Multiple Dimensions of Public Debts, Economic Growth and Capital Productivity in India

Dr. K. Shanmugan,
Associate Professor,
Department of Business Economics,
Faculty of Commerce,
The Maharaja Sayajirao University of Baroda,Vadodara, Gujarat.

Abstract:

Macroeconomic policy making is shared by RBI and Central Government in a manner that the former focuses on inflation as a mandated target which is consistent with some desired rate of growth of GDP and later concentrates about pushing growth rate of GDP without much bothering about inflation and developments in the financial markets. Demand management policies have become more predominant through fiscal actions even when borrowings have reached upper limits of debt trap.The study attempts to analyze the long-term dynamics and correlation that exist among economic growth, public debts, capital productivity and exports by framing econometric exercise in terms of Autoregressive Distributed Lag (ARDL) model. As per the estimates this exercise that around 64 percent adjustments towards the long-run equilibrium are corrected by the explanatory variables. The findings also show that the lagged variables pertaining to periods one and two on the domestic debt has had marginal optimistic impact as the values of coefficients are very small on short-run growth, whereas external debt seems to be having larger influence on the output. In the first lag, the debt service ratio hurts economic growth. In the near run, capital productivity has a constructive pay-off on growth, and its estimated lagged value suggests that capital productivity has considerably induced economic growth. Finally, between 1995 and 2015, exports have been promoting India's economic growth and developmental processes.

Keywords: Public Debts, Economic Growth, Fiscal Deficit, Internal Debts and External Debts, Capital Productivity.

1. Introduction

Economic growth and budgetary management have been an intense debate for analysts and policymakers including business entities in articulating the framework for appropriate allocation of resources and stabilization consistent with price stability. Despite considerable increase in the public revenues, government expenditures continue to escalate more proportionately and alarmingly giving raise to ever increasing indebtedness. Government borrowing program remained primary and essential activity in the absence of proper expenditure reducing policies at fiscal level even when Fiscal Responsibility and Budget Management (FRBM) Act was placed as constraints for fiscal sustainability. At times, key facets of economic growth and inflation are severely destabilized and adversely impacted as a result of enormous borrowings and unproductive public expenditures which are motivated by political economic decisions in India. Total debts as a proportion of GDP have swollen to more than 75 percent and this is an indication of larger indebtedness, if not dangerous. Expenditure side of the budget, which includes both public revenue and borrowing, has been translating into more inflationary than growth oriented. It is in this context that public debt and repayment obligations become more crucial and important for long term sustainability of fiscal stance.

Macroeconomic policy making is shared by RBI and Central Government in a manner that the former focuses on inflation as a mandated target which is consistent with some desired rate of growth of GDP and later concentrates about pushing growth rate of GDP without much bothering about inflation and developments in the financial markets. Demand management policies have become more predominant through fiscal actions even when borrowings have reached upper limits of debt trap. Therefore, some actions are certainly needed for prudent debt management. According to Rangarajan and Srivastav (2005), "The process of adjustment can be considered in two phases: adjustment and stabilization. In the adjustment phase, the fiscal deficit should be reduced in each successive year until the revenue deficit, and correspondingly, government dissaving, is eliminated. In the second phase, the fiscal deficit could be stabilised at 6 per cent of GDP and the debt-GDP ratio would eventually stabilize at 56 per cent". Though it looks somewhat hypothetical but clearly gives the warning as to how the fiscal situation to be moderated. It is against this background that this moderate investigation attempts to analyze the implications of different categories of public debtson economic growth by incorporating Capital productivity and exports into the macroeconomic link that is capable of examining the long run correlation and equilibrium.

The paper is organized as follows. While section 1 is devoted to the introduction, section 2 critically unearths perspectives on the review of literature. Sections 3 and 4 are dealing with the issues on econometric modeling including specification and inferences respectively. The last section is provided for conclusion and policy analysis.

