The Tertiary Sector Is Going to Dominate the World Economy; Should We Worry?

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Thesis

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Abstract

This paper explains some practical experiences on service sector growth as well as its contribution to the economy throughout the world. In rich countries, service contributions are comparatively higher than that in poor countries. But service sector growth rates are higher in the poor countries in comparison to the rich counterparts. This study is a good witness to service sector's supremacy in the present era. This paper is trying to reach a decision – weather high sectoral difference make disturbance to economic growth or not? It is found that high service sector share in the economy is a cause of slower economic growth. Nonetheless, in the long run, slower growth rates cannot make noteworthy disturbances to the economy. Because, service sector has a self correction motive through the income effect. Some policy suggestions are included here to manage short and mid term effects of high sectoral difference (high service contribution in the economy).

Key words: *Economic Growth, Income Effect, Sectoral Participation Ratio, Service Sector Share, Labor productivity, Tertiary sector.*

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Preface

During the last decade Bangladesh experienced significant service sector growth and many new branches of service sector has been established and flourished. Most significant improvement occurred in telecommunication sector, IT sector, banks and financial institutes, real estate services and some other rental services. Many of the self services have been taken institutional form. Government services have been increased also in limiting areas. In 2005 service sector growth (value added) was accounted 6.63%, which was an increasing trend with respect to previous rates. Other developing countries like India and China have boosted up their economy through service sector (besides manufacturing sector). Developed countries are, where service sector is already in renowned position, facing stagnant (United States, United Kingdome, Japan, Germany, France etc.) situation in service sector growth. In this context, we are in question, what will be and what already happened as a consequence of service sector growth. Are there any favorable or unfavorable effects that arise from high differentials in productive and unproductive growth rates? The service sector as an upcoming dominant sector is claiming enough attention to be examined critically. This study is a mere contribution in response to that claim.

Insufficient provision of data and data sources is a well known disturbance to the econometric analysis. Lacks of data provoked me to limit my analysis toward some particular countries.

I am highly indebted to my supervisor Mohammad Sadiqunnabi Choudhury for his invaluable support, suggestions and valuable advises. His keen interests and concerns helped me to keep focused in my research work. I am also grateful to all of my teachers whose teaching and guidance helped me to build up a research mind. My special thanks to the head of the Economics department Professor Rezai Karim Khondker (PhD), for his latent supervision. I am also indebted to all of my classmates and friends who helped me at various stages of this research. I thankfully acknowledge the researchers, authors and predecessors, whose books, journals and researches were helpful to this paper.

This is my first thesis. Therefore, it would be pleasant for me if readers are liberal to my faults and errors. All my efforts would be gratified if this paper could make any significant contribution to the macroeconomic research ground. All creative and constructive criticisms are welcomed.

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I. Introduction

At the beginning of the process of development, most of the countries start shifting their factors toward manufacturing sector from agricultural sector. Growth rates of those countries are favored by manufacturing growth at the very first dates of their development process. Finally, after a particular period countries go through the deindustrialization process. Deindustrialization is the tendency for the industrial sector to account for a decreasing proportion of GDP and employment. It is typically conceptualized as a decline in manufacturing as a share of total employment. Classical economists advocate in favor of full employment equilibrium in the economy. It is also empirically evident that full employment, more or less, exists around the natural unemployment rate in developed economies. Then what will be the new address of those laborers who become workless as a result of deindustrialization? Sectoral composition has to be moved toward some other area to absorb those laborers who were engaged in the industrial sector before deindustrialization. This sector, obviously, is not the stagnant agricultural sector. It is industrial sector. Developed countries (Australia, France, Germany, Japan, USA, UK, etc.) started gathering their remaining potentials into service sector when deindustrialization was in progress. This supply side explanation can not accord all reasons behind establishment of large service sector. Service demand increases with the increase in per capita GDP and per capita consumption. There are many developing nations which are (i.e. Bangladesh, China, India etc.) boosting their economy in the early ages of development through service sector growth. There are several examples (Barbados, Djibouti, Dominica, Jamaica, Vanuatu etc.) of small countries whose economies are building on the base of service sector growth and service export. Generally, this sector establishes as the third (agriculture, industry then service) sector in the economy. For this reason this sector is also labeled as 'the tertiary sector of industry'.

It is clearly viewed that service sector share in both developing and developed countries are growing over time. The countries, which have higher per capita income, contain larger share of service sector and which have low per capita income contain smaller share of service sector in the economy. In the year 2004 United Kingdom (UK), Australia, France,

Japan, United States of America (USA) accounted 72%, 71%, 73%, 68% and 75% service contribution in the economy respectively. Whereas, developing countries like China (35%), India (52%), Sri Lanka (58%) and Bangladesh (48%) were facing comparatively less service share in the economy. It is obvious; in general, service sector grows and expands by time. UK, Australia, France, Japan, USA, Singapore, Hong Kong, China, India and Sri Lanka all had relatively smaller service share in 1960 (53%, 51%, 52%, 42%, 58%, 78%, 62%, 20%, 30% and 48% respectively) in comparison to the service share of those countries in the year 2004. Pattern of service sector growth rate exhibits that service sector grows relatively faster in those areas where service sector share is relatively low and the degree to which the country is developing. The features of service sector growth pattern and service sector share illustrate that service share and growth are linked with per capita income which create demand for services in the market. The higher the income the higher the income elasticity of demand for services.

Why and how service sector is growing and becoming the major part in the economy has already been a major concern of many economists. Many researches have been accomplished concerning this topic. Although, our major concern is not to find out how service sector is emerging as a mammoth, some extension of previous works about this matter has been included here. Our major concern is to discuss about — is the mammoth helping the economy to carry on effectively otherwise making disturbances?

There are some complexities that are tightly tied with service sector which make the question difficult to be solved. At first, service measurement problem in the national account is a very regular problem. Service production is underestimated in national account. It is difficult as well to establish adequate quantitative variables against service activities which could estimate the productivity of service sector. To find some effective solutions to measure services many researchers have already devoted themselves. Here, for convenience, the problem is ignored. Productive service growth and unproductive service growth is not distinguished as well, although there may have different outcome of its effect. To avoid complication, indirect effects of services are overlooked as well.

This paper tries to find some specific attributes of service sector growth and its contribution to the economy. At the very outset it is tried to find out either sectoral differences hamper economic growth or not under different conditions. In primary section,

this paper shows relationship between per capita income and service sector share as well as service sector share and service sector growth through current empirical evidences. Through some functional relationships second section intends to see weather service dominancy in the economy is appreciable or not. Third section evaluates the findings of the second section critically. At the end, some suggestions are placed to manage the problem of tertiary sector.

III. Literature review

Definitions and roles of goods and services have been a matter of debate for many years. It is argued by some economists that service production is immaterial. It is also argued that service productions diverges resources from more valuable activities to less valuable activities. In fact, the debate starts with the classification of output as either "services" or "goods". This classification implies that services are somehow "non-goods" or "bads". But recent researches are rapidly changing that view. All advanced economies are moving toward service production **(Riddle, 1986)**. Growth in service sector is continued throughout the world in almost every developed and developing country **(Shugan, 1993)**.

Service sector is becoming complicated ceaselessly — especially in developing countries. This sector constitutes a very heterogeneous economic category. Service sectors are adding fresh sectors. New patterns, shapes and labels of this sector are responsible for its increasing significance and complication. Older definitions of service tend to rest on the fact that it was difficult to separate from service provider and recipient **(Chandrasekhar and Ghosh, 1999)**. Complexities in measuring output of service sectors have been well documented **(Wolff, 1997)**.

● A famous definition of services is provided by Adam Smith. He notes that,   contrary to commodities, services renders "generally perish in the very instant of their performance, and seldom leave any trace or value behind them for which an equal quality of service could afterwards be procured" **(Smith, 1776)**. According to **Mohr (1999)**, "A service is a change in the condition of a person, or a good belonging to some economic entity, brought about as the result of the activity of some other economic entity, with the approval of the first person or economic entity."

● According to **Kutscher and Mark (1983)**, service sector circumscribes every industry except those in goods producing sector. Under this definition services include transportation, communication, public utilities, wholesale and retail trade, finance, real estate, insurance, other personal and business services and government services. Another

definition of service sector looks narrower by being exclusion of government activities at all levels and taking into account only private personal and business services which erase some other sectors like wholesale and retail trade, finance ,insurance and real estate. **Elfring (1989)** divides services into four categories: *Producer Services*, *Distributive Services*, *Personal Services* and *Social Services*. Another similar significant and well established classification is derived by **Singelmann (1978)** and followed by many economists. He classifies this tertiary sector into four sub sectors, each of which is assigned as ISIC (International Standard Industrial Classification) category. It is one of the most frequently used methods to classify service sector. Under ISIC service sector is classified into four categories. *Distribution services* are mainly made up of the following activities: sale, maintenance and repair of motor vehicles and motorcycles, retail sale of automotive fuels, wholesale trade and commission trade, retail trade, repair of personal and household goods, inland, water and air transport, supporting and auxiliary transport activities except the activities of travel agencies, communications. *Business services* include financial intermediation, insurance and pension funding (except compulsory social security), activities auxiliary to financial intermediation, real estate activities, renting of machinery and equipment, computer and related activities, research and development (R&D), legal, technical, advertising and other business activities. *Social services* comprise activities in the areas of public administration, defense, compulsory social security, education, health and social work. *Personal services* are divided into the segments of hotels and catering and private households with employed persons. But **Shugan (1993)** argues — personal services are not representative of the service sector.

The first two sub sectors, distribution and business services, can be further aggregated into production-oriented services as inputs of the production of goods and services. Social and personal services together constitute a combined category of consumption-oriented services, destined for final consumption.

● In the late 1980s and early 1990s, **Baily** and **Gordon (1988)** and **Griliches (1992, 1994)** demonstrated that output in most service sector industries was not measured very well. **"**Measurement of productivity in the service sector has always been represented as a challenge for economists." **(Diewert, 2005)**. Information of the quantities produced in any

economic activity is required to measure productivity. For several services, there are certainly some basic production indicators to measure productivity (the number of haircuts given, the number of cheques processed, the number of telephone calls made) but these indicators are not always comparable because of the variation in qualitative measurement. Even, for a whole range of other services such indicators are not available. **(Chandrasekhar and Ghosh, 1999)**. Measure of productivity in service industries has been aimed at improving the output measure **(Wolff, 1997)**. Measuring the output of service sectors is far more difficult than the measurement of input in service sector. Labor, capital, and material inputs are easily identifiable and assessable in services. The estimation of output and value-added at constant prices for service products is generally recognized as being more difficult than estimation of goods production **(Pant and Blades, 1997)**. **Griliches (1994)** accentuates that economic activities have been shifted toward the sectors into which output is intrinsically hard to measure. **Gordon (1996)** points out that 'hard-to-measure hypothesis of **Griliches (1994)** should not apply equally to all nations. **Gordon (1996)** also demonstrates and classifies some sectors which are measurable (agriculture, mining, manufacturing, transportation and utilities) and which are hard to measure (construction, wholesale trade, retail trade, finance, insurance, real estates and government services) – on the consideration of US data.

● Service sector is growing all over the world. Without some exceptions, growth rate of service sector is higher in under developed and developing countries than service sector of developed countries but share of service sector is comparatively high in high income countries **(The world and Russia, 1995)**. The demand for services increases when the income level rises and when the population ages **(Kanapathy, 2003)**. Several thesises **(e.g. Kuznets, 1971 and Bell, 1973)** have evaluated the hypothesis that consumers buy more services as average income level increases. **Steven M. Shugan** puts an important contribution to this hypothesis "This hypothesis assumes a causal relationship between income and services. Certainly, service economies thrive in developed countries and developed countries have greater average income. But the relationship between the consumption of services and income levels is complex. Service growth often leads to enhanced productivity in other sectors and enhanced incomes. Service growth precedes or

accompanies increased income. As income increases, the use of many infrastructure services increases. The use of other services remains constant or declines. Occasionally, increasing incomes lead to higher prices for services." **Shugan (1993)** shows, the highest share of services being found in the industrial countries, and the lowest in the least developed countries, is a basic argument seem to be quite plausible. **Chandrasekhar** and **Ghosh (1999)** say, a rise in the share of services in national income is viewed as being positively associated with both economic growth and quality of life. Service sector has become an extremely large part of the modern economy. Its contribution cannot be overlooked **(Lee, 1994)**. Most economists argue that the composition of people's demand for goods and services changes over time. This means that people's preferences have merely shifted toward services. It is now, for example, more socially acceptable to leave children in daycare, have others cater your parties and lease your automobile. **Tschetter (1987)** demonstrates that this changing demand for services is translated less than 2% of the growth by producer services. Expansion of services is related to expansion of private sector's intermediate services and related to increased demand in manufacturing for service inputs. This growth of demand for services in manufacturing is more closely related to changes in the structure of production rather than to outsourcing or splintering process **(Francois and Reinert, 1995)**. **Russo** and **Schettkat (2001)** found some evidences of a significant increase in final demand. They found an increase in the demand for services in the manufacturing industries and an increase in the demand for intermediate services in the production of services. Service sector growth is accounted positively by many researches. Growth in service sectors is marked as an important aspect of economic development and strongly associated with income growth and economic modernization. **Kanapathy (2003)** states that several domestic and international developments in the new millennium prompt policy makers to re-engineer the economy, focusing on the development of the service sector and service trade, and to chart a new sustainable growth path.

