

PUNJAB'S DEBT BURDEN AND SUSTAINABILITY

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Abstract

All previous government's borrowing from institutions, other governments and other parts of the government are collectively known as debt. This research paper examines Punjab's debt burden and sustainability. Here, this paper seeks to determine whether Punjab's debt position was manageable. For this purpose, data is collected from various sources such as budgets of Punjab, RBI bulletin various issues, Economic survey of Punjab, CSO from 1990-91 to 2016-17. The Domer's Debt Sustainability criteria and Indicator Approach of methodology is used for this purpose.

Keywords: Debt sustainability; FRBM; Revenue; Expenditure; Deficit.

Introduction

An analysis of the baseline scenarios of path and magnitude of Punjab's debt burden, both at the aggregated and at disaggregated levels, suggest that Punjab's debt and deficit situation will remain precarious in the absence of strong fiscal measures.

The baseline scenario for 2016-17 to 2036-37 (aggregate), if the values of the relevant parameters follow the five-year average (from 2011-12 to 2015-16), shows that Punjab's debt dynamics are weak and a cause of concern. An event of a temporary/short-term shock (such as real GDP growth shock, interest rate shock, primary balance shock or a combination analysis of the components of revenue receipts shows that average share of SOTR to RR has increased from 53.4 per cent to 59.8 per cent. However, the share of SONTR to RR has declined from 30.8 per cent to 17.1 per cent. The contribution of SOR (SOTR+SONTR) to total RR of the State has reported a decline from an average 84.2 per cent in the pre-reform period to 77 per cent in the post-reform periods.

With Tax to GSDP ratio fluctuating between 7.2 to 6.39 and never crossing double digit mark; the tax collection in the State is a potential area to revisit. On the other hand, the debt growth rate of government of Punjab for the past eleven years has been dramatically high rather it shows a double-digit growth (9.4%, 10.28%, 10.16%, 10.33%, 10.81%, 11.37%, 10.86%, 10.93%, 18.19%, 49.89% from 2007-08 to 2016-17) which violates the norms of fiscal prudence. Both fiscal deficits and revenue deficits over a period of ten years (2006-07 to 2016-17) show an increasing trend in terms of absolute value. Debt-deficit indicators continue to breach FRBM, 2005 targets indicating fiscal instability. For Punjab, post FRBM (2006-07 to 2016-17(RE) average revenue deficit to GSDP is 2.18 per cent, fiscal deficit to GSDP equal 3 per cent, and outstanding debt to GSDP is 33.79 per cent. All previous government borrowings from institutions, other governments, and other parts of the government are collectively represented as debt. An increase in general government spending usually occurs in conjunction with debt accumulation. The growth of income and the government's ability to borrow money are negatively impacted if government spending that is financed by borrowings is of a non-productive nature. Therefore, increasing public debt has negative effects on

macroeconomic stability, government solvency, capital accumulation and productivity, as well as economic growth and productivity (Tanzi and Schuknecht, 1997; Reinhart and Rogoff, 2010).

When financed by borrowings, the revenue-expenditure gap, which is reflected as the deficit, is regarded as the main contributor to public debt. The historical accumulation of the deficit and the associated borrowing costs or interest burden are the other aspects of the deficit that are relevant to its accumulation (Lahiri and Kannan, 2002). It is asserted that governments with high incomes can have significant debt loads while still being able to pay them off in the long run. Conversely, it becomes impossible to raise additional funds through borrowings when the income is insufficient to support the continued accumulation of debt. Governments must therefore increase debt viability through necessary fiscal and monetary adjustments in order for the debt to be sustainable. Fiscal adjustment is the only tool left to sub-national governments for securing a stable debt situation because they have little control over monetary policies.

Numerous methods have been described in the literature for sub-national governments to achieve debt sustainability. Increased revenue and a reduction in non-productive spending, as well as an increase in productive capacity, are some of these (Domar, 1994; Clements, Bhattacharya, and Nguyen, 2003; Checherita and Rother, 2010; Kumar and Woo, 2010; Reinhart and Rogoff, 2010; Cecchetti, Mohanty, and Zampolli, 2011).