2. ReviewofLiterature

Several studies have discovered an inverse linear link between total debt and economic growth, both globally and at the country level. Mitchell (1988), Baro (1989, p. 238), and Camen and Rogoff (2011) used data from the United Kingdom to illustrate that public debt has a major influence on economic growth. According to the findings of a study by Forslund et al. (2011), domestic debt and inflation in emerging nations have a negative relationship. According to Ismihan and Ozkan (2012), when a country's financial system is weak, public debt might be harmful. Based on their research of twelve European nations, Westphal- Checherita and Rother (2012) concluded that public debt has a non-linear influence on economic development, which is mostly attributable to private savings, public investment, and total factor productivity. According to Schclarek (2004), a strong inverse connection existed between foreign debt and economic development in 59 developing nations from 1970 to 2002.

Classical economists such as Smith (1776, p. 878), Ricardo (1951, p. 247), and Mill (1845, p. 230) saw public debt as detrimental to a country's progress. The Ricardian Equivalence hypothesis states that taxation and borrowing are both equivalent sources of funding for government spending[1]. Its premise is that debt repayment will be accomplished by future taxation, implying that individuals would grow their savings by purchasing government-issued bonds. So, according to Ricardo, public debt does not influence economic development. Keynesian economists pointed out that a rise in government debt generated by the deficit-financed fiscal policy will raise the amount of income, the transaction demand for money, and prices in the Investment-Savings and Liquidity Preference-Money Supply (IS-LM) model. A constant money supply will cause the rate of interest on bonds to climb. According to Keynesian supposition, the deficit will magnify private consumption expenditures, transaction demand, interest rates, and prices if the private sector views government assets as net wealth. Through the accelerator effects, the benefits of expansionary fiscal policy on capital creation can be amplified, resulting in higher economic growth.

Monetarists, on the other hand, believe that the macroeconomic consequence of debt-financed investment is crowding out private investment by raising interest rates. As a result, public debt will have a detrimental impact on economic growth. Furthermore, according to the debt over-hang hypothesis, if future debt exceeds a country's ability to repay it, the projected debt-service costs will deter additional domestic and international investment, stifling economic development.Similarly, Kumar and Woo (2010) found an inverse connection between debt and economic development, in 38 advanced and emerging nations between 1970 and 2007, based on their empirical analysis[2]. Between 1981 and 2008, the high amount of state debt had a detrimental impact on Pakistan's economy, according to Qureshi and Ali (2010).

The followings are some of the major studies that specifically addressed challenges in the Indian context. Using the Johansen cointegration approach, Singh (1999) looked at the long-term association between domestic debt and economic growth. His findings backed the theory of Ricardian equivalence for India. In India, Kannan and Singh (2007) found that high public debt and a large budget deficit had a long-term negative impact on interest rates, GDP, inflation, and the trade balance. Rangarajan and Srivastav (2005) claimed that a significant budget deficit and interest payments as a percentage of GDP harmed economic growth. They also stated that public debt has a detrimental impact on the Indian economy's growth. According to Rangarajan and Srivastav (2005), "In 1990-91, the combined budget deficit of the federal government and the states was 9.3% of GDP. In the early 1990s, there was a noticeable improvement. The fiscal deficit to GDP ratio began to rise again after decreasing to 6.26 percent in 1996-97 and was about 10% in 2001-02 and 2002-03. Although only slightly larger than in 1990-91, the fiscal deficit was qualitatively different since it was accompanied by significantly greater levels of the debt-to-GDP ratio, the interest-to-revenue-receipts ratio, and the shortfalls ofrevenuesto the fiscal deficit. When foreign debt is calculated at historical exchange rates and state liabilities on account of reserve funds and deposits are excluded, the debt-to-GDP ratio has grown from 61.7 percent in 1990-91 to almost 76 percent in 2002-03. When these are taken into account, and external debt is valued at current exchange rates, an upward adjustment of about 9 percentage points of GDP is required, with 3 and 6 percentage points for the two factors, respectively, bringing government liabilities to around 85 percent of GDP at the end of 2002-03".