Mellor (1976, 1999) is one of the staunchest supporters of the importance of agricultural growth, in underdeveloped countries, considering the view that agriculture employs the majority of the population in developing countries. Using cross section data **Hasan** and **Quibria (2004)** demonstrate that development as well as poverty reduction is determined by service sector in East Asia and, in Latin America. Criticizing **Mellor (1999)** they (Hasan & Quibria) state that contribution of each sector to poverty reduction is country specific. **Kanapathy (2003)** disagrees with the traditional view that services are important

to an economy only when it reaches a relatively advanced stage of economic development. This view is being challenged by more recent evidences that services are prerequisite for economic development rather just its final demand.

● **Baumol's (1967)** growth model divides the economy into two sectors, one productive (manufacturing/agriculture) sector and one non-productive sector (services). A definition describes service as "a transformation of the user or the user's goods, as a voluntary intervention by the producer of services" **(Hill, 1977).** This does not infer an acquisition which is transferable, but rather a modification of the characteristics of the recipient. Over two hundred years ago, economists have divided firms' outputs into material products (tangibles) and services (intangibles). Adam Smith himself viewed services as a hindrance to the production of material goods, and so classified the labor that went into the production of services as "unproductive" labor, whereas the labor that helped to produce tangible things was productive **(Delaunay and Gadrey, 1992)**.

A main feature of service sector, pointed out throw different issues, is its unproductive nature. Historically, the service sector was viewed as having little or no productivity growth and was unable to innovate. The intangible nature of service products makes it difficult to distinguish between product and process. For this reason, industries in the service sector have traditionally been viewed as "laggards" or static, technology consuming, non innovative companies that provide non technical products **(Tether and Metcalfe, 2002; Tether, Hipp, and Miles, 2001; Sundbo, 1997)**. **Chand (1983)** examined the productivity performance of the goods and service sectors and assessed the implication of low productivity growth in service industries on the overall productivity performance of the economy. The general perception about the service sector is that it exists entirely in industries with low growth in productivity. Comparison of growth rates for output and employment by industry over the last two decades might seem to lend support to this belief **(Kutscher and Mark, 1983)**. **Kaldor (1966)** develops an explanation of economic growth that is driven from the characteristics of manufacturing productivity. He subsequently identifies slow growth of the United Kingdom as a function of the excessively large service sector which retains labor when it is in short supply. Thus service sector starves manufacturing sector and consequently inhibits economic growth. Service productivity **(Mark, 1988)** depends on the service industry. Karl Marx points out that some

services (transport, communication, and maintenance and repairs) are productive, since they alters the material form of things, but all other services (including commercial labor, engaged in wholesale and retail trade; financial labor, engaged in finance, insurance, and real estate; and government labor, involves in the maintenance of law and order) are unproductive in his view and the labor employs in these activities are therefore unproductive too **(Marks, 1999)**.

The unproductive appearance of the service sector often was just a consequence of biased economic literature against service sector. According to **Lee (1996)** "Neither economic historians nor economists have accorded the service industries much credit in their accounts and explanations of economic growth. The thesis developed by the classical economists in the nineteenth century relied heavily on the notion of capital accumulation in terms of tangible goods. Economists then largely ignored growth for almost a century until the 1950s." **Nielsen (2005)** argues that traditional classification of the sectors into a productive manufacturing industry and an unproductive service sector can be disputed. Due to the increased use of ICT in financial or business services have shown strong productivity growths; especially in the second half of the 1990's. **Li, Wang** and **Zhai (2003)** treats service sector as an engine of economic growth. Production efficiency in agriculture and manufacturing sector and promotion of technical progress is highly related to the integrated services. Services are directly satisfying consumer needs. More rapid development of *producer services* is connected with deepening division of labor and specialization, which are sources of productivity growth. **Shugan (1993)** states that service specialization ensure producer services to be more effective. This allows manufacturer to improve output. Hence, services growth and manufacturing growth can be occurred together. **Elfring (1989)** shows that, in all OECD[3.1] countries employment growth in *producer services* is about two times high than average employment in the entire service sector. The society is widely benefited through rapid development of service sector. **Li, Wang** and **Zhai (2003)** suggest that through "contracting out" industrial firms could lessen the cost of a production that formerly was produced internally. The introduction of low-cost and high-quality *producer services* causes an economy-wide transformation of production, distribution and consumption patterns. They also adds, introduction of the market to small and medium sized firms occurs as a consequence of Specialization of *producer services*, which previously were unable to obtain these services without great cost. Another   influential opportunity is associated with service sector. It is less sensitive to recessions than the

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3.1: Organization for Economic Cooperation and Development

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industrial sector. The service itself may not be able to gain in productivity term over time, it may be able to contribute to productivity gains in other sectors either immediately or over time **(Chandrasekhar and Ghosh 1999)**. **Riddle (1986)**, in his work, adds that productivity in the service sector is higher than it was previously believed by most researchers. He also shows that the service sector's productivity is higher than the productivity of the economy as a whole.

Oulton (2003) finds that a shift of primary inputs such as labor or raw materials from industry to intermediate service production increases the economy's productivity rate as long as the service sector has some positive productivity growth. An interesting contradictory effect of difference of the productivities of service and manufacturing sector in the economy is shown by **Baumol (1967)**. On the one hand, for a given output mix slower productivity in services relative to manufacturing augments the service employment share in the economy. Slower productivity in the service sector increases relative service sector price, thereby induce consumers to substitute services with goods. This last effect is reflected by an increase in the demand for workers in manufacturing sectors relative to service sectors.

It was tried to estimate labor productivity in services during nineteenth century in United Kingdom, United States, France and Japan. All estimates revealed that some services not only generated productivity gain but actually had a relatively high level of productivity. Among these, transport and communication, notably railways were the major sectors for accumulation of capital investment in all countries. **(Gemmell and Wardley, 1990)**. Service industries are responsible for the different courses of productivity development. **Breitenfellner** and **Hildebrandt (2006)** showed that labor productivity growth of the service sector of some newly joined[3.2] European countries was supported by communication activities. Contribution of other business activities in service sector was negative. Wholesale trade and commission trade had positive effects on productivity growth in all countries. But the Slovak Republic was reflecting the strong rise in employment in this segment. The parallel course of development in Hungary's and Poland's employment structure was partially reflected in labor productivity. In both countries, contribution of business services to employment growth was high, but it was low or even negative for labor productivity growth. The fact is, distributive services made a substantial contribution to labor productivity growth in the Czech Republic and in Poland

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3.2: Slovak Republic, Czech Republic, Hungary and Poland

— can be attributed to the positive development of wholesale and commission trade, as well as in retail trade. Consumption services (personal and social services) had a negative effect on labor productivity growth in the Czech Republic while Poland, Hungary and particularly the Slovak Republic recorded a positive contribution from this sub sector. The phenomena of labor-dynamic business services and productivity-driving consumption services in Hungary, Poland and the Slovak Republic appeared somewhat counterintuitive. This puzzle may be explained by the role of direct investments in business services such as marketing, designing or accounting, which were newly established at a relatively high productivity level during the transformation process. At the same time, the demand for these services continued unabated and consequently affected employment growth. Inversely, distribution services and social services seemed to overcome the legacy of underemployment and inefficiencies inherited in the past **(Stehrer, 2005)**.

● It is evident that the service sector has ability to create jobs progressively. Because a significant number of sub sectors in service sector are labor-intensive **(Li, Wang and Zhai, 2003)**. **Sirilli** and **Evangelista (1998)** also characterizes the service industries as labor intensive sector "Service-sector industries are characterized by a close interaction between production and consumption, high information content, the intangible nature of their output, and a heavy emphasis on labor capital in the delivery of their output". As service sector is labor intensive, **Aring (2003)** suggests promotion of human capital development and innovative ideas which could play a central role in the model of managed tertiarization. **Nielsen (2005)** also treats service sector as a labor intensive sector. "The labor-intensive nature of many business-related services, the high degree of interaction with customers, the knowledge intensity of many services and the importance of tacit knowledge are all factors implying the importance of a sufficient supply of skilled human capital and the vulnerability of the sector in a future labor market confronted with emerging skills gaps."

It is frequently argued that service sector has become more capital intensive and it is occurred at a faster rate than other sectors in the economy. Illustration of Indian service sector suggests that share of capital stock in the economy which is accounted by the service sector has actually been falling continuously since 1980. It has fallen from nearly 50 per

cent in 1980 to just under 45 per cent in 1996-97 **(Chandrasekhar and Ghosh, 1999)**. **Kanapathy (2003)** agrees with **Chandrasekhar** and **Ghosh (1999)**. Many service related activities are typically skill-based and not investment intensive. These activities are ideal sources of growth for countries with scarce capital and an increasingly educated workforce. From the early theories of Allan Fisher and Colin Clark many researchers questioned the idea of enhancing service productivity. At that time, most researchers believed that services are, by definition, labor intensive. Personal services such as haircuts, taxi cab rides, shoe shines and domestic work all require human workers. Human worker is difficult to remove. Therefore, it is difficult to increase output per worker. This argument suggests that employment in the service sector will be increased when other sectors become more productive. Services are doomed to be labor intensive and should eventually employ most workers **(Shugan, 1993)**. In recent years, service sector is viewed as a dynamic component of the economy that is characterized by the large consumption of new technologies and human capital. Observable growth in Internet and web-based services and high-technology based environmental services indicates that knowledge-intensive services are taking on a more active economic role **(Howells, 2001)**. Observing the changing trend in the structure of China's service sector it is also found that, growth of employment share of labor-intensive service industries is likely to be constrained by the slowing-down in the demand for services. In recent years, there has been a stagnant and even declining employment share of the labor-intensive service sectors such as transport, storage, posts and telecommunications as well as wholesale, retail and catering services. Since, labor-intensive service sectors do not require special skills a considerable part of the decline in employment could be explained by insufficient demand for these services **(Li, Wang and Zhai, 2003)**.

● **Fisher (1935)** and **Clark (1940)** established their first literature on the sectoral distribution of employment. Transformation of labor from agriculture to manufacturing and from manufacturing to commerce and services are regarded as the most important concomitant of economic progress. More precisely it can be said, growth in service sector is mainly elucidated as the result of shifting income elasticities of demand **(Appelbaum and Schettkat, 2001)**. "As economies grow richer, tastes switch away from the basic needs of food and shelter towards non material goods, including services. In other words, the

increasing service employment share recorded in post-industrial economies could be the result of rising per capita income levels." **D'Agostino, Serafini** and **Warmedinger (2006)**. Advocates of positive income effect on service sector growth compared output of richer and poorer countries. They have found a positive relationship between wealth and the share of services in GDP. However, it has been argued that this effect become extinct if one allows the higher relative prices of services in richer economies. Then the poor countries might have been able to sell their services to rich countries. Then the share of services to GDP would have been increased in poor countries with respect to richer countries. Along this line, a number of studies found that the share of services in real output remains constant as per capita income rises. **(Summers, 1985; Baumol, Blackman and Wolff, 1989)**.

Baumol (1967) identified the main causes of the expansion of service sector employment. The reason is: slower productivity growth in services compared to manufacturing. It is known as "Baumol's disease". The expansion of employment share in service sector relative to industrial sector is the direct consequence of lower productivity performance of services. **Ngai** and **Pissarides (2004)** put same argument along the balanced growth path. Labor employed in the production of consumption goods gradually moves to the sector with the lower TFP (Total Factor Productivity). The theory depicts that as a result of this productivity differential in service sector and industrial sector, if the relative level of output in industry and services is maintained, increasing percentage of the labor force must be linked into service activities. The existence of this effect leads to a "paradox" of the service sector. The model of **Baumol (1967)** is regarded as one of the fundamental theories on service sector employment. An interesting extension of this work is provided by **Oulton (2003)**, where supply of intermediate service goods is taken into account. Another explanation for escalation in service sector employment may be found in pragmatic literature by Fuchs. **Fuchs (1980)** deduces that a considerable proportion of the increase in service sector employment is due to the increased labor market participation of women. The effect being driven by both income and substitution effects of the choice between home and market activities. **Erdem** and **Glyn (2001)** found that since 1973, in both US and Europe, female labor supply was most important for service employment. In particular, the analysis of **OECD (2000),** based on a sample of OECD countries from 1984 to 1998 in four sub-sectors of services, found that employment share in services is mainly affected by per-capita income, the size of the welfare state and by female participation. Whereas

Messina (2004) focused on a sample of 27 OECD countries from 1970 to 1998 (five-years averages). Like **OECD (2000)**, Messina found a positive impact of per-capita income and size of the public sector on service employment, together with productivity gap between services and manufacturing, the rate of investment, the degree of urbanization, and the administrative burden on the creation of new firms. In contrast to **OECD (2000)**, Messina found that female participation does not play a significant role in service sector employment.

D'Agostino, Serafini, Warmedinger (2006) states "Any discussion of the determinants of employment within the European context needs to consider the role played by the institutional settings. A number of studies of European labor markets have identified a significant effect of labor market institutions - such as the generosity of the unemployment benefit systems, the Employment Protection Legislation (EPL), the degree of unionisation, the level of taxation — on aggregate unemployment". According to **Bertola (2001),** institutional constraints — such as high non-employment benefits, legal minimum wages, centrally negotiated employment contracts, high tax wedges — may prevent the creation of low-wage jobs. Other economists have found a positive effect of the interaction between labor market institutions and economic shocks on the European unemployment rate; a survey of a number of the key hypotheses and developments in this field is provided in **Bertola (2001)**. **Erdem** and **Glyn (2001)** argue that service sector employment acts like a "sponge" – persistently expanding more where labor supply is plentiful.

