

Health Care Spending and Inclusive Growth in India: An Empirical Investigation

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Abstract—*This study assesses the impact of health spending on inclusive growth in India over the period 1980 to 2014. Augmented Dickey Fuller for stationarity test, Johansen Co-integration, and Ordinary least square were used to test the existence of long-run relationship among the variables used in the model. The results show that there is long-run relationship among the inclusive growth. Specifically, it shows that public health spending makes growth to be sustainable in the long-run. It was also discovered that private health spending doesn't substantially reduce poverty rate. Therefore, the finding of this study however, contends that government spending on health is far from substantial poverty reduction in India. It recommends that government should increase budgetary allocation on health and sustain health spending aim at reducing poverty and increase economic growth.*

Keywords: *Health care spending, Inclusive growth, Investigation.*

1. INTRODUCTION

Development is not complete without human development. A sound economy requires healthy workforce which may reduce the problem of absenteeism and would naturally increase the growth rate of the economy. Inclusive growth on the other hand refers to both the pace and distribution of economic growth. In order for growth to be sustainable and effective in reducing poverty, it needs to be inclusive [4]. Economic theory has over the years identified human capital as a catalyst to economic growth and development both at the macro and micro levels [6]. A healthy population is a fundamental ingredient of inclusive development and nation building. Universal access to quality health care is not just a social imperative; it is a necessary condition for economic progress and prosperity [5]. It clearly shows that health expenditure in India is dominated by private spending. This is a reflection of the inadequate public spending [5]. This shows the unfortunate feature of Indian development. Similarly, the over reliance on private health care services and infrastructures is not suitable which in turn deny adequate access to the poor. No doubt this will affect social welfare and labour productivity and will harm future growth and development prospects [5]. Therefore this study seeks to determine the impact of health spending on inclusive growth in India.

Inclusive growth in Indian: An overview

Indian market is the second largest consumer market in the world; the country's economy has been facing towering economic development in current years. One of the main aims of the government in recent years is moving Incredible India to Inclusive India. Inclusive growth is to be achieved so as to reduce poverty and other social and economic inequality, and also to maintain economic growth. In respect of this, the Planning Commission has made inclusive growth as a goal in the Eleventh Five Year Plan (2007-2012). The summary of the Twelfth Five Year Plan (2012-2017) lists tactical challenges which prolong the focus on inclusive growth. These include generation of employment, enhancing the capacity for growth, development of infrastructure, better healthcare, improved access to quality education, rural transformation, and continuous agricultural growth [5].

2. REVIEW OF LITERATURE

Many empirical studies were attempted to investigate health spending and economic growth notably, [9] empirically, on the side of health expenditure, there is no clear evidence on income elasticity of the demand for health care including the causal direction between health care expenditure and income. He noted that health is a capital and investment on health is a major source of economic growth. [8] Examine the relationship between health care expenditure and economic growth on the four states in India, using annual data from the period 1991 to 2010. The authors find that health expenditure and economic growth are co-integrated in all the four states. The results also revealed that there exists a unidirectional causality from health expenditure to economic growth. Similarly, [5] analyze the issue of inclusive growth in India in terms of public expenditure on healthcare and domestic

income, using the test of stationarity and cointegration analysis. Their result of cointegrated analysis rejects the hypothesis of existence of long-run relationship between per capita domestic income and per capita planned expenditure in India. They conclude that growth of planned health expenditure over time may have occurred due to other reasons than to increase in per capita income of the country. Another study by [7], using Indian data, provided some dissenting evidence that existence of long-run equilibrium relationship between public health expenditure and economic growth in India during the period 1993 to 2012. Applying (ECM) model, the author found that one-way causality runs from economic growth to public expenditure in the short-run and long-run also supporting the Wagner's law of public expenditure.

3. METHODOLOGY AND DATA

The present study uses secondary data in the form time series for the period of 1980-2014. It was taken from the World Development Indicators (WDI), World Bank 2015.

