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THE IMPACT OF FISCAL CONSOLIDATION AND ECONOMIC GROWTH ON DEBT: EVIDENCE FROM INDIA

ABSTRACT: *This paper analyses the challenges debt reduction faces as a result of fiscal consolidation and the effect of growth on India's debt ratio. Simulations are conducted based on India's current revenue and debt levels and project different cases of fiscal tightening and their effect on changes in debt stock with respect to the change in GDP, i.e., changes in the debt ratio. The estimates for multipliers that are used in the Structural Vector Auto Regression (SVAR) model are obtained empirically by giving shocks to fiscal instruments such as expenditure and taxes. A non-technical approach to the SVAR methodology is used to analyse the dynamics of the studied framework by subjecting it to unexpected shocks. A more measured act of consolidation may be implemented in an attempt to normalise multiplier values in order to create an appropriate environment for reducing government spending. The drawbacks include the limitations of the SVAR methodology such as the orthogonality condition, which makes the entire analysis fairly restrictive. The framework used for the analysis is a modern approach towards understanding macroeconomic trends and variables in the context of the Indian economy and seeks to apply recently developed analytical tools.*

KEY WORDS: *Fiscal Tightening, Simulation, Debt/GDP ratio, Fiscal Sustainability*

JEL CLASSIFICATION: C23, F34, H63

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1. INTRODUCTION

India has always been a rather unique case when it comes to economic analysis and policy formulation. As the world's largest capitalist economy in terms of population, along with its status as an emerging market economy, India presents a fascinating opportunity for analysing the effects of different fiscal policies and their impact on debt-growth dynamics.

Recently, fiscal adjustment has become a focal point for developed economies, especially in European Union countries and similar fairly mature economies. Recent events across Europe and post-financial-crisis USA have demonstrated the need to look again at sustainable public debt levels and the impact government spending/fiscal stimulus can have in the trade-off to boost economic growth. Developing economies require a combination of debt, equity, and foreign direct investment to fuel growth at a consistently high level and correspondingly tend to have a higher associated cost of capital due to the additional risk premia attached to most investments. This explains the steady rise in the debt stock of emerging nations such as India, which has recorded significant growth over the past decade.

This paper examines the impact of fiscal consolidation on debt dynamics. We first analyse the size of short-term fiscal multipliers, which helps us to understand the relationship between growth, debt reduction, and the impact of changes in fiscal policy. Assuming, in line with the recent fiscal adjustment packages in developing countries, that two-thirds of the adjustment come from spending measures, a weighted average of spending and revenue multipliers in downturns yields an overall fiscal multiplier of about 1, which will be used to simulate the impact of fiscal consolidations (Eyraud and Weber 2013). The negative impacts of contractionary fiscal policy in a country like India may be due to a number of reasons including credit-constrained agents, a relatively closed economy, and limited flexibility in terms of impact of monetary policy (recently, inflation targeting has been a higher-priority issue than interest rate levels for the Reserve Bank of India).

With high initial fiscal multipliers, fiscal consolidation is expected to increase the debt ratio in India in the short run. Although the debt ratio eventually declines,

its slow response to fiscal adjustment could raise concerns, particularly if economic agents react adversely to the changes.

Section 2 of this paper details the literature that has helped to better understand the problem and to formalise an appropriate solution. Section 3 presents the data sources and the methodology used to arrive at our conclusions. Section 4 highlights the simulations conducted to arrive at our results, along with certain policy recommendations. Section 5 explains the empirical analysis conducted to support our results, while the conclusions and policy implications are presented in Section 6.

2. LITERATURE REVIEW

In this literature review we refer to a number of papers regarding the effects of fiscal multipliers on the economy and the multidimensional impact fiscal consolidation/tightening may have on debt growth and sustainability in a range of different economies. Debt dynamics have been a focus of research across the globe (e.g., Escolano 2010). Very few studies have specifically assessed the impact of fiscal policy on the debt ratio from the point of view of an emerging economy, since in emerging economies debt and fiscal consolidation often take a backseat to driving economic growth and expanding per capita GDP. The existence of an accounting relationship suggests that the relation between these variables is straightforward, which is why the problem would not have been of initial interest, especially in a non-Keynesian setting.