3. Model and Specification

The study attempts to analyze the long-term dynamics and correlation that that exist among economic growth, public debts, capital productivity and exportsby framing econometric exercise in terms of the Autoregressive Distributed Lag (ARDL) model.This study attempts to measure capital productivity through the ratio of total output to total capital input which can be located in the broader framework of growth accounting method popularized by Solow (1957) and one can alternatively propose various methods for measuring capital productivity includingMalmquist method which are popularly used for macro analysis. The information related to all the variables utilised in estimating the models are taken from various issues of RBI hand Book of Statistics on Indian Economy and Economic Survey of finance ministry, Government of India.

The popular approach for examining the link between economic growth, public debts and other macro variables has generally been based on a conventional production function model[3]:

$$Y = f\ (K, L, I) \qquad (1)$$

Where; Y, L, and K are measurements of output, capital, labour and other inputs, respectively. According to the debt overhang hypothesis, if a country's debt exceeds its repayment capability, the difference will have a detrimental impact on investment and the ability to work, and hence on economic development. Furthermore Debt, according to Pattillo and Poirson (2002), has an inverted U-shaped association with economic development.

The growth function in this context proposes public debt as one of the key variables, which is decomposed in to domestic debt, external debt, and exports, and the debt service ratio as additional variables[4]. The inclusion of exports as a major input in the production function is in line with Cunningham (1993), who claimed that large-scale exports from a country contribute to increased productivity and hence good economic growth. Theincrease in productivity, in theory, has a long-term beneficial influence on economic growth. Checherita and Rother (2010), as well as Pattillo and Poirson (2004), discovered that the changes in productivity have an impact on economic growth. Capital Productivity (CP) isused as proxy for capturing the long run influence andconsidered as one of the major drivers of economic development. Accordingly, the equation (1) is extended in this study as:

$$Y = f\ (DEBTS, CP, EXPORTS) \qquad (2)$$

To discuss multidimensional effects of public debtson economic growth, equation(2) considers thetotal public debts in to domestic debt, external debt, and debt payment as a proportion of GDP at market prices. As a convention and as a matter of issues on specification, the standard Cobb–Douglas production function is used in order to analyze the long run co-integration process of the dynamic link between public debts and economic growth through productivity and exports in the Indian context for sample period, from 1990 to 2015.

$$Y = A\ DL^{\delta} EL^{\gamma} DS^{\eta} CP^{\lambda}\ EX^{\mu} \qquad (3)$$

The equation (3) is transformed in to double logarithmic model for more meaningful linear estimation, which is expressed in the following equation (4), and the elasticity coefficients for the country's domestic debt (DL), foreign debt (EL), debt service (DS) payments, capital productivity (CP), and exports (EX), respectively explain the long run association.

$$lnY = A + \delta lnDL + \gamma lnEL + \eta lnDS + \lambda lnCP + \mu lnEX + \epsilon \qquad (4)$$

The logarithm conversion was used primarily to seasonally modify all of the variables as well as to change the magnitude of the measurements of the variables. It also aided us in interpreting the data in terms of elasticity. Theoretically, we expected the CP and EX coefficients to be positively related to economic growth. In the long

run, a country's higher level of productivity improves aggregate production, which has a favourable influence on economic growth. A rise in a country's exports typically has a complementary influence on income and, as a result, on economic growth. Domestic and external debt, on the other hand, may have an unclear impact on economic growth. Public debt (both internal and external) can have a detrimental influence on economic growth, as we discussed in the literature review, but Keynesians have pointed out that an increase in government debt generated by the deficit-financed fiscal policy will boost economic growth. The empirical literatures on cross country experiences reveal a mixed picture[5]. According to Dholakia et al (2009) "The choice of this target variable is based on the argument that the Government would be in a much better position to decide on how much of the current revenues it can afford for paying interest on its borrowing in the coming years, while defining a sustainable debt/GDP ratio in terms of a precise number is neither straight forward nor always meaningful under the high growth environment".

