EXTERNAL DEBT AND ECONOMIC GROWTH IN INDIA

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ABSTRACT

Throughout the nineties, the Indian economy faced an adverse balance of payment (BOP) situation. To overcome the situation, India was required to lift its reserves by borrowing from the International Monetary Fund (IMF). External borrowing seems to be an important component in improving economic conditions, thus allowing a return to a normal state and reviving a struggling economy. It is believed that external debt helps to finance productive investment and so contributes to economic growth. However, beyond a certain level, additional debt is likely to hamper economic growth. The objective of this paper is to examine the impact of external debt on India's economic growth using the Ordinal Least Square analysis (OLS), on data spanning from 1990-91 to 2015-16.

Keywords**:** External Debt, Economic Growth, Ordinal Least Square (OLS)

INTRODUCTION

During the Gulf War quadrupling oil prices and other notable events, led to an increase in current account deficits and severe macroeconomic issues in many countries. These issues proved to be more problematic for developing countries, which were exposed to the problem of international price fluctuations, leading to a Balance of Payment (BOP) crisis. To rectify this, developing countries resorted to borrowing from internal as well as external sources, with many forced to borrow externally from BOP surplus countries, in order to lift their reserves. India too, witnessed an era of economic challenges and a BOP crisis during the nineties. To resolve these issues it took several curative measures, including the economic reforms of 1991, which became an important measure. To mitigate the BOP crisis, the Indian government decided to borrow funds externally from the International Monetary Fund (IMF) with some special conditions under the Extended Fund Transfer Scheme (EFF). (Little, 1996)

India's Macroeconomic Performance and External Debt

During the early nineties India's domestic production was slow while consumption remained strong. The value of Indian imports increased faster than the exports, due to the increased cost of POL imports. Records show an increase of more

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than 40% in the value of imports during the period from 1986-87 to 1989-90. This led to degradation of current account balances and a growth in the abundance and severity of current account deficit. Growth of current account deficit was also due to the partial loss of exports to Middle Eastern countries, particularly the Soviet Union, as this country was an important trading partner with India at that time. Induced by the slow growth rate of its trading partners, India's export growth fell from 3.9 % in 1988 to 0.8 % in 1990 to a negative growth rate of -1.0 % in 1991 (Finance, Economic Survey , 1990-91).

During the nineties the gap between the income and expenditure of the Indian government widened, resulting in mounting fiscal deficits. To counter this, the government of India induced deficit financing which increased the money supply (M3) and caused inflationary pressure (Saxena, 2002). Continuing fiscal deficits also spilled over into current accounts, leading to an increase in current account deficits. These deficits were financed either by the rapidly depleting foreign currency reserves, or through fresh external borrowing. Further to this, the political uncertainty prevailing at that time also led to lowering investors' confidence which downgraded India's credit rating by international credit rating agencies. This also played a crucial role in the upsurge of current account deficit (CAD).

The growing current account deficit, coupled with fiscal deficit, financed by borrowing during the nineties resulted in a rapid increase in India's external debt from 1991 onwards (table 1). However, over time, the increasing trend in external debt, also led to a substantial improvement in India's external debt indicators, particularly due to a substantial policy shift by the government. The earlier policy was focused on debt creating flows. In contrast, the new policy focuses on less expensive sources of debt, limiting short term debt, repaying expensive debt and motivating non-debt flows.

The key indicators of India's external debt[i], External Debt-to-GDP, Debt-Service Ratio, and Share of Short-Term Debt in Total Debt (table 2), show continuous improvement in India's external debt position. Improvement in India's GDP has led particularly to improvements in the External Debt-GDP Ratio from 28.7 per cent at the end of March 1991 to 23.36 per cent at the end of March 2015, indicating the country's potential to service external debt (Finance, Report on External Debt Status, 2015). However, even though the figures of External Debt-to-GDP Ratio show a declining trend, indicating that external debt is under prudent limits, the fact remains that absolute debt is raising fast, which is a big cause of worry.

The situation described above provides motivation to look into the contribution of external debt in India's development process. The main body of this paper is divided into five sections. The introduction described the status of external debt in India from the late 1980's to present, and the potential transitional effects of external debt on India's economic development. Section two, presents a theoretical foundation explaining the relationships between debt and economic growth and presents an overview of current knowledge on the problem under study. Section three, provides information on data and methodology, outlining the choice of variables, sources of data and methods. Section four provides a summary of the results of key statistical analyses, leading into section five, which concludes the study.

