"DO PUBLIC EXPENDITURE AND DOMESTIC CONSUMPTION BECOME SIGNIFICANT IN GDP GROWTH OF INDIA AFTER 2011? "

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INTRODUCTION

1. The government of India regularly revises the GDP estimation methods to get a better picture of how the economy is performing. In the period 2011-2012 the data sources and methodology for GDP estimation were changed significantly.
2. Arvind Subramanian published a detailed paper to test if the new methodology has caused misestimation in GDP Growth. The PMEAC published comments on the mentioned paper by Arvind Subramanian.
3. Our analysis re-formulates the analysis given by Arvind Subramanium using indicators mentioned in PMEAC note and the original variables used by Arvind Subramanian.

APPROACH

1. Arvind Subramanian's Model was taken into account and analysed after adding public expenditure and domestic consumption variables.
2. Time series data was collected and appropriate regression model was generated to analyse the result
3. Tests for multicollinearity and robustness was performed to judge the correctness of the new model.
4. Concluded whether India is an outlier country in both post-2012 and pre-2012 time period.

STATISTICAL ANALYSIS

The main OLS-regression model equation is:-

$$gdp\_growth_i = \beta 0 + \beta 1 credit\_growth_i + \beta 2 electric\_growth_i + \beta 3 edu\_growth_i + \beta 4 import\_growth_i + \beta 5 India + \beta 6 household\_growth_i + \beta 7 military\_growth_i + \beta 8 employee\_growth_i + \beta 9 out\_growth_i + \beta 10 health\_growth_i + \beta 11 subs\_growth_i + \beta 12 r.d\_growth_i + \varepsilon i$$

Where i denotes countries and β denotes coefficients.
Adding other growth indicators which might be the main indicators for the GDP growth and adding them might make the model more robust and consistent.

TABLE 2 (Pooled Regression)Complete Table omitted, brief results :India dummy*T estimate[std. err] = 0.663196 [1.191556]

Regression Result:-

2002-2011	
India dummy	1.338 [1.080]
Household expenses Growth	0.552 *** [0.025]
Health expenditure Growth	-0.066 *** [0.015]
No. of observations	801
R^2	0.474
2012-2016	
India dummy	1.794 & [0.915]
Household expenses Growth	0.509 *** [0.031]
Health expenditure Growth	-0.032 * [0.015]
No. of observations	365
R^2	0.532

Significance codes: "***" 0.001, "**" 0.01, "*" 0.05, "&" 0.1

REFERENCES

1. Economic Advisory Council to the Prime Minister, Bibek Debroy, Rathin Roy, Surjit Bhalla,Charan Singh,Arvind Virmani. (June 2019). "GDP estimation in India-Perspectives and Facts"
2. Arvind Subramanian, S.(June 2019)."India's GDP Mis-estimation: Likelihood, Magnitudes, Mechanisms, and Implications",CID Faculty Working Paper No. 354

TESTS AND ANALYSIS

Robustness:-

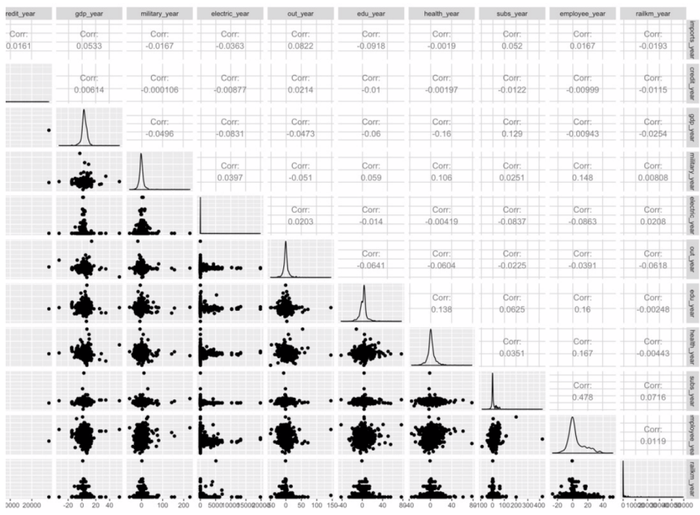
1. To check the robustness of our model, each covariate was omitted from the model and its effect was observed by observing the significance and the t-value of the other variables. The model turned out to be robust on all the variables except for the variable household_growth

