'AHISTORICAL SERVICES LED GROWTH OF INDIA': AN UNSOLVED QUESTION'

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ABSTRACT

In 2015 and in 2017, India has become world's fastest growing major economy surpassing China. It has also become the third-largest country of the world in terms of 'GDP by purchasing power parity (PPP)' ('Economy of India', Wikipedia, https://en.m.wikipedia.org dated 31/1/2018). This stunning performance of India over the last two decades, especially in face of massive global depression and through the adoption of 'Liberalisation, Privatisation and Globalisation' (LPG) policies, has drawn attention of the world economists. The question is: Has India followed an apparent 'ahistorical' path of 'Services led Growth', in sharp contrast to the 'Stylized Facts of Growth and Development' prescribed by Kuznets, Clark, Chenery and Taylor? Has India got an alternative prescription of development? Here, we have firstly tried to find out the 'Structural Break' points of the Indian economy corresponding to the GDP of India and its' sectoral distribution across the primary, secondary and tertiary sectors considering different econometric and input-output methodologies of the Structural Change. Secondly, we have tried to examine the validity of the 'Ahistorical Services Led Growth' argument of India and tried to address the relevant policy issues in this regard.

Keywords: Zivott-Andrews Structural Break, Amit Sen Structural Break, Structural Change, Input Output Method, Services led Growth

JEL Classification: C22, C67, O14, O50.

SECTION – 1: INTRODUCTION:

India, as an emerging economy, especially in the context of a 'Global Slowdown', has recently created both a history and a sensation through becoming one of the fastest growing nation in the world by moving ahead of Peoples' Republic of China in 2015 and 2017 ('Economy of India', Wikipedia, https://en.m.wikipedia.org dated 31/1/2018) and it has become a centre of attention as India has achieved the target by growing through an 'ahistorical' path of 'Services led Growth' circumventing the stylized path of 'Manufacturing led Growth' proposed by Kuznets (1966, 1971), Clark (1940) and Chenery and Taylor (1968) on the basis of the economic survey of a group of 13 the then developing and presently developed economies (along with 4 presently developing economies) for more than 200 years. World Bank (2004) terms this as 'India's Services Revolution'. Clearly this has generated great curiosity and obviously a discourse.

The idea behind the 'Stylized Facts of Manufacturing led Growth' proposed by Kuznets (1966, 1971), is based upon the 'Historical Development Experience' of 13 developed and 4 developing countries for more than 200 years that at the initial stage of the historical development process, agriculture acquires the predominant position in terms of its' contribution to GDP/Gross Value Added (GVA), with a paltry contribution of subsistence level of manufacturing and basic services in GDP/(GVA). However, along with the growth in per capita GDP, contribution of manufacturing swells over time at the expense of the agriculture in terms of the contribution in GDP, services share remaining almost unchanged or fluctuating within a band of 25-35 percent. Along with further growth in per capita GDP, manufacturing reaches to its' saturation in terms of demand and then the demand for capital intensive qualified services (like transport, communications, banking and

finance, distributive trade, business services etc.) develop so that relative contribution of 'services' in GDP/GVA puff out at the expense of the labor intensive manufacturing, the relative contribution of agriculture being paltry. Relative contributions of the major sectors in GDP change along with the change in the structure of the final demand as the Engel's Law of Income Elasticity of Demand notifies that as income increases, the proportion of income spent on food grains decreases and proportion of income spent on manufacturing and services increases.

The theory seemed universal during the period 1765 to 1967. However, it has started to lose its' generality especially from 1970 onwards since several developing countries have started to grow in terms of the advanced capital intensive services along with the advanced developed nations, especially through spread/ spillover of modern technologies (along with modern computers and satellite technologies) by availing the advantages of trade liberalization worldwide, through increase in the trade volume and 'Trade-GDP Ratio' for almost all the countries (see Table – 1 in the Appendix). As a result, 'Tertiarisation' has become the name of development since 1970s and this makes the fact evident that there has indeed occurred a clear structural break worldwide around 1970s (Sinha, 2015). Hence, if we analyze the development process 1970 onwards, then we may distinguish between two kinds of developing countries in the world in terms of development experience – (i) a group of developing countries that are observed to follow the 'Stylized Facts of Development' through having manufacturing swelling at the expense of agriculture in terms of relative share in GDP, share of services remaining either same or slowly growing (example: China, Philippines, Thailand, Romania, Ghana etc.), i.e., 'Kuznets Stylised Facts Follower Countries'; (ii) and another group of developing countries that are observed to defy the 'Stylized Facts of Development' through having services inflammation at the expense of agriculture in terms of relative share in GDP, share of manufacturing and industry as a whole remaining either same or relatively sluggishly growing (example: India, Brazil, Mexico, Hong Kong, Lebanon etc.), i.e., 'Kuznets Stylized Facts flouter Countries'. The clusters of the advanced developed nations are obviously growing through services, especially post 1970s.

It is often argued in this discourse that material goods are capable of generating economic growth through their use as fixed capital and wage goods and hence they are to be treated as productive. Services, on the other hand, being intangible, regarded as unproductive. Based upon this Smithian idea (A. Smith, 1776; pp. 315-321), many observers (Bhattacharya and Mitra (1990 and 1991), Bhalla (2004), Sastry et. al. (2003)) have identified this 'Service led Growth' as transitory and illusory.[1] However, these views have strongly been refuted by Rakshit (2007), Datta(1989), Datta and Sinha (2008), Sinha (2015) et. al. According to them, services led growth is neither illusory nor transitory.

As the 'Services led Growth', especially in the Indian context, has achieved the central importance, therefore in the next 'Section – 2', our objective is to focus towards the analysis of structural change of the Indian economy for the period 1950-51 to 2014-15 so that we may have a comprehensive analysis of change that India has undergone over the past 65 years. For this purpose, we are going to use 'Endogenous Structural Break Methodology' for GDP of India and it's sectoral shares of the three major sectors Agriculture and Allied (A), Industry (I), Services (S), having a special attention towards Manufacturing (M), Trade, Hotels and Restaurants, Transport, Storage and Communications (THRTSC), Banking and Insurance, Dwelling, Real Estate and Business Services (BIDRB), Community, Social and Personal Services (CSP).[2]

SECTION – 2: STRUCTURAL CHANGE IN THE INDIAN ECONOMY:

[1] In this context it could be noted that the erstwhile socialist countries have adopted this idea to follow the measure called 'Net Material Product' (NMP) that takes into account the unduplicated aggregate value of the whole production activity of the nation starting from extraction of resources to the production of the final material goods and their distribution, including only 'material intermediate services' integrated with the production process (like trade, transport, finance) and excluding all the remaining services in the economy from the Material Product System (MPS) by classifying them as 'unproductive' or 'ephemeral' (Mukherjee, (1969)). Thus, following this idea, it may seem that indeed 'Service led Growth' is transitory.

[2] Agriculture and Allied (A) sector includes Agricultural Crops, Forestry, Fishing etc., Industry (I) sector includes Mining and Quarrying, Manufacturing (M), Construction (C) and Electricity, Gas and Water Supply (EGWs) and Services includes Trade, Hotels and Restaurants (THR), Transport, Storage and Communications (TSC), Banking and Insurance (B&I), Dwelling, Real Estate and Business Services (DRB), Public Administration and Defence (PAD) and Other Services including Education and Research and Medical and Health Services (ERMHOS). 'THRTSC' refers to Trade, Hotels and Restaurants (THR), Transport, Storage and Communications (TSC), BIDRB refers to Banking and Insurance (B&I), Dwelling, Real Estate and Business Services (DRB), and CSP refers to Public Administration and Defence (PAD) and Other Services including Education and Research and Medical and Health Services (ERMHOS).

(I) GROWTH SCENARIO OF INDIA: STRUCTURAL BREAK ANALYSIS:

Here, from Table -2 in the Appendix, it becomes evident that since 1952-53, the share of the A sector has consistently shown a decline in overall GDP at factor cost, both at current and constant prices and this loss in share has been compensated by the S sector almost singlehandedly, with the share of the I sector remaining almost stagnant between 25 to 27 percent. Services has not only shown a rising share in GDP, but has also shown a consistently rising share in the growth rate of GDP (Rakshit, (2007)) and that is why Service sector is regarded as the 'Engine of Growth' of the Indian economy, especially from the last two decades and that is why World Bank has termed this development as 'India's Services Revolution'.