● Liberalization in service trade will generate sizable gains **(LI, Wang and Zhai, 2003).** In support of service trade and service trade impact on service sector **Riddle (1986)** speaks out that rapid expansion of the service sector is a natural part of deepening trade, specialization, and marketization. Conversely, the expansion of trade also facilitates the development of the service sector. **Francois** and **Spinanger (2002)** and **Dominique (2001)** suggest that the reduction of the barrier of service trade should be done by reducing huge trading cost. They are non revenue generating costs in service trade. Trade can be expanded if these costs are reduced **(Stern, 2002)**.

Historically, service industries have been at the heart of economic growth, stimulating and facilitating production for the market rather than simply for self sufficiency. It is argued by **Li, Wang** and **Zhai (2003)** that gains from trade, including specialization, developing countries have clear comparative advantages in many labor-intensive sectors such as tourism and construction. Liberalization of trade in services allows more specialization and scale economy due to expanded market size. Service liberalization expands the market for intermediate services (such as transportation and telecom), lessen prices and improve the quality of services.

Hodge (2002) and **Mattoo (2002)** also advocate in favor of service trade either in the form of export or import. Gains from FDI (Foreign Direct Investment) are considered as gains from trade. In many cases, imports of services take the form of commercial presence, i.e., foreign direct investment. This import, through FDI, causes inflow of physical capital, human capital and technology factors — which are important for development and growth. "The liberalized, production-oriented service sector, which is marked by strong cross-links to the modernized and export-oriented manufacturing sector, remains the main source of employment growth." (**Aring, 2003**). Export of services is viewed as an optimistic deal for the domestic economy. Some tourism based poor countries export tourism services and import capital goods from rich economies. Specialization in this sector can thrust the growth rate of small countries (**Albelo and Martin 1997**). The embodied service component of export is strongly linked to the level of development (**Francois and Reinert 1995**). Liberalization of service trade creates opportunities for the service sector (including service export) to be expanded rapidly, which will facilitate growth and poverty reduction (**Li, Wang and Zhai, 2003**).

Recent experiences of regulatory reform in OECD countries show that liberalization in service industries and utilities results in significant gains in sectoral productivity, cost reductions and growth of output. In Germany, France and Spain total factor productivity (TFP) in the electricity and telecommunication industries has been increased by 40 percent due to their recent regulatory reform. In Japan the scope of TFP increase is relatively high in the *distribution sector*. In general, increases in TFP for the studied OECD countries are ranged from 1.5 percent to 3.5 percent, except the United States. The potential for reform-induced productivity increase is estimated to be less in the United States, as significant

reform have already occurred in this country and sectoral labor and capital productivity are generally higher there than the other countries **(OECD, 1997)**.

Kutscher and **Mark's (1983)** overall idea about employment and growth in service sector and its impact on some specific ground would be helpful for our study. "Over the past three decades, the rapid growth of the economy's service sector and the increasing interest in the sector on the part of both scholars and policymakers have helped give currency to three perceptions about service industries. The perceptions are that (1) the service sector is composed entirely of industries that have very low rates of productivity growth; (2) service industries are highly labor intensive and low in capital intensity; and (3) shifts in employment to the service producing sector have been a major reason for the slowdown in productivity growth over the past 10 to 15 years[3.3]."

3.3: 7th and 8th decade of 20th century.

IV. Research Methodology

This study intends to extend some of the previous ideas, exposed by predecessors, through empirical studies. Here service sector growth rates in 2004 and 2005 (in most of the economies of the world) are used to show how service sectors are upcoming as a dominant sector all over the world. Afterward it is tried to demonstrate relations between per capita GDP and service sector share, between service sector share and service sector growth and between service sector growth and GDP growth rates. To examine these relations the area of investigation is squeezed into some specific countries. We observe data of 16 countries of Asia, America, Oceania and Europe continent. Tables and bar diagrams are used to observe those relationships. Each observation in bar diagrams is taken as an average of values from 1995 to 2004 within each cross section. Finally, regressions are drawn to find out relation between per capita GDP growth rate and Sectoral Participation Ratio (SPR)[4.1].

Sixteen countries[4.2] are selected from different regions for regression analysis. But those countries are homogenous[4.3] by some characteristics. Those countries are classified into two parts on the basis of income level and service liberalization. Countries are classified into developing and developed countries by per capita income. Average per capita income (of the data from 1995 to 2004) of each country is used as the determinant of inclusion of a country into a group – either developed or developing. Per capita real income (in dollar) which has five digits is considered as the indicator of developed category. Other countries (per capita income – less than 5 digits) are developing. Classification on the basis of service liberalization is determined through an index[4.4]. Average value (1995 – 2004) of the index of each country determines the extent of service liberalization. Higher values of the index imply higher service liberalization and lower values imply lower service liberalization. Countries are subdivided into high service liberalized and low service liberalized countries. Two countries[4.5] are deducted from the middle of the list of countries. The list is sorted according to the extent of service liberalization. To create comprehensible difference between two groups those two countries are deducted. An overall regression on

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4.1: SPR = Service sector share in GDP/ Non service sector in GDP
4.2: 16 countries from Asia, Europe, Oceania and America: mentioned in appendix.
4.3: Countries were homogenous because during 1995 to 2004 those countries did not face massive non economic disturbances (war, natural disasters, international restrictions etc.) for long time which could hamper macroeconomic tools. Every country had big economies by population size (more than 10 millions). Technological progress in each country was not same at a particular period but underdeveloped countries followed technical process of developed countries after some periods. Countries were more or less liberal to trade and by the time trade became more liberalized in every country. Moreover, service demand was linked with income in every country.
4.4: Service liberalization index = (% of service trade in GDP/ % of trade in GDP) × 100.
4.5: Two countries were Russia and Canada.

entire cross sections and regressions on subdivided groups are done considering some theoretical judgment.

Theoretical Perspective: Endogenous growth model is an extension of neoclassical growth model. This model attaches the technology term. Technology arises in the model as an endogenous factor. The endogenous growth model illustrates output (Y) as a function of labor (L), capital (K) and technology (T).

$$Y = F\ (K,\ L,\ T) \tag{1.1}$$

In the endogenous model technology is assumed proportional to the level of capital per worker in the economy overall, $T = aK/L = ak,$ and that technology is labor augmenting. So production function can be written as (a is a constant term)

$$Y = F\ (K,\ TL) \tag{1.2}$$

$$Y/L = F\ (K/L,\ TL/L)$$

$$y = F\ (k,\ T)$$

(1.3)

Now, technological progress can be determined by capital growth.

$$\Delta T/T = \Delta K/K - \Delta L/L = \Delta k/k.$$

Another assumption of endogenous growth model: output and capital grow at equal rates, implying that y/k is a constant. Then per capita GDP growth rate, G, is

$$G = \Delta y/y = \beta \times \Delta k/k + (1-\beta) \times \Delta T/T \qquad\qquad 0 < \beta < 1$$

$$G = \Delta k/k \tag{1.4}$$

Equation (1.4) suggests that capital growth per capita is the key determinant of per capita GDP growth rate. Thus, in this research we took GDP growth and capital on per capita basis. In our regression analysis per capita real GDP (base year 2000) Growth Rate (GGR[4.6]) is considered as dependent variable and Capital Formulation Growth (CFG[4.7]) (per capita) is taken as one of the key determinant of growth. Another determinant of growth is Final Consumption Growth (FCG[4.8]) per capita. Final Consumption is the sum of private consumption and government expenditure on final goods. There are some other partial variables[4.9] and a core independent variable – Sectoral Participation Ratio (SPR which is quoted as RSA in regression results in appendices section).

Software: Statistical software 'EViews' was used to analyze data and estimate variables. This software was recommended in various reliable books[4.10] of econometrics.

4.6, 4.7, 4.8: See in *Appendices* (in **Regression Results**).

4.9: See in *Appendices*. Partial variables are changed through different regressions, considering its significance in a particular regression.

4.10: *Basic Econometrics* of Damodar N Gujarati, *Econometric Methods* of Jack Johnston & John Dinardo, , *Econometric Analysis* of William H Greene and so on.

Data Assembling and Choice of the Model (regression): As there are 16 cross sections and each of which are containing 10 periods (1995 – 2004); the data set is a balanced data set. Since this paper is not going to show any growth model and concerning into the relation between service sector share and GDP growth rate only, we do not care about dynamic adjustment of GDP growth rate towards steady state. Thus, having this benefit, data sets are pooled in staked form. This can be done when groups to be pooled are relatively similar or homogenous. We already noted that countries are homogenous by some characteristics. Thus pooled regression is run to accomplish the analysis. It is assumed that every country of this study faces same GDP growth function. Thus slope coefficient for each country is assumed constant. Fixed effects of constant terms are taken across countries. When cross sections, in this study, are subdivided into two groups the number of time series become higher than number of cross sections in a regression. When time series is large and cross section is small, there is likely to be little difference in the values of the parameters estimated by fixed effects or random effects (**Gujarati, 1978**). Hence the choice is based on the computational convenience. In these cases[4.11], fixed effects of constant terms across countries are appropriate. In the case[4.12] of overall regression (16 cross sections and 10 time series) fixed effects and random effects models are drawn and Hausman test is made to decide weather the model will have fixed effects or random effects. Inconclusive results from the test are drawn because of accepting the hypothesis that Fixed Effects Model (FEM) and Error Correction Model (ECM/ random effects model) dose not differ much. Then 'random effects' of pooled regression is kept out from the analysis. Due to existence of heteroscedasticity in pooled data matrix Estimated Generalized Least Square (EGLS) method is used to run the regression. The model follows linear estimation after one-step weighting matrix. All of the independent variables are taken as exogenous variables in the model thus instrumental variables are not required to include in the model.

The Selected Model: The basic framework is a regression of the form:

$$Y_{it} = \alpha + X_{it}^{©} \, \beta_{it} + \delta_i + \gamma_t + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2.1)$$

where Y_{it} was the dependent variable, and X_{it} is a k-vector of regressors, and ε_{it} are the error terms for $i = 1, 2,…,M$ cross sectional units observes for dated periods $t = 1,2,….,T$. The α

4.11: **Regression output 2, Regression output 3, Regression output 4 and Regression output 5** in *Appendices*

4.12: **Regression output 1** in *Appendices*

parameter represents the overall constant in the model, while the δ_i and γ_t represents cross-section or period specific effects (random or fixed). Identification obviously requires that the β coefficients have restrictions placed upon them. They might be divided into sets of common (across cross-section and periods), cross-section specific and period specific regressor parameters.

The sample used in this model is a balanced sample. We view these data as a set of cross-section specific regressions so that we have M cross sectional equations each with T observations stacks on top of one another:

$$Y_i = \alpha l_T + X\copyright_i \beta_{it} + \delta_i l_T + I_T\gamma + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2.2)$$

for $i = 1,\ldots,M$, where l_T is a T-element unit vector, I_T is the T-element identity matrix, and γ is a vector containing all of the period effects, $\gamma\copyright = (\gamma_1,\gamma_2,\ldots\ldots,\gamma_T)$.
The stacked representation of the equations of 2.1 is therefore:

$$Y = \alpha l_{MT} + X\beta + (I_M \otimes l_T)\delta + (l_M \otimes I_T)\gamma + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots(2.3)$$

where the matrices β and X are set up to impose any restrictions on the data and parameters between cross-sectional units and periods, and where the general form of the unconditional error covariance matrix is given by:

$$\Omega = E\,(\varepsilon\varepsilon\copyright) = E \begin{bmatrix} \varepsilon_1\varepsilon_1' & \varepsilon_2\varepsilon_1'\ldots\ldots\varepsilon_M\varepsilon_1' \\ \varepsilon_2\varepsilon_1' & \varepsilon_2\varepsilon_2'\ldots\ldots\varepsilon_M\varepsilon_2' \\ \vdots & \ddots \quad \vdots \\ \vdots & \ddots \quad \vdots \\ \varepsilon_M\varepsilon_1' & \varepsilon_M\varepsilon_2'\ldots\ldots\varepsilon_M\varepsilon_M' \end{bmatrix} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2.4)$$

In our model β_{it} are common across cross-sections and periods, we simplifies the expression for Equation (2.1) to:

$$Y_{it} = \alpha + X_{it}\copyright\beta + \delta_i + \gamma_t + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2.5)$$

There are a total of k coefficients in β, each corresponding to an element of x. The presence of cross-section and period specific effects terms δ and γ might be handled using fixed or random effects methods. We consider fixed effects method to find out cross section effects term δ_i in our regressions.

The fixed effects portions of specifications are handled using orthogonal projections. In the simple one-way fixed effect specifications and the balanced two-way fixed specification, these projections involve the familiar approach of removing cross-section or period specific means from the dependent variable and exogenous regressors, and then performing the specified regression on the demean (**Baltagi, 2001**).

Cross-section Heteroscedasticity: Each cross-section, in this study, has some certain characteristics which are unlike other cross-sections' characteristics. Thus there have been cross-section heteroscedasticity. Cross section heteroscedasticity allowes for a different residual variance for each cross section. Residuals between different cross-sections and different periods are assumed to be 0. Thus, we assumed that:

$$E(\varepsilon_{it}\varepsilon_{it}\backslash X_i*) = \sigma^2_{i.}$$
$$E\ (\varepsilon_{is}\varepsilon_{jt}\backslash X_i*) = 0 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots..(2.6)$$

for all i, j, s and t with $i \neq j$ and $s \neq t$, where X_i* contains X_i and, if estimated by fixed effects, the relevant cross-section or period effects (δ_i, γ).