From a conceptual point of view, the framework developed by Gros (2011) is akin to ours. Gros (2011) shows that austerity can be self-defeating and increase the debt ratio in the short term. However, the sample used consists of relatively developed/mature European economies where interest rates are relatively low, leaving little room for monetary policy to make a significant impact. When coupled with high debt and lack of investment such an environment often leads to high multipliers, as only government spending can act as a stimulus for sustainable growth; barring which, in the event of ill-conceived fiscal austerity, the result may be a dip in consumer sentiment and spending, a negative stimulus to the economic system, and a potential structural economic recession. The persistence of short-term multipliers is omitted from the analysis, along with the

effects of repeated episodes of fiscal tightening, and how the two may end up in a vicious cycle of negative economic stimulus, lower growth, and higher debt.

Batini et al. (2014) have studied the size, persistence, determinants, and impact of fiscal multipliers in detail. They provide a framework for estimating the multipliers for countries that do not track data for calculating them. Emphasis is placed on the use of multipliers while running simulations related to the design of debt/fiscal policy, highlighting that policies formulated without taking into account their potential impact may lead down unsustainable paths and structurally hamper a country's long-term growth and economic progress. The authors also highlight the pitfalls of incorporating multipliers into any given study, emphasizing the difficulty in isolating the direct impact of fiscal measures on GDP because of the two-way relationship between the different variables involved in the model.

Sen et al. (2007) explain that debt overhang may impede a country's investment and growth. The debt overhang hypothesis holds empirically true in tests performed in this study and this direct correlation with growth explains an economy's inability to bounce back after a one-off fiscal tightening, which can have severe negative implications for an economy's debt aggregation. Krugman (1988) examines the trade-offs that creditors face in countries where the debt is so large that they cannot attract voluntary new lending. He points out that creditors face a double-edged sword when a country cannot service its debt payments: they can still finance the country with an expected loss in the hope of recovering the money later or bringing the debt back to a useful level. Krugman (1988) discusses the choice between financing and forgiveness when focusing on a country's historical debt ratio and the implications of changes in fiscal policy that are made for the purpose of self-correction.

As of now, little research has been done to determine the fiscal multipliers of emerging market economies or low income countries. It is not clear where the exact range should be, especially when compared to advanced economies. Factors that increase multipliers in these countries include liquidity constraints that impact consumption patterns, less efficient monetary policy, lower automatic stabilisers, and lower public debt. Factors that contribute to lower multipliers include higher interest margins, smaller and more open economies, and

inefficiencies in the administration of public funds. Some studies even conclude that the multipliers are negative, especially in the long term (Tanner and Samake 2008) and when public debt is high (Ghosh and Rahman 2008).

Structural factors affecting fiscal multipliers include:

- *Trade openness*: Countries with higher imports or more open trading patterns have lower fiscal multipliers due to demand leakage through imports (Barrell et al. 2012; Ilzetzki et al. 2013; Tanner and Samake 2008).
- *Labour market rigidity*: Countries with more rigid labour laws or stronger trade unions tend to have less flexible responses to demand/supply shocks and hence have higher fiscal multipliers (Cole and Ohanian 2004; Auerbach, and Gorodnichenko 2012).
- *Exchange rate regime*: Flexible exchange rate regimes allow for greater flexibility of monetary policy, which results in lower multipliers due to their ability to offset discretionary fiscal policy or other fiscal shocks to the system (Born et al. 2013; Ilzetzki et al. 2013).
- *Debt level*: High-debt countries generally have lower multipliers, as fiscal consolidation (or stimulus) is likely to have positive (or negative) credibility and confidence effects on private demand and the interest rate risk premium (Ilzetzki et al. 2013, Kirchner et al. 2010).

Keeping all the above factors in mind, we have formulated values for the fiscal multiplier that we feel are appropriate for the successful simulation and empirical analysis of the problem in hand. We believe India to be a combination of unique factors, where trade openness has increased at an exponential rate post-liberalisation (1993), along with more recent foreign investment stimuli such as changes in Foreign Direct Investment Regulations, tax breaks/incentives for foreign manufacturing, and increased accessibility to capital markets.