From the various analyses, a consensus emerges and that consensus is that the growth path of Indian economy has changed its' course well before 1991-92, the year of official move of India towards 'Reform Process' aimed at 'Liberalisation', 'Privatisation' and 'Globalisation'.[3]

Hence, three points are coming out unanimously from the present discourse -

(i) India's growth path has shifted its' course well before the official admittance to 'Economic Reforms' of 1991-92;

(ii) The significant enhancement in public expenditure along with 'mild doses of industrial deregulation' (Nayyar, 2006), 'attitudinal shift' of the government towards privatization (Rodrik and Subramanian (2004), DeLong (2003)) and growth of TFP, propelled by significant enhancement in private equipment investment has started much earlier than its official initiation in 1991-92; and

(iii) The process of deregulation, TFP growth and privatization, along with other necessary reform activities has held the key for the structural break in terms of economic growth in the Indian economy well before 1991-92.

In this context, the present paper attempts to re-examine the growth path of GDP and its sectoral contributions of the major as well as the minor sectors following the 'Endogenous Structural Break Methodology used by Zivot and Andrews (1992) and Amit Sen (2000). In order to move ahead to determine the 'Take-off' point of the Indian economy, let's first discuss the relevant methodologies in nutshell.

Interpretation of the Obtained Results through Endogenous Break Methodology: Here we are going to follow Zivot and Andrews test methodology (1992) and Amit Sen test methodology (2000) of 'single structural break' to have a compact and consistent analysis of the 'Structural Change' of 'GDP at Factor Cost' and its major sectors, viz., 'Agriculture and Allied' (A), 'Industry including Construction' (I) (as mentioned earlier), 'Manufacturing' (M) and 'Services excluding Construction' (S) (as mentioned earlier).For the purpose, the relevant methodologies are analyzed in the Appendix.

We have obtained each of the aforementioned series variables to be integrated of order 1, or difference stationary of order 1, following the normal ADF Test and PP Test, and it is quite obvious. The question is: What is the relevant structural break point corresponding to each series? Answers are in Table – 3 and Table – 4.

Now, in our structural break analysis, quite significantly, both of the two methodologies of structural break provide the same break date for each of the series in analysis, viz., LNGDPFC, LNAGRI, LNINDUS, LNMANU, LNSERV, LNTHRTSC, LNBIDRB, LNCSP.

The growth rate of GDPFC has a break in 1988 obtained by both break methodologies and both methods are unanimously confirming the fact that indeed the decade of 1980's is the decade of crucial change in India's growth trajectory. According to the researchers, the structural break during late 1970s to late 1980s refers to a shift from the low 'Hindu Rate

[3] The argument implies that India has started moving towards the direction of higher growth from the so called 'Hindu Rate of Growth' much ahead than was believed. It may seem more astonishing because it is a common belief that India has started to grow after it has broke the shackles of regulation and as it has happened in 1990-91, hence economic growth started since 1991 onwards. However the scholars observe that the process of moving towards deregulation and privatization has started informally well before 1990-91(there lies a debate regarding this informal starting point; while Sen (2007) argues that it has started in mid 1970s, DeLong (2003) argues that it has started in mid 1980s, Nayyar (2006), Balakrishnan and Parameswaran (2007) and many others argue it to be around 1980).

of Growth' around 3.5 percent towards 6 percent and according to most of them, this has become possible due to the transformation in policy orientation of the Indian government from 'Dirigisme' towards 'Economic Reforms' through 'Liberalization, Privatization and Globalization'. Another explanation suggests that the expansion of aggregate demand, mostly through a rapid increase in government expenditure on investment and consumption, was the major factor behind this shift. According to many researchers, this shift is also accountable to the massive growth of the 'Services' that has started to become the pivot of the Indian economy since mid 1980s. This growth in Services, fuelled through the growing national and international demand of Information-Technology (IT) and Information-Technology-Enabled-Services (ITES), Transport and Communication Services, Banking and Finance Services, has laid the building block and also led the way towards a massive GDP growth to become one of the highest growing countries of the world at present. In addition, the modest growth of manufacturing and the industrial sector as a whole has also attributed to the consolidation and consistency of the growth rate despite worldwide recession. As we observe next, all the major components of GDPFC have been found to be accelerating, thereby providing a strong logical support to the argument of rapid growth of GDPFC.

'Agricultural (A)' sector of India has shown an endogenous structural break in 1978. This break in the late 1970s entails perhaps the policy effects of the government towards implementation of the 'Second Phase of Green Revolution'. This has resulted in a level shift in agricultural growth from 2.3 percent of the previous regime to 3.1 percent in the next regime. Especially, Introduction of newer high yielding varieties of 'Mexican Wheat and Dwarf Rice seeds, spreading of 'Green Revolution technologies from north-western India to central and eastern India, significant increase in oilseeds production along with grains and pulses production, the starting of the process of deregulation of industries resulting in an improvement in the terms of trade of the agricultural sector and an enhancement in the minimum support prices given by the government aiming at the reduction in the wedge between international and domestic prices are the possible reasons behind this shift. These events have worked favorably for enhancement in the purchasing power of the agricultural mass of India that has definitely boosted the aggregate demand of India.

'Industrial (I)' sector has shown endogenous structural breaks in 1969. Now the break of 1969 signifies that up to 1969, a sharp fall has been observed in industrial growth from almost 7 percent in 1953-54 to 1963-64 periods to almost 4 percent during 1969-70, possibly indicating the start of industrial deceleration since mid 1960s. This has happened owing to the lower effective demand for the industrial products because of drought situation in India for four consecutive years 1962-63, 1963-64, 1964-65 and 1965-66. Also the terms of trade tilted against the industrial sector during this period. In addition to that, huge borrowing on the external front for purchase of the heavy industries has moved against the industrial growth. As a whole, the situation was so worse that government was forced to abandon the 'Five Year Plan Program'. However, according to these two tests, since 1970, the situation has started to improve slowly and steadily. It is to be remembered, however, that there remains a lot of debates regarding the period of this industrial deceleration. Increase in effective demand through a rise in agricultural production through the initiation of 'Green Revolution' seems one of the important reasons behind the enhanced industrial growth since 1970s.

'M' sector, the most significant subsector of the 'I' sector, has shown endogenous structural breaks in 1978. For a variety of reasons, lack of industrial demand during 1960s and early1970s, especially for investment goods, has been held responsible for the stagnation in manufacturing and downturn in the growth rate of the manufacturing sector (Nagaraj (2003), Balakrishnan and Parameswaran (2007). According to our study, since 1978, the manufacturing sector has started moving upward as a significant positive shift in growth rate of this sector is observed thereafter.

Also, for the 'S' sector, following Zivot-Andrews and Amit Sen methodologies, the most significant structural break is on 1978. Now, it is to be recalled that in India, 'S' sector is the only major sector that has shown a consistently increasing trend throughout the post independence period of the Indian economy. Therefore the structural break points may be regarded as growth rate shifting points towards higher and even higher growth. During 1951-1961 the growth rate is 4.6 percent and it become just somewhat lower at 4.5 percent during the regime 1961-1978, possibly because of the indirect effect of 'Industrial Deceleration' and 'Severe and Continuous Draught' ongoing at that time. Since 1978, 'S' sector shifted its average rate of growth rate to 6.6 percent during 1978-2000 and growth rate enhanced close to 9 percent during 2001-2013. There are several explanations behind this exceptionally rising growth of the Services. Therefore, services sector is steadily growing since 1978. One possible explanation behind this exceptional growth trajectory is that since the industrial sector was tied up in the red tape of the 'Industrial Regulation' in the pre-reform period of the Indian economy (officially

the period before 1991-92), the relatively unregulated 'Services' activities has become an alternative area of expansion. Further, the worldwide spread of science and technologies and advent of modern computer and communication technologies (including satellite technologies) have started to show its spillover effect through trade liberalization and through increasing international cooperation between the developed and developing countries 1970 onwards (that is also in terms of international trade). India has started to become influenced by it well before (at least a decade before) its' official admission to 'LPG' regime (Sinha, 2014, 2015). Another possible explanation lies in the domestic as well as international splintering of the manufacturing sector across different nations. 'Splintering' refers to the fact that with the expansion of the manufacturing sector, several services activities associated with manufacturing such as transport, communication, trade, advertising, banking and finance activities are subcontracted to different service industries. When this is done domestically, it is called 'Splintering'; but when it is done from one (read, 'mainly developed nation') national industry to the industries of the other nations (read, 'mainly the developing nations), then it is called 'Outsourcing'. It refers to the subcontracting a part of the total production chain. Thus in the modern technology driven era, national as well as international industrial production process could be regarded as a *'manufacturing-services-manufacturing chain'* in the globalised production process across the developed and developing nations and generally, a part of this production process is subcontracted to the services industries especially of developing origin for securing cost advantage (Sinha, 2015). While the logic behind the domestic 'splintering' is gain from specialization, the logic behind international 'outsourcing' is the higher profit gain through cost advantage since the skilled laborers or the 'service providers' of the developing nations are much cheaper from their corresponding counterparts in the developed nations. This is gainful both in terms of the industries of the developed countries and the service industries of the developing nations and this mutual gain from comparative advantage is expected to continue until the comparative advantage evaporated or any restriction on international trade is imposed. India has exploited this comparative advantage of cheapest skilled labors to deliver the huge 'Services-led Growth' especially since the decade of 1990s.[4]

