Consumption function in India

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Abstract:In the paper, we test forthe consumption function in Indian economy for the period 1980-81 to 2010-2011. We take the ratio of Consumption to Gross Domestic product as our dependent variable. There has been a secular decline in Consumption to GDP ratio in India over the years. The results show that inflation, export to GDP ratio, and growth rate of GDP are significant determinants of final consumption expenditure in India. While inflation; saving to GDP ratio; and growth rate of GDP negatively and significantlyaffect consumption expenditure, export to GDP ratio; and lagged consumption have positive and significant effect on the level of consumption expenditure.

Keywords—consumption function; export to GDP ratio; growth rate of GDP; inflation

1. INTRODUCTION

Consumption expenditure constitutes a major proportion of the aggregate demand. Understanding the determinants of consumption function is important because consumption expenditure has been on a secular decline andtrends in consumption may have a bearing on overall GDP trend.In the paper, total final consumption expenditure i.e. sum of private and government final consumption expenditure is considered as the dependent variable, and a bunch of factors are explored as its possible determinents.

2. THEORETICAL FRAMEWORK

Most empirical papers test for consumption function based on Keynesian current income hypothesis (1936), permanent income hypothesis by Friedman (1957), and life cycle hypothesis byModigiliani and Brumber(cited in Limbagourd, 2012).

Keynes (1936) held the view that current consumption expenditure is a stable function of current income and marginal propensity to consume is less than unity. Friedman (1957) argued that the key determinant of consumption isnot the current real disposable income, but the real wealth of consumer. The theory states that if change in income is transitory, consumption will not change.Modigiliani and Brumber(cited in Limbagourd, 2012) hypthize that the propensity to consume is lower for younger households than for households of older persons who spend their savings after retirement. Aggregate demand thus depends not only on income and wealth but also on demographic changes.

To test for the last two hypotheses, data on assets is required. However, for India, such data is not available. Papers test for permanent or life cycle hypothesis by reducing consumption expenditure to just become a function of current income lagged income and lagged consumption. This might be an over simplification. In my paper, I try to explain consumption expenditure in terms of

determinants like inflation, growth rate of GDP, export to GDP ratio, savings to GDP ratio, and lagged value of consumption expenditure.

3. DESCRIPTION OF DATA

The graph for ratio of consumption to gdp indicates the presence of time trend. The model considered in the paper is thus based on Auto regressive of order one. This is done so as to de –trend consumption to gdp series.

The graph of inflation shows an upward trend which means that inflation is increasing persistently. The minimum value is 19.71 in 1980 and the maximum value is 143.3 in 2010.

Due to the liberalisation of the economy in 1990s, India's exports continuously increased till 2008 with some minor fluctuations. But with the onset of global financial crisis of 2008, India's exports suffered a major setback with growth rate of exports plunging to negative figures in 2009(the lowest value being 0.7% in 1980 and the highest value being 21.8%.

As it is evident from the graph of saving to GDP, savings as a proportion of GDP has shown a rising trend over time. There has been a slight dip in some years but more or less there has been a persistent upward trend in the graph (the lowest value being close to 17% in 1980 and the highest being 36% in 2007). The higher saving to GDP ratio may be seen as a validation of higher saving-investment led growth in India. After 2008, the saving to GDP ratio eroded a little. The average savings to gdp ratio for the three decades has been 24.34%.

