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Towards a sustainable growth story: Critical analysis of Fundamentals

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The Indian economy is still in its developing phase. At this stage it has to generate policy measures to aid development, and at the same time it has to comply with increased demand of globalization. This is a common concern for all developing parts of the world: to design policies for development while meeting global standards. Hence, in this race for development, some sectors/regions of a developing economy like India are ultra modern and developing fast whereas there are still many regions where people have been working hard to make ends meet for their basic necessities. The role of the political arena of a developing nation is very crucial in this regard. In the race for development, they have to design domestically viable policies, and at the same time they have to follow norms and stipulations of the international arena and organizations like WTO, World Bank, International Finance capital etc. The task of balancing both of these needs is quite cumbersome because after all an economy has limited resources and use of these resources for developmental purposes are constrained by many forces like norms of organization, globalizing needs, for benefit of high income classes and elites. In the midst of this scenario, policy makers in democratic countries have to reconcile 'n' number of political views, the decreased autonomy of utilizing resources, and directing them fully towards development purposes. This causes some imbalances within the structure of a developing economy. These imbalances come up in the form of paradoxes in society, where comparative conditions are poles apart but still there is illusion of development. We call it inequality.

Indian GDP growth in 2006-07 was 9.6, and looking at the past few years, it has consistently been on a surge compared to the first few years of the decade. On a superficial note, it points towards sustainability of a high growth in the long-run. It is argued that this rate of growth is accrued to stimulus from external markets and to increased savings rate, which have induced a sudden step up in investment potential, resulting in multiple rounds of investment and has stimulated growth.

But it has to be analyzed carefully[1]. In regard to external demand, the high rate of growth in the dollar value of exports is not a sufficient indicator, indeed the net exports, which actually contribute to the growth, have been consistently been negative and the gap between exports and imports has risen throughout the decade. Now, for growth, it is essentially the autonomous investment which acts as a generator, bringing in the induced investment, which drives the growth. But in India, public investment, which is generally called the autonomous investment, has seen a decline in its share in total capital formation, from 29% in 2001-02 to 22.5% in 2005-06, whereas that of private corporate sector (induced investment) has risen from 22.5% to 40% during the same period. So, it can be asserted that domestic consumption demand has stimulated Private corporate investment, which has brought a surge in overall investment, and hence, in growth.

At the same time it has been seen that domestic savings rate has increased, which is due to the increased savings of those who can save. This situation points toward the fact that growth has been

[1] Analysis by Chandrashekhar C. P. (2008), New Growth Story, Frontline, Vol. 25, Issue-04

accompanied with increase in income inequalities which would have an impact on consumption patterns and hence, on consumption led growth itself.

The objective of this paper is to bring out the income and consumption inequalities, which can prove to be detrimental for long run sustainable growth and suggest some measures in the form of specific sector analysis to mitigate this inequality and hence bring out a long run high rate of growth, which is sustainable.

The rest of the paper is organized as follows: In section 2 a brief explanation of some empirical evidences in favor of productive consumption by mass have been cited which are followed by 2 theoretical models emphasizing on enhancing labor productivity and bringing endogenous growth process through productive consumption. In section 3, we will analyze the consumption inequalities in Indian economy, which will make the fragile structure of the growth process, overt. Section 4 deals with the discussion of Indian sectoral transition which has been a major cause of this fragility and inequality, and will discuss a specific case of Indian Manufacturing sector, which is identified as a crucial juncture of the new growth strategy. Section 5 will bring the theoretical conventions of models discussed in section 2 and the findings of section 3 & 4 together to show, how it will enhance the growth process and I will also show an IS-LM analysis to simulate the same. Section 6 will summarize the findings and conclude the paper, followed by appendix and references.

I. Empirical and Theoretical overview

In this section we will see the role of productive consumption and its growth stimulus. Productive consumption is defined broadly as the consumption expenditure on food, nutrients, good health facilities and on some basic and intermediate necessities, which are directly linked with improving the standard of living for low income groups.

A. Empirical Evidences

A positive relation between labor productivity and output growth on one hand and productive consumption on the other hand has been identified by many empirical studies on micro and macro levels by several economists on various national and international arenas. Here are a few of them:

On the basis of microeconomic cross-sectional data for small-scale farming enterprises in Sierra Leone (1974/75), Strauss (1986) estimates the coefficients of an agricultural Cobb-Douglas production function[2]. The production function is specified to account for a dependence of the agricultural workers' efficiency upon daily nutrient intake per worker. The approach takes into account the simultaneity of household choices, the levels of variable farm inputs and it considers the possible influence of other variables on agricultural output, e.g. land quality. The coefficients of nutrient intake show the expected positive sign and are highly significant. The positive impact of nutrient intake on labor productivity is especially marked at low levels and decreases with an increasing level of calorie intake.

[2] Strauss, John (1986), Does Better Nutrition Raise Farm Productivity?, Journal of Political Economy, Vol. 94, No. 2, 297-320

Ram and Schultz (1979) analyze the relation between the health status and labor productivity in agriculture on the basis of data for different Indian states[3]. The rate of mortality is employed as an indicator of the health status in such a way that a decrease in the rate of mortality is interpreted as an improvement in the health status. Ram and Schultz regress the percentage change in rural labor productivity on the percentage change in the rate of mortality for the period from 1958 to 1967. This single regression explains 28 percent of the interstate variation in agricultural productivity.

On a macroeconomic level, Wheeler (1980) examines for 54 DCs (Developing Countries) the relation between the growth rate of output on the one hand and the growth rate of different indicators for the nutritional status (calorie availability per day), the health status (life expectancy at birth), and education (adult literacy rate), on the other hand, for the period from 1960 to 1970[4]. For this purpose, Wheeler formulates a simultaneous four-equation model, consisting of a macroeconomic production function and one equation for nutrition, health, and education, respectively (which are called "welfare equations"). The production function includes capital in addition to labor in efficiency units as inputs, with the latter again depending on the level of nutrition, health, and education. The three "welfare equations" represent the level of nutrition, health, and education as a function of per capita income as well as some exogenous variables. By this formulation, a mutual causality between the growth rate of output on the one hand and the change in nutrition, health, and education on the other hand can be taken into consideration. Wheeler finds a strong labor augmenting effect of the nutrition and health variables in the determination of the change in output for "poor countries".