Now, in the next sub-section, we turn our discussion towards the analysis of the structural change of the Indian economy, but with a completely different approach of Input-Output Analysis.

(II) STRUCTURAL CHANGE OF THE INDIAN ECONOMY: INPUT-OUTPUT FRAMEWORK:

Case Study of India Through Input-Output Analysis: We now take up an examination of the structural interrelationships among four major sectors of the Indian economy through the input-output (I-O)transaction Tables published by the Central Statistical Organization. We have considered four I-O Tables for the years 1973-74, 1993-94,

[4] Now, for the 'Trade, Hotels & Restaurant, Transport, Storage and Communications' (THRTSC) subsector of the 'S' sector, following Zivot-Andrews and Amit Sen methodologies, we get the relevant single endogenous breakpoints at 1992 and at 1989, i.e., to speak, around 1990s. Now, before 1989, growth rate of this composite sector was almost stagnant at an average growth rate of 4.3 percent, possibly due to the industrial deceleration and severe draught, as these services form the parts and parcels of the industrial as well as agricultural production process. However, since 1989 (or, 1992), there has occurred a level shift in the growth rate of 'THRTSC' from 4.3 percent to almost 6 percent. During the next two regimes of (1989/1992 to 2004-05) and (2004-05 to 2012-13), the growth rate of THRTSC has become further higher at 9.7 percent and 9.2 percent respectively.

For the 'Banking, Insurance, Dwelling, Real Estate and Business Services' (BIDRB) subgroup of the 'S' sector, following Zivot-Andrews and Amit Sen methodologies, we get the relevant single endogenous breakpoints at 1975 and at 1981respectively, i.e., around late 1970s or early 1980s. The rise in the growth rate in this sector since 1975 (or, 1981) is possibly because of the government's policy orientation towards 'Bank Nationalization' (1969), spreading of much of the 'Poverty Alleviation Programs' through the direct involvement of the banking sector and increased amount of public investments in the banking sector. These have further benefitted the insurance sector and the dwelling and real estate services. As these services also form the parts and parcels of the industrial as well as agricultural production process, hence the steady growth of these services seem helpful towards the growth of 'S' sector and increased 'splintering activities between the manufacturing and services. Since 1975 (or,1981), during the next regime, there has occurred a level shift in the growth rate of 'BIDRB' from an average of 4 percent to an average of 9 percent. The successful banking sector reforms and controlled liberalization under the supervision of Reserve Bank of India, significant reduction in non-performing assets, increased worldwide competition and increased foreign investments in the forms of Foreign Direct Investment (FDI) and Foreign Institutional Investment (FII) have contributed significantly in the growth of this composite sub-sector.

Lastly, for the 'Community, Social and Personal Services' (CSP) subcategory of the 'S' sector, following Zivot-Andrews and Amit Sen methodologies, we get the relevant single endogenous breakpoints at 1980 and at 1982 respectively, i.e., around early 1980s. Since 1980 (or,1982), we observe the average growth rate of CSP to remain at a higher level of 5.7 percent from less than 4 percent average growth rate during 1953-54 to 1980 (or 1982) and this shift has occurred possibly because of much higher attention of the Indian government towards poverty alleviation, employment provision, higher public investment for education and research and health facilities through the implementation of the 'Fourth Five Year Plan Program'. These social sector reform programs, started actively since the start of the 'Fourth Five Year Plan', has continued to expand and has helped to raise not only the growth of the 'S' sector, but also to expand the knowledge base and technological know-how of the economy as a whole. It cannot be denied that the pay commission effects corresponding to the emoluments of the central and state government employees are also the reasons behind the higher growth of this sector. However, pay commission effect peters out generally within two years. Even then, 'Education and Research' sub-sector along with 'Medical and Health' sub-sector have become a lucrative area of domestic as well as foreign investments. These are also bearing fruits. Since 1990s, the average growth rate of this sector has enhanced further to 7 percent.

2003-04, 2006-07 and 2007-08 in Table-5.[5] We condensed them into 4x4 matrices.[6] We know from the Input-Output methodology that for an 'n' sector economy, if '**A**' is the 'nxn' input coefficient matrix, '**F**' is the 'n' sector final demand vector, '**X**' is the 'n' sector vector of output, '**I**' is the 'nxn' Identity Matrix, then we have –

$$\mathbf{(I - A)X = F} \text{ ……..(1)}$$

$$\mathbf{X = (I - A)^{-1}F} \text{ …..……..(2)}$$

Here we are going to observe the change in the value added structure from 1973-74 to 2007-08.

Then we firstly want to observe the effect of change in the final demand structure for the relevant period 1973-74 to 2007-08, given the input structure of 2007-08. This effect is called 'Final Demand Effect' (see Datta (2011)).

Further, we want to observe the effect of change in the input structure for the relevant period 1973-74 to 2007-08, given the final demand structure of 1973-74. This effect is called 'Input Structure Effect' (see Datta (2011)). Now it is important to note that a change in the input structure automatically creates a reallocation of value added among the industries. This could be observed from the fact that as input structure changes from 1973-74 to 2007-08, then correspondingly a change occurs in reallocation of value added among industries since, corresponding to **(I – A)X = F**,

we have the value added in sector j as given by the relation,

$$v_j = (1 - \sum_{i=1}^{n} a_{ij} - a_{mj}) \text{.....(3)}$$

where a_{ij} is the amount of i[th] input required to produce 1 unit of j[th] sector's output, and a_{mj} is the amount of imported input required per unit of j. This effect is called 'Reallocation Effect' (see Datta (2011)). Here, we are taking 'Input Structure Effect' and 'Reallocation Effect' together we are naming it 'Combined Input Structure and Reallocation Effect' (ISR Effect).

Now, Datta (2011) has already shown comprehensively that we can decompose the 'Value Added Effect' into 'Final Demand Effect', 'Input Structure Effect' and 'Reallocation Effect' by the following decomposition methodology.[7] We are here explaining the present decomposition in the light of this methodology proposed by Datta (2011). A preliminary version of this methodology has been discussed also in Datta and Sinha (2008).

Here we have decomposed the value added effect in (a) final demand effect and (b) combined input structure and reallocation effect, i.e.,

$$\mathbf{\Delta X = V_1(I-A_1)^{-1}\Delta F + \Delta\{V(I-A)^{-1}\}F_0 = ISR_1.\Delta F + \Delta ISR.F_0} \text{……..(4)}$$

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[5] A look at Table-5 will make it clear that Category-I Services-intensity (in terms of indirect effects) is by far the highest in the Secondary Sector. Furthermore, this intensity has increased substantially from 1973-74 to 1993-94 and to 2006-07 relative to 1973-74. This deepening of Service intensity is present in other sectors also. This fact indicates to a change in the structure of final demand from material goods to Services will change the sectoral shares in GDP in favour of Services; and consequently it will also change the relative weights of the two categories of Services. But this is not the only source of change, the change in relative weights will also be affected by the increase in intermediate Service-intensity of production which should raise the relative share of Category 1 Service further.