Internal debt, loans and advances from the Central government, state provident funds, modest savings, trusts and endowments, and pension funds make up India's sub-national debt. Additional sources of internal debt include money borrowed from the market, advances from the RBI in terms of ways and means, and loans from banks and other financial institutions. According to a description of the debt to GSDP ratio, Punjab has a long history of increasing its debt stock. Between 2000-01 and 2005-06, Punjab's debt stock increased significantly at a 4.3% annual growth rate. Punjab's debt in 2005-06 was 48% of its GSDP. This ratio decreased after the state's FRBM Act, 2005, and was estimated to be around 34% of GSDP in 2016-17. The sustainability of Punjab's debt situation has recently come under question, however, due to the recent slowdown in GSDP growth and weak revenue generation.

This paper advances the conversation by conducting an empirical analysis of Punjab's debt sustainability. Here, the question seeks to determine whether Punjab's debt position was manageable from 1990-91 to 2016-17. This compares the sustainability of Punjab's debt over the study period (1990-91 to 2016-17) and in the post-FRBM era (2005-06 to 2016-17). The Domar Debt Sustainability Criteria and the Indicator Approach of methodology used for this purpose.

Methodology

The discussion of alternative methodologies used to evaluate debt sustainability is presented in this section:

Debt Sustainability Criterion: Domar's Condition and Adequate Primary Balance

Domar (1994) suggested the following equation which lay the necessary condition for debt sustainability:

$$G-R > 0 \quad (1)$$

Where, G= Nominal Growth rate of GSDP R=Nominal Interest Rate

t= Time Period

Equation (1) implies that if nominal GDP growth (G) exceeds the nominal interest rate (R) on government debt, then the debt/GDP ratio(d/y)is stable, According to equation (1), the larger the gap between the interest rate and growth rate, the higher will be debt-GDP ratio. Thus, for debt sustainability, the gap between the rate of interest and growth in GDP, nominal, should be positive. Domar’s condition is termed as the *necessary debt sustainability condition* (Sucharita, 2014).The nominal rate of growth of GDP (n) could be higher either (a) if the real rate rises or (b) if inflation rate rises. Since either will lower the debt to GDP ratio, there are calls for “inflating your way out of a debt squeeze”. However, inflation as a policy to stabilize debt-GDP ratio carries harmful consequences. Thus, the necessary condition is taken in real terms to assess debt sustainability (Pattnaik and Jayakumar, 2016).

Primary balance is also considered as an important indicator of debt sustainability. For debt position to be stable, government needs to maintain sufficient primary surplus to finance debt service. This condition is called *sufficiency condition* for debt sustainability. The stable debt sufficiency condition is examined by the debt-dynamic wedge defined as:

$$g - r - p = 0.$$

Where ‘g’ is real GDP growth (GDP at constant market prices), ‘r’ is real interest rate i.e. nominal interest rate minus inflation measured by GDP deflator and ‘p’ is primary deficit relative to GDP). When this condition is met, debt-GDP ratio remains stable.

Indicator Analysis

This method evaluates various facets of debt sustainability using a set of indicators. Examining different debt burden indicators that meet sustainability requirements, the methodologies and indicator selection were taken from published works (Kaur et al. (2014), Maurya (2014), and Narayan (2016). Table 1 below contains a list of these:

Empirical Results

Results of Punjab's debt sustainability under the alternative approaches are presented in this section, based on the methodology.