The above-mentioned results are confirmed by Hicks (1979)[5] insofar as he finds within the framework of different multiple regressions on the basis of cross-sectional data for 69 non-oil exporting DCs (1960-73), without exception, a strong and significant influence of different "basic-needs" indicators (life expectancy at birth, adult literacy rate, primary school enrolment rates) on the growth rate of real per capita income.

B. Theoretical Models

B.1 Consumption and Labor Productivity

Gersovitz (1983) analyzes the effects of productive consumption on the labor productivity[6] and he concluded from the resultant model that, *"Greater current consumption adds to utility directly and indirectly by increasing income, thereby creating a bias against savings".* The crucial hypothesis of consumption (c_1) enhancing the efficiency of labor (h) is represented by a concave and twice continuously differentiable "effort-function". Thus, it is supposed in accordance with efficiency wage literature, that consumption increases the efficiency of labor without any delay.

(1) $$h = h(c_1) \text{ , with } h' \geq 0$$

[3] Ram, Rati and Theodore W. Schultz (1979), Life Span, Health, Savings and Productivity, Economic Development and Cultural Change 27, 399-421.
[4] Wheeler, David (1980), Basic Needs Fulfillment and Economic Growth: A Simultaneous Model, Journal of Development Economics 7, 435-451.
[5] Hicks, Norman (1979), Growth vs. Basic Needs: Is there a Trade-off?, World Development, Vol. 7, Nov./Dec., 985-994.
[6] Gersovitz, Mark (1983), Savings and Nutrition at Low Incomes, Journal of Political Economy Vol. 91, No. 5, 841-855

The individual considered exists for two periods, the entire income is received exclusively during the first period. Current and future consumption are chosen in order to maximize total utility,

(2) $\boldsymbol{V = u(c_1) + u(c_2)}$ **subject to the constraints*

(3) $\boldsymbol{R \cdot s = c_2}$

(4) $\boldsymbol{c_1 + s = y = w.h(c_1) + \alpha}$

In this case w denotes the wage rate per efficiency unit of labor [i.e. the wage rate per man-hour in relation to one unit of efficient labor (w_0/h)], $h(c_1)$ the efficiency of labor, so that $wh(c_1)$ represents the wage income and $\boldsymbol{\alpha}$ all components of non wage income. The first-order condition for an interior solution reads:

(5) $\boldsymbol{u'(c_1) = -R \cdot u'(c_2) \cdot (w \cdot h' - 1)}$

Taking into consideration the presumed positive marginal utility, condition (5) can only be fulfilled if the following inequality holds:

(6) $\boldsymbol{(w \cdot h' - 1) < 0 \text{ or } w \cdot h' < 1}$

The interpretation of condition (6) is as follows: Saving necessarily means a reduction in current consumption. Consequently, the efficiency of labor and, therefore, the wage income decreases in accordance with the effort-function. The condition $wh' < 1$ means that further saving (renunciation of current consumption) by one unit can only be reasonable if the induced fall in income turns out to be smaller. The bias toward current consumption in the case of low incomes becomes clear if (5) is transformed to:

(7) $\boldsymbol{u'(c_1) = R \cdot u'(c_2) - R \cdot u'(c_2) \cdot w \cdot h'}$

For comparably low incomes and, consequently, ceteris paribus low consumption levels, h' is relatively high, and the value of the right-hand side of (7) is relatively small. Hence, a low marginal utility of consumption in the first period (left-hand side) and, taking into account the concavity of the utility function, a comparably high level of current consumption results. This effect disappears with a rise in income and for $h'=0$ (7) turns into the usual optimum condition. The average saving rate rises with income provided that the following condition holds:

(8) $\boldsymbol{(1+\lambda) \cdot (\varepsilon - 1) + wh' - \mu\varepsilon > 0}$

(9) With, $\boldsymbol{\varepsilon \equiv (-h''/h').c_1}$, $\boldsymbol{\mu \equiv \alpha/c_1}$ and as before $\boldsymbol{\lambda \equiv c_2/c_1}$

Provided that the individual has no non-wage income ($\alpha = 0$), $\varepsilon > 1$ is a sufficient condition for the saving rate to increase with income. Accordingly, the marginal attractiveness of current consumption as a result of the efficiency and wage increasing effect must fall sufficiently fast.

B.2 Human Capital Enhancement Function[7]

To analyze the implications of productive consumption in the context of growth, the productive consumption effect is interpreted as enhancing the stock of human capital. This central hypothesis is specified in the form of a *human-capital-enhancement function*. In its intensive form, this concave and twice continuously differentiable function reads:

$$\textbf{(10)} \quad h(t) = \phi[c(t)] - (n+\delta)\cdot h(t), \qquad \text{with } \phi'(c) > 0 \text{ and } \phi''(c) < 0$$

In this case $h(t)$ denotes the stock of human capital per capita at time t , $c(t)$ consumption per capita, δ the depreciation rate of human capital, and n the population growth rate, respectively. Equation (10) represents the equation of motion for the average stock of human capital. As a result of productive consumption activities, the stock of human capital per capita increases according to the function $\phi[c(t)]$, while it decreases due to depreciation and population growth. Consequently, $\phi[c(t)]$ can be designated as the gross human-capital-enhancement-function. The positive, but decreasing marginal human-capital-enhancement-effect of consumption $[\phi'(c) > 0, \phi''(c) < 0]$ appears justified by the empirical evidence. The "smooth" shape may not be reasonable at an individual level. However, this assumption hardly appears problematic at an aggregate level that is if (1) is interpreted in the sense of an average human-capital-enhancement-function. On account of its static character, the traditional efficiency wage theory was forced to assume that consumption increases the efficiency of labor without any delay.

This version of modeling human capital enhancement is closely related to the Endogenous growth models, wherein, enhancement of human capital contributes to the enhancement of the overall capital stock and hence contributes towards achieving a higher rate of growth.

II. Indian Scenario

A. Growth Story

As seen in the first section of the paper, the growth has been consumption led and has been accompanied by a sharp increase in savings rate, which point towards the fact that this growth has been accompanied by increase in income inequalities, which will have implications on consumption patterns and then on the consumption led growth itself. Also, there has been a shift in commodity baskets in favor of luxury and credit fuelled consumption goods, which have thrived on easy availability of credit due to financial liberalization.