[6] Normal practice is to classify the I-O framework into 3x3 matrix based upon three major sectors, viz., Agriculture and Allied activities, Industry and Services. However, here, it may be noted that we have divided the Service Sector in two broad parts, viz., Category-1 Service and Category-2 Service. Category-1 Service is basically of intermediate nature and Category-2 Service is basically of final use in nature. Hence, instead of using the terms intermediate and final, we use neutral terms –Category-1 and Category-2 Service – as Category-1 has some final use while Category-2 has some has some intermediate use. Hence, we have classified our four major sectors as 'Agriculture and Allied' (A&A), 'Industry' (I), 'Category-1 Service' (S1) and 'Category-2 Service' (S2) (Datta and Sinha, 2008).

[7] As Datta (2011) has shown,

$\chi = VX = V(I-A)^{-1}F$

Then, $\Delta\chi = \underline{V_0(I-A_0)^{-1}\Delta F} + \underline{V_0\Delta(I-A)^{-1}F_1} + \underline{\Delta V(I-A_1)^{-1}F_1}$

Where, $\Delta\chi$ implies Value Added Effect; $V_0(I-A_0)^{-1}\Delta F$ implies Final Demand Effect ; $V_0\Delta(I-A)^{-1}F_1$ implies Input Structure Effect ; and $\Delta V(I-A_1)^{-1}F_1$ implies Reallocation Effect.

Here, ΔX implies Value Added Effect; $ISR_1.\Delta F$ implies Final Demand Effect; and, $\Delta ISR.F_0$ implies combined input structure and reallocation effect.

where, $\mathbf{ISR_0 = V_0(I-A_0)^{-1}}$ and $\mathbf{ISR_1 = V_1(I-A_1)^{-1}}$; $\mathbf{F_1}$, $\mathbf{F_0}$, $\mathbf{X_1}$ and $\mathbf{X_0}$ have their usual meanings.

The Table-6 in Appendix shows our decomposition results. Here from we get that out of a reduction of 31 percentage share in agriculture from 1973-74 to 2007-08, 21 percentage points reduction is due to final demand effect and 10 percentage points reduction is due to input structure and reallocation effect (ISR effect). This signifies a massive shift of final demand away from agriculture. Industrial sector's share has increased by 8 percentage points during the aforesaid period, out of which 6 percentage point increase is due to final demand effect and 2 percentage point increase is due to ISR effect. The share of Services-1 (basically of intermediate in nature) in value added has increased by 13 percentage points during the aforesaid period, out of which 7 percentage point increase is due to final demand effect and 6 percentage point increase is due to ISR effect. Further, share of Services-2 (basically of final in nature) in value added has increased by 10 percentage points during the aforesaid period, out of which 8 percentage point increase is due to final demand effect and 2 percentage point increase is due to ISR effect.

Thus, as a whole, share of Services in value added has increased by 23 percentage points during the aforesaid period, out of which 15 percentage point increase is due to final demand effect and 8 percentage point increase is due to ISR effect.

In the next section, we are going to critically evaluate this 'Ahistorical Services Led Growth of India'.

SECTION 5: CRITICAL EVALUATION OF 'AHISTORICAL SERVICES LED GROWTH':

Although 'Services Led Growth' seems a rosy pathway for the Indian economy, but, according to many economists, this path comprises several thorns in terms of (a) limited employment opportunities and jobless growth; (b) stagnation in manufacturing sector and (c) growing external deficit. Let's observe and analyze these issues critically.

(a)Limited Employment Opportunities and Jobless Growth: Kuznets' Stylized Facts of Development coming from the long term (200 years or more) survey of 17 developed (the then developing) and 7 developing countries (Kuznets, (1971)) has shown that with growth in per capita income, a substantial reduction occurs in the sectoral contribution of the agricultural sector (A) in total employment and industrial sector (I) or the manufacturing sector (M) becomes the largest employment provider with largest share of labor force being employed in I or M sector for most of the developed countries (DCs). However, not to forget the contribution of the Services sector that eventually has become the second largest employment provider for most of the DCs until 1964 (end period of Kuznet's study). If we observe the scenario later on up to 2017 (the data from 1990-2017 is taken from International Labor Organisation Database about Sectoral Employment for the Major Sectors), then we can observe that for the DCs, clearly the services (S) have become the largest employment provider now and industrial sector (I or M) is providing almost the remaining part of the labor force, with agricultural contribution to overall employment being less than 5 percent in general. For details, observe Table-7. Now, if we observe the 7 LDCs corresponding to Kuznet's (1971) study, then we find very interesting result. All the LDCs except India have followed Kuznets Stylized Facts of development in terms of employment distribution among the major sectors. That is to say, most of them have shown a rise in sectoral employment contribution of the Services with rising economic development. Not only that, except India, for all the LDCs in study, services has become the largest employment provider for each of the respective economies, jumping over the industrial sector. It is further interesting that China, the country excluded from Kuznet's analysis for several reasons, have shown a marvelous transformation towards services within last two and half decades through making the services the largest employment provider and more than 55 percent of total labour force is engaged in services in 2017 in China (see Table-7). Thus from the perspective of employment generation, services sector (S) is becoming the most potent sector in worldwide development experience. Now, if we look at India from this perspective, then there is no doubt that in terms of the change in sectoral employment allocation, India has performed very sluggishly and in that respect it seems an outlier in the historical development process. Thus it seems that really India has shown an 'Ahistorical' growth process not only because it has shown significant growth in terms of services engine through contributing the largest and significant share of services in Gross Value Added skipping the phase of industrial growth, but also has shown 'Ahistorical' scenario through achieving that services led growth despite providing the largest employment share in agriculture. In this aspect it seems that India is really an outlier in terms of historical development process. Thus, from the policy perspective, there is sufficient reason of pointing out towards the 'Jobless Growth' in the form of 'Services Led Growth' of the Indian economy. Therefore, from that perspective,as Nagaraj(2017) points out, the popular slogans regarding rejuvenation of stagnated Manufacturing and Industrial sector would do a little in reality until and unless we actively concentrate upon export promotion and import substitution in a calculated practical way. It is to be noticed that the developed world has already started 'protectionism' against 'liberalization' policies, thereby raising serious questions in front of the LDCs regarding 'Free Trade across the World'. However, if we closely follow the employment data of the

Indian economy (see Table-7), then it seems that 'Even the Darkest Cloud has a Silver Lining'. Although presently (2017), 42.7 percent of total employment is provided by the agricultural sector, but the second largest employment provider (33.5%) is the services (S) for the Indian economy skipping the manufacturing sector. Thus, although there exists a gap of 9 percentage points between agricultural and services percentage employment provisions, the trend of employment provision of services is rising and gap is steadily narrowing. Thus, still there exists rays of hope that in near future, services will become the largest employment provider for the Indian economy. Even then, there exists deep concerns over the sluggishly performing manufacturing sector for the Indian economy regarding productivity and employment provisions and we should address this issue here, at least in brief.

(b)Stagnation in Manufacturing Sector: If we compare with the manufacturing growth of India with that of China, the 'manufacturing powerhouse of the world', then surely the picture looks very gloomy, as for many other developed and developing countries too. However, if we exclude the 'outlier' China from the system, then India's manufacturing sector progress is 'average' in terms of the worldwide development experience (Kochhar et. al. (2006) and Datta et. al. (2015). As per the World Bank database, the growth rate of the industrial sector and manufacturing sector are relatively less in terms of growth rate during 2011-2016 than 2001-2010 period. In 2001-2010, the two average growth rates were 7.96 percent and 8.2 percent respectively. However, during 2011-2016 period, the growth rate of both Industry and Manufacturing has remained modest at 6.11 percent and 7.42 percent respectively in terms of growth. As India has already avoided 'Deindustrialisation' (Rodrik (2015)), hence this performance of Indian Industrial sector is significant on account of worldwide economic depression since 2008-09 (global financial crash). The Index of Industrial Production (IIP) measure of Manufacturing sector growth shows almost the same thing (see Nagaraj, (2017). Despite having positive and significant growth rate of the industry as well as manufacturing sectors, the shares of these sectors have stagnated between 14-15 percent and 26-27 percent. One reason of this is the enormous growth of services that is growing even at present 2011-2016 period at a rate of more than 8 percent, almost 2 percentage points higher than the corresponding periods GDP. That is why the Services (S) is capturing almost the entire share in GDP sacrificed by the diminishing Agro (A) sector in terms of percentage contribution in GDP. Again, it is to be noticed that most recently (2016-17), the share of the I sector in GDP has moved to 32 percent with the S sector getting stagnated at 54 percent. This is also an indicator of Industrial growth in the Indian economy (CSO and RBI Database on Indian Economy).