4. MODEL SPECIFICATION

This study adopts and improves on [7]; [2] which it specified as:

$Y_t = \alpha_0 + \beta_1 Y_t + \beta_2 X_t + \mu_t$ (1) Where: Y_t is the log-difference of $Y_t - Y_{t-1}$ i.e. measure of growth at time t . Y_{t-1} is the initial level of per capita Purchasing Power Parity (PPP)-adjusted income at time t , X_t is a set of growth and inequality determinants at time t , and μ_t is the disturbance term. According to [2] education and human capital influences economic growth and hence, the model can be extended by including health and education components into equation (1). It can be stated as:

$$y_t = \alpha_0 + \beta_1 Y_t + \rho_1 PuHE_t + \rho_2 Pr HE_t + \rho_3 SSE_t + \rho_4 X_t + \mu_t \dots \dots \dots (2)$$

Where: $PuHE$ is the public health expenditure $PrHE$ is the private health expenditure, and SSE is Secondary School enrolment rate. Other determinants of inclusive growth i.e. X_t , Inv is the gross total investment measured as percentage of GDP, Trd is trade openness measure as total trade, export plus import divided by GDP, and Inf is the price stability measured consumer price index annual percentage change. Based on the above formulations, and incorporating other growth determinants, the equation is further stated as:

$$y_t = \alpha_0 + \beta_1 Y_t + \rho_1 PuHE_t + \rho_2 Pr HE_t + \rho_3 SSE_t + \rho_4 INV_t + \rho_5 Trd_t + \rho_6 Inf_t + \mu_t \dots \dots \dots (3)$$

The nature of regression on time series data can give spurious results [10] due to the possibility of non-stationarity of such data. Thus, before applying co-integration test one has to check for the stationarity of the date. For this purpose, Augmented Dickey Fuller (ADF) test proposed by [3] has validity of stationarity level in the data sets. Once the variables are found to be stationary at the same order then we can proceed for the checking of co-integration among the variables. The Johansen co-integration test suggested by [12] and [11] has been used to determine the Trace and Maximum-Eigen value. Similarly, the Ordinary Least Squares (OLS) was employed to find the long-run estimates. Post-estimation diagnostic tests were also carried out in this study, such as the Normality test (Jargua Bera Test), Breuseh Godfrey serial correlation test and White Noise test to check the presence of heteroskedasticity.

5. PRESENTATION AND DISCUSSION OF RESULTS

This section presents the result of the analysis. We first begin by reporting the results of (ADF) unit root and (PP) test were presented in Table 1. These results indicate that three among the variables are stationary at levels I(0) (as in first differenced) which are inclusive growth rate, private health spending and public health spending. Also, the remaining variables such as secondary school enrolment, inflation rate, investment, per capita income, and trade openness are non-stationary at level but were stationary at their one I(1). Similarly, Johansen co-integration test proposed by [12] and [11] was employed to find out whether there is a long-run relationship among the variables.

Table 1: Unit Root Test Results

| Variables | Augmented Dickey Fuller Test (ADF) | | Phillip-Perron (PP) | | Decision |
|-----------|------------------------------------|----------------------------|--------------------------|----------------------------|----------|
| | At Levels | 1 st Difference | At Levels | 1 st Difference | |
| SSE | -1.7847 (0) [-3.2071] | -4.2431 (0) [3.5530]** | -2.0783 (2) [-3.2071] | -4.1011 (6) [-3.5430]** | I(1) |
| INGR | -6.9772 (0) [-4.2529]* | – | -7.5301 (3) [-4.2529] | – | I(0) |
| INF | -3.4187 (1) [-3.2096]*** | – | -2.7634 (6) [-3.2071] | -5.6409 (4) [-4.2627]* | I(1) |
| INV | -1.6267 (0) [-3.2071] | -6.3187 (1) [3.2124]* | -1.4521 (3) [-3.2071] | -5.6325 (3) [-3.2096] | I(1) |
| PCI | -0.2075 (0) [-3.2071] | -4.8247 (0) [-4.2527]* | -0.4284 (3) [-3.2071] | -4.8359 (2) [-4.2627]* | I(1) |
| PRHE | -4.1703 (0) [-3.5385]** | – | -4.1003 (1) [-3.5485]** | – | I(0) |
| PUHE | -3.2467 (0) [3.2071]*** | – | -3.3213 (1) [-3.2071]*** | – | I(0) |
| TRD | 0.5357 (7) [-3.2292] | -3.8390 (6) [3.5674]** | -2.0147 (2) [-3.2071] | -8.0971 (3) [-4.2627]* | I(1) |