Apart from that, when one looks at the contribution of sector wise growth to the total GDP, some strange facts are observed. Service sector has accounted for as much as 60% of the increment in GDP during the high growth period between 2002-03 and 2006-07. Further, the contribution of agriculture (10.75%) and registered Manufacturing sector (11%), the real commodity producing sectors, to the increment in GDP during this period has not been very much higher than that of construction (11%), communication (10.46%), banking and insurance (8.03%) and real estate (7.71%). That is, the individual sectors in services have been growing as fast as the leading commodity producing sectors. So, we can see that growth has been consumption-led, service dominated and credit fuelled which has implications for its

[7] Steger, Thomas (1997), Productive Consumption and Growth in Developing Countries, University of Siegen, Germany, Pg 13-15

sustainability. In this case, a global economic shock (like the current financial crisis) will have a shift away from the current financial regime, and growth in credit fuelled consumption will slow down, resulting in decelerating of income growth and overall GDP growth.

With this background, in the next sub-section I will analyze the consumption baskets and their growth overtime with a fall in MPC. Followed by it will be an analysis of the welfare contribution of different consumption baskets (classified as luxury and necessities) using the sen's welfare index and I will use it to show the inherent inequalities in the consumption patterns arising out of the service dominated and consumption led growth, which have a negative implications for the growth process in long run.

B. Analysis

Looking at the consumption trajectories in Indian Economy, I get the following data results: The share of private final consumption in GDP has declined from over 70% in the early 1990's to 65% a decade later and to below 59% in 2006-07.[8]

As we have seen in the section 2.2, as argued by the analysis of models, that at higher levels of income, the marginal utility out of the additional consumption starts declining and there is an overall saving bias in the economy. So, theory says that MPC declined as income rises. Thus, the trajectories shown above may not seem to be surprising. But this inverse relationship does not hold for income growth from low levels, precisely in the case of a developing economy like India. This is because, in the case of India, where more than one fourth of the total population is facing severe poverty situations, an increase in income must meet unmet needs for mass which turn to increased effective demand and hence the overall bias towards current consumption.

This paradox has been observed in India due to the presence of inequalities which has resulted in the increased savings from the classes having surplus to save. Nearly, one fourth of Indian population is below the poverty line and a significant number still dwell just close to it. So in the case of Indian Economy, increasing MPS with increasing income does not represent an equitable picture of the society.

To establish this more convincingly let us analyze the Compound Average Growth Rate (CAGR) of some consumption commodities[9] and we will find that: during 1999-00 to 2006-07 CAGR of real private consumption expenditure in India has been 5.5 percent. But the CAGR of food among its components has been just 2% and that for rent, fuel and power has been close to 3.6%. On the other hand, during the same period CAGR of private consumption on transport and communication stood at 10.8% and for recreation, luxury and culture goods and services, it was 11%. Private consumption on basic goods (food, fuel, power etc) has been growing far slower than that for other luxury commodities.

So I found that:

1. Food and other necessities has grown at a very lower rate, in spite of a larger lower section of society, for which, increase in income leads to fulfillment of unmet needs and hence an increase in MPC.

[8] Source: Handbook of Statistics, RBI
[9] Hajra, Sujan (2008), Re-crowning the Indian Consumer, Hindu: Business Line.

2. Luxury commodities have grown at a very high rate, which has fuelled growth but represent only a small section of service dominated economy.
3. Despite this scenario, basic goods still own a heavy weight in private consumption expenditure. For ex. Food alone accounts for 40% of the total private consumption over the years.

To analyze and evaluate my hypothesis of increasing consumption inequalities and its implications on Growth process, I have measured inequality within 2 classes of consumption commodities viz. Class 1 of food and basic necessity goods and Class 2 of non food luxury items and durable goods and have calculated their individual welfare contribution by using Sen's welfare Index: $W = \mu(1-G)$[10], where, μ= Mean expenditure, G = Gini's Coefficient (See Appendix A for details). This index is efficient because it takes into account both; average expenditure and the degree of inequality.

For the purpose of calculating the gini's coefficient I have used the National Sample Survey (NSS) data on monthly per capital expenditure by different income classes (in ascending order), on different consumption baskets[11]. For the consumption baskets I have made two classes: Class 1 (including food, pan, tobacco, intoxicants, fuel and light) and Class 2 (including non food luxury commodities like services, durable goods and commodities used by high income groups). Note: These income classes confirm to the reporting methodology of NSS, for detailed breakup of classes, one can look up the NSS household surveys.

The results are as follows:

For Rural Areas:	**Gini's Coeff .**	**Avg. Consumption Exp. (Rs.)**	**Welfare**
Class 1	0.1739	447.19	369.424
Class 2	0.2541	199.03	148.459

For Urban Areas:	**Gini's Coeff.**	**Avg. Consumption Exp. (Rs.)**	**Welfare**
Class 1	0.1457	653.27	558.076
Class 2	0.3683	575.91	363.789

[10] Sen, A. K. (1974) Information Base of Alternative Welfare Approach: Aggregation and Income Distribution, Journal of Public Economics 3: 219-231.
[11] Table: A-14 to A-17, Appendix A, NSS Report No. 527, Household Consumption Expenditure in India, 63rd Round, 2006-07.

C. Results: Identification of Problem Areas

The results from the analysis of sub-section A and B are summarized as follows:

1. Much higher inequality in Class 2 commodities has been observed in both rural and urban areas, compared with Class 1 commodities. (Consumption which has stimulated the current high growth has been distributed very unequally)
2. Welfare contribution of Class 1 goods on other hand is significantly greater than welfare contribution of Class 2 goods in both, rural and urban areas. (Basic goods have more welfare enhancement effects than the luxury and credit fuelled consumption goods, in the Indian economy)
3. Gap of inequality and welfare contribution between both class of goods become wide when one looks at urban areas in comparison with rural areas (Service dominated regions have greater presence of inequality).

So I found that, consumption expenditure on certain goods, which has fuelled the current high economic growth, has been very unequally distributed and also is contributing less to the welfare than basic goods and necessities. This is due to the fact discussed before, that in a low income country like India, increasing income translates into current consumption of basic goods and necessities and hence increases the utility of people (Models in section II).

So comparing the results to the earlier analysis of CAGR of different consumption baskets I find that this widening inequality and depressing consumption of necessities and basic goods (which have contributed more to the welfare) point towards some problem with the income earning opportunities in some marginalized and *not so well off* sections of the Indian economy. These results confirm the hypothesis that increased income inequality has an implication on consumption patterns and hence will inhibit a sustained growth process in Indian Economy**.**

Once the problem area has been identified, it can be asserted that a more even distribution of benefits of high growth and income earning opportunities is likely to stimulate demand for basic and necessary commodities (Class 1) and which will boost overall consumption base and also the MPC, and hence will contribute to a more sustained growth of GDP in Indian economy.