THEORETICAL FOUNDATION

The concept of growth and development is well documented, with investment in the economy often advocated, both directly and indirectly, as an important factor in sustainable economic development. Economies have both internal and external sources for meeting investment needs, and in practical circumstances, a wise blend of both of these gateways is used, to elevate per capita growth and standard of living, in a country. Internal gateways include public

Table 1
India's GDP and Gross External Debt

Year	Gross Domestic Product (At constant MP) (Rs. Crore)	Gross External Debt (Rs. Crore)
1991-92	1503337	163001
1992-93	1585755	252910
1993-94	1661091	280746
1994-95	1771702	311685
1995-96	1905899	320728
1996-97	2049786	355827
1997-98	2132798	369682
1998-99	2264699	411297
1999-00	2465029	428550
2000-01	2559711	471724
2001-02	2683190	482328
2002-03	2785258	498804
2003-04	3004190	495549
2004-05	3242209	586305
2005-06	3543244	620522
2006-07	3871489	751402
2007-08	4250947	897290
2008-09	4416350	1142125
2009-10	4790847	1178638
2010-11	5282386	1419407
2011-12	5633050	1844167
2012-13	5899847	2225001
2013-14	6195842	2650031
2014-15	10552151	2682752
2015-16	11350249	2978666

Source: www.rbi/dbie.org and External Debt Status Reports, Ministry of Finance, Various Issues.
Note: Data on GDP (At constant MP) Rupees billion is converted to GDP (At constant MP) Rupees Crore.

savings, revenue from taxation, and other contingent income of the government. External gateways, include Foreign Direct Investment (FDI), Foreign Institutional Investment (FII), Foreign Aid, and External Debt. External Debt bridges the investment– savings gap and stimulates domestic savings for faster economic growth. Economic growth depends on investment in goods, which may be achieved via both domestic and external resources.

In developing countries the gap between

Table 2
India's External Debt Indicators

Year (End March)	External Debt (US$ Billions)	External Debt to GDP	Debt Service Ratio	Short Term Debt to Total Debt	Forex Reserve to External Debt Ratio	Concessional Debt to Total Debt
1991-92	83.8	28.7	35.3	10.2	7.0	45.9
1992-93	85.3	38.7	30.2	8.3	10.8	44.8
1993-94	90.0	37.5	27.5	7.0	10.9	44.5
1994-95	92.7	33.8	25.4	3.9	20.8	44.4
1995-96	93.7	30.8	25.9	4.3	25.4	45.3
1996-97	93.5	27.0	26.2	5.4	23.1	44.7
1997-98	93.5	24.5	23.0	4.4	28.3	42.2
1998-99	96.9	24.3	19.5	4.0	31.4	39.5
1999-00	98.3	23.6	18.8	3.4	33.5	38.5
2000-01	99.7	22.2	17.1	3.6	38.7	38.9
2001-02	98.8	21.1	16.2	2.8	41.7	35.4
2002-03	104.9	20.4	13.6	4.5	54.7	35.9
2003-04	111.6	17.8	16.0	4.0	72.5	36.8
2004-05	133.0	17.3	15.9	13.3	101.2	36.1
2005-06	138.1	15.8	6.0	14.1	106.4	30.9
2006-07	171.3	17.5	4.7	16.4	109.8	28.6
2007-08	224.6	18.0	4.8	20.9	115.6	23.0
2008-09	229.9	20.3	4.4	21.5	138.0	19.7
2009-10	260.9	18.2	5.8	20.1	112.1	18.7
2010-11	317.9	18.2	4.4	20.4	106.8	16.8
2011-12	360.8	20.9	6.0	21.7	95.9	14.9
2012-13	409.5	22.3	5.9	23.6	81.6	13.3
2013-14	446.3	22.3	5.9	23.6	71.3	11.1
2014-15	446.3	23.6	5.9	20.5	68.2	10.4
2015-16	475.8	23.8	7.5	17.8	71.8	8.8

Source: External Debt Status Reports Various Issues

foreign exchange earnings from exports and the necessary imports, is larger than the domestic investment - saving gap. This is commonly called dual gap (Hollis Chenery and others, quoted by Thirlwall AP, 2006). Dual gap[ii] identifies the rate at which foreign borrowing is required for economic development to progress.

It is commonly accepted that a reasonable level of external debt helps to finance productive investment, and contributes to economic growth. However, beyond a certain level additional debt is likely to decrease economic growth. This process can be better understood by applying the debt overhang hypothesis. This hypothesis states that where there is a likelihood that in the future, debt will be larger than the country's repayment capacity, expected debt service cost will lead to further domestic and foreign investment and thus harm growth (Catherine Pattillo, 2002).