Using the cross-section specific residual vectors, we might rewrite the main assumption as:

$$E(\varepsilon_i\varepsilon_i \copyright \backslash X_i*) = \sigma^2_i I_T \dots\dots\dots\dots\dots\dots\dots\dots\dots.(2.7)$$

GLS for this specification is straightforward. First, we perform preliminary estimation to obtain cross-section specific residual vectors and then we use these residuals to form estimates of the cross-specific variances. The estimates of the variances are then used in a weighted least squares procedure to form the feasible GLS estimates.

Contemporaneous Covariances (***Cross-section SUR***)**:** Contemporaneous correlations arise in the model when cross sections are grouped according to high income countries and low income countries or when cross sections are grouped into more service liberalized and less

service liberalized countries.   This class of covariance structures allows for conditional correlation between the contemporaneous residuals for cross-section i and j, but restricted residuals in different periods to be uncorrelated. More specifically, we assumed that:

$$E(\varepsilon_{it}\varepsilon_{jt}\backslash X_t^*) = \sigma_{ij.}$$

$$E\left(\varepsilon_{is}\varepsilon_{jt}\backslash X_t^*\right) = 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.(2.8)$$

for all i, j, s and t with $s \neq t$. Note that the contemporaneous covariances do not vary over t. Using the period specific residual vectors, we might rewrite this assumption as,

$$E(\varepsilon_t\varepsilon_t\textcircled{c} \backslash X_t^*) = \Omega_M \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.(2.9)$$

for all t, where,

$$\Omega_M = \begin{bmatrix} \sigma_{11} & \sigma_{12}\ldots\ldots\sigma_{1M} \\ \sigma_{21} & \sigma_{22}\ldots\ldots\sigma_{2M} \\ & \cdot \quad\quad \cdot \\ & \cdot \quad\quad \cdot \\ \sigma_{M1} & \sigma_{M2}\ldots\ldots\sigma_{MM} \end{bmatrix} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2.10)$$

There is no commonly accepted name for this variance structure, so we term it a Cross-section SUR (Seemingly Unrelated Regression) specification since it involves covariances across cross-sections.

Cross-section SUR weighted least squares on this specification (sometimes referred to as the Parks estimator) is simply the feasible GLS estimator for systems where the residuals are both cross-sectionally heteroscedastic and contemporaneously correlated. Residuals are employed from first stage estimates to form an estimate of Ω_M. In the second stage, we perform feasible GLS.

It should be noticed that there are potential pitfalls associated with the SUR/Parks estimation (**Beck and Katz, 1995**). EViews is unable to compute estimates for the model when the dimension of the relevant covariance matrix is large and there are a small number of observations available from which to obtain covariance estimates. For example, we have a cross-section SUR specification with large numbers of cross-sections and a small number

of time periods in the first regression[4.13] of this study. It is quite likely that the estimated residual correlation matrix would be nonsingular so that feasible GLS is not possible. Thus in this case 'cross-section weight' option is used in the data processing software.

Statistical Tests: In this paper core variables of the regression analysis are GDP Growth Rate (GGR) and Sectoral Participation Ratio (SPR). The first one is dependent and second one is independent. To remove associated problem with data set (heteroscedasticity, autocorrelation, specification bias etc.) and to test hypothesis various test applications are applied on regression through the statistical software EViews. R^2, adjusted R^2, t-statistic, F-statistic, D (Durbin Watson) - statistic, Hausman- statistic are drawn[4.14]. EGLS (Estimated Generalized Least Square) procedure is used to run the regressions due to heteroscedasticity embedded in the data.   <u>Multicolleniarity</u>   problem have been over looked. Because this paper tries to find the shape of the relation between GGR and SPR only; it does not emphasize on the values of the regression results. 1% significance level is considered to decide weather a coefficient is significant or not.

Data Sources:

- World Development Indicators database
- www.nationmaster.com
- IMF (International Monetary Fund) database
- Statistical pocketbook, BBS.

4.13: **Regression output 1** in *Appendices*.

4.14: See in *Appendices* (in **Regression Results**). Heteroscedasticity, autocorrelation and specification bias were removed from the model.

V. Tertiary Sector around the World

Changing Appearance of Sectoral Supremacy: In old ages, economies in every demographic area were mostly dependent on agriculture. Agricultural products were exchanged through some service activities but most of those services were not well organized. Service sector did not have institutional appearance. Society and economy both relied on production of agriculture and agriculture oriented production. After achieving sufficiency in food production and gathering inventive knowledge people became interested in industrial production. Most of the developed countries proved the effectualness of industrial sector to guarantee faster growth in the economy. Alongside, with the emergence of industrial sector as a prominent sector economy became well organized and specialized. Specialization towards specific economic activities and market based economy demanded a well organized sector which was helpful for the agricultural and industrial production as well as its marketization. Continuous economic growth and development encouraged people to earn additional income – more than subsistence level. Additional income encouraged them to spend their income towards services. Now-a-days we face many service activities which were regarded as the household affaires (domestic services, child care, firm accounting etc.) in old ages. Some services are treated new; just because those have been arrived under assessment process. Some services have emerged as fresh sectors (WAP services, new communication services, value added services of mobile companies etc.) and other service sectors extended their existing activities (advertising activities, gaming, management services in institutions and companies etc.). This tertiary sector is now dominating in world economy.

Depiction of Service Sector Expansion: A considerable comparison between economic (GDP) growth and service sector growth around the world will be a good witness in favor of the claim of up coming service sector dominancy. Specially, Asian countries are showing interest in service sector.

Asia: In 2005, Afghanistan (14.34%), Bangladesh (6.36%), Bhutan (7.89%), China (10%), Cambodia(12.13%), Hong Kong (8.46%), India (9.94%) , Indonesia (9.05%), Iran

(5.42%), Jordan (6.25%), Malaysia (6.78%), Mongolia (8.57%), Pakistan (7.89%), Philippines (6.35%), Singapore (6.19%), Sri Lanka (5.11%), Thailand (4.58 %), Turkey (6.51%), Uzbekistan (8.01%) and Vietnam (8.27%) accounted noteworthy growth in service sector. Most of these rates were higher than the total GDP growth rates in 2005. Only a few countries' GDP growth crossed, by a very small quantity, the service growth rate (China (10.2%), Jordan (7.26%), Sri Lanka (5.3%), Singapore (6.38%), Turkey (7.38%) and Vietnam (8.42%)). Service growth in Japan (2.5%), South Korea (3.02%) and Nepal (2.4%) was accounted low in 2005. But it was caused by higher share of service sector and slackness of overall economic growth. Maldives (-7.72%) was a special case in 2005 in Asia for the tertiary sector. But the negative escalation not only observed in tertiary sector of this country. Whole economy faced an unusual pessimistic growth (-5.19%) in this year. Hong Kong is a highly biased economy towards service sector. Around 90% contribution of the service sector had been a common feature of this country for last ten years. Middle East countries of Asia exhibit uneven scenario of service sector. So it is difficult to comment about those countries. Some of those are highly oil and resource based countries and many of those, somehow, involved in war or affected by war as well as international restrictions. As a consequence, those countries could not run their economy in a usual manner. Iraq, as a victim of war, accounted massive negative growth in service sector. Service sector growth for this country in 2003 was -23.68%.

Europe: Same picture is drawn in different way for large economies in Europe. Austria (1.57%), Belgium (1.76%), France (1.42%), Germany (0.96%), Italy (0.84%), Netherlands (1.8 %), Poland (2.97%), Portugal (0.89%), Sweden (2.65%), Switzerland (0.89%) and United Kingdom (2.91%) are some homogenous countries which were experiencing lower growth rate in service sector in 2005. They are homogenous in a sense that, all of those countries are rich and population of those countries, at least, maintaining 7 million level. As their income is high, they are leading a higher standard of living. Moreover, people of those nations have already left behind the phase of industrialization. These European countries are demanding and consuming more service opportunities in a usual manner. The slower growth rate of this sector is responsible for high degree of service contribution in the economy. Service sector in these countries is already well established and there is something very little to be achieved. Those countries are just relying on innovative sources of services for service sector growth. Furthermore, growth of this tertiary sector in these mentioned European countries is tied with the law of convergence. Low rates in service

sector of those countries are derived by lower economic growth. Despite the slower pace, in most cases service sectors are growing faster than other non-service sectors. The service sector of the countries, which are regarded as developed nations but population is not noteworthy (less than 7 million), are following comparatively higher rate (Finland (3.06%), Denmark (3.27%), Norway (3.41%)) but not as much like Asian developing countries. Only Luxembourg (5.85%) and Ice land (7.65%)[5.1] are showing higher rates. Higher pace of tertiary sector in Luxembourg is marked through transport and communication services, financial services and real estate services. Software production, biotechnology, financial services, ecotourism, whale-watching brought about some pushes in the economy. Greece (3.5%) and Spain (3.98%) are little exception here. They are well populated but facing comparatively hire rate than there homogenous European countries. Other European economies, which are not developed yet are yielding higher rate in service sector like developing Asia. As for example, in 2005 Bosnia and Herzegovina (5.87%), Hungary (4.43%), Latvia (11.27%), Romania (4.37%), Russia (7.56%) and Armenia (10.77%) accounted these significant rates which exceeded total growth rate in each country in that year.

America and Oceania: In general, without some exceptions, geographical difference or distance of the countries cannot not make significant difference in the behavior of service sectors. Developed countries in the continent of America Oceania and Africa exhibit generous rates in tertiary sector. In 2004 Australia (3.12 %), Canada (2.82 %), New Zealand (4.37 %), South Africa (4.67 %) and United States (4.45 %) carried generous growth rates which were on an average more than European average. Except South Africa all these countries experienced higher growth rates in service sector than over all economy in 2004.

In Oceania region except Australia, New Zealand and Papua New Guinea (1.84 % in 2003) other economies are so small that they cannot bring about any significant effect in world economy. They are highly dependent or attached with neighbor economies. Service sector pattern in these countries are uneven.

Mexico, a North American country, had a growth rate of 3.89 % in service sector where as it was 2.96% for the whole economy in 2005. South American countries and Developing Asia had been continuing homogeneity among their economy for last some decades. There

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5.1: In 2005.

are more or less similarities in their per capita income, living standards and phase of development. It has been reflected in the tertiary sector as well. Argentina (8.37%), Chile (6.06%), Colombia (4.75%), Ecuador (6.42%), Paraguay (4.26%), Peru (6.04%) and Venezuela (10.3%) are consisting high growth rate in tertiary sector like developing countries of Asia. It is also apparent that there is a tough   competition between service sector and its rival sectors. Brazil (2.47%) and Bolivia (1.4%) had comparatively little rate in 2005 and Bolivia's service growth had been fallen behind than other sectors—was an exception in South American region.

Africa: Africa, which is treated as darken continent, claim importance to be studied well because of its unprogressive character than other continental areas. Most of the countries of Aafrica are enlisted in LDCs[5.2]. Are those poverty stroked countries service intensive? It is noteworthy that poor African countries permits service sector expansion in the economy. Rates of adoption of services in the economy are relatively high in these poor countries. In 2005, Benin (3.19%), Burundi (10.59%), Burkina Faso (5.34%), Chad (6.17%), Congo, Democratic Republics(8.96%), Malawi (6.25%), Mozambique (10.01%), Rwanda (5.95%) and Tanzania (6.69%), as very poor countries, showed high growth in service sector which were not much different than other less poor countries, as for example Albania (7.96%), Angola (14.34%), Algeria (5.75%), Ethiopia (5.81%), Kenya (4.67%), Morocco (4.81%), Nigeria (7.13%), Senegal (4.64%) and Tunisia (7.11%), in Africa. Average share of service sector in Africa is around 40% to 45%. Some of them are highly biased to the agriculture (Burundi's agricultural share is more than 80%) and some are service oriented economy.

Zimbabwe is an unusual example for service sector in Africa. This country had been accounting negative growth rates in service sector for some consecutive years. This might be arisen as an affect of hyperinflation. In 2005 it was -20.1%. Other sectors were affected less than service sector. Agricultural growth rate declined by 10% and industrial growth declined by11.74% in 2005. The cause of negative growth was unexpected high inflation rate in the Zimbabwean economy. Negative growth rates reduced real income as well as demand for services.

64% contribution of service sector in the world economy was accounted in 2004 whereas it was 32% by its rival secondary (industrial) sector. The statistical references tell us a clear

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5.2: Least Developed Countries.

story that service sector, in all over the world, is becoming as a gigantic figure. Though references are quoted from 2004 and 2005 only, the overall scenario, more or less, do not disagree much in the recent years. Now we are going to squeeze the field of investigation for better experiment.

Service Sector's Performance: A Comparative Analysis: Table 1 is very useful to find out the connection between per capita income and share of service sector. Average (1995-2004) per capita incomes of Asian, European, American and Oceania countries are deciding the contribution of service sector into those countries.

Table 1: Comparison among Sectoral participation ratio, service sector growth and economic growth (average figures of data 1995-2004).

