RESEARCH ARTICLE

APPLICATION OF LAFFER CURVE IN INDIAN TAX STRUCTURE

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ARTICLE INFO	ABSTRACT
	The study was carried out for the period 1982-1983 to 1999-2000 using the variables like income tax revenue, peak marginal tax rate, GDP at factor cost and GDP at current market price along with time, with and without adjusting for the changes in prices over a period of time. To adjust for price changes the data on Income tax revenue and GDP at factor cost were deflated by using the GDP deflator which was obtained by dividing the gross domestic product at current prices by gross domestic product at constant prices in terms of base year prices (1993-94). The secondary time series data on the variables selected were obtained from Income Tax Office, Coimbatore district; Economic Survey (various issues) published by Ministry of Finance and Economic and Political Weekly (various issues) published by A Sameeksha Trust Publication. Required and relevant tools were applied and results arrived at. *Copy Right, IJCR, 2011, Academic Journals. All rights reserved*

INTRODUCTION

The Laffer curve explains the typical functional relationship between the tax rate and tax revenue introduced by Prof. Arthur. B. Laffer is a noteworthy contribution to the supply side economics. Arthur Laffer argues that in a highly taxed nation, the government can hope to yield more revenue by lowering the tax rate rather than raising it further. The Laffer curve is a bullet-shaped curve where the minimum and maximum points of tax yields zero revenue. Initially when the tax rate rises tax revenue also rises without adverse economic effect and will be positive sloping, once the optimum taxable capacity is reached any further increase in tax rate will reduce the tax revenue as it will reduce the incentives of the people to work and save. Ever since the advent of the Laffer curve in 1980 there was a considerable interest among the world economists to empirically test its effectiveness and validity in their tax systems. In India there were various studies on elasticity and buoyancy of tax system separately, but very few empirical research were carried out on this topic, to name a few Upendra (2001) and Chakraborty (1997) to test the effectiveness and the validity of the Laffer curve in India separately. The present exercise was an attempt to study the effectiveness of the income tax Laffer curve in India during the period 1982-83 to 1999-2000 which includes both the pre tax and post tax reform period.

MATERIALS AND METHODS

The study was carried out for the period 1982-1983 to 1999-2000 using the variables income tax revenue, peak marginal

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tax rate, GDP at factor cost and GDP at current market prices along with time, with and without adjusting for the changes in prices over a period of time. To adjust for price changes the data on Income tax revenue and GDP at factor cost were deflated by using the GDP deflator which was obtained by dividing the gross domestic products at current prices by gross domestic product at constant prices in terms of base year prices (1993-94). The secondary time series data on the variables selected were obtained from Income Tax Office, Coimbatore district; Economic Survey (various issues) published by Ministry of Finance and Economic and Political Weekly (various issues) published by A Sameeksha Trust Publication. Required and relevant tools were applied and results arrived at.

RESULTS AND DISCUSSION

A. Verification of income tax buoyancy of the Indian tax system during the period 1983-84 to 1999-2000

In order to obtain the buoyancy of income tax revenue in Indian tax system, Income tax buoyancy was measured as a ratio of the proportionate increase in tax revenue to a proportionate increase in the gross domestic product (with and without price adjustment). The results of calculated income tax buoyancy for the period 1983-84 to 1999-2000 are given in Table 1. The numerical value of buoyancy in column (2) of the Table 1 without price adjustment was positive and more than unity in almost all the period under study barring the years 1983-84, 1987-88 and 1990-91 evincing the fact that the

proportionate increase in income tax revenue was more than that of the proportionate increase in gross domestic income. The bewildering aspect is that the size of the tax buoyancy was negative and less than unity in 1997-98 showing the proportionate change in income tax revenue to be negative and the proportionate change in the gross domestic income to be positive. The numerical value of tax buoyancy in column (3) after price adjustment in almost all the years under the study was negative with wide fluctuations ranging from 0.26 per cent to 9.67 per cent which is expected to be due to price fluctuations.

This is a clear contrast to the income tax buoyancy computed without price adjustment and is shocking. In the financial years 1988-89, 1990-91, 1996-97, 1997-98 and 1999-2000 the income tax buoyancy was positive and more than unity bringing out the fact that the proportionate increase in the income tax revenue was more than that of the proportionate increase in the gross domestic income. In the year 1996-97 the proportionate increase in the income tax revenue was nearly 59 times more than that of the proportionate increase in the gross domestic income, which showed an increase only by 67,400 crores, (GDP at factor cost without deflation). This growth potential of income tax revenue was achieved as the growth of GDP was stagnating due to the impact of the slow growth of other sectors of the economy.

Table 1. Income to year movements in the magnitude of income tax buoyancy (with and without price adjustment) during the period 1983-84 TO 1999-2000

Financial year	Income tax buoyancy (without price adjustment)	Income tax buoyancy (with price adjustment)
(1)	(2)	(3)
1983-84	0.49	0.47
1984-85	1.14	-2.33
1985-86	2.28	-8.29
1986-87	1.23	-2.60
1987-88	0.79	0.26
1988-89	1.73	10.59
1989-90	1.18	-5.40
1990-91	0.42	0.62
1991-92	1.71	-0.94
1992-93	1.18	-2.01
1993-94	1.06	-1.55
1994-95	1.78	-8.48
1995-96	1.71	-12.14
1996-97	1.11	59.47
1997-98	-0.55	7.54
1998-99	1.18	-9.67
1999-2000	2.82	11.19

Source: The data on Personal Income Tax Revenue GDP at Factor Cost and Constant Prices, GDP Deflator and Peak Marginal Tax Rate were used (Secondary data).