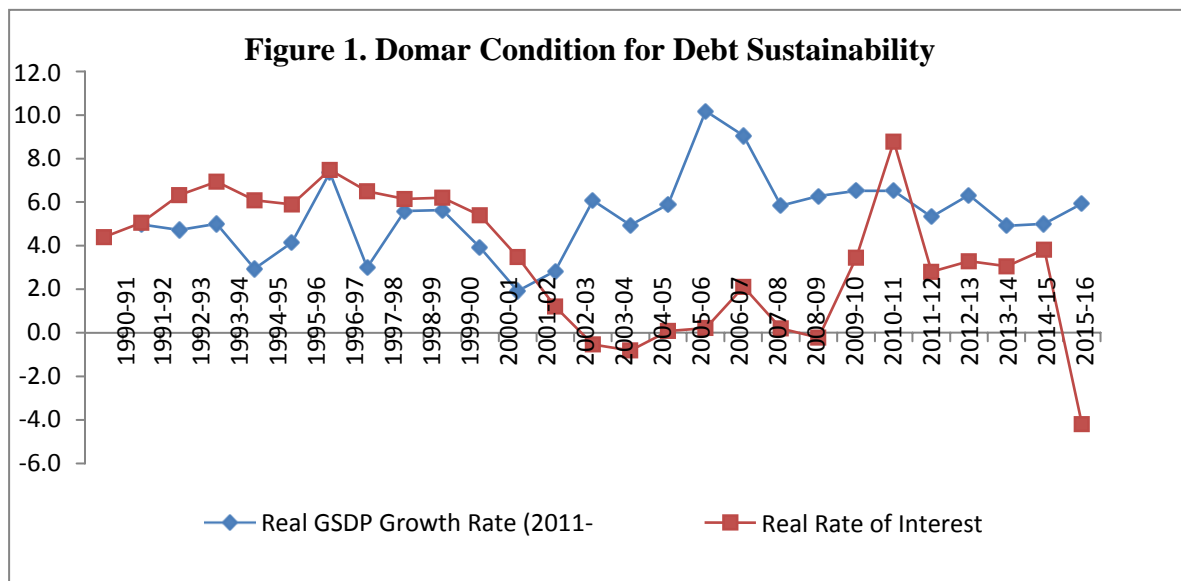
Domar Debt Sustainability

The debt sustainability rule, which is covered in the methodology section of this paper stipulates that an economy's real growth rate must be higher than its real interest rate and that it must maintain a sufficient primary balance to finance debt service in order to keep the debt/GDP ratio stable. In this section, we look at Punjab's necessary ($g-r>0$) and sufficient ($g-r-p=0$) debt stability conditions from 1990–91 to 2016–17. Figure 1 and Table 1 show the results.

Table 1: Indicator Approach

S. No.	Indicators	Symbol
1	Rate of growth of debt (D) should be lower than Rate of growth of nominal GDP (G)	$D-G < 0$
2	Rate of growth of debt (D) should be lower than Effective interest rate (i)	$D-i < 0$
3	Real rate of interest (r) should be lower than real Output growth (g)	$r-g < 0$

4a	Primary balance (PB) should be in surplus	$PB/GDP > 0$
4b	Primary revenue balance (PRB) should be in Surplus	$PRB/GDP > 0$
5a	Revenue Receipts (RR) as a percentage of GDP Should increase over time	RR/GDP
5b	Revenue variability should decline over time	$CV(RR/GDP)$
5c	Debt to revenue receipts ratio should decline over Time	D/RR
5d	Debt to tax revenue ratio should decline over time	D/TR
5e	Debt to own tax revenue ratio should decline over Time	D/OTR
6a	Interest burden defined by interest payments (IP) As a percentage to GDP should decline over time	IP/GDP
6b	Interest payments (IP) as a percentage of revenue Expenditure (RE) should decline over time	IP/RE
6c	Interest payments (IP) as a percentage of revenue Receipts (RR) should decline over time	IP/RR



Source: RBI, Punjab Economic Survey, CSO

Note: Real Rate of Interest = Weighted Average of Interest Rates on State Govt. Securities (Inflation accounted for by GSDP deflator); GSDP is at 2011-12 prices; GSDP data from 1995-96 to 2014-15 is taken from CSO; GSDP data for 2015-2016 (Q) to 2016-17 (Adv.) is collected from Punjab Economic Survey, 2017; Q –quick estimates; Adv.-advance estimates.

Figure 1 illustrates that from 1991–1992 to 2001–2002, the real growth in Punjab's gross state product (GSDP) (g) was less than the real rate of interest. The changes in real interest rates relative to real GSDP

growth over this time period suggested a breach of Domar's essential requirement for stable debt. Domar's condition appears to be met after 2002–03, with the $g-r$ gap being positive from 2002–03 to 2016–17 (Exception of FY 2011-12). This is because, compared to the period prior to 2002-03, the real growth in the Punjab GSDP was much higher between 2002-03 and 2016-17. Additionally, between 2002–2003 and 2010–11, high inflation and low real interest rates allowed for the attainment of $g-r > 0$. Overall, the findings indicated that Punjab had satisfied the Domar's necessary condition for debt sustainability from 2002–03 to 2016–17.

Table 2 presents sufficiency condition for debt sustainability viz., $g-p-r \geq 0$. Examining this requirement of a sufficient primary balance to guarantee a stable debt situation occurred both before and after the FRBM (1991–92 to 2004–05 and 2005-06 to 2016-17). Table 1 show that the sufficiency condition was satisfied for a number of years during the pre-FRBM period. Overall, the pre-FRBM average indicated a violation of the condition, implying an unstable debt situation for Punjab.

Results show a significant improvement in Punjab's debt sustainability position during the post-FRBM period. Except for the FY 2011–12, all of the years during the post-FRBM period meet the debt–dynamic wedge condition. The average over the time period also points to Punjab's stable debt to GSDP.