4. Inferences and Analysis

It is critically important to discuss the variables under consideration in terms of is characteristics by estimating descriptive statistics. This estimate would not only enable to understand the stochastic processes under examination but also considerably aide in building ARDL model for co-integration analysis. Table 1 shows a variety of widely used summary statistics for the major variables. Real income, domestic debt and exports show greater variability as compared to capital productivity and, as far asexternal debt is concerned, it is imperative to note thatnot only the variability is very low but there seems to be good amount of excess kurtosis. One can also notice that there is no unique pattern in the differences between maximum values and minimum values of all the variables even in terms of logarithmic distribution of values. Descriptive statistical estimates for capital productivity resemble almost closer to the normal distribution.

By considering the distributional characteristics of variables, which are critical for the link that the study tries to explore in examining the long run equilibrium of public debts and economic growth, the choice of co-integration scrutiny becomes more crucial and relevant. Therefore, we need to examine the time series properties of stochastic processes for further investigations.

Table 1: Descriptive Statistics

Variables	Mean	Max.	Min.	S.D.	Skewness	Kurtosis
LYt	8.75	7.28	4.15	2.44	0.73	0.44
LDLt	8.03	12.33	4.26	3.12	0.43	- 3.11
LELt	7.32	4.50	3.62	1.34	- 0.32	- 0.53
LDSt	4.56	5.13	4.27	1.14	0.64	1.44
LEXt	8.17	10.32	3.96	4.55	- 0.24	- 0.67
LCPt	10.03	15.42	12.31	1.21	- 0.52	0.33

As a matter of conventional wisdom, it is necessary to determine if the variables are stationary or non-stationary to prevent false regression in time series analysis and also to understand order of integration. Although there are several tests for analyzing unit root problems, a simple and straight forward parsimonioustest for understanding stationarity is presented by Augmented Dickey Fuller (ADF) test. The results of ADF regression are presented below in Table 2.

Table 2: Results of Unit Root Test

Variables	Level	1st order difference	Inference on integration
LYt	0.535 (0.86)	- 5.003 (0.00)	I(1)
LDLt	- 1.976(0.41)	- 4.934 (0.01)	I(1)
LELt	- 1.326 (0.56)	- 6.543 (0.00)	I(1)
LDSt	- 1.548 (0.44)	- 5.471 (0.00)	I(1)
LEXt	- 1.732 (0.36)	- 5.234 (0.00)	I(1)
LCPt	- 5.103 (0.08)	–	I(0)

Note: Figures in the parentheses are p-value.

For determining the appropriate order of variables, the ADF (Dickey and Fuller, 1979) test is widely employed. The aforementioned findings clearly show that the model is a combination of I (0) and I (1) processes and standard Engle and Granger and, also Johansen co-integration procedures cannot be applied. Rather, the ADF estimates for the unit roots based on the Mackinnon "P" values encourage this endeavour to model the long run correlation process in terms ofthe autoregressive distributed lags model of cointegration method (Pesaran et al.2001). Table 3 summarizes the F value for Bond testing for the co-integration.

Table 3: Bound F -test Results

Country	F -statistic value	Lag length	Significance level	Bound critical values by Narayan (2005)		Bound critical values by Pesaran et al. (2001)	
				I (0)	I (1)	I (0)	I (1)
India	4.2692	3	1%	4.483	6.32	3.74	5.05
			5%	3.12	4.56	2.45	3.61
			10%	2.56	3.828	2.12	3.23

Note: Critical values are borrowed from Narayan (2005).

Table 3 shows that the computed F-statistic is larger than the critical values of Narayan (2005) and Pesaran et al. (2001) at the 10% and 5% levels of significances, respectively. As a result, we reject the null hypothesis that these variables have no long-run connection, implying that there is a long-run relationship between public debt and economic growth and other variables under examination. The study uses the VAR model to select the appropriate lag options based on the AIC, SC, and HQ criteria. The next stage is to estimate the long-run impacts of public debt, debt-service ratio, capital productivity, and exports on economic growth for finding a long-run equilibrium of the variables. Table 4 shows the findings of the long-run estimation.