3. DATA AND METHODOLOGY

PART 1

Data for the simulations and empirical analysis was obtained from past records of the Union Budget of India. For the purpose of the study we used the past 50 years' worth of data to identify trends and to form a basis for the forecasts that

are used in the simulations and analysis. As the government's budgetary records lack consistency in terms of the accounting techniques used when recording the data and there are a number of reconciliation errors and restatements in the earlier records, we relied on a novel and comprehensive modelling approach to designing a dataset that accurately captures the significant macroeconomic trends over the studied time period and serves as suitable template for performing our simulations. We observed the trends followed by the different input variables in our models over the last 50 years, and modelled all those trends as a function of GDP to arrive at a suitable and uniform dataset. We assumed the trends to be linear for simplicity of calculation, while factoring in structural breaks and jumps for the impact of events such as liberalisation in 1993 and the financial crises of the late 1990s and 2008. The final data set consists of over 200 observations, taken on a quarterly basis over the considered time period. The text below highlights the assumptions/facts behind the data modelling:

1. Tax Revenue grew linearly from 12% of GDP in 1965 to 18% of GDP in 2015: the tax base expanded gradually as the government slowly implemented policies to bring more of the economy into the organised sector.
2. Revenue from Non-Tax Items increased from 20% of total revenues in 1965 to 14.2% of total revenues in 2015 as more of the economy became part of the tax base, while most non-tax items remained the same.
3. Government Expenditure grew from 21% of GDP in 1965 to 30% of GDP in 2015.
4. Net Interest Payments have been relatively constant at 5% of GDP, except during financial stress/volatility such as the Asian financial crisis and the global financial crisis in 2008.
5. Total Public Debt declined significantly from approximately 42% in 1960 to 23% in 1980. It increased sharply post-1990 as significant foreign capital (in the form of debt and equity) was invested after the liberalisation of the economy. Public debt rose from 39% in 1990 to close to 66% in 2014.
6. Primary Deficit remained at an average of 3.75% over the time horizon considered, except during times of fiscal stress or increased spending to boost development, such as the post-1995 period and the early 2000s; a lower tax base in the earlier years (1965-1980) also contributed to this.

The simulations are conducted using the equations described below (taken from Eyraud and Weber 2013) and the forecasted values, bearing in mind factors such as the sustainability of debt levels and the feedback effect of factors such as automatic stabilisers.

$$\underline{\Delta}\left(\frac{debt(N)}{Y(N)}\right)*1=-N+Debt\,ratio(N)*mult(N)+rev\,ratio*\sum mult(i;1\le i\le n) \quad (1)$$

where rev ratio is the revenue ratio and mult(N) is the multiplier. A permanent tightening of 1% of GDP should reduce the debt ratio by N per cent of GDP after N periods if there is no fiscal multiplier. In the right hand side of the above equation, –N refers to the direct effect, whereas the rest of the terms sum up to the mitigating effect.

Equation (1) is the core of the simulation process. We have made a number of assumptions regarding the simulation process:

- We have assumed a 1% fiscal tightening as a % of GDP
- The elasticity of revenue with respect to GDP is 1, and the change in the revenue ratio remains zero.

The simulation process is elaborated in a subsequent section using the above equation.

PART 2

We estimate the model using a Vector Auto Regression approach, including the ratio of debt in gross public debt terms to GDP as the exogenous variable and modelling its dynamics using a separate accounting identity.

$$Y(t)=\sum C(i;1\le i\le k)Y(t-i;1\le i\le k)+\sum\gamma(i;1\le i\le k)d(t-i;1\le)+u(t) \quad (2)$$

The identity is quite robust, consisting of the average cost of servicing debt; the real GDP term in log normalized format; the inflation in percentage terms; and the primary deficit, also as a percentage of GDP.

$$d_t = \frac{1+i_t}{(1+\Delta p_t)(1+\Delta y_t)} d_{t-1} + pd_t \quad (3)$$

In Equations (2) and (3), Y(t) denotes a vector of endogenous variables, including real GDP (yt, in logarithms), it, is the average cost of servicing debt (in per cent), Δpt is inflation (in per cent), dt is gross public debt to GDP, and pdt is the primary deficit as a percentage of GDP. Our analysis uses yearly data for India, with inflation defined as the change in the logarithm of the GDP deflator. Traditionally, the average cost of servicing debt is defined as the ratio of net interest payments to total gross public debt. The intention of the model is to establish a clear understanding of the effects fiscal consolidation can have on the debt ratio. Inclusion of other variables such as expenditure or revenue in the model separately would mean that the variables are related endogenously to one another, which could cause autocorrelation bias.