Therefore, with $g-r > 0$ and $g-r-p \geq 0$, the debt situation appeared to satisfy Punjab's post-FRBM primary balance requirement and Domar's necessary condition.

Indicator Approach

The indicator approach is used in the discussion that follows to evaluate Punjab's debt sustainability in comparison to All India. Pre-FRBM period (1995–96 to 2004–05) and post-FRBM period (2005-06 to 2016-17) were separated from the study period for this reason. Additionally, the pre-FRBM period was divided into phase-I (1995-96 to 1999-2000) and phase-II for the purpose of better understanding the trend that various indicators followed (2000-01 to 2004-05). Similar to that, the post-FRBM period was split into two phases, phase-III (from 2005–06 to 2009–10), and phase-IV (2010-11 to 2016-17). The results are displayed in Table 3

Table 3 presents a set of criteria for evaluating Punjab's debt sustainability in relation to India. With regard to the growth in income, the primary balance, the revenue account, and expenditure, these parameters evaluate outstanding debt and the cost of debt (i.e., interest payments and the interest rate). The values listed are the averages across various phases.

Punjab's rate of debt growth exceeded the nominal GDP (G) growth rate during the pre-FRBM period (1995–96 to 2004–05). The rate of debt growth across all of India was also discovered to be higher than the corresponding growth rate of nominal GDP prior to FRBM, indicating a worsening debt situation for the nation as a whole. The post-FRBM phase's negative (D-G) gap in phase III indicated that Punjab's and India's debt situations had improved in relation to income growth. Although India's figures continued to show higher income growth against debt growth in phase IV, Punjab's debt situation appeared to be weak with a positive gap in an earlier section, we noted that Punjab's recent slowdown in GSDP growth had significantly strained its economy and unstable debt situation.

In the pre-FRBM period (1990-91 and 2004-05), both for Punjab and India, the rate of debt growth (D) is faster than the effective interest rate I Phase III saw a slight improvement for Punjab, but Phase IV saw a further decline (2010-11 and 2016-17). In Phase I and Phase II of Punjab's fiscal stress, the real interest rate (r) was higher than the real output growth rate (g). Prior to the implementation of FRBM, this indicator (r-g) for all of India was less than zero, indicating the country's sustainable ability to repay its debt. However, after the FRBM Act, there was a noticeable improvement. Real output growth rate (g) is greater than real interest rate (r) for both Punjab and all of India, according to values for phases III and IV.

For Punjab and all of India, it was discovered that the primary balance to GDP ratio (PB/GDP) and the primary revenue balance to GDP ratio (PRB/GDP) were negative over the study period. A negative primary balance indicates that the government does not have any extra money after paying interest. Therefore, a lack of primary balance limits the government's ability to pay off its current debt stock. Additionally, the fact that the primary revenue balance ratio was negative throughout all phases, for both Punjab and the entire country of India, demonstrated that the governments were incurring revenue expenditures above and beyond their revenue receipts, and the burden was increased by the payment of interest.

Table 2: Primary Deficit and Stable Debt Condition Sustainability

Year	Real GSDP Growth Rate(g)	Real Interest Rate(r)	Primary Deficit /GSDP(p)	(g-r-p≥0)	Stable Debt
1990-1991	-	4.4	0.048	-	-
1991-1992	5.0	5.1	0.035	0	yes
1992-1993	4.7	6.3	0.032	-2	No
1993-1994	5.0	7.0	0.015	-2	No
1994-1995	2.9	6.1	0.016	-3	No
1995-1996	4.2	5.9	-0.004	-2	No
1996-1997	7.4	7.5	-0.004	0	yes
1997-1998	3.0	6.5	0.013	-4	No
1998-1999	5.6	6.1	0.026	-1	No
1999-2000	5.6	6.2	0.008	-1	No
2000-2001	3.9	5.4	0.021	-1	No
2001-2002	1.9	3.5	0.022	-2	No
2002-2003	2.8	1.2	0.012	2	yes
2003-2004	6.1	-0.5	0.013	7	yes
2004-2005	5.0	-0.8	0.001	6	yes
Average Pre-FRBM	4.5	4.7	0.01	-0.18	UNSUSTAINBALE
2005-2006	5.9	0.09	-0.010	6	yes
2006-2007	10.2	0.23	0.002	10	yes
2007-2008	9	2.12	0.001	7	yes
2008-2009	5.8	0.20	0.010	6	yes
2009-2010	6.3	-0.21	0.006	7	yes
2010-2011	6.5	3.45	0.007	3	yes
2011-2012	6.5	8.79	0.008	-2	No