MultiCollinearity:-

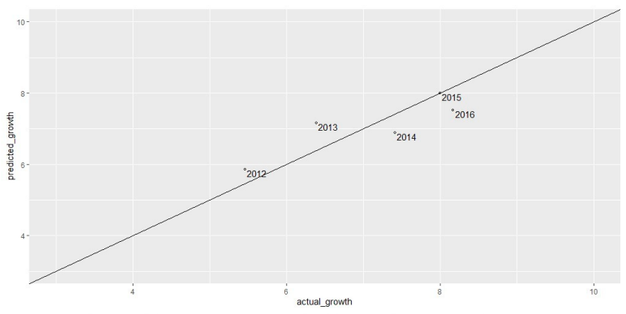
1. We needed to make sure that none of the independent variables are dependent on each other. If there is collinearity in independent variables, regression model ends up being inconsistent and standard errors of estimators may shoot up. We used some tests to make sure that that there is no multicollinearity in our mode for every pair of variable

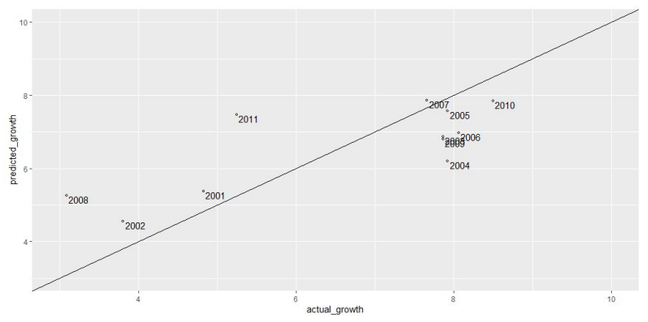
Variable	Description
Health	Government schemes for health improvement account for a large % of GDP spending by the government.
Education	Education is one of the most important factor for a countries growth and account for a large % of gdp
Employee Compensation	Government spending on Salaries and benefits of government employees account for a large % of gdp.
Military Expense	Military spendings accounts for a significant % of gdp
Research and development	Spending on R&D acts as the major step of becoming technologically self reliant.
Subsidies	Government provides incentives to both consumers as well as the producers with the aim of promoting social and economic policy.
Household Consumption	Household expenditure means spending by an individual on day to day necessities such as food,clothing,shelter,etc. Which is an important factor in domestic spending.
Credit Growth	Credit growth is defined as the expansion of credit as Loans to individuals or organizations which helps in maintaining the liquidity of the businesses in a country
Imports	Imports is one of the major factors for the calculation of the Gdp of a country
Electricity	Important factor for the sustainability of the life.Thus a key part of the domestic consumption.
Health	Expenditure on health also accounts for a large part of domestic consumption. Insurance, mandatory checks are the major factors of health expenditure by the people.

Variable Description

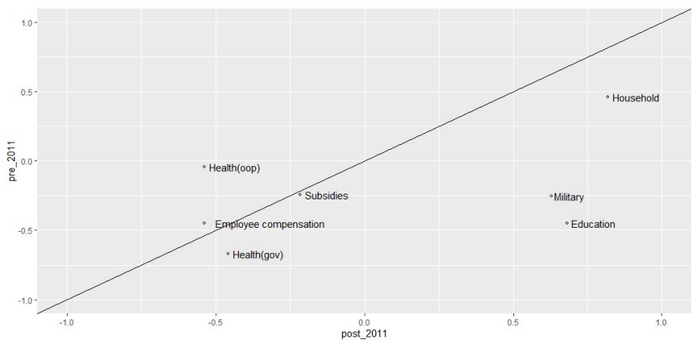


Correlation between any 2 variables





Actual India GDP and fitted GDP in pre2011 and post 2011



Correlation of selected indicators and GDP in pre 2011 and post 2011

CONCLUSION/RESULTS

-> The India (Dummy, $\beta 5 * India$) data from table 1 shows that India is an outlier with 90% confidence in period 2012-2016.
-> But from Table 2 data, Dummy*T remains insignificant, implying that India is a normal country.
->Similarly, graphs plotted between predicted and actual GDP growth implies India isn't an outlier in both periods.
->Graph plotted between correlation of Independent variables and GDP growth implies that most of the variables become more correlated to GDP growth in post 2011 period.
->Adding all these results , the evidence are inconclusive to determine whether public expenditure and domestic consumptions became major growth drivers after 2012