Potential investors will fear, that the more the country produces, the more it will be taxed by the creditors, to service the external debt and hence hamper growth. All this, indicates that relying on external debt is not the real issue for a country, but it is important to consider how this external debt is used. If usage is productive, the country will earn more than its service requirements, and if it is unproductive it will lead to severe problems such as unfavorable sentiments and a low credit rating.

An analysis of prior literature on the topic was carried out, in order to understand economists' viewpoints on the relationship between external debt and economic growth. This revealed that some economists followed a more direct but narrow approach to quantify the relationship, while others adopted a broader approach by considering more debt related variables. Many studies have been carried-out in various different time zones and geographical regions by using a direct approach, including those of Bhatta (2005), Shabbir (2005), Safdari & Masoud (2011), Eze & Isu (2011), Lawrence & Michael (2012), and Ould & Mahmoud (2015) as outlined below.

Bhatta (2005) examined the relationship between external debt and Gross National Product (GNP) in Nepal. Based on the analysis, the study concluded that external debt has a positive impact on the economic growth of Nepal. In contrast, Safia (2010) conducting a study on twenty-four developing countries, observed a negative impact of external debt on economic growth.

Mehrizi (2011) examined the impact of external debt on economic growth in Iran and concluded that external debt had a negative impact on gross domestic product and private investment. Isu (2011) investigated the relationship between external debt and economic growth in Nigeria, concluding that a negative relationship exists between external debt and economic growth. Michael (2012), identified a negative relationship between gross external debt and economic development in samples from Nigeria, Iran, Turkey and Latin America.

Oja (2012) examined the relationship between external debt and economic growth in Nigeria by using the ordinal least square (OLS) on time series data for a period from 1975 to 2012. In the modelling process he included "external debt service" and "foreign reserves" as explanatory variables. The study revealed that these explanatory variables were positively related with economic growth in Nigeria.

Mahmoud (2015) examined the impact of external debt on the economic growth of Mauritania. The results of this study revealed a negative relationship between external debt and economic growth in Mauritania. Victor (2016) also tried to examine the relationship between external debt and economic growth in Nigeria by applying OLS on the debt service to GDP ratio and annual growth rate data over a period from 1981 to 2014. The results revealed that external debt is positively, and external debt service is negatively associated with economic growth in Nigeria.

Some researchers followed a broader approach, considering debt, growth and also other related variables. Important among these are Pattillo *et al.* (2002), Rangarajan & Srivastava (2003), Schclarek & Ballster (2005), Erdal (2005), Kon (2010), Musyoka (2011), Saad (2012) and Saini (2015).

Catherine Pattillo (2002), performed a study on external debt and growth, concluding that misallocation of investment, and large debt service are expected to have negative effects on the economic perform-ance (GDP) of a country. The quote worthy paper of Rangarajan & Srivastava (2003) theoretically explained the determining factors to the accumulation of debt in India. They identified two factors responsible for the changes in the debt-GDP ratio in India; these were, cumulated primary deficits, and the cumulated effect of the difference between growth rate and interest rate. The authors, also tried to explain the impacts of these determining factors on external debt in

India by using decomposition effects, but were unable to explain the impact of external debt on economic growth.

In a panel study, conducted to examine the relationship between external debt and economic growth in selected Latin American and Caribbean countries, Ramon-Ballster (2005) observed interrelationships between external debt and economic development. Related aspects included Per Capita Income, Educational Attainment, Government Size and Openness, Development of Financial Intermediaries, Population Growth and Level of Investment. Karagol (2005) examined the relationship among external debt service, economic growth and capital inflow. The researcher stated that a rise in the debt-service ratio adversely affects economic growth; and a fall in the rate of growth, reduces the ability of an economy to service its debt. He observed the existence of a two-way relationship between total debt stock and debt service.

Kon (2010) used a cross country panel analysis to examine the relationship between foreign reserves and macroeconomic indicators, such as external debt and economic growth, in developing countries, covering the time span from 1980 to 2005. He concluded that foreign reserves have a positive relationship with external debt and economic growth. Musyoka (2011) investigated the relationship between debt servicing and economic growth in Kenya, by using a time series analysis and co-integration analysis on debt service payments and gross domestic product data, for a period from 1970 to 2008. The results revealed that external debt does not have much impact of on the country's gross domestic product.

