents inflation between time  $t$  and  $t - 1$
- ▶  $g_{t-1,t}$  is the growth in real GDP between time  $t$  and  $t - 1$
- ▶  $def_t$  represents the deficit net of interest payments at time  $t$



# Debt Decomposition Equation

- ▶ Iterating backwards on the GBC equation (1) from time  $t$  to period  $\tau$  yields:

$$d_t - d_{t-\tau} = \sum_{j=0}^{\tau-1} \{(r_{t-1-j} - \pi_{t-j} - g_{t-j})d_{t-1-j} + def_{t-j}\} \quad (2)$$

- ▶  $d_t$  is real debt-to-GDP at time  $t$
- ▶  $def_{t-j}$  is real primary deficit as a share of real GDP at time  $t$

## Summary of Debt-GDP and Components across various periods

Table 2: Summary Statistics

Variable	N	Mean	SD	Min	Max
<b>Entire Period : 1971-2017</b>					
General debt-GDP	46	44.45	10.77	25.77	61.5
Nominal Interest rate	46	4.09	1.36	0.53	7.16
Growth rate	46	5.05	3.25	-6.9	12.04
Inflation	46	7.98	5.04	-7.57	28.52
Primary Deficit (% of GDP)	46	4.2	3.83	-10.97	17.75
<b>Pre-Liberalization : 1971-1990</b>					
General debt-GDP	18	35.06	8.06	25.77	52.5
Nominal Interest rate	18	3.52	1.09	2.21	7.16
Growth rate	18	4.35	3.97	-6.9	12.04
Inflation	18	8.68	7.08	-7.57	28.52
Primary Deficit (% of GDP)	18	3.81	5.46	-10.97	17.75
<b>Post-Liberalization: 1990-2017</b>					
General debt-GDP	28	50.49	7.46	38.11	61.5
Nominal Interest rate	28	4.46	1.41	0.53	6.92
Growth rate	28	5.51	2.66	1.31	9.71
Inflation	28	7.53	3.2	2.81	13.88
Primary Deficit (% of GDP)	28	4.45	2.34	1.68	13.28

**Table 3: Debt Decomposition 1972-2017**

Period		Debt-GDP (LHS)			Components (RHS)				RHS	
Start	End	Start	End	Change	Nominal int.	Inflation	Growth	Deficit	Residual	Total
1972	1981	0.29	0.44	0.15	0.083	-0.248	-0.099	0.364	0.052	0.099
1981	1990	0.44	0.42	-0.02	0.141	-0.308	-0.194	0.337	0.006	-0.024
1990	1999	0.42	0.39	-0.03	0.188	-0.362	-0.177	0.302	0.016	-0.048
1999	2008	0.39	0.54	0.14	0.203	-0.249	-0.359	0.496	0.054	0.091
2008	2017	0.54	0.56	0.02	0.2	-0.379	-0.216	0.412	0.005	0.017

**Table 4: Debt Decomposition 1972-2017: By Government in Power**

Period		Debt-GDP (LHS)			Components (RHS)				RHS	
Start	End	Start	End	Change	Nominal int	Inflation	Growth	Deficit	Residual	Total
1972	1975	0.29	0.26	-0.03	0.03	-0.15	0.01	0.06	0.01	-0.05
1977	1980	0.28	0.31	0.03	0.03	-0.06	-0.04	0.09	0.01	0.02
1980	1989	0.31	0.42	0.11	0.12	-0.31	-0.18	0.48	0.00	0.11
1989	1991	0.42	0.4	-0.01	0.05	-0.10	-0.05	0.06	0.03	-0.04
1991	1998	0.4	0.38	-0.02	0.15	-0.28	-0.15	0.24	0.03	-0.05
1998	2004	0.38	0.62	0.23	0.14	-0.12	-0.15	0.37	-0.02	0.25
2004	2014	0.62	0.54	-0.08	0.23	-0.46	-0.36	0.45	0.06	-0.14
2014	2017	0.54	0.56	0.02	0.06	-0.07	-0.08	0.12	-0.01	0.03

Note: Shaded periods in the above table represent years when Indian National Congress was in power. Non-shaded represent years when non-Congress political parties were in power at the Centre.