Table 4: Long Run Elasticities

Variables	Coefficients	t-test statistics
LDLt	- 0.328*	- 3.65
LELt	- 0.041*	- 4.27
LDSt	- 0.985**	- 2.04
LEXt	0.3035*	4.36
LCPt	0.2617*	4.72
Constant	1.64	0.58

Notes: Dependent variable LPGNP.

* and ** indicate 1% and 5% levels of significance respectively.

The results show that both domestic and external debts have a considerable detrimental influence on long term India's economic growth. This means that the ever-increasing public debts, regardless of its source, pull down India's economic growth and development in the long run. This conclusion is unsurprising, especially in the context of India, where the vast majority of government borrowings are spent on consumption and just a small percentage is used to create productive capital. Similarly, the debt service payment coefficient has a large and unfavourable long-run influence on economic growth, which confirms the a priori hypothesis. As we have expected a positive link between CP and economic growth, in theory, the coefficient in Table 4 is statistically significant implying that in the long run capital productivity is very critical. Finally, the export coefficient has a large and beneficial influence on economic growth. As India's trade policies have evolved over the last two decades, it has aided the nation by expanding its exports of products and services to the global markets, which may have complemented India's growth process. The story of global trade benefiting the open and free market economy is partly true for India.The error correction model of the ARDL process is deployed to estimate the short-run parameter with the speed of adjustment. The error correction model's estimates are exhibited in Table 5.

Table 5: Results of Error Correction Representation

Variables	Coefficients	t-test statistics
ΔLDL_t	0.243	0.48
ΔLDL(t-1)	0.002**	2.03
ΔLDL(t-2)	0.053**	2.96
ΔLELt	0.382	0.84
ΔLEL(t-1)	0.554**	2.85
ΔLEL(t-2)	0.332**	2.62
ΔLDSt	-0.024	0.44
ΔLDS(t-1)	-0.588*	4.53
ΔLCP_t	0.845	0.74
ΔLCP(t-1)	0.952*	6.07
ΔLEXt	0.385**	2.43
ΔLEX(t-1)	0.182**	2.04
Constant	9.505*	4.72
ECM(t−1)	- 0.643*	- 4.65
R-squared	0.953	
Adjusted R-squared	0.861	
Prob (F -statistics)	15.74	
$\chi 2$ (Auto)(2)	5.04 (0.034)	
$\chi 2$(Norm)(1)	3.72 (0.07)	
$\chi 2$ (Het)(1)	0.018 (0.53)	

Notes: Dependent variable Δ LPGNP.
* and ** indicate 1% and 5% levels of significance respectively.

The results show that the variables have a stable long-run equilibrium, which is supported by the importance of the error correction term (Bannerjee and Mestre, 1998). The pace of adjustment is measured by the coefficient on the lagged error correction term. Because the delayed error correction factor is negative and substantial, the series is non-explosive and a long-run equilibrium may be reached and the ECM(t-1) assesses how quickly the endogenous variable adapts to changes in the explanatory factors before reaching

equilibrium, every successive year, as indicated by the coefficient of Error Correction Mechanism(ECM). As per the estimates, this implies that around 64 percent adjustments towards the long-run equilibriumare corrected by the explanatory variables. The findings also show that the lagged variables pertaining to periods one and two on the domestic debt hashad marginal optimistic impact as the values of coefficients are very small on short-run growth, whereas external debt seems to be having larger influence on the output. In the first lag, the debt service ratio hurts economic growth. In the near run, capital productivity has a constructive pay-off on growth, and its estimated lagged value suggests that capital productivity has considerably induced economic growth. Finally, between 1995 and 2015, exports have been promoting India's economic growth and developmental processes.

5. Conclusion and Policy Perspectives

The study has been undertaken to examine the various dimensions of public debts, output growth and capital productivity in the Indian context and the estimation of ARDL model appears to be novel narrative and contribution to the current debt. The ARDL model's results demonstrate that there is a long-run equilibrium relationship among the variables. All the factors that have been included in the ECMinfluenced theeconomic growth in the short term and these findings were consistent with our a priori expectations. From a policy standpoint, the government must strive to find a way to boost economic growth and development, which will eventually lead to a reduction in the country's public debt. Even while there is a little danger for India in terms of its existing debt refinancing, government borrowing has been raising significantly since the global financial crisis. Consequently, it would be prudent for the government to pursue the long-term goal of intergenerational fairness in budgetary management in terms both taxation and borrowing policies while assuming increasing public expenditures for time to come.