2012-2013	5.3	2.82	0.009	2	yes
2013-2014	6.3	3.30	0.003	3	yes
2014-2015	4.9	3.07	0.005	2	yes
2015-2016	5	3.83	0.006	1	yes
2016-2017	5.9	-4.19	0.005	10	yes
Average Post-Reform	6.5	1.96	0.004	5	STABLE

Table 3: Sustainability Indicators for Punjab vis-à-vis India (1995-96 to 2016-17)

S. No.	Indicators	Symbol	Pre-FRBM				Post-FRBM			
			1995-96 to 1999-00		2000-01 to 2004-05		2005-06 to 2009-10		2010-11 to 2016-17	
			Phase I		Phase II		Phase III		Phase IV	
			Punjab	India	Punjab	India	Punjab	India	Punjab	India
1	Rate of growth of debt (D) should be lower than rate of growth of nominal GDP(G)	D-G<0	2	4.63	4.51	4.84	-7.71	-4.62	0.14	-1.22
2	Rate of growth of debt(D) should be lower than effective Interest rate (i)	D-i<0	4.39	9.92	2.68	6.03	-0.72	3	3.49	4.95
3	Real rate of interest (r) should be lower than real output growth(g)	r-g < 0	1.7	-3.19	0.29	-2.08	-4.62	-6.1	-1.68	-4.72
4a	Primary balance (PB) should be in surplus	PB/GDP>0	-0.008	-0.013	-0.014	-0.013	-0.002	-0.002	-0.006	-0.009
4b	Primary revenue balance (PRB)should be in Surplus	PRB/GD>0	-0.007	-0.003	0.001	-0.005	-0.01	-0.02	-0.002	-0.015
5a	Revenue Receipts (RR) as a percentage to GDP should increase over Time	RR/GDP	12.1	10.35	12.99	10.83	12.92	12.15	11.67	12.94
5b	Revenue variability	CV(RR/GDP)	10.93	5.26	8.94	2.22	13.06	2.97	11.28	8.86

6a	Debt to revenue receipts ratio should decline overtime	D/RR	3.14	2.11	3.57	2.78	3	2.28	2.78	1.75
6b	Debt to tax revenue ratio should decline overtime	D/TR	5.13	3.01	6.11	3.92	4.79	3.26	3.56	2.4
6c	Debt to own tax revenue ratio should decline overtime	D/OTR	6.06	4.45	6.89	5.6	5.63	4.81	4.32	3.57
7a	Interest burden defined by interest payments (IP) as a percentage to GDP should decline over Time	IP/GDP	3.89	1.93	3.91	2.63	3	2	2.41	1.55
7b	Interest payments (IP) as a percentage of revenue expenditure(RE)should decline overtime	IP/RE	25.42	16.06	22.99	20.3	20.13	16.8	18.29	12.07
7c	Interest payments (IP) as a percentage of revenue receipts(RR) should decline over Time	IP/RR	32.55	18.71	30.2	24.32	23.29	16.51	20.85	12.06

Table 3's indicators 5a and 5b, which depict debt sustainability in relation to the revenue account, show this. In terms of the available financial resources that the government uses to provide public utilities, government revenues as a percentage of GDP demonstrate the significance of the public sector in the economy. Increases in revenue receipts as a percentage of GDP may be used to pay off debts as long as current government spending stays the same. According to this indicator, revenue receipts as a percentage of GDP should increase over time in order for debt to remain manageable. However, the ratio for Punjab showed a declining trend with only a slight improvement from phase I to phase II. Revenue receipts increased from 12% in phase I to about 13% in phase II as a percentage of GDP. This indicator has on average dropped from 12.9% in phase III to 11.67% in phase IV during the post-FRBM period. The main causes of Punjab's declining RR/GDP were stagnant revenue generation and a relative decline in state income. As a result of the decline in revenue receipts, the government had fewer financial resources and was compelled to borrow money to pay for its expenses.

Regarding revenue variability, it occurs frequently throughout the business cycle, which presents a challenge to state policymakers because it makes it challenging to manage the funds for both spending and debt repayment. As a result, the variability in revenue should decrease over time. In phase II, the average revenue variability decreased from 10.9 in 1995–2000 to 8.9 in 2000–05 for Punjab in the pre-FRBM and from 5.26

to 2.22 for all of India during the same time period, according to the findings in Table 3. Punjab's average revenue variability increased in phase III (13.06), and it decreased once more in phase IV (11.28). With 8.86 in phase IV, the revenue variability for the entire country of India is seen to be at an all-time high. Thus, phase IV of the post-FRBM period violates the debt sustainability condition. This suggests that the revenue fluctuations led to a worsening of India's and Punjab's debt loads.