However, it is quite true that the 'land acquision policies' oriented towards manufacturing growth through export promotion (viz., SEZs) followed by the policymakers have become counterproductive in various parts of India, leading to widespread political and social agitations and leading to 'predatory growth' (Bhaduri, (2008).

(c)Growing External Deficit: "Exports have increased dramatically over the last two decades, from $18.5 billion to $309.7 billion between 1990-91 and 2011-12 (…). The average annual growth rate of merchandise exports doubled during the last two decades, from 9% in 1991-92 to 1999-2000 to 20% during 2000-01 to 2011-12. The growth rate fell sharply to -3% in 2009-10 during the global financial crisis, but then picked up immediately to 37% in 2010-11, but is estimated to have slowed down to 24% in 2011-12" (Rangarajan and Mishra, 2013). Rangarajan, Mishra (2013) also analyses the significant shift in the composition of India's exports from labor intensive products (e.g. textiles) to capital and skill-intensive ones (viz., engineering goods and jwelleries). They have also analyzed about the diversification of the Indian merchandise exports (also Garg, (2012). The growth of services exports is phenomenal (the average annual growth rate rising from 15% to 25% from 1990-91 to 2011-12). However, the biggest problem of India has remained it's inelastic demand and heavy dependence upon the import of crude oil. Roughly speaking, 'crude oil import' has alone constituted 25-30 percent of total value of Indian imports on an average since 1990-91to 2012-13. Along with it a significant rise in gold and silver import has remained responsible for further deterioration in the current account deficit till 2012-13. In 2012-13, current account deficit has become record 4.7 percent (almost 5 percent) of GDP which was quite alarming. In addition to that, a reduction in capital inflow post 2008-09 global financial crisis has led to a balance of payments deficit (BOP Deficit) which was in surplus during 2001-2008 period. Thus it seems unwise to shift the entire responsibility of underperformance of the external sector upon the growth of merchandise export and hence upon the manufacturing sector. Since 2013-14, India's BOP situation has become comfortable and after some downtrends, merchandise exports have again started to rise for India since 2016-17.

CONCLUSION:

Thus we can conclude that –

(I) Around the decade of 1980s, the most significant structural break of India has generated. Therefore, the decade of 1980s could be regarded as the 'Take Off' Period, if we have failed to get a unanimous point of time.

(II) The 'Take Off' of the growth trajectory of India in terms of GDP at factor cost is attributable to the 'Take Off' in Agricultural growth, Industrial growth, basically led by the Manufacturing growth along with consistently

enhancing growth of services that has happened in the last part of the decade of 1970s and the first part of the decade of 1980s.

(III) Final demand plays the dominant role in the structural transformation of Indian economy towards 'Services', during the period 1973-74 to 2007-08, as 65 percent change in service's share in value added is explained by the change in the final demand alone. However, the role of intermediate demand cannot be neglected also as it is explaining the remaining 45 percentage change.

(IV) The performance of Indian manufacturing seems to be average and satisfactory corresponding to the global comparison in terms of growth and merchandise exports, if not compared to the global outlier China (in manufacturing).

(V) It seems that really India has shown an 'Ahistorical' growth process not only because it has shown significant growth in terms of services engine through contributing the largest and significant share of services in Gross Value Added skipping the phase of industrial growth, but also has shown 'Ahistorical' scenario through achieving that services led growth despite providing the largest employment share in agriculture.

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APPENDIX:

SECTION 1: TABLES:

Table –1: Trade-GDP Ratio for the 13 Developed Countries and 12 Developing Countries			
DEVELOPED		DEVELOPING	
At 2005 constant US Dollars		At 2005 constant US Dollars	
NATIONS	(Trade/GDP)*100	NATIONS	(Trade/GDP)*100
GB/UK,GDP,2005 prices-1970	0.251707176	India, GDP, 2005 prices-1970	0.092889746
1980	0.312318403	1980	0.140486638
1990	0.371786031	1990	0.137765086
2000	0.51652459	2000	0.267082488
2010	0.576857475	2010	0.468129125
FRANCE, GDP, 2005prices-1970	0.198411688	Brazil, GDP, 2005 prices-1970	0.110199084
1980	0.276584741	1980	0.112591419
1990	0.330257291	1990	0.13717108
2000	0.506921308	2000	0.227610499
2010	0.546261613	2010	0.320818437
IRELAND,GDP, 2005 prices - 1970	0.402453139	Mexico, 2005 prices-1970	0.1187558
1980	0.506557288	1980	0.161234201
1990	0.737042778	1990	0.204241991
2000	1.492861132	2000	0.510235692
2010	1.661461407	2010	0.645791748
NETHERLANDS,GDP,2005prices-1970	0.551653781	Honduras, GDP, 2005 prices-1970	1.674170076
1980	0.650675718	1980	1.576093214
1990	0.780344539	1990	1.235472402
2000	1.182311652	2000	1.182486149
2010	1.450774023	2010	1.101688668
GERMANY,GDP,2005prices-1970	0.262218066	Egypt, 2005 prices-1970	0.890945584
1980	0.327872337	1980	1.061442448
1990	0.409789347	1990	0.679230382
2000	0.620741803	2000	0.52533836
2010	0.896658266	2010	0.762313225
DENMARK,GDP,2005prices-1970	0.343932866	Philippines, 2005 prices-1970	0.388583779
1980	0.459530103	1980	0.51682225
1990	0.594190748	1990	0.636120409
2000	0.805606536	2000	0.996517235
2010	1.007786818	2010	0.962676479
NORWAY,GDP,2005prices-1970	0.554555197	Argentina, 2005 prices-1970	0.132017577
1980	0.544479895	1980	0.212421926
1990	0.637536183	1990	0.221929754
2000	0.724385684	2000	0.413561389
2010	0.73674957	2010	0.468308094
SWEDEN,GDP,2005prices-1970	0.408471544	China, 2005 prices-1970	0.06212687
1980	0.452018174	1980	0.177263373
1990	0.54178936	1990	0.215380717
2000	0.844296078	2000	0.446661303
2010	0.962748048	2010	0.786634279
ITALY,GDP,2005prices-1970	0.243134274	Uganda, 2005 prices-1970	0.289189428
1980	0.284568506	1980	0.289752984
1990	0.365357563	1990	0.290807236
2000	0.509558296	2000	0.33838848
2010	0.515899665	2010	0.493753556
JAPAN, GDP, 2005 prices-1970	0.113782374	Turkey, 2005 prices-1970	0.091793906
1980	0.152861006	1980	0.115193079
1990	0.172152207	1990	0.222305722
2000	0.229319258	2000	0.399776124
2010	0.289527702	2010	0.470360017
US,GDP,2005prices-1970	0.097712062	Nepal, 2005 prices-1970	0.128647462
1980	0.120057277	1980	0.306310776
1990	0.159784493	1990	0.290007003
2000	0.253277888	2000	0.555725048
2010	0.287946531	2010	0.505062186
CANADA,GDP,2005prices-1970	0.370053985	Malaysia, 2005 prices-1970	0.728378645
1980	0.384827249	1980	0.868583983
1990	0.479240285	1990	1.31149507
2000	0.749839512	2000	2.039517822
2010	0.671591102	2010	1.944412752
AUSTRALIA,GDP,2005prices-1970	0.187149575		
1980	0.20074583		
1990	0.263496635	Source: Own Calculations	
2000	0.377614827		
2010	0.474708275	United Nations Statistical Divisins Database	

TABLE 2: SECTORAL SHARES OF THE PRIME SECTORS OF GDP AT FACTOR COST (AT CONSTANT 2004-05 PRICES & AT CURRENT PRICES)