Countries	Per Capita Income(in US$)	Economic Growth[5.3] (in %)	Share of Service Sector (in %)	Service Sector Growth[5.4] (in %)	Sectoral Participation Ratio[5.5]
Australia	20634.76	2.480	63.15	2.922	1.715
Bangladesh	360.42	3.169	47.84	3.010	0.917
Brazil	3430.29	0.934	49.98	0.994	0.999
Canada	22319.20	2.365	60.13	2.456	1.508
China	946.64	8.239	39.02	8.813	0.640
France	21827.10	1.789	66.46	1.876	1.981
India	449.04	4.515	45.56	6.542	0.841
Japan	36483.93	0.918	66.16	1.374	1.958
Malaysia	3855.92	2.856	49.69	2.555	0.715
Mexico	5602.74	1.395	62.02	1.405	1.634
Philippine	987.31	2.135	52.37	3.116	1.102
Russia	1791.79	3.226	50.24	3.291	1.010
South Korea	10740.08	4.131	48.95	3.605	0.959
Thailand	2082.36	2.289	49.62	1.436	0.987
United Kingdom	23844.46	2.594	61.96	3.386	1.633
United States	33429.71	2.129	70.18	2.521	2.358

Source: World Development Indicators database (1995 – 2004)

The higher the per capita income the higher the share of service sector in the economy. Within these particular countries Japan is the richest country receiving per capita income of $36483.93. Its service sector is contributing 66.16% of total economy whereas the poorest country (per capita income $360.42) Bangladesh tolerates only 47.84% contribution of

5.3: Economic Growth is per capita real economic growth (base year 2000; US dollar) in percentage.
5.4: Service Sector Growth is per capita real service sector growth (base year 2000; US dollar) in percentage.
5.5: Sectoral Participation Ratio = service sector share in a economy/ non-service sector share in a economy.

service sector. It may appear a little difference, only about 18%, in their contribution. But this difference is considerably large. It may happen that, a relatively inferior country is contributing in service sector more than it's superior. But it will be obviously factual that, their per capita incomes are different by a small number. As for example, United States (US) economy is holding larger share (70.18%) than Japan but having low per capita income. But difference between their per capita incomes is very small.

These conditions are very clearly portrayed in the **Chart 1**. The countries, which cross 150[5.6] of horizontal grids by per capita income bar, capture at least 60% share in service sector. Japan and US are showing high service sector share for corresponding high-rise bars of per capita income.

Per Capita Income (in US$)   Share of Service Sector (in %)
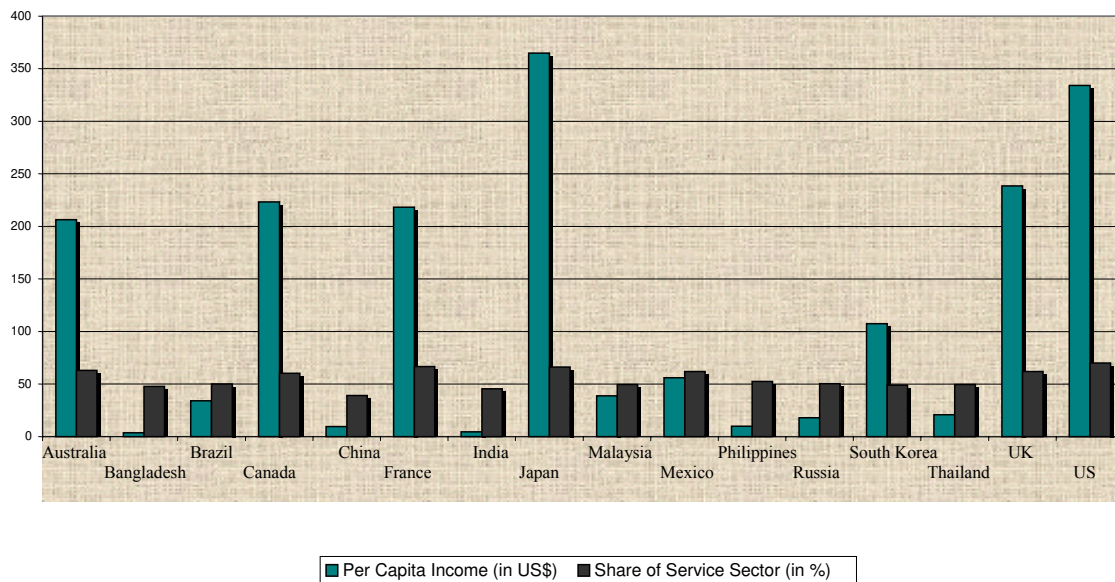
Chart 1: A comparison between per capita income and service sector share (average of the values from 1995-2004).

Now recalling **Table 1** let us try to find out, weather service sector growths are attached with the level of service shares in these economies or not. The picture is little bit ambiguous but not insignificant at all. China is holding the lowest share (39.02%) and capturing the highest growth rate (8.81%) in tertiary sector. On the other hand US share is the highest (70.18 %) but not capturing the lowest rate (2.52%) of service sector growth. But growing at a rate is quite low. From **Chart 2**, it is noticed that, countries which have crossed 60% level (Australia, France, Japan, Mexico, UK, US) of share, have experienced

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5.6: 150 = 15000 US$ per capita income.

growth rates lower than 3% in the discussed sector. Within them merely UK has carried a little more (3.38%). The included economies, which have low shares (40% to 50%) in service sectors (Bangladesh, Brazil, India, Malaysia, Philippine, Russia, South Korea and Thailand), have
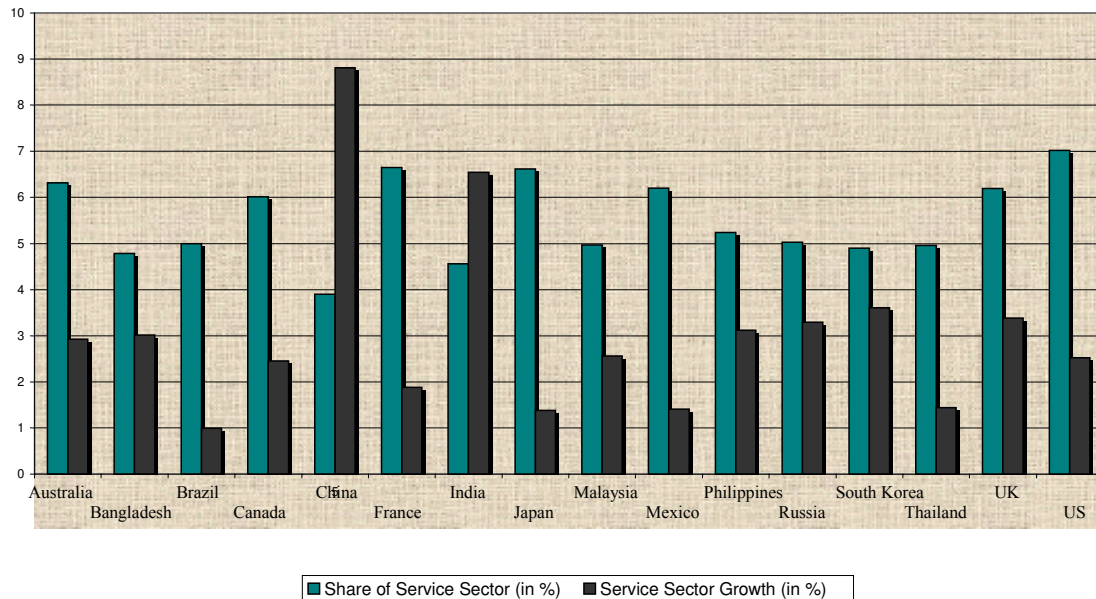
Chart 2: Service sector growth is linked with share of service sector (average of the values from 1995-2004).

high rates in service sector growth. The rates are accounted by more than 3%. Brazil and Thailand are exceptions. The motives behind the exceptions are unambiguous. Brazil had been suffering from sluggish movement of the economy during 1995 to 2004. Within this period this country accounted some negative growth rates in other sectors. Thus the lower growth rate with lower share in tertiary sector is out of question. High negative GDP growth rates in 1997 and 1998 in the Thailand's economy and slow GDP growth rates in the early years of given phase (1995-2004) might be responsible for slower growth rate in service sector.

In the recent past, the relation between share of service sector and service sector growth exhibits more or less similar attitude to the average (1995-2004) trend. **Chart 2** will be useful to establish these arguments. Take a look at a recent year 2004.

In recent years, service sector growth rates have been increased. In 2004, average service growth rate of the particular countries in **Table 2** was about 4%. For these similar countries average rate of consecutive 10 years was 3.1%. Service sector share has been improved in 2004 than average value[5.7] of service sector share within each country. **Chart 3** summarizes

Table 2: Service sector share and its growth in the year 2004.		
Countries	Share of Service Sector (in %)	Service Sector Growth (in %)
Australia	64.44	1.68
Bangladesh	47.83	3.68
Brazil	49.41	2.55
Canada	60.81	1.66
China	40.19	9.34
France	66.61	1.49
India	49.31	8.07
Japan	67.41	2.13
Malaysia	41.68	1.56
Mexico	62.84	3.12
Philippine	54.92	5.73
Russia	49.50	8.41
South Korea	47.14	1.42
Thailand	47.50	5.95
United Kingdom	64.10	3.14
United States	70.98	3.43

Source: World Development Indicators database (2004)

the tendency of service sector growth very well. China was the highest service growing country and share was lowest in 2004. Except Philippines, all high service growing countries (Bangladesh, China, India, Russia and Thailand) were bearing service share less than 50%. The countries, whose service share exceeded 60 % level (Australia, Canada, France, Japan, Mexico, UK and US), had service growth rates around 3% or less.

5.7: average value is the average service sector share of 10 years (1995-2004), within a country.
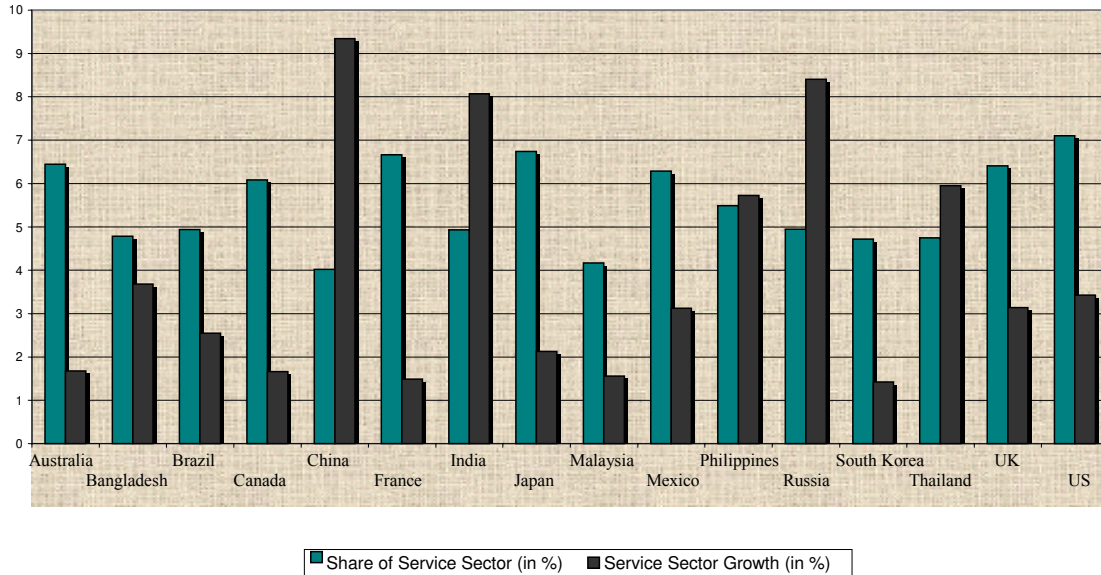
**Chart 3:** Service sector growth is linked with share of service sector (2004).
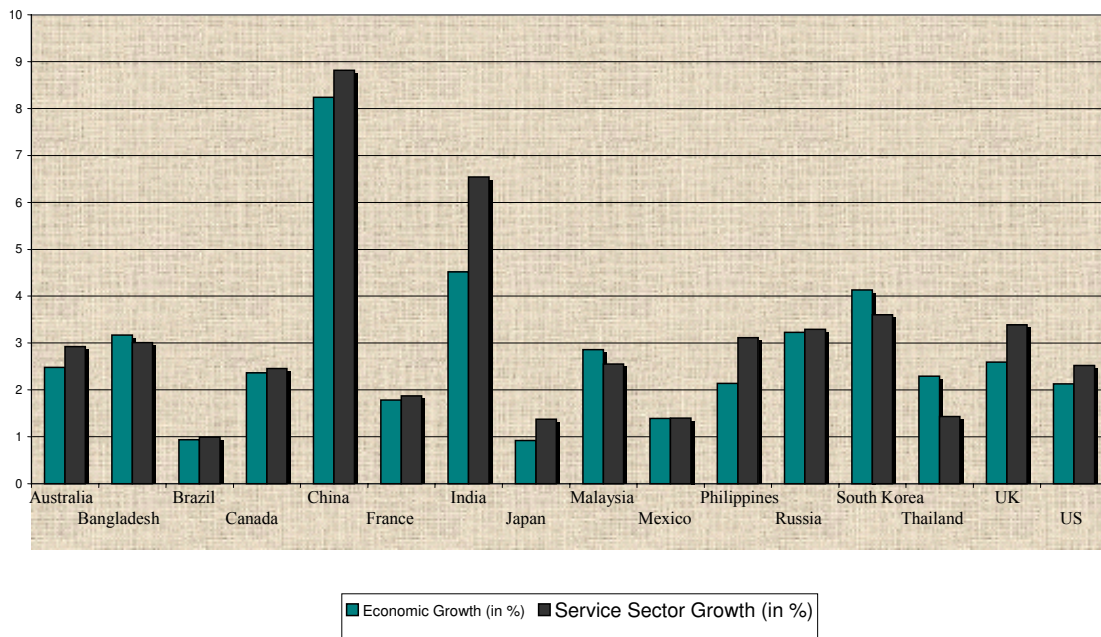
Chart: 4: Service sector growth rate is defeating Economic growth rate (average of the values from 1995-2004).