B. Analysing the working of income tax Laffer curve in India (without price adjustment) using the data points covering the period of 1983-84 to 1999-2000

To verify whether the Income Tax Laffer Curve is working precisely in Indian tax system during the period 1983-84 to 1999-2000 the data points (without price adjustment) covering the period were used and the results of the estimated equation is given in Table 2.

Table 2. Regression results of laffer curve equation with price adjustment

Variable	Parameter Coefficient	SE	t-statistic
Constant	1818627.7745	455413.281	–
GDP** at current market prices	0.0246	0.0022	11.082
	-937.5766	232.2029	-4.038
T**	1593.2051	330.9188	4.814
PMTR	-16.3004	3.6123	-4.513
$PMTR^2$	0.99		
R^2	0.99		
R^2			

Note: **Statistically significant at one per cent level.

The regression results of the estimated equation without price adjustment showed a positive relationship between GDP at current market prices and income tax revenue. A percentage change in GDP at current market prices will lead to 0.025 per cent change in income tax revenue. The signs of the estimates of coefficient PMTR and $PMTR^2$ were positive and negative respectively and all the independent variables were statistically significant at one per cent level. The R^2 was very high showing the goodness of the fit, proving that about 99 per cent of the variations in Income Tax revenue mobilisation was due to the selected independent variables. The results widely differ from the results obtained by Upender (2001). The intention of this study was to verify the impact of the proportionate reduction in peak marginal tax rate on the proportionate increase in the revenue from income tax. For this purpose a linear regression tax elasticity equations were fitted to the data points to verity whether the Indian tax system was working in the prohibitive/normal range of Laffer curve covering the period 1983-84 to 1999-2000. The results of the estimated equations (without price adjustment) are furnished in Tables 3.

Table 3. Regression results of linear tax elasticity equation without price adjustment

Variable	Coefficient	SE	t-statistic
Constant	42227.3100	3707.1328	–
PMTR	-719.3939	79.651	-9.032
$PMTR^2$	0.84		
R^2	0.83		
R^2			

Note: **Statistically significant at one per cent level.

The results of the estimated equation exemplified that the regression coefficient of Peak Marginal Tax Rate ($\Box_1$) was not only significantly negative but also more than unity. This shows that the Indian economy is operating in the prohibitive range of the income tax Laffer curve in almost all the years in the period under study. The R^2 value was also high showing the goodness of the fit.

C. Analysing the working of the income tax Laffer curve in India (with price adjustment) using the data points covering a period of 1982-83 to 1999-2000

Analysing the working of the income tax Laffer curve in India (with price adjustment) using the data points covering a period of 1982-83 to 1999-2000. The results of the estimated equation are given in Table 4.

Table 4. Regression results of laffer curve equation with price adjustment

Variable	Coefficient	SE	t-statistic
Constant	-23993.3006	6198.6689	–
GDP after factor cost	0.01321	0.0080	1.647
(after deflation)	12.0472	3.0626	3.934
T**	-1.634	2.7708	-0.590
PMTR	0.0255	0.0313	0.812
$PMTR^2$	0.95		
R^2	0.93		
R^2			

Note: **Statistically significant at one per cent level.

The estimated equation showed that the peak marginal tax rate is inversely related to the income tax revenue and was statistically insignificant along with the other independent variable Linear tax elasticity equations were fitted to the data points (with price adjustment) covering the period 1982-83 to 1999-2000 to verify whether the Indian tax system was operating in the prohibitive or normal range of the income tax Laffer curve and the results are given in Tables 5.

Table 5. Regression results of linear tax elasticity equation with price adjustment

Variable	Coefficient	SE	t-statistic
Constant	259.3933	18.3532	–
PMTR**	-3.6988	0.3873	-9.55
R^2	0.85		
R^2	0.84		

Note: **Statistically significant at one per cent level.

The estimated equation with price adjustment elucidated a negative relationship between the peak marginal tax rate and the income tax revenue. The R^2 is (0.85) high showing the goodness of the fit. The variable peak marginal tax rate is statistically significant at one per cent level. The expected sign of $\square_1$ was negative and less than zero which signifies the prohibitive range of the Laffer curve during the period, covering the present study.

CONCLUSION

The results of the present exercise, subjected to the data used confirmed that the Indian Income Tax System was operating in the prohibitive range of the Laffer curve during the period under consideration.

AREA FOR FURTHER RESEARCH

1. An anlaysis to verify whether the reduction in corporate taxation through tax reforms has enhanced the marginal efficiency of capital, with an increase in volume of investment can be taken up.
2. An attempt can be made to see the specific tax incidence on the tax payers due to the change in tax policy and tax reforms, especially due to tax cut.

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