4. SIMULATION

Using Equations (1), (2), and (3), we simulate the case of a one-off fiscal tightening in the Indian economy and its effects on debt stock and GDP over a five-year period. The simulation is based on the economic data available for the year 2014. We take into account the debt stock, debt ratio, revenue ratio, GDP, and GDP growth rate as recorded in the year 2014.

We begin the simulation by calculating the fall in GDP post the cut in fiscal spending. Assuming the base case multiplier to be 1, we assume a fall in GDP equivalent to the fall in government spending by 1% of total GDP. We assume a decline in multiplier levels over the 5-year time frame, consistent with theory, with the multiplier effectively becoming zero from year 5 onwards (Eyraud and Weber 2013). Different sets of scenario analyses may be performed for different time frames and different rates of multiplier depreciation to assess the impact of a one-off tightening. To arrive at a qualitative assessment we have restricted ourselves to a fiscal tightening of 1% of GDP over a 5-year horizon and a linear decline in fiscal multiplier values. The change in the debt ratio over a 5-year period is calculated using the formulae provided in Equation (1), based on a permanent one-time cut in fiscal spending.

Table I: Summary of Assumptions used

Variable	Base Value
Base Revenue Ratio	0.325
Base Debt Ratio	0.667
Average Fiscal Multiplier over 10 years	0.86
Fiscal Multiplier in base year	1

We assume two cases for the fiscal multipliers. In the first case, we assume an initial rise in the fiscal multiplier due to a delay in the transmission mechanism for the impact of a cut in fiscal spending, taking into account the lack of efficient policy implementation infrastructure and a delay in the reaction of other market agents due to the presence of significant information asymmetry in the country. A combination of market uncertainty and short-term consumer sentiment may result in a temporary rise in the immediate multiplier before its effect begins to reduce. In the second case we assume a linear decrease in the multiplier without any immediate or near-term increase.

From the graphs showing the change in the debt ratio to analysis time frame, it can be inferred that the change in the debt ratio increases initially due to a sharp increase in the fiscal multiplier due to the shock provided by fiscal tightening in the first year. The change in the debt ratio follows an inverted U-shaped pattern. For ease of simulation we assume a linear decrease to zero, bearing in mind the assumption that the effects of the fiscal multiplier on the change in the debt ratio dissipate by the end of the five years.

Over a prolonged period, we can observe that under the assumption of a multiplier of 1, the debt ratio initially increases before falling back to a lower equilibrium value beyond a period of five years, when the impact of a one-off tightening dissipates. In India's case, the debt and revenue ratios are currently at manageable levels, and with the increasing levels of economic development and inflow of foreign as well as domestic investor capital, reliance on government spending is reduced, leading to lower multipliers. In such an environment, fiscal cuts even greater than 1% of GDP are manageable without inflating debt to unsustainable levels in the short term.

Table 2: Debt Ratio projections assuming an initial fiscal multiplier of 1 and a subsequent rise in the following year (stabilization lag)

Time	Fiscal Multiplier	Delta Debt Ratio	Total Debt Ratio
T	1	0.02%	0.66
t+1	1.3	0.61%	0.67
t+2	0.875	0.31%	0.68
t+3	0.65	–0.03%	0.67
t+4	0.325	–0.35%	0.66
t+5	0	–0.66%	0.65

In the case of the fiscal multiplier as assumed in the base year, fiscal tightening does lead to sustainable debt during the shock period, followed by a steady levelling off of debt with respect to GDP. It takes roughly 10 years before the debt ratio begins to reduce significantly.

Table 3: Debt Ratio projections assuming an initial fiscal multiplier of 1 (Base Year multiple) without a subsequent rise in multiplier

Time	Fiscal Multiplier	Delta Debt Ratio	Total Debt Ratio
t	1	0.02%	0.66
t+1	0.8	1.1%	0.67
t+2	0.6	1.2%	0.68
t+3	0.4	2.1%	0.70
t+4	0.2	1.4%	0.72
t+5	0	–0.8%	0.71

The scenario where fiscal tightening would lead to near-term unsustainable debt levels involves developing an environment where multipliers are at inflated levels due to stress in certain parts of the economy (conditions similar to those in Greece or Portugal), coupled with high levels of the baseline/initial debt ratio (approximately 80% of GDP and above). Our model tells us that in these situations (where multiplier values may be as high as 5 and may go even higher), fiscal tightening may counter-intuitively prove to be disastrous when managing debt levels in the country.