Saad (2012) investigated causality between economic growth, and external debt servicing and exports in Lebanon, finding evidence of causality between economic growth and external debt. It is worth mentioning that there are a very limited number of studies on the topic in an Indian context. Saini (2015) used an ordinal least square analysis (OLS) on time series data of external debt service and exchange rates in

Nigeria, for a period from 1980 to 2013. The study concluded that changes in exchange rate are significantly influenced by external debt and external debt service.

DATA AND METHODOLOGY

The level of economic development in a country is commonly represented by its Gross Domestic Product (GDP), which is influenced by a number of macroeconomic factors (M). Among others, these may include consumption, investment, savings, exports, imports, inflation, interest rates, and exchange rates. Besides these, external debt (E) is also an important factor affecting economic growth in a country. In line with the key objective of this study, to examine the impact of external debt on economic growth in India, external debt is taken as the independent variable, while gross domestic product (GDP) is taken as the dependent variable.

Secondary data, spanning from 1991-92 to 2015-16, collected from the Reserve Bank of India (RBI) and the Ministry of Finance, Government of India, were used in this study. The data for India's gross domestic product (GDP) was collected from the database on Indian economy from the Reserve Bank of India (RBI), while data of India's gross external debt and its indicators is compiled from various issues of External Debt Status Reports, from the Ministry of Finance, Government of India.

ANALYSIS AND RESULTS

The analysis of the relationship between external debt and economic growth is three fold. The first level of statistical analysis, provides basic descriptive statistics, namely the Mean, Standard Deviation, Skewness, Kurtosis, and Jarque-Bera statistics of the variables under consideration. Following this, an Augmented Dickey Fuller (ADF) Unit Root Test is used as a precursor to the Ordinal Least Square (OLS) estimation,

confirming stationarity of the time series data of the selected variables. The final stage of data analysis, is the OLS estimation.

The results of the Jarque-Bera statistics (table 3) indicate that the data of the selected variables are not normally distributed as the values of the JB indicate a probability of less than 0.1 for all variables. Hence, the variables were transformed into a logarithmic form to normalize and linearize the data and remove outliers.

Theoretically, diagnostic checking of residuals left over from the OLS model is important. In this process, if residuals are not found to be normal, the results of the OLS estimation will not hold BLUE (Best Linear Unbiased Estimators). In our model there is no heteroscedasticity (Breusch Pagan Godfrey Test, with P-value of 0.4184 of Chi square), no multicollinearity (as correlations of independent factors are low and variance inflation factors are around 4.50, less than 10) and no autocorrelation problem (Durbin Watson Test value was close to 2). Normality was observed, among the residuals of the selected variables, which proves that the model can be held correct.

To check stationarity before OLS estimation, the data was transformed to a logarithmic form. The stationarity of data was checked by using the Augmented Dickey-Fuller (ADF) Unit Root Test. The Augmented Dickey-Fuller (ADF) Test considers the null hypothesis that the variable contains a unit root or that it is generated by a non-stationary process. The alternative hypothesis assumes that the variables are generated by a stationary process. The decision rule for the ADF unit root test is that the computed t-statistic values should be less than the critical values at the five percent significance level.

In the process of stationarity checking, the results (table 4) initially revealed that all the variables are non-stationary at five lags. Later, for the purposes of analysis the data was made stationary by using a difference stationary process (DSP). The results of DSP (table 5) show that all the independent variables (EXD, LFE and DSR) became

stationary after the first differencing, while the dependent variable (GDP) became stationary after the second differencing.

The OLS estimation[iii] was done taking Gross Domestic Product (GDP) as the dependent variable and Gross External Debt (EXD), Debt Service Ratio (DSR) and Foreign Exchange Reserve to External Debt (FER) as independent variables. The summary of the OLS estimation results (table 6), shows negative coefficients of EXD (- 0.075952) and DSR (- 0.004038). It indicates that a negative relationship exists between GDP and both EXD and DSR. In other words, a 1% increase in EXD will result in a 0.075952% decrease in GDP. Similarly, a 1% increase in DSR will result in a 0.004038% decrease in GDP. The coefficient of FER however is positive (0.026168), indicating that a 1% increase in FER will result in a 0.026168% increase in GDP. The constant has no significant meaning in the model, because it reflects the value of GDP when other explanatory variables are held constant.

The coefficient of determination (R^2) is 0.235510, considered as 24%. This indicates that about 24% of the total systematic variations in GDP are explained by the variation in the explanatory variables, EXD, DSR and FER. The remaining 76% of variations in GDP may be attributed to other factors and stochastic error, which are not included in the model. In a nutshell, a negative relationship exists between EXD and GDP. Though, the coefficient of Gross External Debt (EXD) also shows a negative contribution toward Gross Domestic Product (GDP), the coefficient of determination is too low to allow us to consider it as a significant determinant of GDP.