YEAR	CONSTANT 2004-05 PRICES ESTIMATE			CURRENT PRICES ESTIMATE		
	A	I (incl. Construction)	S (excl. Construction)	A	I (incl. Construction)	S (excl. Construction)
1952-53	51.61	16.22	29.71	50.05	14.38	35.22
1962-63	44.39	21.76	31.92	39.89	20.61	39.92
1972-73	38.56	24.92	35.25	40.28	21.29	38.27
1982-83	34.25	25.85	39.03	32.88	25.19	41.53
1992-93	28.89	26.77	44.05	28.74	25.77	45.22
2002-03	20.13	27.39	52.48	20.75	26.23	53.02
2012-13	13.69	26.76	59.59	17.39	25.75	56.86
2016-17*	15.16	23.16	61.67	17.35	21.23	61.42

* denotes the base year as 2011-12 and incl. construction. Source: Own Calculations from RBI Indian Economy Database 2014

TABLE 3: ENDOGENOUS STRUCTURAL BREAK ANALYSIS FOR GDPFC AND IT'S SECTORAL & SUB-SECTORAL COMPOSITIONS FOR THE PERIOD 1950-51 TO 2013-14: ZIVOTT & ANDREWS:

COUNTRY: INDIA

	VARIABLE	CONSTANT	DU_t	DT_t	D_t	T	Y_{t-1}	DY_{t-1}	BREAK YEAR	SERIES TYPE
	LNGDPFC	2.79116	-0.001321	0.010683	0.60039	0.012735	0.650824	…		
BFM	t' STATISTIC	(3.747159)***	-0.096179	(3.819365)***	(2.225937)**	(3.728614)***	ZA 't'→(-3.702166)	…	1988	DS
	LNAGRI	7.38021	(-0.033533)	0.008716	0.07695	0.021948	(-.009603)	…		
BFM	t' STATISTIC	(7.724892)***	(-1.58219)	(5.372414)***	(1.761029)*	(7.32824)***	ZA 't'→(-7.702846)***	…	1978	TS
	LNINDUS	1.097121	(-0.051845)	…	0.063906	0.010499	0.826991	0.266064		
BFM	t' STATISTIC	(3.536585)***	(-3.194705)***	…	(2.076655)**	(3.571772)***	ZA 't'→(-3.40722)	(2.183551)**	1969	DS
	LNMANU	1.628519	(-0.052323)	0.00402	0.103477	0.014319	0.714807	0.372437		
BFM	t' STATISTIC	(4.562201)***	(-2.684192)***	(3.618707)***	(3.170085)***	(4.095156)***	ZA 't'→(-4.424465)	(3.2994)***	1978	DS
	LNSERV	0.809543	(-0.016079)	0.004043	0.030455	0.00522	0.883293	0.311407		
BFM	t' STATISTIC	(3.468747)***	(-1.744810)*	(3.6815)***	(2.101521)**	(3.303287)***	ZA 't'→(-3.341721)	(2.455920)**	1978	DS
	LNTHRTSC	1.888727	…	0.012119	…	0.016402	0.674752	0.447074		
BFM	t' STATISTIC	(4.276129)***	…	(4.098435)***	…	(4.295978)***	ZA 't'→(-4.2167)*	(3.442096)***	1992	DS
	LNBIDRB	0.528486	…	0.005446	…	0.003343	0.907307	…		
BFM	t' STATISTIC	(2.438215)**	…	(2.493104)**	…	(3.051484)**	ZA 't'→(-2.338409)	…	1975	DS
	LNCSP	1.742814	-0.025572	0.005058	0.006952	0.013949	0.692512	0.417893		
BFM	t' STATISTIC	(4.18082)***	(-2.071463)**	(3.758923)***	0.346151	(4.135717)***	ZA 't'→(-4.113759)	(3.412155)***	1980	DS

Source: Own Calculations. *** implies significance at 1 % level, ** implies significance at 5 % level and * implies significance at 10 % level.

TABLE 4: ENDOGENOUS STRUCTURAL BREAK ANALYSIS FOR GDPFC AND IT'S SECTORAL & SUB-SECTORAL COMPOSITIONS FOR THE PERIOD 1950-51 TO 2013-14: AMIT SEN

COUNTRY: INDIA

	VARIABLE	CONSTANT	DU_t	DT_t	D_t	T	Y_{t-1}	DY_{t-1}	F STAT	BREAK YEAR	SERIES TYPE
	LNGDPFC	2.79116	-0.001321	0.010683	0.60039	0.012735	0.650824	…			
BFM	t' STATISTIC	(3.747159)***	-0.096179	(3.819365)***	(2.225937)**	(3.728614)***	ZA 't'→(-3.702166)	…	8	1988	DS
	LNAGRI	7.38021	(-0.033533)	0.008716	0.07695	0.021948	(-.009603)	…			
BFM	t' STATISTIC	(7.724892)***	(-1.58219)	(5.372414)***	(1.761029)*	(7.32824)***	ZA 't'→(-7.702846)***	…	15.8	1978	TS
	LNINDUS	1.121873	(-0.055758)	(-0.000498)	0.064152	0.011242	0.822222	0.270039			
BFM	t' STATISTIC	(3.489906)***	(-2.766295)***	(-0.332313)*	(-2.067448)**	(3.028753)***	ZA 't'→(-3.344261)	(-2.18815)**	5.1	1969	DS
	LNMANU	1.628519	(-0.052323)	0.00402	0.103477	0.014319	0.714807	0.372437			
BFM	t' STATISTIC	(4.562201)***	(-2.684192)***	(3.618707)***	(3.170085)***	(4.095156)***	ZA 't'→(-4.424465)	(3.2994)***	8.8	1978	DS
	LNSERV	0.809543	(-0.016079)	0.004043	0.030455	0.00522	0.883293	0.311407			
BFM	t' STATISTIC	(3.468747)***	(-1.744810)*	(3.6815)***	(2.101521)**	(3.303287)***	ZA 't'→(-3.341721)	(2.455920)**	6.9	1978	DS
	LNTHRTSC	1.800878	0.025945	0.011466	0.040775	0.01545	0.690581	0.434207			
BFM	t' STATISTIC	(4.082247)***	1.600237	(3.842643)***	1.608509	(3.992372)***	ZA 't'→(-4.008027)	(3.252716)***	8.9	1989	DS
	LNBIDRB	0.25155	0.033895	0.002334	0.001958	0.001892	0.958276	…			
BFM	t' STATISTIC	0.687505	(3.082992)***	0.68511	0.087156	0.80194	ZA 't'→(-0.614102)	…	3.9	1981	DS
	LNCSP	1.711441	-0.012422	0.005362	0.039785	0.013391	0.698441	0.447235			
BFM	t' STATISTIC	(4.057741)***	-1.11611	(3.812779)***	(-2.005387)**	(3.957868)***	ZA 't'→(-3.988746)	(3.671894)***	7.6	1982	DS

Source: Own Calculations. *** implies significance at 1 % level, ** implies significance at 5 % level and * implies significance at 10 % level.

TABLE 5: LEONTIEF INVERSE MATRIX FOR INDIAN ECONOMY:				
Leontief Inverse Matrix 1973-74				
	1	2	3	4
A&A	1.221377	0.311742	0.131942	0.054484
I	0.09059	1.530729	0.182591	0.239704
S1	0.035537	0.199873	1.158172	0.076153
S2	0.001528	0.021938	0.007965	1.008514
Leontief Inverse Matrix 1993-94				
A&A	1.188343	0.15567	0.062866	0.038583
I	0.182615	1.797938	0.334247	0.254788
S1	0.114745	0.351255	1.209319	0.111991
S2	0.008903	0.043396	0.052069	1.023746
Leontief Inverse Matrix 2003-04				
A&A	1.264441855	0.155381661	0.073350846	0.016156067
I	0.252424181	1.976752777	0.416713361	0.162486008
S1	0.15198065	0.384162461	1.249832403	0.082628785
S2	0.007289682	0.029153028	0.023031232	1.050599526
Leontief Inverse Matrix 2006-07				
A&A	1.2048721	0.125929	0.062487	0.0156083
I	0.2733205	2.07605	0.389299	0.2034434
S1	0.1492575	0.375211	1.221594	0.1025817
S2	0.0075473	0.032576	0.022113	1.0596783
Leontief Inverse Matrix 2007-08				
A	1.258747051	0.154701902	0.078476948	0.016459237
I	0.232728481	2.07642071	0.420881667	0.165218438
S1	0.159021956	0.384577131	1.245177517	0.093434014
S2	0.008205243	0.043106607	0.02682551	1.051615035
Source: Own calculations from CSO, I-O Transaction Tables Published in 1981, 2000, 2008 2011.				