III. Solution to Problem: *Sectoral Case Study*

A. Transition Story: Issue of Sectoral Mobility of Labor

This problem of income earning opportunities for deprived and not so well off sections of society has been dealt with in the "Growth Report" published by the Growth Commission.[12] According to which, the solution starts by:

1. Creating gainful employment for people who are otherwise marginalized and all bound to get restricted to the low productive and hence low remunerative sectors of the society

[12] The Growth Report, Commission on Growth and Development, part-2 The policy Ingredients of Growth Strategies, Pg 45.

2. Next, creating better jobs for people who are educated, more skillful workers, so that they can climb the ladder of income and hence of their standards of living.

These suggestions are confirmed by the rationale of economic history that, in an economy, there must be a step by step transition from agriculture to manufacturing and then to services sector. This step by step transition makes the process mentioned above, more lucid and if we look closely to this process, it represents the result of the same step by step transition. That is, in an economy a step by step transition from a low productive sector to high productive sector, ensures that people are brought out of low productive sectors into sectors of comparatively high productivity and then with adequate skill formation, they enter into sectors with very high productivity, and in this way they climb the ladder of income and standard of living.[13]

Now, these two objectives (suggestions by growth report and Transition), can be attained only when labor is mobile between sectors and hence makes migration overtime from a low productive to high productive sector.

But India has defied the conventions of the economic history by trying to transit directly to services from agriculture, leaving a lackluster manufacturing sector. Labor mobility in India has suffered due to this leap-froging, which has been both the cause and effect of a clumsy step by step transition and hence, is the prime reason of inequalities shown in the first section.

In Indian case, labor mobility has been in a dismal state. To prove it, I have performed a decomposing exercise[14], in which I have decomposed the aggregate labor productivity of agriculture and manufacturing, into 3 parts, one of which (called as Denison effect), will show the changes in aggregate labor productivity due to movement of workers overtime, from a low productive sector (agriculture) to a higher productive one (manufacturing).

Due to data constraint, I have used average output per worker (average productivity), as a proxy for the labor productivity in both agriculture and manufacturing sector[15]. The increase in aggregate average productivity comes out to be 92.98% for the time period 1994-95 to 2004-05. The decomposing results are as follows:

$$0.9298 = 1.363 + (-0.315) + (-0.1183)$$

(Change in prod.) = (Pure productivity effect) + (Boumul effect) + (Denison effect)

These results show that due to constrained labor mobility, there has been close to 12% decline in aggregate avg. productivity over the time period, which proves the dismal state of labor mobility in the case of Indian economy. Possible reasons for this constrained labor mobility have been identified by the "Growth report" as follows: (Improving upon which will facilitate the labor mobility):

[13] The Cambridge Economic History of India, vol. 2, Edited by Dharma Kumar, orient long-man in association with Cambridge university press, pg- 533-549.

[14] William D Nordhaus (2000), Alternative Methods for Measuring Productivity Growth, University of Yale, Pg 4-6.

[15] Source: Handbook of Statistics, RBI.

1. Lackluster situation of literacy and education
2. Zero sum Game (in manufacturing sector)

Taking the first point of literacy and education, we will see it from the point of view of Sen's capability approach[16]**.** We see that basic objective of development as expansion of human capabilities has been widely prevalent but, with and without a prime emphasis on generation of economic growth. "Capability" refers to alternative combination of functioning from which a person can choose. So, this notion consequently turns out to be that of freedom- the range of options a person has in choosing what kind of life to lead. Sen then talks about some factors or variables which enable these freedoms in a person; called as enabling factors.

Social variables of health and education can perfectly take the position of these enabling factors. He proves them to be valuable because they have intrinsic importance, instrumental personal roles, social roles, process roles and empowerment & distributive roles. Apart from that they all generate significant positive externalities, which along with all other roles, help in fostering freedom of choice, which develops capabilities and hence induce overall development in a society.

In the light of these arguments we see that prerequisites for enhancing the quantum and quality of employment in developing countries are adequate skill formation. Skills[17] here are defined as an acquired practiced ability or a qualification needed to perform a job or a certain task. Adequate provisions for creating and developing marketable skills, in process of skilling, up-skilling and re-skilling workers contributes directly to the role of increasing their adaptabilities to various situations and work conditions. Hence, increased adaptability facilitates better labor mobility from a low productive sector to a high productive one, overtime. There is a crucial role of public policy in this regard which will be dealt with, later in this section of the paper.

Moving on to Zero Sum Game (it is discussed below), we will see a case study of Indian Manufacturing Sector. First, let us glance at the relative sectoral contribution to NDP (at 1999-00 prices) in India. (In figure 1)

The graph shows a lackluster trend in the industrial contribution to the total NDP (major part of which is manufacturing), while the share of agriculture is falling and that of services is surging rapidly. Also we can see the employment creating capacity of manufacturing (In figure 2)

We can conclude from these two graphs that even after the industrial reforms, manufacturing sector has not been enhanced in terms of increasing growth and hence have not been able to create jobs which are central goal of our analysis. India has missed out on a crucial sector of manufacturing which has led to inhibiting the labor mobility from a low productive sector to a higher one.

In this case, the zero sum game comes about. Let us discuss this in detail. This is the characteristic of most developing countries marked by large labor supply. In a highly populated country like India there is large labor supply. But due to absence of a job creating ability of one crucial juncture in transition process i.e. the manufacturing sector, labor demand falls short of the supply. These shortages

[16] Dreze and Sen (2002), India: Development and participation, Oxford University Press, Chapter-2, Pg 36-43.

create inevitable entering barriers on entering in labor force and securing an employment. This is because at one hand, manufacturing sector is unable to provide job and on the other hand, services sector does not create a large scale job due to its capital intensity, apart from that in services sector, entry in restricted due to inevitable entry barriers like High educational and skill requirements[18].

In this case, increased skills of one worker are very likely to pose a threat to the job of another comparatively less skilled worker. Hence, in this case gain of employment by one might retrench another and bring a 'zero' addition to the net value added in the output produced. These tendencies inhibit free labor movement from a lower sector to an upper one and pose a threat to the above said solution for decreasing inequality and promoting inclusion.

So, the solution is to enhance the manufacturing sector so that it can provide employment to mass, removing the constraints on labor mobility and bringing out a lucid transition from low productive agriculture to comparatively high productive manufacturing sector, which will contribute towards easing barriers on income earning opportunities and hence removing consumption inequalities in Indian economy.