5. EMPIRICAL ANALYSIS

While empirical literature suggests that high levels of debt are not necessarily the reason for subpar growth over the immediate horizon, there is some correlation between high levels of debt and volatility in the levels of GDP. This has been traditionally attributed to the fiscal or monetary policy consolidation associated with high levels of debt. We used an econometric estimation model to further confirm the results of the simulation. A structural vector autoregression approach was used to study the impact of the actions taken by the government to meet its inter-temporal budget constraints, such as fiscal tightening. The end result of the analysis will help us understand the effect of fiscal shocks on various macroeconomic variables, with an understanding of the debt dynamics that are local to our model. In the Indian context it can be seen that an increase in fiscal consolidation has a direct correlation with the debt ratio.

Our VAR approach is similar to that of Favero and Giavazzi (2009), in the sense that VAR estimates have traditionally been shown to be biased when the feedback effect of the debt-to-GDP ratio is omitted. We consider that VAR analysis of fiscal policy requires the inclusion of debt-to-GDP ratio, as taxes and spending are directly related to the debt level (Bohn 1998). This can also be better understood by the fact that the analysis would include residuals that contain the response of the considered macroeconomic variables to a change in debt level. The regressors would then be correlated with the error terms, making the regressors endogenous.

Two possible solutions suggested by Eyraud and Weber (2013) are the inclusion of the debt variable as an endogenous variable in the VAR analysis, and the complete omission of the debt variable. However, both of these methods may result in appropriate results, due to the intricacies in the relationship between the debt variable and variables such as taxes, government spending, output, inflation, and the prevailing interest rates. The accounting identity used to include the debt variable as an exogenous variable in our estimation can be found in the methodology section.

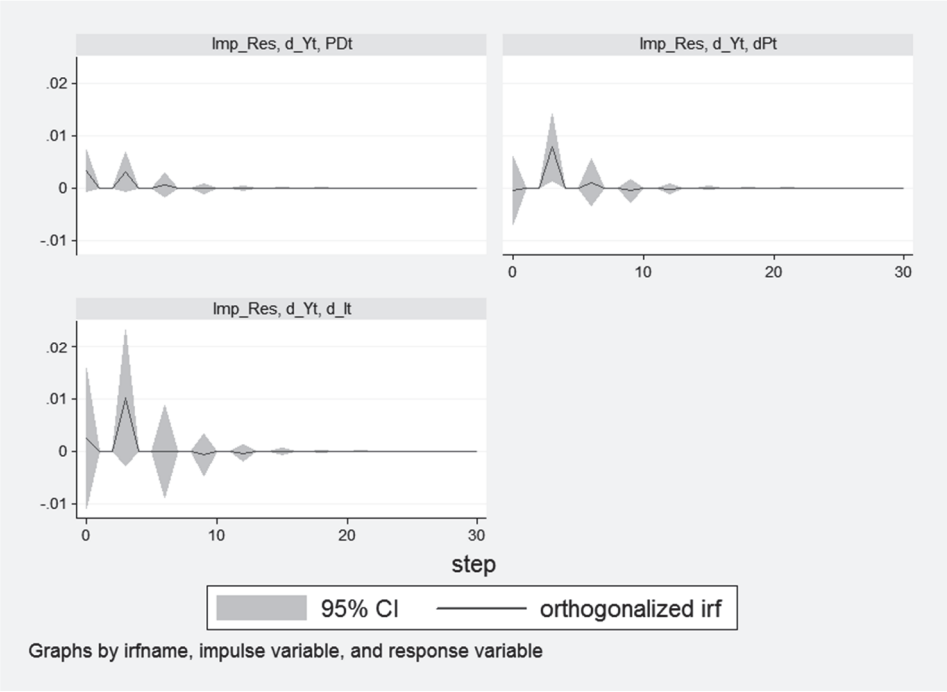
Table 4: Stationarity test (Augmented Dickey Fuller) results