TABLE 6: Decomposition of Structural Change of India from 1973-74 to 2007-08 into Final Demand Effect & ISR Effect			
SECTORS	TOTAL PERCENTAGE CHANGE IN VALUE ADDED FROM 1973-74 TO 2007-08	FINAL DEMAND EFFECT	ISR EFFECT
A	(-31.0) PERCENT	(-21.0) PERCENT	(-10.0) PERCENT
I	(+8.0) PERCENT	(+6.0) PERCENT	(+2) PERCENT
S1	(+13.0) PERCENT	(+7.0) PERCENT	(+6.0) PERCENT
S2	(+10.0) PERCENT	(+8.0) PERCENT	(+2.0) PERCENT
Source: Own Calculations from I-O 1973-74 and I-O 2007-08 Input-Output Transaction Matrices			

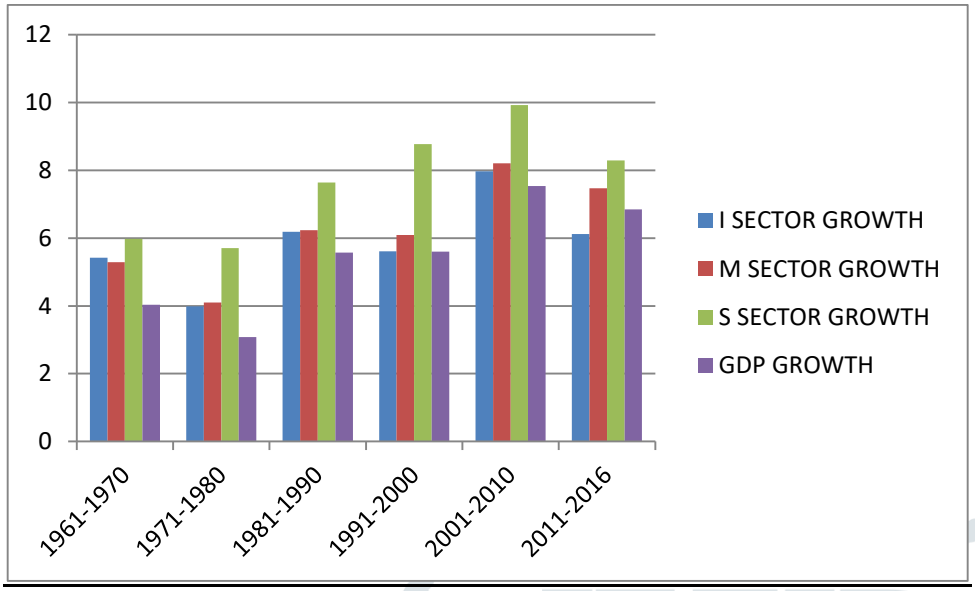
TABLE 7: LONG TERM CHANGES IN SHARES OF MAJOR SECTORS IN LABOR FORCE

DEVELOPED COUNTRIES	SHARES IN TOTAL LABOR FORCE		
COUNTRY	A	I	S
GREAT BRITAIN (UK), 1851/61	21.6	56.9	21.5
1961	3.7	55	41.3
1991	2.3	33.4	66.5
2001	1.4	25.8	74
2011	1.2	21	79.6
2017	1.1	20	80.5
FRANCE, 1856	51.7	28.5	19.8
1962	20	43.6	36.4
1991	5.3	30.4	65.5
2001	4.1	27.1	69.9
2011	2.9	23.8	74.9
2017	2.9	21.9	76.8
BELGIUM, 1846	50.9	37.1	12
1964	5.9	52.4	41.7
1991	2.7	32.4	66
2001	1.4	26.2	73.1
2011	1.3	24.8	75.5
2017	1.3	22.9	77.4
NETHERLANDS, 1849	45.4	29.4	25.2
1960	11	50.5	38.5
1991	4.4	26.3	70.7
2001	3.1	22.1	75.3
2011	2.8	18.2	80.1
2017	2.2	17.5	81.3
GERMANY, 1852/55/58	54.1	26.8	19.1
1964	11.3	54.6	34.1
1991	4.1	43.1	55
2001	2.6	34	64.6
2011	1.7	30	70.1
2017	1.3	28.8	71.5
SWITZERLAND, 1880	42.4	45.5	12.1
1960	11.2	55.9	32.9
1991	4.3	29.6	67.1
2001	4.4	25.3	71.2
2011	3.5	23.3	74.2
2017	3.5	21.8	75.8
DENMARK, 1911	43.1	29.4	27.5
1960	17.8	44.5	37.7
1991	5.7	27.8	67.3
2001	3.6	26	71.1
2011	2.4	21.2	77.7
2017	2.6	20.1	78.6
NORWAY, 1865	63.7	19.9	16.4
1960	19.6	48.6	31.8
1991	5.8	25.4	71
2001	4.1	24.1	74.2
2011	2.4	23.6	77.4
2017	2.1	22.8	78.5
SWEDEN, 1860	64	18.8	17.2
1960	13.8	52.7	33.5
1991	3.2	25.6	72.1
2001	2.3	23.2	75.4
2011	2	21.1	78.1
2017	1.9	19.4	80
FINLAND, 1880	71.2	13.3	15.5
1960	35.6	37.8	26.6
1991	8.9	30.2	62.3
2001	5.8	28.2	67.1
2011	4.2	24.2	72.8
2017	3.9	23.7	73.8
ITALY, 1861/71	57.5	25.8	16.7
1964	25.2	46.4	28.4
1991	8.5	36.6	56.5
2001	5.2	32.8	63.1
2011	3.7	30	68
2017	3.9	28.1	69.8
JAPAN, 1872	85.8	5.6	8.6
1964	27.6	37.4	35
1991	6.7	35.2	58.7
2001	4.9	31.3	64.4
2011	4	26.3	70.5
2017	3.5	26.6	70.9
CANADA, 1911	37.1	37.4	25.5
1965	9.5	41.1	49.4
1991	4.4	25.5	72.7
2001	2.8	24.4	74.8
2011	2.3	22.2	77.9
2017	2	21.8	78.4
USA, 1869/79	50	29	21
1965	5.7	38	56.3
1991	2.8	26.4	72.6
2001	1.7	23.9	75.7
2011	1.7	20.1	79.8
2017	1.7	20.3	79.5
AUSTRALIA, 1901	33	33.9	33.1
1961	11.1	48.9	40
1991	5.5	26.3	70.7
2001	4.8	22.5	74.5
2011	2.8	24.1	76.4
2017	2.6	22.2	78.3
NEW ZEALAND, 1896	37	34.5	28.5
1961	14.5	46.8	38.7
1991	10.8	24.9	65.5
2001	9.1	23.6	68
2011	6.9	21.5	72.7
2017	6.6	21.3	73.1
SPAIN, 1877	70.5	15.5	14
1964	34.9	40.1	25
1991	10.3	34.7	56.2
2001	6.6	32.5	62
2011	4.1	23.2	74.1
2017	4.1	20.8	76.4
CHILE, 1920	38.9	35.3	25.8
1960	29.6	35.4	35
1991	19.1	28.9	54.6
2001	13.6	25.8	62.5
2011	10.3	27.1	66.4
2017	9.6	26.1	67.6

LESS DEVELOPED COUNTRIES	SHARES IN TOTAL LABOR FORCE		
COUNTRY	A	I	S
ARGENTINA, 1895	39.6	28	32.4
1960	21.4	43.1	35.5
1991	0.3	34	66.8
2001	0.8	22.9	77.2
2011	0.6	25.4	75.4
2017	0.5	25.1	76.1
COLOMBIA, 1925	68.5	16	15.5
1962	44.6	26.8	28.6
1991	26.7	22.5	52.4
2001	22.2	20.1	59.4
2011	17.9	22.8	61.2
2017	16.1	20.7	64.5
MEXICO, 1910	64.7	14.4	20.9
1960	54.6	22.3	23.1
1991	26.8	24.3	50.1
2001	17.7	26.9	56.3
2011	13.4	25.6	62
2017	13.1	26.9	61.1
EGYPT, 1907	71.2	14.1	14.7
1960	58.3	15.6	26.1
1991	31.3	26.1	43.8
2001	28.6	22.8	50.2
2011	29.2	25.6	47.2
2017	24.8	27.7	49.6
PHILIPPINES, 1939	72.9	13.9	13.2
1962	61.6	17.2	21.2
1991	45.3	17.1	38.7
2001	37.2	16.9	46.6
2011	33	15.8	52.2
2017	26	18.7	56.3
INDIA, 1881	74.4	14.6	11
1961	73.5	13.1	13.4
1991	63.6	16	21.6
2001	60.3	16.8	23.8
2011	48.8	24.5	27.8
2017	42.7	25	33.5
SRI LANKA (CEYLON), 1881	68.2	14	17.8
1953	56.7	17.2	26.1
1991	42.8	28.6	30.6
2001	40.9	24.5	36.3
2011	33.1	25.1	42.8
2017	26.7	27	47.7
CHINA,1991	55.3	27.7	17.4
2001	42.6	28.5	29.3
2011	24.5	30.6	45.5
2017	17.5	27.4	55.9