Notes:

1. This part of the review is mainly based on the work by Rangarajan and Srivastav(2003 and 2005) pertaining to various schools of thoughts.
2. Reviews expressed and demonstrated in the present work are based on the original works of authors and certain statements are freely drawn from their respective studies whose details are given in the references. We do not claim any originality for those statements. But usual disclaimers apply.
3. For more analytical details, one can refer to; Goyal, Rajan (2004) Rangarajan, C., Srivastava, D.K. (2005),Kannan, R., Singh, B. (2007), Westphal- Checherita and Rother (2012).
4. Qureshi and Ali (2010) and Naeem Akram (2010) Rangarajan and Srivastav (2003 and 2005) demonstrate the similar framework.
5. For more interesting and complex debate, the studies quoted in references can serve as useful literature for not only to gauge the depth but also to understand the disagreements on the topic chosen in our analysis.

References:

1. Bannerjee,A.D., Mestre, R., 1998. Error-correction mechanism test for cointegration in the single-equation framework. J. Time Ser. Anal. 19, 267–283.
2. Baro,R.,1989. The Ricardian approach to the budget deficit. J. Econ. Perspect. 3, 37–54.
3. Barrel, R, J Morgan, J Sefton and J isn't Veld (1994): 'The Cyclical Adjustment of Budget Balances, Report Series No 8, National Institute of Economic and Social Research.
4. Barro, Robert J (1974): 'Are Government Bonds Net Wealth?' Journal of Political Economy, November/December 82, 1095-1117.
5. Bernheim, Douglas B (1989): 'A Neoclassical Perspective on Budget Deficits', Journal of Economic Perspectives, Vol 3, No 2, pp 55-72.
6. Bradner,P, L Diebalek and H Schuberth (1998): 'Structural budget Deficits and Sustainability of Fiscal Positions in the European Union', Working paper No 26, Oesterreichische National Bank.
7. Buiter, W H (1985): 'Guide to Public Sector Deficit and Debt'' Economic Policy. November, 13-79.
8. Buiter, Willem H and Urjit R Patel (1992): 'Debt, Deficits and Inflation: An Application to the Public Finances of India', Journal of Public Economics, Vol 47, March, pp 172-305.
9. Camen,R., Rogoff, K., 2011. From financial crash to the debt crisis. American Economic Review, 101, 1676–1706.
10. Cano, L and A Kanutin (1996): 'Estimation of Structural Deficits in EU Countries', mimeo, London School of Economics.
11. Chakraborty, Lekha S (2002): 'Fiscal Deficit and Rate of Interest: An Econometric Analysis of the Deregulated Financial Regime', Economic and Political Weekly, Vol 37, No 19, May 11.
12. Charles,A., Cooper, W.W., Rhodes, E., 1978. Measuring the efficiency of decision-making units. European J. Oper. Res. 2, 429–444.
13. Checherita, C.,Rother, P.,2010. Theimpact ofhigh andgrowinggovernment debton economicgrowth: anempirical investigationforthe Euroarea. Euro. CentralBankWorkingPaper1237.
14. Chelliah, R J (2001): 'The Nature of the Fiscal Crisis in Indian Federation and Calibrating Fiscal Policy', Money and Finance, ICRA Bulletin, Vol 2, Nos 4-5.
15. Cunningham,R.T.,1993.Theeffectsofdebtburdenoneconomicgrowthinheavilyindebted nations.J.Econ.Dev.18,115–126.
16. Dicky,D.A,Fuller,W.A.,1979.Distributionoftheestimationforautoregressivetimeseriesw ithaunitroot.J.Amer.Statist.Assoc.74,427–431.
17. Dholakia et al (2009): An Outline of Post 2009 FRBM Fiscal Architecture of the Union Government in the Medium Term, study No: 31 RBI.
18. Domar, E (1944): 'The 'Burden' of Public Debt and National Income', American Economic Review, Vol 34.
19. Easterly,W.,Kremer,M.,Lant,P.,Summers,L.H.,1993.Goodpolicyorgoodluck?Countryg rowthperformanceandtemporaryshocks.J.MonetaryEcon. 32,459–483.
20. Easterly,W.,Levine,R.,2002.It'snotfactoraccumulation: stylized factsandgrowthmodels.In:Loayza,N.,Soto,R.(Eds.),Econ.Growth:Sources,Trendsa ndCycles.CentralBankof Chile,Santiago,Chile,Mimeo.
21. Eisner, Robert (1989): 'Budget Deficits: Rhetoric and Reality, Journal of Economic Perspectives, Vol 3, No 2, Spring, pp 73-93.
22. Enders, W. (2004). Applied Econometrics: Time Series, John Wiley & Sons.