To enhance the manufacturing sector, strategies should be designed for investment which can enhance the sector and create employment through the route of increased demand due to enhanced operations.

In a resource constraint country like India, policies cannot be designed to invest simultaneously in all sectors, so something else has to be proposed. Here comes the role of the Unbalanced Growth Thesis by Albert O Hirchman[19], he proposed that in a developing nation it is not possible to invest simultaneously in all sectors of the economy, so strategy has to be made to invest in sector which is most favorable and will pull other sector into growth process.

But when it comes to choosing the sector, one must consider that investing in one sector at the cost of other might inhibit the growth of other sector. This tendency will eventually result in a growth pattern where one sector enhances at the cost of other, then other sector follows the same pattern and they move towards high growth rate inhibiting each other. This process brings about a clumsy and prolonged journey to the desired target of higher growth of all sectors. This is known as antagonistic pattern of growth, wherein, one sector enhances at the cost of other and other suffers a loss in its growth performance, which leads to a clumsy movement towards long-run growth path.

The solution of this problem is that the sector chosen for investment must be the sector which has maximum Backward and Forward linkages. For a sector which has maximum backward and forward linkages, it is possible to impart benefits to other sectors in the economy without gaining at their cost and hence can induce other linked sectors into the growth process. This happens because the sector with

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[17] Skill formation and Employment assurance, NCEUS, August 2008, Pg 5-9.

[18] There might me other reasons also like existence of Labor Unions. In this paper I have not analyzed them, so they remain as a future avenue for research in this regards. In future I would like to analyze them too.

[19] Albert O Hirschman, Rival Views of market society and other essays, chapter-1: "A Dissenter's Confession: The strategy of Economic Development revisited and chapter-3: "Linkages in Economic Development".

backward and forward linkages has significant positive externalities for the linked sectors and its enhancement acts as a stimulus of other linked sectors, which are then pulled into the growth process.

One answer to this question is investment in infrastructure because it acts as a diverging series of investment. The virtue of infrastructure is that unlike other sectors, it does not constraint the growth of other sector and will pull a number of sectors into growth process and enhance their expansion, which will turn into increased employment opportunities and eventually, in higher income and higher consumption expenditure to boost and sustain the economic growth. Public expenditure on infrastructure- roads, ports, airports, power, irrigation etc, crowds private investment in, because it gives the producers a chance to enhance their operations due to lower costs concerning infrastructure needs and hence their desire to operate on large scale to reap maximum benefits out of it.

Now, looking at the theoretical background of the role of infrastructure, we see that either infrastructure can enter the production function directly, as any other factor of production or it can enter the production function through enhancing the total productivity and hence, having an indirect effect[20]. I have analyzed manufacturing sector and the role of infrastructure in it from the point of view of both direct and indirect effects (See Appendix B for details).

Direct Effects: To analyze direct effects I have regressed the index of manufacturing output as a dependant variable over the composite index of infrastructure industries as an independent variable for the time period 1993-94 to 2003-04. The summarized results are as follows[21]:

Dependent Variable: MANUF
Method: Ordinary Least Squares
Sample: 1993-94 to 2003-04
Included Observations: 10

MANUF	**Coeff.**	**Std. Err.**	**t**	**P> |t|**	**95% confidence interval**	
Infra	4.500818	1.148803	3.92	0.004	1.851674	7.149963
cons	-598.6137	241.9251	-2.47	0.038	-1156.494	-40.73333

rho	0.8673516		
R-sq	0.6574	Root MSE	16.118
Ad R-sq	0.6146	Sum Squared residual	6119.04532
F-statistic	15.35	d-statistic (transfomed)	1.270248
Prob(F)	0.0044		

[20] Straub, Stephane (2007), Infrastructure and Development: A critical Appraisal of Macro level Literature, University of Edinburgh, pg 7-10. This paper has defined how Infrastructure enters production function directly and also Indirectly, enhancing the aggregate productivity.
[21] Regression Report: STATA™

These results point towards the significance of the regression. The R-sq is close to 0.65, which is very significant. Also, the p values for (t) test and for overall regression are sufficiently low to prove the significance of the regression. These results are brought about after correction for autocorrelation by using prais-winston transformation. These results show that infrastructure has played a crucial role in determining the output of manufacturing sector and hence direct effects are very significant.

Indirect Effects: Aggregate productivity in manufacturing sector has been falling over the same time period of 14 years, which shows that there are no significant indirect effects of infrastructure on the aggregate productivity of manufacturing sector. But this has to be looked into closely. Overtime, it has been seen in manufacturing sector that labor productivity has increased but this is accompanied by 2 most important things: 1. Capital substituting labor and 2. Declining efficiency of capital, shown by an increase in capital-output ratio.[22]

So there is one important qualification over this result that, labor productivity has increased, which might help in reversing the trend of declining aggregate productivity in manufacturing sector. One crucial aspect of increase in labor productivity is that of social infrastructure (health and education), which have been discussed earlier as well. So enhancing social infrastructure will have positive externalities too and can have significant indirect effects in future, as it enhances the aggregate productivity.[23]

In all, I have found that there are significant direct effects of infrastructure over the performance of manufacturing sector and at the same time enhancing the social infrastructure might bring about crucial indirect effects too in future.

Case Study: De-licensing and manufacturing sector[24]

This is a study done by Indian council for Research on International Economic Relations, which has studied the performance of manufacturing sector after the de-licensing in India. They have analyzed the trends in manufacturing sector, taking into account 3 factors: infrastructural dependence, dependence on external finance and labor intensity. I will talk about the first factor i.e. infrastructural dependence. They have analyzed that after de-licensing, the manufacturing industries with ‘above median’ infrastructural dependence have seen a 15% decline in their performance due to infrastructural deficiencies in India with comparison to a 33% increment in performance for industries with ‘below median’ infrastructure dependence. This study shows that, how crucial infrastructure has been for determining the performance of manufacturing sector in India, which confirms my analysis of its direct and indirect effects.

[22] Source: Handbook of Statistics, RBI. Also, this situation has been significantly due to labor unions and low skill level of workers, which has forced owners to substitute capital for labor. Following the suggestions in this paper, there are fairly good chances that these trends will reverse. This is also a further avenue of research for me.

[23] Some Works on this topic suggest that there may be some sizable Indirect effects on productivity also, other than that of Social Infrastructure. I would like to work on them in future.