Chart 4 is illustrating very familiar scenario of the world economy. This diagram is advocating in favor of high service growth rates than its rival sectors' growth rates. Here, on average, growth rates from 1995 to 2004, service growth rates had been defeated by

GDP growth rates in 10 countries (Australia, Brazil, Canada, China, France, India, Philippine, Russia, UK and US). Mexico had shown equal competition between service sector growth and economic growth rate. In other three countries (Bangladesh, South Korea and Thailand) service sector growth rates were behind the GDP growth rates.

It is lucid from the discussion that, the tertiary sector is becoming dominant in nature. Now we are in the burning question – will the supremacy of this sector be a threat for the economies in the future? Answer of this question is tried to be solved in **Chart 5**. But ambiguous answer comes through the chart. We observe very similar SPRs for Brazil, Russia, South Korea and Thailand but they have very distinct GDP growth rates. SPRs of China and Malaysia are not so far but their growth rates are. For Mexico and UK the statement is also true. So we have to extend our observation and experiment about this matter. Now let us take a tour in the ground of more critical investigation.
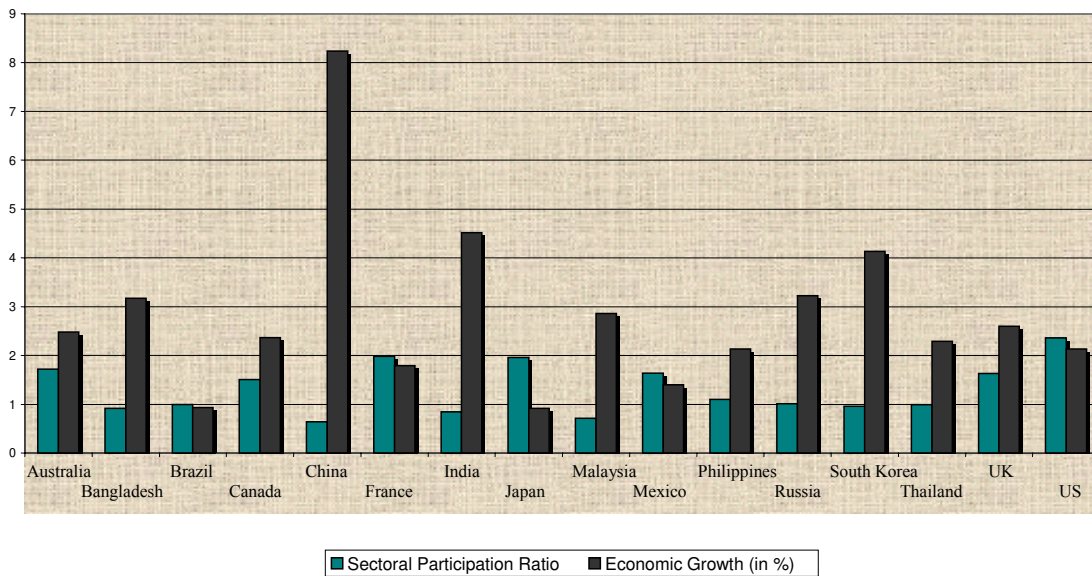
Chart 5: Sectoral participation ratio (SPR) and economic growth: an ambiguous relationship (average of the values from 1995-2004).

Verdict of the Observation: Before concentrating into investigation, it should be better to sort out the results which have arises from given evidences. Previous evidences of this section notify—

- There is positive relation between per capita income and share of service sector in the economy. There are some exceptions in small economies and some economies which are surrounded by non economic difficulties.
- Service sector's share increases, by the time, in every regular economy. Growth rates of service sector exceed non-service growth rates in most of the large economies. As there is a positive sign between per capita incomes as well as service share and service sector share is increasing by the time — demand for service is mostly determined by income.
- Service sector's growth rate is high in those countries where service sector share is low. And service growth rate is low where its share is high.
- Relation between service sector contribution to the economy and economic growth rate appears ambiguous.

VI. Final Analysis

This paper is not going to describe about the productive and unproductive nature of service sector. Already considerable quantity of researches has been accomplished on this topic. Some researchers criticize this sector very harshly and some are liberal considering its association with production. We will not focus on the dispute. We are going to examine the effect of sectoral differences in the economies. More specifically, here sectoral difference implies the difference between service sector share and other sectors aggregate share in the economy. A term Sectoral Participation Ratio (SPR) is used in this paper as an indicator of sectroral difference between service sector and rest of the sector other than service sector. SPR is a ratio of service sector share to non-service sector (agriculture and industrial sector together) share.

$$sectoral\ participation\ ratio = \frac{service\ \sec tor\ share\ (in\ percentage)}{non-service\ sector\ share\ (in\ percentage)}$$

Why Participation Ratio?: Sectoral participation ratio is used instead of measurement of gap between service sector share and non-service sector share. But there is a significant distinction between them in this study. Service sector share takes very larger values in comparison with GDP growth rates. It makes difficult and ambiguous to exhibit the relationship between service sector share and GDP growth rate. Service shares show big gaps also in numerical values among countries (as for example, for China this value is about 38% and for America is about 71% on an average of the period 1995-2004). The variable SPR can take any numeric value from 0 to ∞ but it does not take value more than 20, in general, in any big economy. Thus, for having convenience SPR is taken as a dummy variable of sectoral difference in this thesis.

The higher the SPR the more biased the economy towards service sector. SPR= 0; if service sector share in the economy is zero. SPR= ∞; if service sector share in the economy is 100%. SPR= 1; if service sector share and non-service sector share are equal. SPR>1; if service sector is dominant in the economy. In this inspection through watchful regressions, some significant results have been found. Running regression on data of 16 cross sections

(16 countries mentioned above) a nonlinear relation has been found. There is a U shaped relationship between sectoral difference and GDP growth rate[6.1]. With the increase in difference between service sector and other sectors economic growth begins to decline. But beyond the lowest rate economic growth rate improves with the increase in sectoral participation.

Assumptions: Let us consider, firstly, economies are more or less open. Service sector is liberalized as well. Sectors are not occupied with too many restrictions locally or internationally. Otherwise demand and supply for services in those economies will not reflect their economic conditions. Secondly, countries are not too small in size or population so that the macro economic tools can perform without trouble. Thirdly, there is no perfect specialization towards any specific sector. If there is any economy consisting only service sector SPR will go to infinity. Another casual assumption we will consider – economies do not absorb service share more than 80%. Although service share more than 80% is not unfeasible (as for example Hong Kong) we are considering the assumption for convenience in our work. Fourthly, service sector arises in the economy as a tertiary sector. Though there are some countries having service sector as secondary sector (as for example a few small tourism based countries) facing uneven growth rates in service as well as in total economy and those economies are highly dependent on other economies' involvement in any particular year. Fifthly**,** demand for service sector is an endogenous factor. Demand for services creates automatically when per capita income increases. Income elasticity of demand for services is positive and greater than one. Sixthly, Labor productivity in the economy is an exogenous factor which is embedded in capital formulation. It depends upon some qualitative objects such as education, experience, inherent adaptive power and so on. Seventhly, here 'service liberalization' concept is considered as international liberalization for service sector, not local liberalization. But it is very common that internationally liberalized countries are locally liberalized as well. And lastly, economies are not involved in war, not facing devastating natural disaster as well as natural or artificial disturbances such as hyperinflation, great depression and so on. Some countries like Iraq (war affected) and Zimbabwe (hyperinflation) exhibit unorthodox picture of growth rates in recent years.

6.1: Here GDP growth rate is per capita GDP growth rate in real term (base year – 2000 in dollar amount)

Functional   Representation: A significant quadratic relationship is found between SPR and per capita GDP growth rate.

Let,

$$Y = f(X) \qquad\qquad 0 < X < \infty$$

or, $Y = c - \beta_1 X + \beta_2 X^2$

Where,

$Y=$ per capita GDP growth rate (in real term)

$X=$ sectoral participation ratio

$c, \beta s=$ coefficients. $\qquad\qquad S =1, 2$

In **Figure 1** relation between sectoral difference and economic growth is illustrated. It should not be misapprehended through a sense that different countries occupy different levels on this graph. It is well cited, every economy is running through the same track weather it is leading or falling behind. At the end of the race they will meet together in the future. As for example, Hong Kong, Singapore, Turkey and some other countries like these are enlisted in the list of developed countries a few years ago. In near past they were regarded as developing countries. Every country's share in service sector is increasing day by day and countries are facing different level of sectoral participation ratio at different stages of economic development.

Lower shares of service cause higher growth rates. High consecutive GDP growth rates in economy raise income eventually. Since income elasticity of demand for services is positive and greater than 1. Higher income invites service demand as well as service growth. Authoritative growth rate in tertiary sector than rest of the sectors in the economy bring about its larger share in the economy. Another cause of service share increment is increase in labor productivity growth. Technological advancement is another reason behind this factor. Labor productivity growth causes fewer requirements for labor in industries for productive activities. Then additional workers involve in the service sector. When service share increases the SPR rises. SPR is a increasing function of service sector share. The income effect[6.2] on the demand for services is more biased towards personal services. Income elasticity of demand for services (more particularly personal service) increases with the increase in income. Again in the secondary stage of development inequality becomes wider in the society. Inequality encourages conspicuous consumptions in both goods and services. Hotels, bars and restaurants, recreation and amusements, domestic
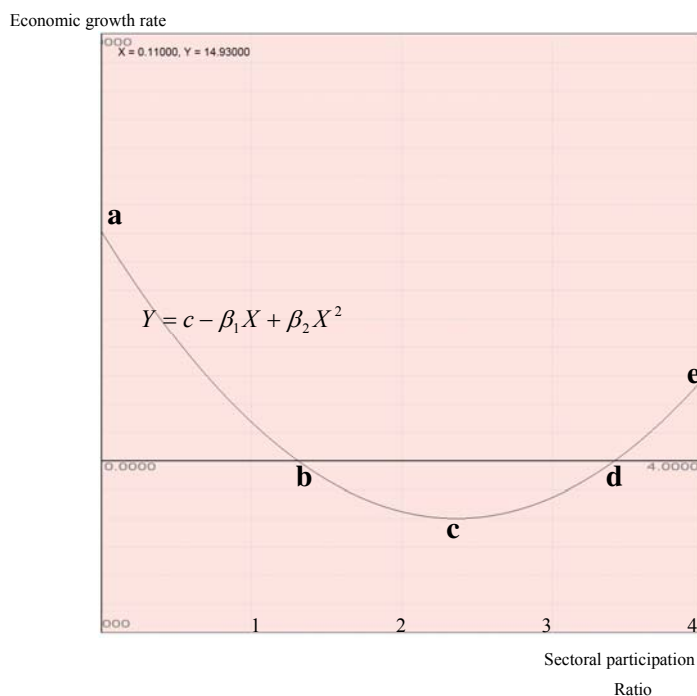

6.2: When per capita income rises, demand for services also rises in the economy.

services, repair services, barber and beauty services, laundry and cleaning services thrive. Labor switches to service sector. Even, employees become benefited in this sector more than their previous job site. Service sector offers high wage than industrial sector. Skilled labor moves toward the unproductive sector. Service industries expand. Service growth rate appears healthy and try to pull economy up. But agriculture and more specifically industrial sector suffers a lot.

Higher wages in unproductive service activities ignore the marginal productivity limit. Therefore inflation hits economy. It hampers economic growth. Real wages decline in the economy. Firms and industries face pressure to increase wage. Cost of production increases as well. Demand for goods fall and economy lose its flow. Of course, low growth rate does not mean awful situation for all economy. Many developed economies regularly face low growth rates unworriedly. But in primary stages of development it does a fact. Economic growth falls but service growth rate still exceeds rival sector's growth. Service share increases as well. Economy, somehow, become stagnant. From **Figure 1** it is seen that, economic growth rate decreases with increase in SPR. Negative relation between them continues from **a** to **c**. At some level, **b,** economic growth rate approaches very low level. It is not necessary to consider it negative. We may consider it as very low level of growth. Dose this stagnant condition not change? Yes, it dose.

Economic growth rate

X = 0.11000, Y = 14.93000

$$Y = c - \beta_1 X + \beta_2 X^2$$

Sectoral participation
Ratio

Figure 1: A quadratic relationship between SPR and economic growth rate

After suffering some stagnant period, economy begins to move forward with the increase in service sector share. This stage is pointed out beyond **c** in this figure. At this stage service sector becomes sensible and try to shift its unproductive instruments. The demand

for personal services grows reasonably but distributive services come in action. Distributive services involve the distribution of commodities and information and transportation of persons, such as retail trade, wholesale trade, internet services, transport services and communications. Production management becomes a significant part in the service sector. At this stage, market enlarges for commodities. To manage the local and international market, economy demands a healthy distributive sector. Production friendly service sector then raises the industrial sector growth. Industrial growth pulls the economy out from stagnant condition. Proportion of the less productive services in the service sector becomes low. Economic growth moves upward and attempts to get out from transition stage **bd**. During this effort, service sector establishes the producer services. Business and professional services, financial services, insurance services, real estate services etc. grow and take part in the economy more significantly. After the transitional stage economy grows by an optimistic sign. Then, share of service sector does not make problem at all. In this stage, social services such as government proper, health services, educational services, power and water supply, and miscellaneous social services become strong. Improved social services ensure improved human capital. Productivity of labor becomes high. Industrial sector does not require much labor to fill up its requirements. Economic growth rate increases further at a slower rate. But the rate cannot reach as high as it remains at very low level of SPR.