23. Engle, R F and C W J Granger (1987): 'Cointegration and Error Correction: Representation, Estimation and Testing, Econometrica, 55, pp 251-76.
24. Fare,R., Grosskopf, S., Morris, M., Zhongyang, Z., 1994. Productivity growth, technical progress, and efficiency in industrialized countries. Amer. Economy. Rev. 84, 66–82.
25. Farrell,M.J.,1957.Themeasurementofproductivityefficiency.J.Roy.Statist.Soc.120,253–290.
26. Forslund,K.,Lima,L.,Panizza,U.,2011.Thedeterminantsofcompositionofpublicdebtindevelopingandemergingmarketcountries.Rev.Dev.Fin.1,207–222.
27. Gale, William G and Orszag Peter R (2002): 'The Economic Effects of Long- Term Fiscal Discipline', Urban-Brookings Tax Policy Centre Discussion Paper, December 17,
28. Ghosh,S.,2006.Canhigherdebtleadtohigherwelfare?Atheoreticalandnumericalanalysis.Appl.Econ.Lett.5,111–116.
29. Goyal, Rajan (2004): 'Does Higher Fiscal Deficit Lead to Rising in Interest Rates? An Empirical Investigation, Economic and Political Weekly, Vol 39, No 21, May, pp 2128-33.
30. Hodrick, R and E Prescott (1981): 'Post-War US Business Cycles: An Empirical Investigation', Discussion Paper No 451, Carnegie-Mellon University, Pittsburgh.
31. Hsiao,C (1997): 'Cointegration and Dynamic Simultaneous Equation Model', Econometrica, 65(3), May, pp 647-70.
32. Ismihan,M.,Ozkan,F.G., 2012.Publicdebt andfinancialdevelopment: atheoreticalexploration.Econ. Lett.115,348–351.
33. Jaeger,A (1990): 'The Measurement and Interpretation of Structural Budget Balances', Empirica, No 2, Vol 17.
34. Johansen, S (1991): 'Estimation and Hypothesis Testing of Cointegrated Vectors in Gaussian Vector Autoregressive Models, Econometrica, 59, pp 1555-80.
35. Johansen, S and K Juselius (1995): 'Identification of the Long-run and Short-run Structure: An Application to the ISLM Model', Journal of Econometrics, 63, pp 7-36.
36. Joshi, Vijay and Little IMD (1994): 'Fiscal Policy' in Macroeconomics and Political Economy: 1964-1991, World Bank, Washington, DC.
37. Kannan,R.,Singh,B.,2007.Debt-deficitdynamicsinIndiaandmacroeconomiceffects:astructuralapproach.MunichPersonalRePEcArch.16480.Availableontheweb:http://mpra.ub.uni-muenchen.de/16480/.
38. Kumar,M.S.,Woo,J.,2010.Publicdebtandgrowth.IMFWorkingPaperWP/10/174.
39. Maudos,J.,Pastor,J.S.,Serrano,L.,1999.Totalfactorproductivitymeasurementandhumancapitalin OECDcountries.Econ.Lett.63,39–44.
40. Mill,J.S.,PrincipleofPoliticalEconomy,http://www.gutenberg.org/licens.
41. Mitchell,B.,1988. British Historical Statistics. Cambridge University Press, Cambridge.
42. Moorthy, Vivek, B Singh and S C Dhal (2000): 'Bond Financing and Debt Stability: Theoretical Issues and Empirical Analysis for India', Development Research Group Study, 19, RBI, Mumbai, June.
43. Narayan, P.K., 2005. The saving and investment nexus for China: evidence from cointegration tests. Appl. Econ. 37, 1979–1990.
44. Parker, K (1995): 'The Behaviour of Private Investment', IMF Occasional Paper No 134. IMF. Washington, DC.
45. Pattillo,C.H.,Poirson,Ricci,R.,2002.Externaldebtandgrowth.IMFWorkingPaper02/69.
46. Pattillo,C.H.,Poirson,Ricci,R.,2004.Whatarethechannelsthroughwhichexternaldebtaffe