[24] Working Paper No. 211 “ What constraints Indian Manufacturing?”, Poonam Gupta, Rana hasan, Utsav Kumar, March 2008, ICRIER

B. Public Policy

In an economy a clear distinction must be made in public spending in current outlays and capital expenditure which will facilitate growth and development. More spending in the former at the cost of latter will inhibit latter and take away resources which are crucial for longer term. This can crowd out private investment possibilities in future too because these expenses will be financed out of taxes, fees or inflation which will deprive private sector of resources it might otherwise have invested for expanding their operations and hence creating more employment opportunity. It is evident by both the graphs (figure 3 and figure 4) that developmental expenditure has lacked the required pace and current, non developmental expenditures have risen. Also in second figure (figure 4) we can see that the expenditure accruing to actual growth has been almost stagnant over a decade. Both of these graphs show that there exists a room of improvement and channelizing funds for developmental purposes like that for infrastructural development (social and physical) in India. It can be argued that rather than allocating funds for satisfying some political needs and for benefits to privileged classes for some non productive causes, they can be channelized for development of a good infrastructural base and providing funds for educational and health services in India.

In this section we have seen the crucial role of labor mobility in easing the consumption inequalities amongst the masses and to facilitate it, we have seen that enhancing the literacy level of people and providing them income earning opportunity by stimulating a crucial missing juncture like that of manufacturing sector are crucial steps to be taken.

IV. Simulation

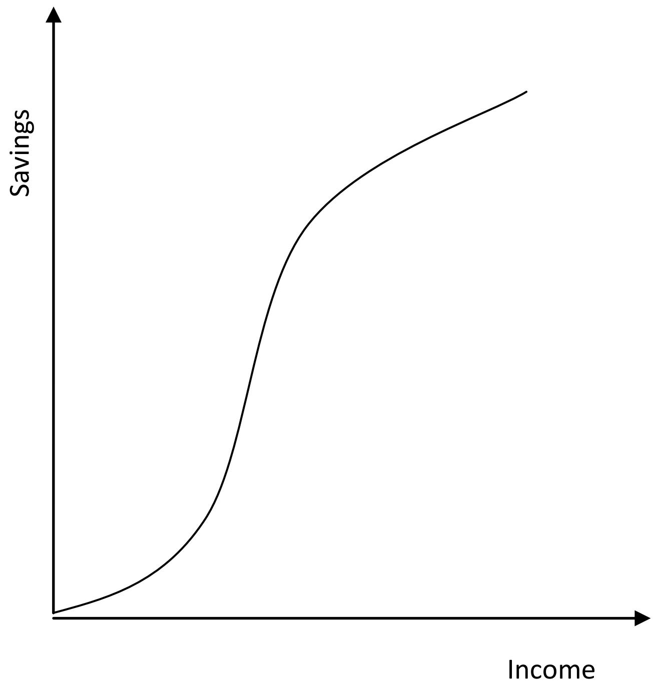
A. Increase in MPC and strengthening the growth prospects

In this section we will bring together the theoretical conventions of section II and the results learned from section III and IV, in bringing out a simulation of how these results will stimulate the variables discussed in the theoretical section and will help in devising a long run inclusive growth strategy for India.

Firstly, we have seen in the last section, how revamping of manufacturing sector can facilitate the labor mobility and a smooth transition from low to high productive sectors. This will contribute towards movement of masses from a low remunerative sector to a higher one and will help in easing income inequalities. The reduced inequalities will bring about a smooth consumption pattern amongst the mass. Now, how this movement from lower income groups to comparatively higher ones will affect the marginal propensity to consume? To answer this we have to move back to the theory. Empirically it has been argued that a tendency to save takes the following pattern with an increase in income of mass.[25]

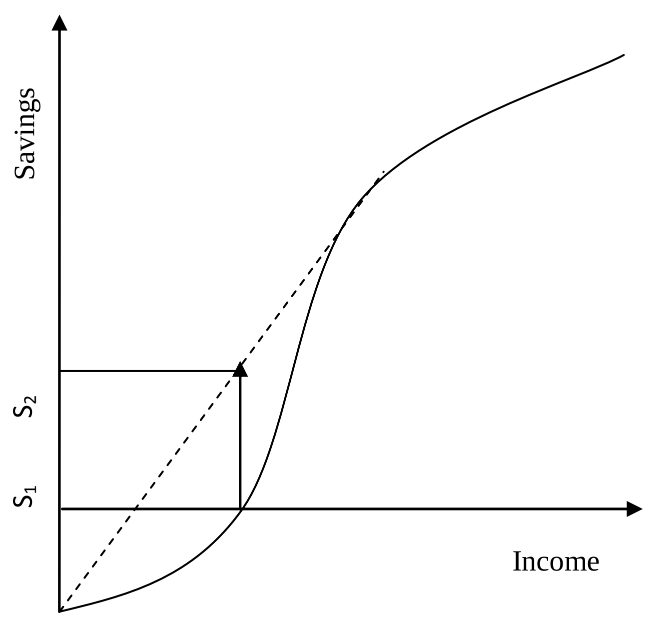
[25] Development Economics by Debraj Ray, Oxford University Press, chapter-7, Section 7.2.4

Figure 1.



This means that at lower levels on income, there is no savings, at a higher level of income, there are increased savings due to anticipation of a good future and at very high levels of income, there is again no tendency to save. In this paper, we have talked about movement of labor from very low incomes to comparatively higher ones, so I am interested in the lower and middle parts of curve to know about the savings behavior.

Figure 2.



In this figure we can see, how easing the inequalities between a lower income group and a middle income group (eg. shift from agriculture to manufacturing), will depress the aggregate savings propensity and will increase the consumption propensity (point S_2 should be reached but a point S_1 on the curve is reached). This proves that enhanced labor mobility and hence a movement from a low productive to a high productive sector will increase the MPC.[26]

This increase in MPC means increase in current consumption and will enhance the labor productivity, as per the first model of section II (section B.1). This enhanced labor productivity and increase in current consumption expenditure will increase the current utility directly and indirectly and will contribute towards achieving a high rate of growth and also inclusive development.

Similarly, this increased in current consumption will enhance the human capital (as shown by second model in section B.2). This enhanced human capital will act as stimulating the total capital base in endogenous growth models, which might turn out to be achieving increasing returns to scale and will achieve higher rates of growth, which can be sustained for long run.