CONCLUSIONS

This study intended to model the behavioral relationship between Gross Domestic Product (GDP) and Gross External Debt (EXD) in India. The results indicate a negative relationship between GDP and EXD.

Table 3

Basic Descriptives

Particulars	GDP	Gross external debt	Debt service ratio	Forex Reserve to External Debt Ratio
Observations	25	25	25	25
Mean	3896042.	194.2840	14.87600	63.10000
Median	3004190.	111.6000	15.90000	68.20000
Maximum	11350249	475.8000	35.30000	138.0000
Minimum	1503337.	83.80000	4.400000	7.000000
Std. Dev.	2556903.	134.9328	9.673602	39.52511
Skewness	1.673465	1.004881	0.455841	0.184677
Kurtosis	5.351924	2.463443	1.932295	1.717192
Jarque-Bera	17.43072	4.507330	2.053290	1.856270
Probability	0.000164	0.105014	0.358207	0.395290
Sum	97401056	4857.100	371.9000	1577.500
Sum Sq. Dev.	1.57E+14	436964.4	2245.886	37493.62

Source: Author's Computation

Table 4

Augmented Dickey Fuller Unit Root Test   No. of Observations:23

S.No.	Variables	Z(t)	Critical value	Order of Integration	Remark
1	GDP	-0.7877	-3.6328	I(0)	Non Stationary
2	EXD	-1.4887	-3.6328	I(0)	Non Stationary
3	DSR	-1.3243	-3.6328	I(0)	Non Stationary
4	FER	-0.8825	-3.6328	I(0)	Non Stationary

Source: Author's Computation

Table 5

Augmented Dickey Fuller Unit Root Test   No. of Observations:23

S.No.	Variables	Z(t)	Critical value	Order of Integration	Remark
1	GDP	-5.8226	-3.6328	I(2)	Stationary
2	EXD	-6.3825	-3.6328	I(1)	Stationary
3	DSR	-4.3425	-3.6328	I(1)	Stationary
4	FER	-6.2896	-3.6328	I(1)	Stationary

Source: Author's Computation

Table 6

OLS Estimation Results

Dependent Variable	Constant	EXD	DSR	FER	R^2	Adj. R^2	P Value
GDP (n=23)	0.017935	-0.075952	-0.004038	0.026168	0.235510	0.205800	0.022369

Source: Author's Computation

This may be regarded as a loose conformation of the debt overhang problem in India. The results of the analysis confirm the findings of studies conducted in Nigerian, Asian, and other under-developed countries by Ajayi & Michael (2012), Vincent & Isu (2011) and Limam & Mahmoud (2015). These findings will be useful for policy makers, researchers, planners and economic stakeholders interested in the external sector of the economy. There is also scope for further study on debt overhang issues in India.

Endnotes

i   External debt is defined as "the outstanding amount of actual, current, and not contingent, liabilities that require payment(s) of principal and/or interest by the debtor at some point(s) in the future and that are owed to non-residents by residents of an economy"

{External Debt Statistics - Guide for Compilers and Users, International Monetary Fund (IMF), 2003}.

ii Dual Gap Framework: In national income accounting, an excess of investment over domestic savings is equivalent to the surplus of imports over exports. The national income can be written as:

$$Income = consumption + Investment + Exports - Imports$$

Since savings are equal to income minus consumption, we have:

Savings=Investment + Exports - Imports

Or,

Investment-Savings=Imports-Exports

A surplus of imports over exports, financed by external debt, allows a country to spend more than it produces, or to invest more than it saves. If a country invests more than it saves, this will show up in the national

accounts as a balance of payment deficit, or an excess of imports over exports. This implies an excess of resources used by an economy, over the resources supplied by it, or an excess of investment over saving. (Thirlwall AP, 2006).

iii An Ordinal Least Square (OLS) estimation can be used to test the relationship among the selected variables. The fundamental equation in the Ordinal Least Square (OLS) framework is:

$$Y = \alpha + \beta X$$

This states that there is a one way causation between X and Y. In other words, the values of the dependent variable Y, depend on the values of independent variable X. However, in reality the dependent variable Y is not only influenced by X, there can be many other variables influencing Y, which may be ignored due to poor knowledge and non-availability of data. So, to quantify such variables a stochastic error term (μ) is introduced in the following equation (Chawala, D & Sondhi, N. 2012).

$$Y = \alpha + \beta X + \mu$$

The OLS estimation requires stationary data so as to ensure that the results are not misleading and spurious.

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