ctsgrowth?IMFWorkingPaper04/15.
47. Pesaran,H.M.,Shin,Y.,Smith,R.J.,2001.Boundstestapproachestotheanalysisoflevelrelationships.J.Appl.Econometrics16,289–326.
48. Pradhan,B K. D K Rathaaand Atul Sarma(1990): 'Complementaritybetween Public and Private Investment in India', Journal of Development Economics, Vol 33.
49. Qureshi,M.N.,Ali,K.,2010.Publicdebtburdenandeconomicgrowth:evidencefromPakistan.Int.Res.J.Fin.Econ.53,100–108.
50. Rakshit, Mihir (2005): 'Budget Deficit: Sustainability, Solvency, and Optimality' in A Bagchi (ed), Readings in Public Finance, OUP.
51. Ram Mohan, T T, Ravindra, H Dholakia and Navendu Karan (2005): 'Is India's Central Debt Sustainable? Revisiting an Old Debate', Economic and Political Weekly, No 10, March 5.
52. Rangarajan C, and D K Srivastava(2003): 'Dynamics of Debt Accumulation in India: Impact of Primary Deficit, Growth and Interest Rate', Economic and Political Weekly, Vol 38, No 46, November.
53. Rangarajan, C, Anupam Basu and Narendra Jadhav (1989): 'Dynamics of Interaction between Government Deficit and Domestic Debt in India', RBI Occasional Papers, September, also included in AmareshBagchi and Nicholas Stern (eds), Tax Policy and Planning in Developing Countries, Oxford University Press, Delhi.
54. Rangarajan,C., Srivastava, D.K., 2005. Fiscal deficits and government debt: implications for growth and stabilisation. Econ. Pol. Weekly 40, 2919–2934.
55. Ricardo,D.,1951.Ontheprinciplesofpoliticaleconomyandtaxation.In:Sraffa,P.(Ed.), TheWorksandCorrespondenceofDavidRicardo1.Cambridge UniversityPress, Cambridge, withthe collaboration ofM. Dobb.
56. Schclarek,A.,2004.Debtandeconomicgrowthindevelopingandindustrialcountries.Availableontheweb:www.nek.lu.se/nekasc.Singh,C., 1999. Domesticdebt and economicgrowth in India. Econ.Pol. Weekly 34,1445–1453.
57. Solow, R. M. (1957), "Technical Change and the Aggregate Production Function", The Review of Economics and Statistics, Vol. 39, No. 3, 312-20.
58. SunderarajanV, and SubhashT Thakur(1980): 'Public Investment,C rowing Out, and Growth: A Dynamic Model Applied to India and Korea', IMF Staff Papers, Vol 27, No 4.
59. Westpha Checherita,C.,Rother,P.,2012.Theimpactofhighgovernmentdebtoneconomicgrowthanditschannels:anempiricalinvestigationfortheEuroarea.Euro.Econ.Rev. 56,1392–1405.