Confirmation of this analysis with the theoretical models suggest that suggestions given in this paper can strengthen the current fragile structure of growth and can take it on long run high growth trajectories.

B. IS-LM Analysis: Increased expansionary effects of Growth

Increased income must induce increased consumption expenditure as the demand of basic and other necessities increase initially in a developing economy. This consumption expenditure multiplies itself in the economy and induces further more consumption from economic agents. This process as a whole work towards increasing the **"Aggregate Demand"** in an economy.

In an economy, shifts in aggregate demand are determined by the intersection of IS and LM curves: Where, the monetary multiplier (Differentiating Y w.r.t M/P in the intersection of IS and LM curves)[27]

$$\frac{\Delta Y}{\Delta(M/P)} = \frac{b\ \gamma}{h}$$

$$\gamma = \frac{\alpha_g}{1+\ (k.\ \alpha_g.b)/h}$$

-

[26] Development Economics by Debraj Ray, Oxford University Press, chapter-7, Section 7.2.4
[27] Macroeconomics, 6th Edition, by Dornbusch & Fischer, Macgraw Hill Inc., Ch-4, Page 116-119

α_g = Govt. spending multiplier

k = sensitivity of money demand to level of income

h = sensitivity of money demand to interest rates

b = sensitivity of investment to interest rates and

M/P = Money supply

Now, for a LM curve to shift more (hence AD to shift more)

(h) & (k) should be smaller and (b) & (α_g) should be larger.

To apply and analyze it in the Indian context, I have applied methods to get the measure of sensitivity of one variable over the another, as required to know the estimated values of the parameters (b), (h), and (k) for the time period of 10 years starting from 1993-94 to 2003-04[28]

To get an estimate of these parameters in Indian context I have used the concept of the responsiveness of the one variable over another, which is calculated by dividing the percent change in one variable by the percent change in another variable (See Appendix 4 for details) For eg. To get the responsiveness of investment to interest rates (to get an estimate of "b"), I have divided the percent change of investments over the time period to the percent change in interest rates over the same period.

$$\text{Responsiveness} = \frac{\%\text{ change in one variable}}{\%\text{ change in another variable}}$$

The respective estimate of the variables came out to be as follows in the Indian context:

(h) =6.855, (k) = 2.884, (b) = 2.992

Now, for the estimate of (α_g) in Indian context, we find (α)= 2.1915

we know that, (α)> (α_g), so we can say that

(α_g) < 2.1915

Hence, our cumulative estimates of the variables come out to be:

(h) =6.855, (k) = 2.884, (b) = 2.992 and (α_g) < 2.1915

In Indian economy (h) & (k) are larger and (b) & (α_g) are smaller.

But the condition required for a LM curve to shift more and hence AD curve to shift more is just the other way around.

[28] Source: Handbook of Statistics, RBI

Here comes the role of boosting the consumption demand. Enhanced consumption demand will enhance the MPC initially because the demand of basic goods increases as we move from low productivity to higher productivity sector (Low productive sector with low returns to start with).

We see that there is a room to enhance the consumption so as to increase

$$(\alpha_g) = \frac{1}{1-c(1-t)} \qquad \text{where, } c = MPC$$

Because, as the consumption increases, MPC increases and hence (α_g) increases. Which contribute to the condition of (α_g) being larger for a LM curve to shift more. When the LM curve shifts more, Aggregate demand increases in the Indian Economy.

Result: Increase in MPC creates the multiplier effect which will show up in enhanced growth rate of GDP with sustained increased in money supply as the economy grows in its all dimensions.

V. Summary and Conclusion

In section 1, we saw that current growth rate story has been consumption led, but service dominated and credit fuelled, which might have its implications on long run growth. In section 2 we saw some empirical works, demonstrating the role of productive consumption, which are also generalized in forms of 2 models later, dealing with labor productivity and human capital enhancement. In section 3, we learned about the fragile structure of consumption led Indian Growth story, which was later analyzed in terms of Inequality in consumption and welfare contributions of distinct classes of items. It was found that increasing MPS was the illusionary display of the actual situation, wherein basic and necessities consumptions are depressed but they have contributed maximum to the welfare.

With identification of the problem in opportunities for income earnings, we saw the dismal status labor mobility brought about by unusual transitions, which has fuelled the gap of inequality and hence resulted in a fragile growth structure. Next we discussed the factors inhibiting the mobility. With a case study of Indian manufacturing sector, I established how enhancing the sector can contribute to facilitating labor mobility and hence, easing the inequalities, which as a whole will strengthen the growth process. In section 5, I brought the results from analysis together and showed, how they fit into the economic models, to sustain and strengthen long run growth story. This was also proved by an IS-LM analysis of increased expansionary effects.

From the analysis presented in this paper, we can conclude that, Indian growth rate story has been unusual and touches many extents of unconventionality. In spite of that it has achieved growth targets beyond expectations. But this overwhelming excitement of achievements has a hidden word of caution in it. No matter how well it has served the political interests and has gained a worldwide hype in its image and position, there is another side of this story which shows increased vulnerability to shocks and factors beyond control. Growth stories are made successful and sustainable by united efforts and contributions from every section of society and economy, not by individualistic achievements which pose a threat to its future prospects. In this regard, looking back at conventions of sustainability and integrating them with local conditions, will generate results, which are equitable, prosperous and sustainable.

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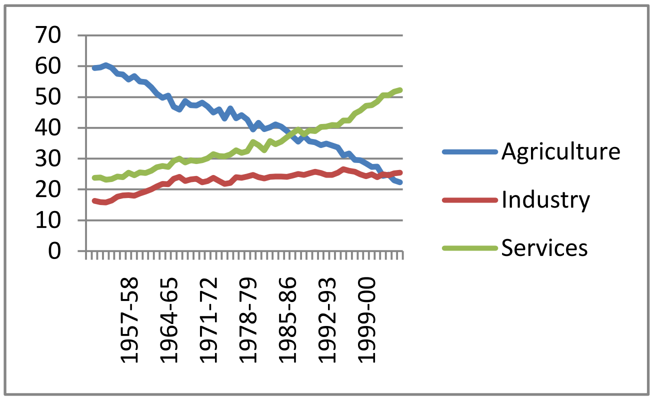
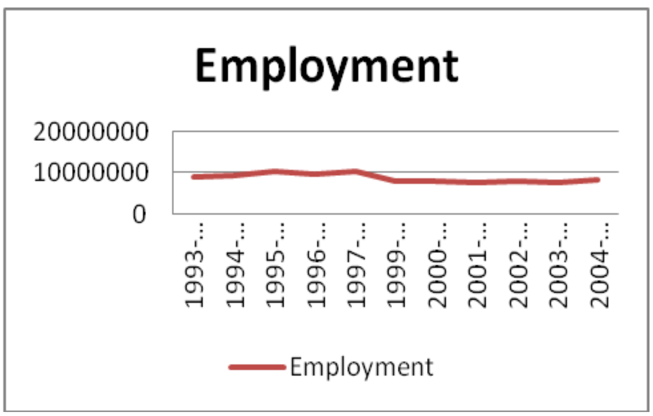
VII. Appendix