The slowdown of growth witnessed during the 1970s was reversed during the 1980s; the pick-up benefited from the initiation of some reform measures aimed at increasing domestic competitiveness.With financial 1991 crisis the growth numbers plummeted. There is a steep decline in growth rate from 5.5% in 1990 to 1.05 % in 1991 in graph. Since 1992, growth impulses appeared to have initially gathered momentum in the aftermath of liberalisation. Yet on closer scrutiny, one observes that on average, growth rate of entire 90's was almost equal to average growth rate in 80's.The growth rate did not accelerate in 90's as has been claimed often(calculated to be close to 5%). Some loss of the growth momentum in the latter half of the 1990 may be attributed to onset of the East Asian financial crisis, setbacks to the fiscal correction process, slowdown in agriculture growth affected by lower than normal monsoon years (Mohan, 2008).In the graph, a sudden decline again occurs in 2008(from 9.80% to 3.89%).This is direct repercussion of crisis in U.S economy which did not leave any growing economy unscathed. This is followed by some recovery in the graph.
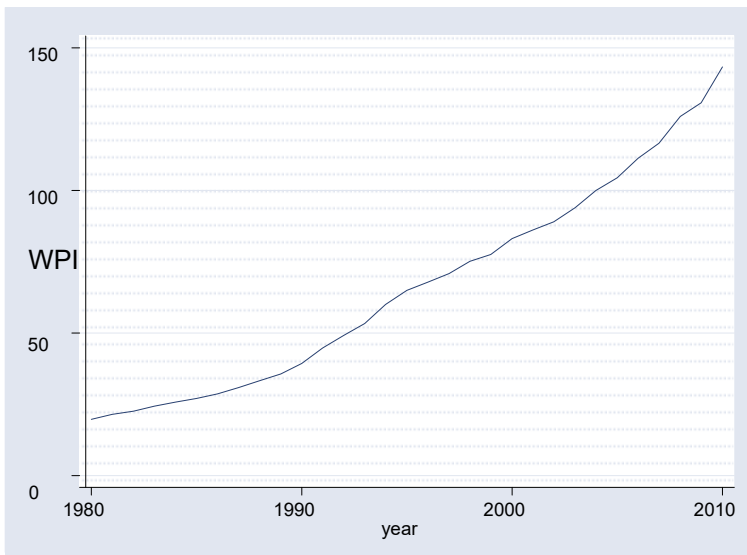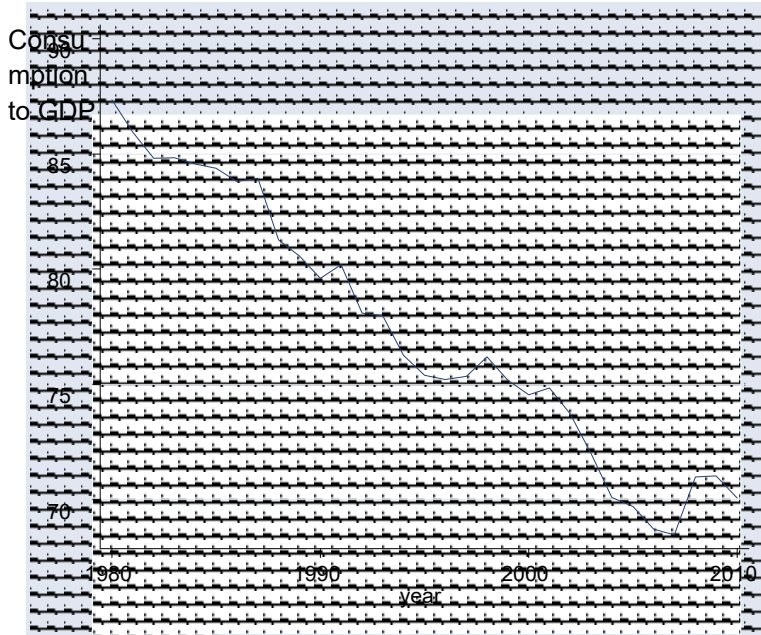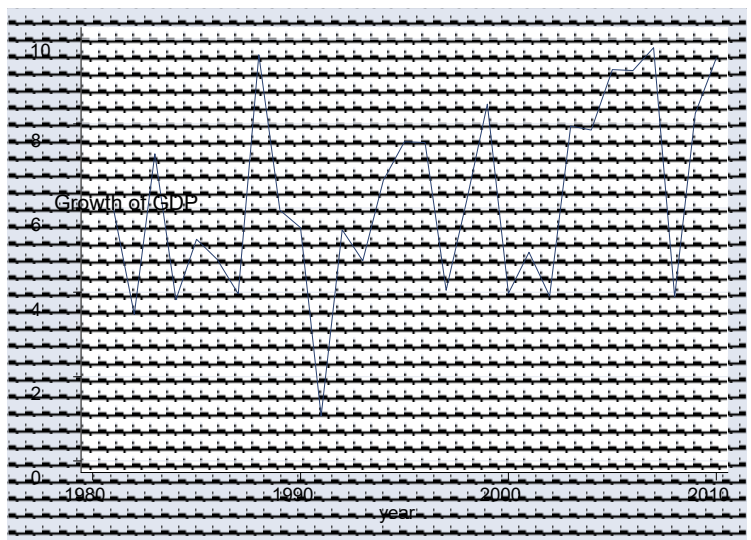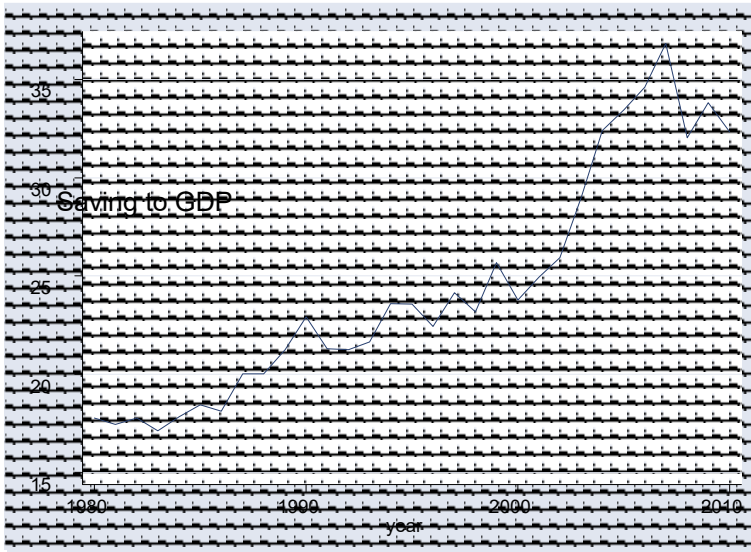
4. Data Source