Figure 2 is the extension of the investigation of **Figure 1**. It does not disagree with **Figure 1**. Two specified regressions have been run on same variables for developed[6.3] and developing[6.4] countries. Results are illustrated in **Figure 2**. Black curve in **Figure 2** is representing the curve of **Figure 1**. Blue and red are representing developing and developed countries' growth rates respectively. Blue line is representing linear relationship between service sector share and economic growth ($Y = c - \beta_1 X$). Poor economies cannot fully adjust to higher service share. With increasing service share economic growth falls. Poor economies follow the first portion of the overall observation (**Figure 1**). Poor economies generally do not exceed the service share level
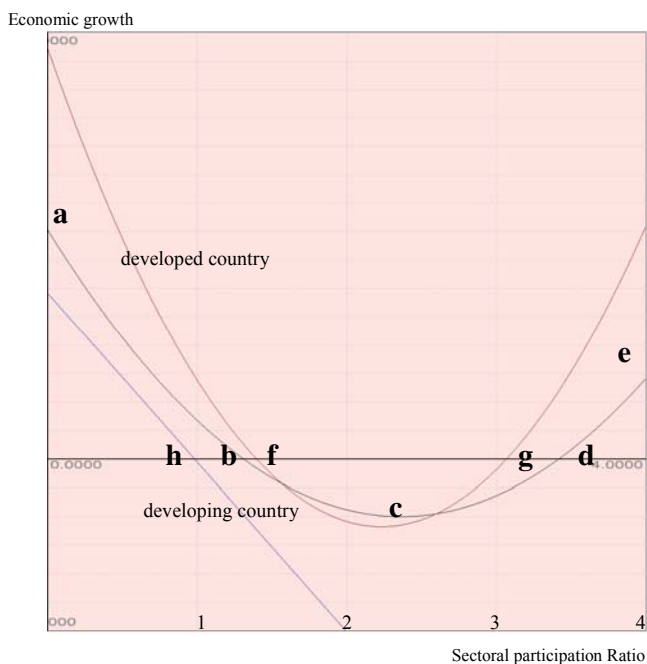
Figure 2: Effect of SPR on economic growth rate in rich and poor countries.

where it can achieve higher growth rate with higher service share together. It does not necessarily mean that, poor countries never reach beyond the level where it can improve its growth rate. Poor countries can achieve positive relation between SPR and economic growth rate when it becomes richer. The poor countries show purely negative effect until they reach at the minimum level of GDP growth rates. Minimum levels of GDP growth rates are different for different countries. The blue line merely illustrates the picture of the effect of service sector share on GDP growth while countries remain poor. On the other hand, Rich countries' economies are showing the similar path like the previous one (curve of **Figure 1**). Because rich countries have gone through all economic stages of lower service sector share and higher service sector share.

Has service sector liberalization any effect on the relationship between service sector share and GDP growth rate? The effect of service sector liberalization is examined and represented in the **Figure 3**. According to an index[6.5] countries are subdivided into two categories—most liberalized and less liberalized. **Figure 3** shows similar result like **Figure 1** for the countries which are poorly liberalized in service sector. The blue curve is representing those countries which are less liberalized in service sector. This curve is also U shaped but it is always maintaining a lower level than black line. It also shows that low service liberalized countries have to face a long ranged (**fg**>**bd**) stagnation. Less service liberalized countries has to face more inconvenience than high service liberalized countries when sectoral participation of service sector rises.
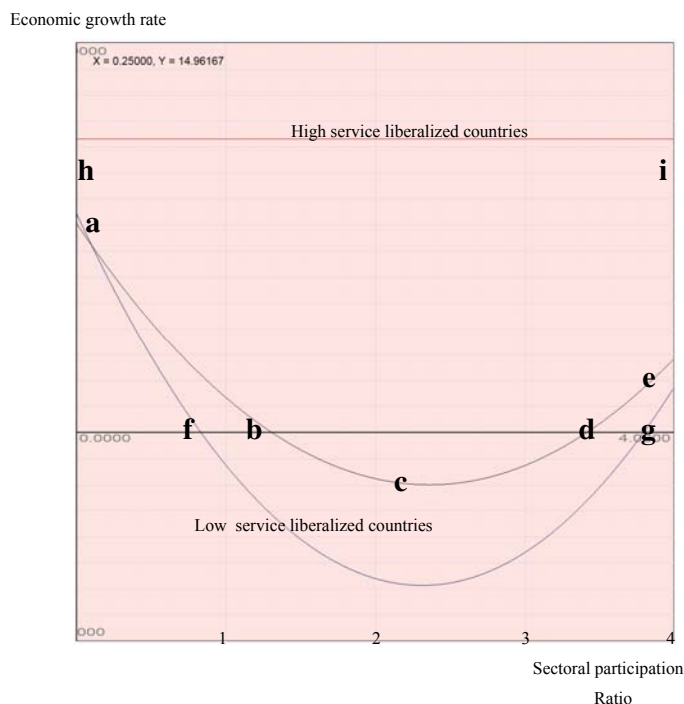
Figure 3: Effect of SPR on economic growth rate in high and low service liberalized countries.

Countries which are less liberalized in service sector, providing major part of services for its own and absorbance of major part of this sector is only those countries' own responsibility. If there are restrictions for service trade, specialization for service sector is difficult to establish. Efficiency loss in service sector arises. Specially, service sector openness in poor countries is positively effective. Because poor countries, in general, are benefited from favorable service trade. Since service demand is income oriented, rich countries demand more services. Poor countries can provide those services through service liberalization. Again, service sector is labor intensive. Thus service sector trade benefits the poor countries through either capital inflow to those countries or labor migration from poor to rich countries. Skilled labor is essential to carry a good result from service trade. Rich countries also benefits from service trade. Services become cheap toward them. There are many technology based services[6.6] which are not available in developing countries itself.

6.5: Index (trade liberalization in service sector) = (% of service trade in total GDP/ % of trade in total GDP) × 100.
6.6: As for example, power management, some technology based researches, new critical operations in medical service

These services are promoted by developed countries. Thus rigidity in service trade causes service sector inefficiency and makes responsible to limit economic progress. In contrast, highly service liberalized countries (representing by red line) do not have to follow decreasing growth rates with increasing service sector share. Service sector share has no significant effect on GDP growth rate. **hi** line (parallel to horizontal axis) is illustrating the effect of service share increment on growth rate ($Y = c$). With the increase or decrease in service share GDP growth rate remains unaffected. There are some highly service liberalized tourism based countries are earning huge foreign currency through services in tourism (there are many small countries[6.7]) and enjoying higher service share in the economy. Services are leaving to abroad but service share as well as growth rate in the economy increases due to foreign currency inflow. Again it is also found in Hong Kong that with a very high SPR GDP growth rate decreases with increasing service sector. Thus it is difficult to make a fair conclusion about the effect of service share change in high service liberalized countries. But service liberalization might be a well prescription for those economies which are facing lower growth rates for high service sector share. But government should be cautious about inflow of personal services from abroad. **hi** line shifts parallely for each service liberalized country. Relatively high service liberalized country accounts high level of constant GDP growth in response to any level of SPR.

More Precise Observation: It is argued that there is a nonlinear U shaped relation between SPR and GDP growth. But is it supported by real world? Here, an assumption has been considered that there is no economy with service share more than 80%. Thus our SPR does not cross the numeral (80/20=) 4. More over, the countries that are taken under inspection, none can cross the numeral (72/28=) 2.5. From 0 to 2.5, SPR has only negative effect on the growth rate (see **Figure 1**). Thus it may be stated that there is only negative effect of service sector share on economic growth. Again, in this inspection there is no economy consisting service share less than 35%. Then our lowest value of the SPR is (35/65=) 0.54. So within .5 to 2.5 economic growth rates are negatively affected by the service sector share. Generally, this range is a very common picture for big[6.8] economies of the world.

6.7: Maldives, Macao, Palau, Araba etc.
6.8: Populated economies where at least 80 million people live.
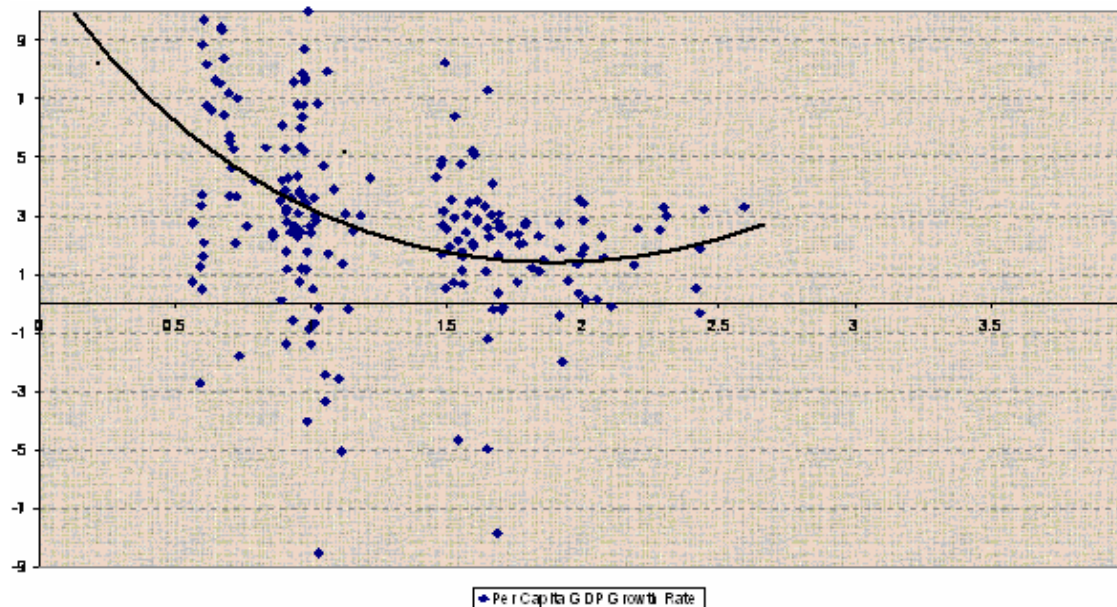
Figure 4: Scatter plot of GDP (per capita) growth rates against SPR. (160 observations of 16 countries from 1995-2004)

In **Figure 4**, scatter plots of GDP growth rates of 16 countries[6.9] are plotted against SPR. Plots are casual representation of a limiting portion of **Figure 1** (SPR from .5 to 2.5). There are many small economies having SPR more than (90/10=) 9 and few exceptional large economies. But area of study for those countries is restricted by assumption. We can now decide about our study. Higher service share in the economy causes lower growth rate. Growth rate falls by a diminishing rate (see **Figure 1** and **Figure 4**). But this conclusion may appear insufficient by the time. Because service sectors are capturing more share than before. After the period of study (1995-2004) service share has been increased in most of the studied countries[6.10]. It will increase more in the future, undoubtedly. Will the SPR have negative effect beyond 2.5 (SPR) in the future? It is a tough question. Answer will be given in the future. Further study is essential to examine the effect of service sector share in the economy in future.

Should We Allow the Service Sector to Do Whatever It Likes?: What should we do if service sector increases as much that sectoral difference become stagnant? It would be a very good idea if we could prevent service sector's share increment. But it is an illusory thinking. Yes, government can stop people from having personal services. Government can proclaim a rule not to use luxurious hotels or prevent people from going saloon more than

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6.9: 16 countries mentioned previous (V) chapter.
6.10: in 2007 in US share became78.5%, in UK it became 73% and in Japan 73.1%

once in a month. But this will not work very well. People will not feel better having idle money in his pocket. If they cannot raise their utility through more earnings why should they earn? They will have less incentive to work and more incentive to leisure. Ultimate result will be zero against the government action.

Though in early ages economists treated service sector as an unproductive sector but its inherent power to boost up industrial production is proven by many researchers in recent years. Thus distributive service sector should be welcomed. What quantity of distributive services should be permitted is a question. If there is 95% distributive service share and rest 5% for agriculture and industrial sector it will not be a good looking appearance for a big economy.

Business services promote courage to entrepreneurs to invest. More financial services ensure easy access to capital market. So this sector's growth is essential. But major problem of this service sector is its ultra profit making schemes. Entrepreneurs benefit less from this sector. Ultimately, there remains a far cry between main goal and achievement. Speculation and arbitraging are other problems associated with this sector. These unearned processes to accumulate money dose not make any good sense in the economy. Banking and other financial sectors as well as share market should be well organized, well observed and well regulated. Social services are some good instruments for economy as well as society. Proper distribution of social services benefits both economy as well as society. Inequality is reduced. Social services do not depend upon demand explicitly. Thus quantity of social services can be handled very well by government. Generous growth rate of social services do not cause harm to the economy. We need not to be anxious about this sector's growth at all.

Suggestions: Service sector's progress should not be restricted. Outcome of restrictions will not be efficient also. But redistribution of productive and unproductive service sectors may become useful. Government can handle service sectors by fiscal instruments. Tax rate discrimination in service sector can do a better job. Higher taxes in unproductive personal services and lower taxes in productive services (distributive and producer services) should be applied. Revenue earnings from those sectors should be spent in social services efficiently. Income inequality in the society can be removed through social services.

Producer services should be kept under keen observation. Government has to make favorable and neatly arranged environment for sustainable capital market. Too much fluctuation in capital market not only disturbs this sector but also cause damage to economic growth. Terms and conditions of financial institutions are to be favorable towards the investors. Central bank should do proper exercise through this sector. Unnecessary employment in public services is a very common scenario. Public administration should be cautious about this type of recruitment. Otherwise disguised unemployment will hamper economic growth. It has been advocated in favor of service trade in the previous section. But poor countries have to be cautious about the type of services which are entering from outside. If unproductive service sectors spread in the country through foreign direct investment and causes huge currency outflow from the country it will be a matter of anxiety. Inclusion of those service investments in the share market and incentives to the productive service investments will be good treatment for this problem.