Figure A.1: Sectoral contribution in GDP



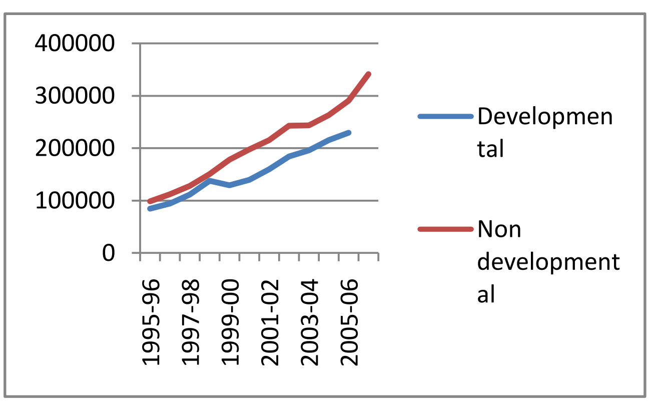
Source: Handbook of Statistics, RBI

Figure A.2: Employment in manufacturing



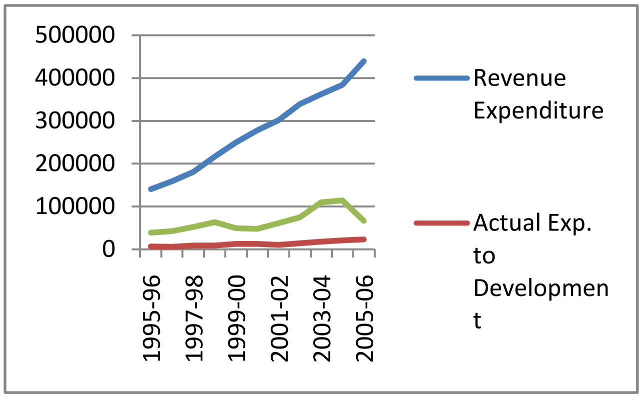
Source: Annual survey of Industries, RBI handbook of statistics

Figure A.3: Developmental and Non-Developmental Expenditures



Source: Handbook of Stats, RBI

Figure A.4: Different heads of Public expenditure in India



Source: Handbook of Stats, RBI

Gini's Coefficient Calculation

The Formula used to calculate Gini's coefficient is: $G = \dfrac{2 \sum i\,(x_i - \bar{x})}{n^2 x}$

where, i = Rank

Rural

<u>Class 1</u>:

$G = [2/(12)^2.\ (447.79)]\ .\ [1(-29.48)+2(-248.46)+3(-216.5)+4(-186.4)+5(-158.55)+6(-125.19)+7(-96.37)+8(-55.33)+9(-2.87)+10(73.63)+11(168.96)+12(407.21)]$

G = 5606.81 x 0.0000310 = **0.1739**

<u>Class 2:</u>

$G = [2/(12)^2.(199.03)]\ .\ [1(-171.93)+2(-162.06)+3(-155.74)+4(-142.69)+5(-132.02)+6(-119.25)+7(-106.13)+8(-87.85)+9(-58.7)+10(2.59)+11(116.02)+12(601.97)]$

G = 3641.12 x 0.0000698 = **0.2541**

Urban

<u>Class 1:</u>

$G = [2/(12)^2.\ (653.27)]\ .\ [1(-438.4)+2(-378.93)+3(-336.58)+4(-277.88)+5(-227.71)+6(-181.73)$

$+7(-124.62)+8(-60.87)+9(32.04)+10(149.63)+11(296.67)+12(725.98)]$

G = 6853.93 x 0.00002126 = **0.1457**

<u>Class 2:</u>

$G = [2/(12)^2 \,.\, (575.91)] \,.\, [1(-525.53)+2(-508.46)+3(-482.59)+4(-450.76)+5(-417.37)+6(-364.29)$

$+7(-302.81)+8(-227.53)+9(-111.57)+10(118.68)+11(496.52)+12(1886.17)]$

G = 15272.67 x 0.00002412 = **0.3683**

Welfare Calculation

The welfare function is: $W = \mu(1-G)$

Where, μ = Average expenditure

For Rural: Class 1

W = 447.19 (1 - 0.1739) = <u>369.424</u>

Class 2

W = 199.03 (1 - 0.2541) = <u>148.459</u>

For Urban: Class 1

W = 653.27 (1 – 0.1453) = <u>558.076</u>

Class 2

W = 575.91 (1 – 0.3683) = <u>363.789</u>

Direct and Indirect Effects

Direct Effect : $Q = A \,.\, F\,[\,K , L , I(K_i)\,]$

Where, A = Aggregate productivity

$I(K_i)$ = Infrastructural Capital

Indirect Effect : $Q = A\,[\theta , K_i\,] \,.\, F\,[\,K , L\,]$

Where, θ = Any other factor influencing productivity

IS-LM Analysis

All the methods of calculation and types of Data used for statistical analysis are explained as follows:

1). Calculation of (b), (h), (k) and (α)

As mentioned earlier, for estimation of sensitivity of one variable to another variable, method for calculating responsiveness is employed.

$$\text{Responsiveness} = \frac{\Delta(\text{ one variable})}{(\text{ Variable at the previous period})} \times \frac{(\text{Second variable at previous period})}{\Delta(\text{second variable})}$$

This method is employed for calculating estimation values for (b), (h) and (k).

2). For calculation of (α):

$$\text{MPC} = \frac{\Delta(\text{consumption expenditure}^{1})}{\Delta(\text{National Income})}$$

$$\text{And } (\alpha) = \frac{1}{1\text{-MPC}}$$

3). For Money Demand "Currency with the public" from money stock data is used.

4). For Investments "Gross domestic capital formation" from data regarding national income aggregates is used.

5). [1]For consumption expenditure "Private final consumption expenditure" from data regarding national income aggregates is used.