Source: Author's Computation 2016

Table 2: Co-integration Test Results

| Hypothesized No. of CE(s) | Eigen value | Trace Statistics | | Max- Eigen Statistics | |
|---------------------------|-------------|------------------|---------------|-----------------------|----------------|
| | | Likelihood Ratio | 5% Sig. level | Likelihood Ratio | 0.5 Crit. Val. |
| None | 0.8808 | 371.7146* | 197.3708 | 130.5823* | 57.4236 |
| At most 1 | 0.8473 | 241.1323* | 159.5297 | 62.0154* | 52.3525 |
| At most 2 | 0.8255 | 179.1169* | 125.6154 | 57.5891* | 46.2314 |
| At most 3 | 0.7082 | 121.5178* | 95.7537 | 40.5302* | 40.0776 |
| At most 4 | 0.6158 | 80.9876* | 69.8189 | 31.5597 | 33.8769 |
| At most 5 | 0.5198 | 49.4179 | 47.8561 | 24.2042 | 27.5843 |
| At most 6 | 0.4065 | 25.2137 | 29.7971 | 17.2179 | 21.1316 |
| At most 7 | 0.1702 | 7.9958 | 15.4947 | 6.1576 | 14.2546 |

Source: Author's Computation 2016

Table 3: Results of the regression exercise (Long-run Estimates)

| Defendant Variable: ICGR | | | |
|----------------------------|-------------|------------|-------------|
| Included Observations:34 | | | |
| Method: Least Squares | | | |
| Variable | Coefficient | Std. Error | T-Statistic |
| C | 0.0004 | 0.2535 | 0.0016 |
| PRHE | -0.0241 | 0.0074 | -3.2595* |
| PUHE | 0.0441 | 0.0112 | 3.9379* |
| SSE | 0.0006 | 0.0081 | 0.0781 |
| INF | -0.0004 | 0.0012 | -0.2088 |
| INV | -0.0015 | 0.0045 | -0.3184 |
| PCI | 2.65E-05 | 4.93E-05 | 0.5407 |
| TRD | 0.0011 | 0.0006 | 1.8479*** |
| R-squared | 0.79566 | | |
| Durbin-Watson stat | 1.6343 | | |
| F-statistic | 229.12 | | |
| Prob. (F-statistic) | 0.0000 | | |

Source: Author's Computation 2016

Table 2 above presents the results of co-integration test. It shows that the null hypothesis of co-integrating vector is accepted at most five and at most three co-integrating vector at 5% level of significance denoting six and four co-integrating vectors respectively under the Trace and Maximum Eigen test. The implication of this test is that all the variables of interest converge in the long-run. This means that there is linear relationship between health spending and inclusive growth in India.

The results of the long-run estimates using the ordinary least square (OLS) were presented in Table 3. It is observed that private health spending, inflation rate and investment has negative impact on inclusive growth in India. This implies that a 100% change in private health spending, inflation rate and investment would deteriorate inclusive growth by 2.41%, 0.04% and 0.15% respectively. Similarly, public health spending, secondary school enrolment, per capita income and trade openness have positive impact on inclusive growth in India. It also implies that a 100% change in public health spending, secondary school enrolment, per capita income and trade openness will improve growth effort towards reducing poverty rate by say 4.4%, 0.06%, 2.65E-05% and 0.1%. Also, these results indicate that private health spending, public health spending, and trade openness are found to be statistically significant with inclusive growth. The overall long-run estimates from the model suggested a higher growth of all the determinants of inclusive growth is found to be statistically significant at 0.05 critical region. The adjusted R-squared result reveals that 69.5 percent variation in total inclusive growth is accounted by changes in private health spending, public health spending, trade openness, private health spending, inflation rate and investment during the period under study. The Durbin-Watson statistics indicates that there is presence of semi-strong positive serial correlation among the residuals, because of the d-value 1.634 is far from zero but close to two, as it indicates.

6. CONCLUSION AND RECOMMENDATIONS

The results of this study have a very useful implication for policy formulations regarding government health financing and economic growth in India. The results lend to the fact that policies that aim to substantial poverty reduction should be given adequate attention. It recommends that government should increase budgetary allocation on healthcare and sustain health spending aim at reducing poverty and increase economic growth. More effort is also required to the provision of social infrastructure to alleviate the poverty situation among the poor.

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