Figure 10: Cumulative sum of Components: 1972-2017

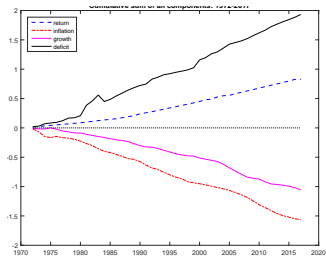


Figure 11: Cumulative sum of Components: 1972-1981

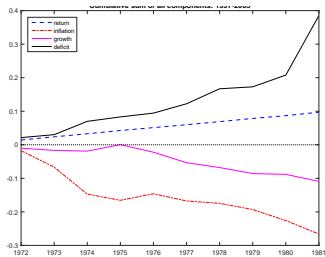


Figure 12: Cumulative sum of Components: 1981-1990

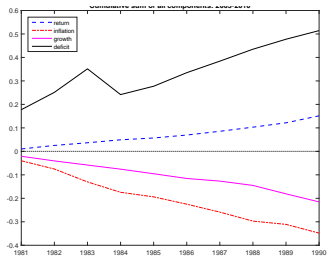


Figure 13: Cumulative sum of Components: 1990-1999

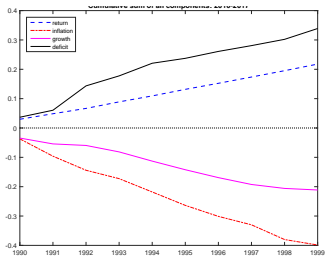


Figure 14: Cumulative sum of Components: 1999-2008

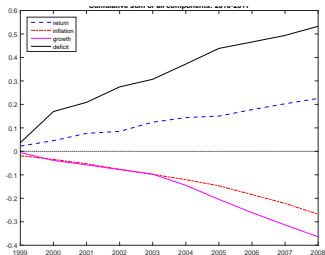


Figure 15: Cumulative sum of Components: 2008-2017

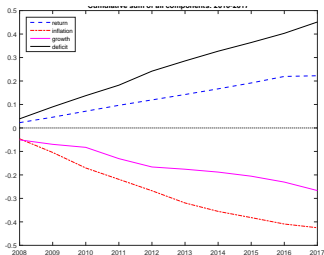


Figure 16: Cumulative sum of Components 1972-1975 (Congress)

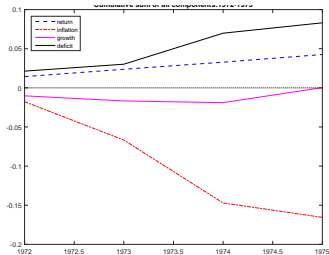


Figure 17: Cumulative sum of Components 1977-1980 (Non-Congress: Janta Dal)

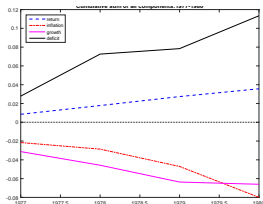


Figure 18: Cumulative sum of Components 1980-1989 (Congress)

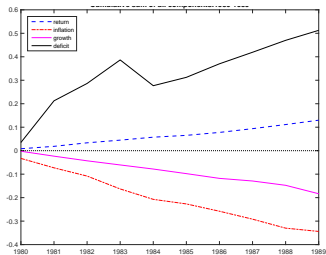


Figure 19: Cumulative sum of Components 1989-1991 (Non-Congress)

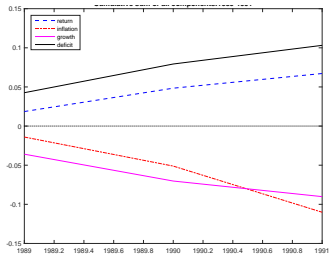




Figure 20: Cumulative sum of Components 1991-1998 (Congress)

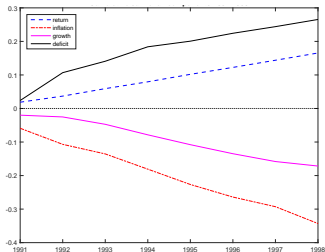


Figure 21: Cumulative sum of Components 1998-2004 (Non-Congress: BJP)

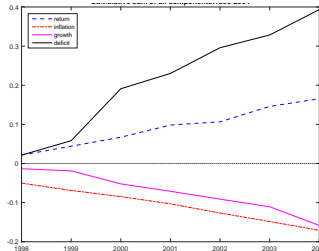


Figure 22: Cumulative sum of Components 2004-2014 (Congress)

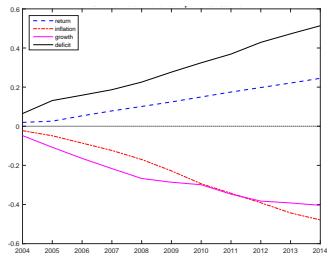
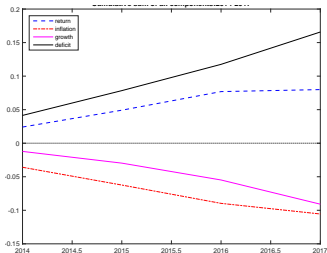


Figure 23: Cumulative sum of Components 2014-2017 (Non-Congress: BJP)



# Summary

- ▶ Analysis permits a quantitative comparison of what is driving of public debt in India between 1972-2017
- ▶ Public Debt in India has been escalating since 1980s and is true for both Centre and States. Ironically, public debt has ballooned in the post FRBM period
- ▶ Prior to 1990s contribution of nominal interest rate towards evolution of debt-GDP was lower than in the post-90s when interest rates ceased to be administered
- ▶ During the high growth phase contribution of growth towards reducing the debt-GDP was higher compared to other periods
- ▶ Comparing across components, Inflation and Primary deficit played important roles in decreasing and increasing the debt-GDP ratio, respectively

## Summary contd.

- ▶ During the years when Congress was the ruling party primary deficit's contribution has been consistently higher over time
- ▶ Comparing across political regimes (Congress and Non-Congress regimes) growth rate has played important role in affecting the debt dynamics during periods when Congress was in power
- ▶ Also, during the Congress-years the role of inflation was high compared to non-Congress years
- ▶ The maturity structure of Centre's debt reveals that under 5 years maturity debt has been rising more compared to longer-term debt, implying the short-term financing needs of the government
- ▶ Post 2014-2015 government started issuing debt of longer term maturity to possibly mitigate the short-term roll over risk.

Thank you