Dickey-Fuller test for Unit Root			**Observations:**		238
		Interpolated Dickey-Fuller Critical Value			
		Test Statistic	**1%**	**5%**	**10%**
It	**Z(t)**	–1.261	–4.372	–3.996	–3.262
	MacKinnon approximate p-value for Z(t) :		0.6218		
D.It	**Z(t)**	–3.443	–4.372	–3.996	–3.262
	MacKinnon approximate p-value for Z(t) :		0.0023		
Dt	**Z(t)**	12.871	–4.372	–3.996	–3.262
	MacKinnon approximate p-value for Z(t) :		1		
log_Dt	**Z(t)**	–1.422	–4.372	–3.996	–3.262
	MacKinnon approximate p-value for Z(t) :		0.5542		
d_log_Dt	**Z(t)**	–2.759	–4.372	–3.996	–3.262
	MacKinnon approximate p-value for Z(t) :		0.2078		
d_log_Dt, trend lags (2)	**Z(t)**	–3.586	–4.569	–3.851	–3.262
	MacKinnon approximate p-value for Z(t) :		0.0397		
Yt	**Z(t)**	1.883	–3.831	–3.199	–2.83
	MacKinnon approximate p-value for Z(t) :		0.9918		
D.Yt	**Z(t)**	–4.003	–3.591	–2.996	–2.618
	MacKinnon approximate p-value for Z(t) :		0.0017		
dPt	**Z(t)**	–2.869	–3.148	–2.898	–2.452
	MacKinnon approximate p-value for Z(t) :		0.0289		
PDt	**Z(t)**	–3.008	–3.293	–2.697	–2.439
	MacKinnon approximate p-value for Z(t) :		0.0129		

The variables involved in the model have to be checked for stationarity. Augmented Dickey Fuller tests were used to establish this at differenced, natural logarithmic, and lagged stages. The results of these tests can be seen in Table 4. The VAR is then estimated using the equation 2 specified in the methodology

section, where vector Yt is a vector of endogenous variables and the debt ratio obtained using the identity is modelled as an endogenous variable. The optimum lag levels are obtained based on the Schwartz information criterion. Table 1 in Appendix B shows that the optimum lag order is three.

Figure 1: Impulse Response Functions



Sourced from Stata Output of the simulation, eliciting the response of endogenous variables to an impulse.

The transformation matrices used in the estimation method are found using the Blanchard and Perotti (1999) model. The residuals from the autoregression approach are used to find the structural fiscal shocks caused. Exclusion restrictions for exact identification of the model force us to consider basic economic theory. For example, we assume that any shock or deviation in the interest rates has a negligible effect on the primary deficit variable. The elements in the transformation matrix are effectively the semi-elasticity values for variables such as budget-deficit-to-output and budget-deficit-to-inflation. Information is publicly available for the former, while Martin et al. (2009) have studied the latter.

The semi-elasticity of the budget deficit with respect to output is provided by the OECD (2009) and Girouard et al. (2006), and is estimated at -0.37, and the elasticity of the budget deficit with respect to inflation is experimentally shown to be significantly negative.

The impulse response function shows us the impact of a percentage point of fiscal tightening (Yt) and the effect it has on inflation (It), primary deficit (Pt), and the cost of servicing debt (PDt). Fiscal tightening of one percentage point has the most impact on inflation at more than 0.02%, followed by impact on primary deficit (more than 0.01%) and cost of servicing debt (less than 0.01%). In each case, the impact dies down after roughly ten years. The Impulse Response Functions (IRFs) also clearly show that the shock caused by the tightening dies down with the time step. Table 5 presents the post-estimation test for the VAR model.

Table 5: Diagnostic tests

Test	**Test statistic**
Ramsey RESET (2)	0.0038
Ramsey RESET (3)	1.0914
Ramsey RESET (4)	1.4566
Jarque-Bera Normality Test	4.2283
Glejser Heteroskedasticity Test	9.9987
Residual Correlation LM Test	2.9349

Note: The null hypothesis for each test is not rejected at the 5% level of significance.

As reported in the table above, a number of conventional diagnostic test statistics indicate the robustness of the adopted model: the model passes the LM residual correlation test, test of heteroskedasticity, and the normality test. The Ramsey RESET misspecification test suggests that the model does not have misspecification problem.