Following the enactment of the FRBM Act, the debt situation as assessed in terms of revenue account (indicator 6a, 6b, and 6c) revealed a declining trend for debt to revenue receipts, debt to tax revenue ratios, and debt to own tax revenue ratios. Once the interest rates on existing debts were taken into account, the State government's debt to revenue receipts ratio provided a clear picture of its capacity to fund the annual debt repayments. The debt-to-revenue ratio is decreased and the state's financial health is improved by the easier repayment of existing debts and their interest. The debt to revenue ratio in Punjab decreased from 3.57 in 2000-01 to 2.78 in 2016-17, satisfying the debt sustainability condition in the post-FRBM period, according to analysis of this indicator. In phase III and phase IV of the post-FRBM period in India, this ratio decreased from 2.28 to 1.75. This suggested that the indicator had improved for both Punjab and all of India, and that the government had been paying off the debt more and more with the money it had been given. It also pointed to a slowing down of debt accumulating.

According to tax revenue, states with higher taxes can afford to borrow more money than states with lower taxes because higher taxes result in more money for the government, which means that the state will be better able to pay off its debts. Therefore, for deficits to decrease, the debt-to-tax revenue ratio must decrease over time, implying that tax revenue must rise and that the higher revenue should be allocated to paying down debt rather than funding current expenditures. In light of this definition, it was discovered that Punjab's debt to tax revenue ratio increased from 5.13% in phase I to 6.11 in phase II during the pre-FRBM period. Following the implementation of FRBM, this indicator's situation improved, and in phase IV, the ratio decreased to 3.56%. Similar to this, post-FRBM conditions improved throughout all of India. This shows that the Punjab government and the government of India as a whole were able to generate more tax revenue in comparison to debt, which relatively improved their ability to repay debt.

Own tax revenue is the state's income from taxes (taxes that are imposed and collected by the States). When the debt to own tax revenue ratio declines, it implies that the State can produce enough own tax revenue to pay off its debts and that its reliance on assistance from the Center is lessened. According to Table 3's findings, Punjab's debt-to-own tax revenue ratio fell from 5.63 in Phase III to 4.32 in Phase IV and from 4.81 in Phase III to 3.57 in Phase IV for the entire country of India.

Punjab and India's interest payment trends (indicator 7a, 7b, and 7c) show a decline. Reduced interest payments as a percentage of total revenue receipts and revenue expenditures suggests that the government now has access to more resources. In the case of Punjab, during the pre-FRBM period, interest payments exceeded one-fourth of revenue receipts before declining to 20.85% in phase IV. After 2005, the interest burden—defined as interest payments as a percentage of GDP—also decreased. Phase II's interest burden decreased from 3.9% to 2.41% in phase IV.

The fiscal position of Punjab relative to all of India during the pre-FRBM period was unsustainable, according to the overall assessment indicators. However, most indicators show that it got better after the FRBM Act was passed.

Conclusion

This paper evaluated Punjab's debt sustainability using the Domar criteria for sustainability, and indicator analysis. During the pre-FRBM period, it was determined that the Domar necessary debt sustainability criterion and sufficiency condition of an adequate primary balance were broken (1991-92 to 2004-05). However, during the post-FRBM era, these requirements were met (2005-06 to 2016-17). The findings suggested that Punjab's debt situation has improved since the FRBM Act. The sustainability analysis using an indicator approach showed that most debt sustainability indicators improved over the last two phases (2005–06 to 2016–17) compared to the two phases before that (1995-96 to 2004-05). However, the overall performance of these indicators fell short of indicating that Punjab's debt situation was stable. The parameters that looked at the debt situation in relation to the primary balance among these indicators revealed weak sustainability. This was due to the fact that primary revenue balance and primary balance as a share of GDP were both found to be generally negative throughout the study period. This demonstrated that Punjab kept investing resources in paying off its debt. The ratio of debt growth to income growth and the cost of debt servicing were two additional indicators of Punjab's weak sustainability. These indicators' performance had gotten worse recently, indicating that the State's income growth was not enough to keep up with the growth of its debt and the corresponding interest payments.

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