All the variables used are at constant prices. The data on Savings are taken from the Economic Survey of India 2011-12 published by Ministry of Finance. The data was available at current prices, we deflated the series to get the data at constant prices. The data was in Rs. Crores and we have converted it into billions.For the following variables, we referred to RBI Handbook of Statistics on the Indian Economy, 2011-2012. For the data on

Wholesale Price Index, the source is Office of the Economic Adviser, Ministry of Commerce and Industry, Government of India. Because the data was given with different base years, we have spliced the data with a common base year (2004-05). Total Consumption Expenditure as a proportion of GDP is calculated by adding Private Final Consumption Expenditure and Government Final consumption Expenditure at market prices. The source is CSO. For the data on Total Exports the source is Directorate General

of Commercial Intelligence and Statistics.The data on GDP is taken at market prices. All the variables are in rupees billions. We have normalised the variables by dividing them by GDP at Market Price except WPI.

5. Regression results:

The table below highlights the following points. R^2 is coming out to be 0.9851 which means 98.51% of the variations in the consumption to GDP ratio are explained by the explanatory variables. The sign of inflation coefficient is negative which is consistent with theory. This implies that as inflation in the economy increases, it will lead to a fall in the real incomes. As a result of which, total consumption to GDP ratio may fall. The relation between exports to GDP ratio and consumption to GDP ratio is positive in theory. Theoretically as exports in the economy rises, purchasing power of certain sections may increase. This may lead to increase in consumption to GDP ratio.In our analysis, we see a negative relationship between growth rate of GDP and consumption to GDP ratio. In case of India, the pattern exhibited by growth may be such that relatively a major proportion of increased aggregate incomes is reaching those sections of society which have as higher propensity to save.This is because Kalecki'stheory explains a change in income distribution over time against workers and in favor of capitalists. In other words, Kalecki theory implied that a major chunk of total income will be channeled to a section of society having higher marginal propensity to save.