In their paper, Eyraud and Weber (2013) clearly divide this result into two possible effects. The first effect is the flow effect, where a decrease in the real output and inflation offsets the decrease in the primary deficit as a percentage of GDP. The stock effect explains the increase in debt ratio due to a decrease in the output, as the variables in the denominator decrease.

India is a unique case when it comes to examining the effects of fiscal policy on growth. We apply this method to India and estimate the impact of fiscal policy on the gross debt-to-GDP ratio. The primary consideration for choosing India is that it is a comparatively closed economy with relatively little commercial activity and foreign investment, coupled with a rigid currency regime and relatively low interest rates. Also, the debt stock of India has been significantly reduced in the recent past. Our simulation results indicate that in the presence of a certain set of multipliers, contractionary fiscal policy may lead to unsustainable debt levels in the short term due to the high multipliers present. If multiplier values reduce or normalise as the country grows and develops, the response of the debt ratio and growth to any fiscal tightening may be more moderate, and may even be positive in the long run.

6. CONCLUSION AND POLICY IMPLICATIONS

The findings represent a constrained link between debt stock accumulation and the growth scenario in India, in the context of fiscal sustainability. This kind of study is especially important when it comes to taking decisions regarding government borrowing and debt sustainability in the long term. In the context of debt growth dynamics, fundamental fiscal reforms that target budget credibility are particularly important. Debt and fiscal sustainability are closely linked to national productivity and economic growth, with the rise in recent variables having a positive effect on fiscal sustainability. Debt ratios are not meant to influence short-term fiscal policy but are more relevant as medium-term indicators.

An economy enters into certain agreements or pacts that ensure fiscal discipline is maintained and enforced. However, it is important to evaluate how the level of fiscal sustainability is evaluated in this scenario. There is plenty of economic analysis that underlines the importance of the sustainability of the debt/GDP ratio in this regard. However, policy decisions are primarily taken paying special

attention to deficit/GDP ratios. As a consequence, the debt stock level often ceases to be a factor in the implementation of policies intended to be fiscally prudent, and the interrelationship between debt level and the government meeting the deficit is often ignored. It is not advisable to overlook the fact that the fiscal sustainability of the government is dictated by its solvency or the extent to which it can repay its debts. The level of public debt in India could be affected in different ways, depending on the compensatory action that the government chooses to take.

In the light of these constraints, all of the following require quick and effective implementation: a continuous reformatory system that focuses on improving the efficiency of collecting revenue and disbursing it for the purposes of administration, regulation, and the maintenance of various bureaucratic bodies; transparency in recording the flow of money right from it being sanctioned to the materialisation of its final purpose; reviewing methods of levying tax on the basis of incidence; and establishing a reliable framework for debt management.

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APPENDIX

Table 1

Lag-order selection statistic for VAR								
varsoc	D.Yt, dPt, d_It, PDt	**maxlag**	3	**exogenous variable**	d_log_Dt			
Selection Order criteria								
Sample:	1955–2014	**Observations:**	238					
Lag	**LL**	**LR**	**df**	**p**	**FPE**	**AIC**	**HQIC**	**SBIC**
0	218.67	–	–	–	1.88E-14	–21.4839	–21.3422	–20.9813
1	234.269	31.946	16	0.003	1.62E-14	–21.7929	–21.5692	–20.2106
2	248.303	65.334	16	0	6.37E-15	–22.4989	–22.1183	–20.5391
3	295.228	61.197*	16	0	2.993e–15*	–23.8292*	–23.1092*	–21.1937*
Endogenous:	D.Yt, dPt, d_It, PDt							
Exogenous:	d_log_Dt, _constant							

Table 2: Eigenvalue stability condition

Eigenvalue	**Modulus**
–0.7351107	0.735111
0.3675554 + 0.6366264i	0.735111
0.3675554 + 0.6366264i	0.735111
–.0.5514138 + 0.4149095i	0.690078
–.0.5514138 + 0.4149095i	0.690078
0.6350291 + 0.2700836i	0.690078
0.6350291 + 0.2700836i	0.690078
–0.08361532 + 0.6849931i	0.690078
–0.08361532 + 0.6849931i	0.690078
–0.2600566	0.260057
0.1300283 + 0.2252156i	0.260057
0.1300283 + 0.2252156i	0.260057

All the eigenvalues lie inside the unit circle. VAR satisfies stability condition