Source: Kuznets(1971), pp. 250-253 (from starting period to the decade of 1960s); ILO Database (1991-2017)

FIGURE 1: Growth Rate of Industry, Manufacturing , Services and GDP of India (World Bank Data)



APPENDIX: SECTION 2:

ENDOGENOUS STRUCTURAL BREAK METHODOLOGY:

A time series is said to be covariance stationary/ weakly stationary if the mean and autocovariances of the series do not depend on time. Further, any series that does not satisfy above conditions is said to be a non-stationary series. Now, a nonstationary series can be converted to a stationary series through differencing 'd' times and in that case it is said to be integrated of order 'd', i.e., I(d). The order of integration is the number of unit roots contained in the series, or the number of differencing operations it takes to make the series stationary. Standard inference procedures do not apply to integrated time series. Therefore we have to depend upon the Augmented Dickey-Fuller (ADF) Test (1979) and Philips-Perron (PP) Test (1988) unit root test for the stationarity of the said series.[8]

Nelson and Plosser (1982) have concluded that most of the long term macroeconomic time series follow unit root process (i.e., they are difference stationary at their level), based upon their study on 14 long-term annual macro time series (13 out of 14 series are subject to unit root process according to their study). However, there may occur serious confusion regarding the determination of stationarity of a time series in the presence of structural break in the data since Perron (1989) has shown that in the presence of structural break in the data, a trend stationary series may be misidentified as a difference stationary series as the conventional unit root tests are biased toward a false unit root null when the data are trend stationary with structural break. Hence, this necessitated the development of various unit root tests that remain valid in the presence of structural break(s).

(A) Zivot and Andrews Test Methodology (1992) of Single Structural Break: Nelson and Plosser (1982) opine that most of the macroeconomic variables are difference stationary (DS) rather than trend stationary (TS). For a TS process, the effect of random shock is temporary around a trend whereas for a DS process, permanent effect is generated by the random shock. In addition, for a DS process, the variance of the series depends on time.

The Augmented Dickey Fuller (ADF) Test is an unit root test that is conducted to detect whether a series is TS or DS. The ADF test here consists of estimating the following regression:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta Y_{t-i} + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (A1)$$

[8] The other well known unit root tests are – GLS-detrended Dickey-Fuller (Eliot, Rothenberg and Stock Point Optimal or ERS) (1996), Kwiatkowski, Philips, Schmidt and Shin (KPSS) (1992) and Ng and Perron (NP, 2001) unit root tests to determine the stationarity of a time series.

Where ε_i is a pure white noise error term and where $\Delta Y_{t-i} = (Y_{t-i} - Y_{t-i+1})$. The test procedure is as follows:

The null hypothesis is H_0 : $\delta = 0$. Rejection of the null hypothesis implies that the underlying series is TS and failure of the rejection that the underlying series is DS. Here it is important to note that the coefficient of Y_{t-1} does not follow the standard 't-distribution' which was solved by Fuller by getting limiting distribution of this coefficient and finally these distributions were approximated empirically by Dickey (1976). From a much larger set of replications, the relevant critical values are being derived by McKinnon (1990). Now, if β_2 in equation (1) is found to be significant then there exists trend in the series. Further, if β_1 is significant then there exists drift in the model. In the ADF test, ΔY_t depends also on ΔY_{t-i} (where i=1,2,3…m; m<T).

As Perron(1989) has shown that in the presence of structural break, even a trend stationary series may be mis-identified as an unit root process through the standard unit root test. Therefore he has suggested a procedure that is appropriate for test of unit root in the presence of one time structural break in the series which is assumed to be exogenously determined from consideration of visual examination of the plots of the data.

Zivot and Andrews (1992) has shown that Perron's methodology of finding out the structural break is based primarily on visual observation and monitoring of the data structure and therefore the break point is determined exogenously and not endogenously. They have shown that in order to determine the break point endogenously, the following models are to be explained and used up:

$$\Delta Y_t = \beta_1^A + \beta_2^A DU_t + \beta_3^A t + \delta^A Y_{t-1} + \sum_{i=1}^{m} \alpha_i^A \Delta Y_{t-i} + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots (A2)$$

$$\Delta Y_t = \beta_1^B + \beta_2^B DT_t + \beta_3^B t + \delta^B Y_{t-1} + \sum_{i=1}^{m} \alpha_i^B \Delta Y_{t-i} + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots (A3)$$

$$\Delta Y_t = \beta_1^C + \beta_2^C DU_t + \beta_3^C DT_t + \beta_4^C t + \delta^C Y_{t-1} + \sum_{i=1}^{m} \alpha_i^C \Delta Y_{t-i} + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots (A4)$$

Here, $DU_t = 1$ if $t<T\Upsilon$

And $DU_t = 0$ if otherwise.

Further, here, $DT_t = (t - T\Upsilon)$ if $t<T\Upsilon$

And $DT_t = 0$ otherwise.

The following points are important:

Model A, exhibited by equation (A2) allows an endogenous break in the level of the series (Crash Model). Model B, exhibited by equation (A3) allows an endogenous break in rate of growth of the series (Changing Growth Model) and Model C exhibited by equation (A4) allows endogenous break in both level and growth of the series (Mixed Model). Here, if DT_t is positive (negative) and significant, then there is acceleration (deceleration) in the growth. T stands for total time period and Υ stands for time break, i.e., $\Upsilon = T_B/T$ where T_B refers to the break period. The above three equations (2), (3) and (4) can be estimated by OLS method and with the break fraction Υ ranging from 2/T to (T-1)/T. Regarding the choice of the lag, Perron (1989) has suggested that lag lengths (i.e., the value of 'm') are determined using t-tests on the coefficients α_i. The value 'm' is selected if the t-statistics on α_i for i>m is less than 1.64.

However, the present paper does not follow Perron's procedure as this procedure is sensitive to a particular value of 't'-statistic around 10 percent level of significance. Rather this paper uses 'Schwarz Criteron' (SC) to determine the proper number of lags.

Now from the estimated regression of each model, the value of the t-statistics for testing the null hypothesis $\delta = 0$ can be obtained. Zivot and Andrews (1992) proved that for each model, among the overall (T-2) regressions one can choose that year as break year which gives the minimum value of t-statistics corresponding to the coefficient of Y_{t-1}. Further, that model (among the three models)

seems to be the best fitted model that gives the minimum 't'-statistics value of the coefficient of Y_{t-1}. The estimated results are compared with the critical values given by Zivot and Andrews to determine whether the series is TS or DS.

Amit Sen Test Methodology (2000) of Single Structural Break: Further Amit Sen (2000) has stated that Zivot and Andrews (1992) could be improved by considering the maximum 'F' statistics instead of taking the minimum 't'-statistics and also argued that model 'C' has a higher power than model 'A' or model 'B'. So Sen (2003) has considered model 'C' and suggested the following test:

$$F^{Max} = Max_{T_B \in \{[\lambda_0 T],[\lambda_0 T]+1,..T-[\lambda_0 T]\}} F_B(T_B) \ldots\ldots\ldots\ldots\ldots (A5)$$

The test procedure is as below:

Among the overall (T-2) regressions, that year should be chosen as the break year which gives us the maximum value of 'F'-statistics among the (T-2) break points of model C. After finding out the break point, one can compare the results with the critical values provided by Amit Sen (2003) to determine whether the series is TS or DS (Sinha, (2015), Chakraborty and Ghose (2013)).