Regression Results

Source	SS	df	MS		
				Number of obs =	30
				F(5, 24) =	317.96
Model	868.45908	5	173.691816	Prob> F =	0.0000
Residual	13.1103882	24	.546266174	R-squared =	0.9851
				Adj R-squared =	0.9820
Total	881.569469	29	30.3989472	Root MSE =	.7391

cons	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
wpi	-.0888666	.0331949	-2.68	0.013	-.1573776	-.0203556
egdp	45.3631	14.58169	3.11	0.005	15.26797	75.45823
lagcons	.6287399	.1233724	5.10	0.000	.3741117	.8833681
grgdp	-.1888236	.0793235	-2.38	0.026	-.3525393	-.0251079
savgdp	-.1965558	.0931614	-2.11	0.045	-.3888314	-.0042801
_cons	37.11733	11.93868	3.11	0.005	12.47711	61.75755

The Breusch-Pagan / Cook-Weisberg test shows that there is no problem of heteroskedasticity as the probability of chi2 is greater than 0.1. This means we cannot reject the null hypothesis that there is constant variance, i.e., there is no problem of heteroskedasticity. This is also evident from

the graph of residual that there is no problem of heteroskedasticity.
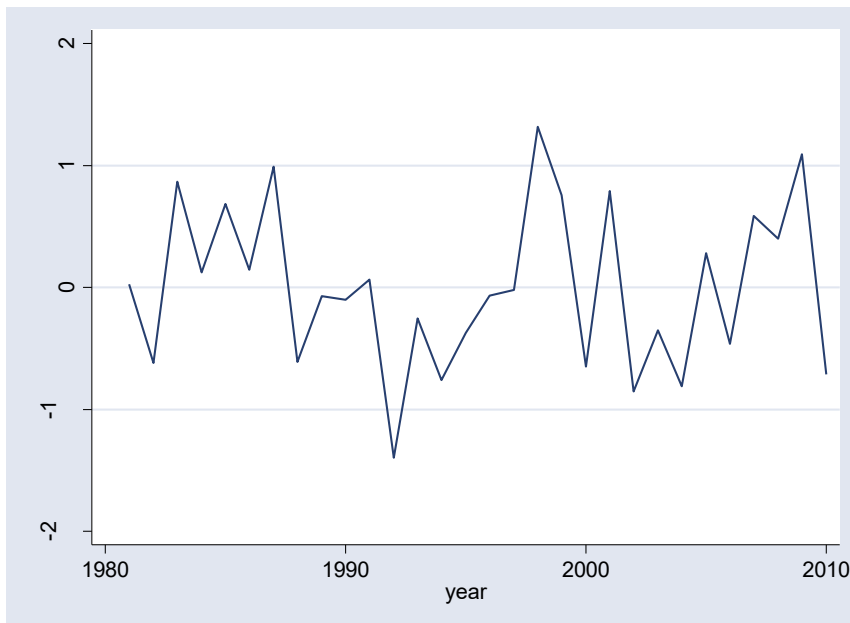
The graph of residual looks more or less stationary. This is because there is some regularity in data and all fluctuations lie within a range. There are some periods of sudden peaks and dips in the graph above. In 1992, there was a steep decline in consumption to GDP ratio when the residual attained the minimum value. The residual attained its peak in 1998. The residual also saw an increase in the year 2001 and attained a sharp fall in the year 2010.

6. Conclusion

While inflation; saving to GDP ratio; and growth rate of GDP negatively and significantly affect consumption expenditure, export to GDP ratio; and lagged consumption have positive and significant effect on the level of consumption expenditure.

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