We are not going to check service sector growth rate. To maintain the service share under a tolerable level growth rate increment in the agricultural and service sector is a better suggestion for the economy. High competitive growth rates in primary and secondary sectors can be achieved through some proven idea. This paper is not going to make further suggestions to this subject. Reduction in wage discrimination between industrial sector and service sector would be a better treatment for unfair biasness of the economy towards service sector.

Service sector dominance is a very natural issue for the economy in this century. Again, we have already been informed that service share has a negative effect on the GDP growth rate. But it is not so important to worry about service sector growth rate. The statement may appear hazy. It is observed from the area of investigation (SPR from .5 to 2.5), in this paper, that there is a negative association of the service share on GDP growth. But negative effect proceeds at a diminishing rate. Economy gets enough time to adjust with new sectoral share. Service sector share depends on income effect, productivity[6.11] effect, market effect and government expenditure. With high real income, high service sector share can not make too much disturbance to the economy. But with low income, high service sector share may become harmful for the economy. A positive characteristic of service sector is its self correcting capacity. If service share is high in low income country

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6.11: Productivity implies labor productivity as well as capital productivity.

this sector will not be able to grow at an honorable rate. Low real per capita income will prevent service sector growth. Static service growth, in comparison with rival sectors, will not enlarge its contribution to the economy. For this reason, service sector share, in the long run, cannot come out as a destructive experience to the economy. Policy suggestions are included in this paper for medium and short term corrections to overcome stagnant condition – led by high service sector share.

VII. Conclusion

Service sector is thriving all over the world. There is no question about this perception. This paper examines the relations of service share with other macro economic variables. Service sector share is positively related with per capita income. Income effect on service demand is reasonably responsible behind this reason. On the other hand, service sector growth rate is lower in LDCs and higher in developed nations. Growth rate of service sector exceeds the growth rates of its rival (agriculture, Industry) sectors in most of the economies. This paper ignores the situations of service sectors of very small economies. Because those countries do not have to practice macroeconomic tools as it requires in big economies. Service sector of small countries are very much uneven. Main theme of this paper is to find out the attitude of real per capita GDP growth rate in response to the increment of service sector's share. A significant response is found. At the first phase, economic growth rate declines in response to service share increment. Beyond the minimum level, in the second phase, growth rate begins to rise with service share. At present, developing countries of the world generally lies in the first phase (comparatively low service share than developed countries) and service share has only negative effect on economic growth rate. Service liberalization is a good suggestion to lift up the economy in case of stagnation. Though high service sector share causes stagnation in the economy it does not appear very harmful in the long run for the economy. Service sector has a self correcting motive. Service sector share in the economy is always adjusted by income effect in the long run but in the short run it may make some problem to the economy. Some suggestions are pointed out in the last section of this paper to tackle this situation. Productive service sectors should be encouraged through fiscal instruments of the government. Reduction in income inequality will be a good sign for this case. Reduction in wage discrimination between service sector and industrial sector may encourage growth in industrial sector. High growth in industrial sector will prevent high service sector contribution in the economy. In a word, service dominancy in the economy is not a considerable threat to the economy if it is handled cautiously.

_____

Reference List

A

Álvarez-Albelo, C., **(CREB), and R. Hernández-Martín (2007)** *Explaining high economic growth in small tourism countries with a dynamic general equilibrium model.* **XREAP2007-06.**

Appelbaum, E., **and R. Schettkat (2001),** *Are prices important? The changing structure of the industrialized economies.* **Chapter 7 in** *The growth of Service Industries – The Paradox of Exploding Costs and Persistent Demand.* **edited by T. ten Raa and R. Schettkat, Edward Elgar Publishing Limited.**

Aring, J., **(2003),** *Industrielle Produktion und Dienstleistungsgesellschaft als komplementa‹re Sa‹ulen der Modernisierung in Schweden.* **Norden 15.**

B

Baltagi, Badi H., **Seuck H. Song, and Byoung C. Jung (2001).** *A Comparative Study Of Alternative Estimators for the Unbalanced Two-way Error Component Regression Model,* **Economic Journal, 5, 480-493.**

Baily, M. N., **and R.J. Gordon (1988),** *The Productivity Slowdown, Measurement Issues, and the Explosion of Computer Power.* **Brookings Papers on Economic Activity.**

Baumol, W. J., **S.A. Blackman, and E. Wolff (1989),** *Productivity and American Leadership: The long View.* **Cambridge, MIT press.**

Beck, Nathaniel **and Jonathan N. Katz (1995).** *What to Do (and Not to Do) With Time-series Crosssection Data,* **American Political Science Review, 89(3), 634-647.**

Bertola, G., **(2001),** *Aggregate and disaggregate aspects of employment and unemployment.* **Paper prepared for a central bank policy conference on** *Employment and Economics,* **March 2001, Bogota, Colombia.**

Breitenfellner, A., **and A. Hildebrandt (2006),** *High Employment with Low Productivity? The Service Sector as a Determinant of Economic Development.* **Oesterreichische Nationalbank (Austrian Central Bank) in its** *journal Monetary Policy and the Economy.*

C

Chandrasekhar, C.P., **and Jayati Ghosh (Nov, 1999),** *Services Sector Growth: What Does it Mean?* **© MACROSCAN 1999.**
http://www.macroscan.org/the/macro/ nov99/mac161199.

Clark, C., **(1940),** *The Conditions of Economic Progress* **(Revised New Edition 1951). London: Macmillan.**

53

D

D'Agostino, Antonello, **Roberta Serafini, and Melanie Ward Warmedinger (May 2006),** *Sectoral Explanations, Of Employment, in Europe the Role of Services.* **Social Science Research Network electronic library at http://ssrn.com/abstract_id=900396.**

Diewert, W.E., **(1987),** *The New Palgrave: A Dictionary of Economics.* **Macmillan, London.**

Diewert, W.E., **(1995),** *Price and Volume Measures in the System of National Accounts* **in J. Kendrick ,** *The New System of National Economic Account.* **Kluwer Publishers, Norwell (forthcoming).**

Diewert, W.E., **(2005a),** *Comment on Aggregation issues in Integrating and Accelerating BEA's accounts: Improved Methods for Calculating DP by Industry.* **by B. Moyer, M. Reinsdorf and R. Yuskavage, forthcoming in** *A New Architecture or the U.S. National Accounts***, D.W. Jorgenson, .S. Landefeld and W.D. Nordhaus eds.) (Chicago: University of Chicago Press).**

Diewert, W.E., **(November 2005b)** *Welfare, Productivity and changes in the Terms of Trade* **paper presented to the Bureau of Economic Analysis, Washington .C.**

E

Elfring, T., **(1988),** *Service Sector Employment in Advanced Economies. A Comparative Analysis of its Implications for Economic Growth***. Gower Publishing Company Limited, Aldershot, UK.**

Elfring, T., **(December, 1989),** *New Evidence on the Expansion of Service Employment in Advanced Economies***. Review of Income and Wealth, Series 35, Number 4.**

Erdem, E., **and A. Glyn (2001***), Employment growth, structural change and capital accumulation***. Chapter 3 in** *The growth of Service Industries – The Paradox of Exploding Costs and Persistent Demand***, edited by T. ten Raa and R. Schettkat, Edward Elgar Publishing Limited.**

F

Fisher, A. G. B., **(1935),** *The Clash of Progress and Security***. London, MacMillan and Co. Ltd.**

Fuchs, V. R., **(1980),** *Economic growth and the rise of service employment***. NBER Working Paper No. 486.**

G

Galenson, Walter, **(1963),** *Economic Development and the Sectoral Expansion of Employment.* **International Labor Review.**

Gemmell, N., **and P. Wardley (1990),** *The Contribution of Services to British Economic Growth 1856-1913***. Explorations in Economic History, 27.**

Gordon, R.J., **(1995),** *Is There a Tradeoff Between Unemployment and Productivity Growth***. NBER Working Paper No. 5081.**

Gordon, R. J., **(1996),** *Problems with the Measurement and Performance of Services Sector Productivity in the United States***. NBER Working Paper 5519.**

54

Gordon, R.J., **(1997),** *Is there a trade off between Unemployment and Productivity Growth in Unemployment Policy?* **in** *Unemployment Policy***, de la Dehese, G. and D. Snower eds, Cambridge University Press.**

Griliches, Z., **(1992),** *Output Measurement in the Service Sectors***. Chicago, University of Chicago Press, Chicago.**

Griliches, Z., **(1994),** *Productivity, R&D, and the Data Constraint.* **American Economic Review, 84(1).**

H

Heston, A., **R. Summers, and B. Aten, (2006), Penn World Tables Version 6.2, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania.**

Hodge, James, **(2002),** *Liberalization of Trade in Services in Developing Countries***. in Hoekman, Bernard, Aaditya Mattoo, and Philip English, 2002 eds.,** *Development, Trade and the WTO: a Handbook***. The World Bank, Washington DC.**

Howells, Jeremy., **(2001),** *The Nature of Innovation in Services* **in Innovation and Productivity in Services, OECD Proceedings Industry, Services and Trade. Paris: Organisation for Economic Co-operation and Development (OECD).**

K

Kanapathy, Vijayakumari, **(February, 2003),** *Service Sector Development in Malaysia: Education and Health as Alternate source of growth***. AT120 Research Conference.**

Kutscher, Ronald E., **and Jerome A. Mark (April 1983),** *The service-producing sector:some common perceptions reviewed***. Monthly Labor Review, New York.**

L

Li, Shantong, **Yan Wan and Fan Zhai (2003),** *Impact of Service Sector Liberalization on Employment and Output: A CGE Analysis***. Paper is prepared foor the Senior Policy Seminar on** *China's Service Sector in the Post-WTO Era***. National Development and Reform Commission and The World Bank.**

M

Mark, Jerome A., *Measuring productivity in the service industries***. Monthly Labor Review, (June, 1982).**

Marks, Robert E**., (1999),** *Rising Legal Costs***. in Russell Fox,** *Justice in the Twenty-First Century***, Cavendish Publishing, London, (Chapter 15).**

Mattoo, Aaditya, **(December, 2002),** *China's Accession to the World Trade Organization — The Services Dimension.* **Working Paper, No. 2932, Washington DC, World Bank.**

Mohr, Michael F., **(1999),** *Identification and Classification of Service Projects: Phase I of an Initiative to Create a North American Product Classification System***. Mimeograph.**
http://www.census.gov/eos/www/napcs/papers/cacapr99.pdf**.**

N

Nielsen, Peter B., **(September 2005),** *Development of Services Sector Statistics œ at a cross road?* **20ᵗʰ Voorburg Group meeting on Services Statistics 26thœ 30th, Helsinki, Finland.**

O

Oulton, Nicholas, **(2001),** *Must the Growth Rate Decline? Baumol's Unbalanced Growth Revisited.* **Oxford Economic Papers.**

OECD (1996)**,** *Service: Statistics on Value Added and Employment***, Paris.**

OECD (1997)**,** *The OECD Report on Regulatory Reform***, Paris.**

OECD (2000)**,** *Employment in the Service Economy: A Reassessment***, Employment Outlook 2000, chapter 3.**

P

Pissarides, Christopher A., **and L. R. Ngai (2004),** *Structural Change in a Multi-Sector Model of Growth.* **Centre for Economic Policy Research, CRPR Discussion Paper: No. 4763.**

R

Reinert, K., **(1995),** *The Role of Services in the Structure of Production and Trade: Stylized Facts from a Cross-Country Analysis.* **CEPR Discussion Paper no.228. London, Centre for Economic Policy Research.**
http://www.cepr.org/pubs/dps/DP1228.asp

Riddle, Dorothy I., **(1986), Service-led Growth:** *The Role of the Service Sector in World Development.* **Praeger Publishers, Westport, Connecticut.**

Russo, G., **and R. Schettkat (1999),** *Are Structural Economic Dynamics a Myth? Changing Industrial Structure in the Final Product Concept.* **in Economia and Lavoro.**

Russo, G., **and R. Schettkat (2001),** *Structural economic dynamics and the final product concept.* **Chapter 8 in** *The growth of Service Industries – The Paradox of Exploding Costs and Persistent Demand* **edited by T. ten Raa and R. Schettkat, Edward Elgar Publishing Limited.**

S

Shugan, S.M., **(1993),** *Marketing and Managing Services: A Context Specific Approach***, Richard D. Irwin, Inc., Homewood, Illinois, forthcoming.**
Sirilli, G., **and R. Evangelista, (1998),** *Technological Innovation in Services and Manufacturing: Results from Italian Surveys.* **Research Policy.**

Smith, Adam, **(1776),** *An Inquiry into the Nature and Causes of the Wealth of Nations.* **London.**

Stehrer, R., **(2005),** *Employment, Education and Occupation Structure: A Framework for Forecasting.* **Wiiw Research Report 315, Vienna.**

56

Stern, Robert M., **(2002),** ***Quantifying Barriers to Trade in Services* in Hoekman, Bernard, Aaditya Mattoo, and Philip English, 2002 eds.** *Development, Trade and the WTO: a Handbook***, The World Bank, Washington DC.**

Summers, R., **(1985),** *Services in the international economy.* **in R. O. Inman (ed.),** *Managing the Service Economy***, Cambridge University Press.**

W

Wolff, Edward N., **(April, 1991),** *Productivity Growth, Capital Intensity, and Skill Levels In the U.S. Insurance Industry***,** *1984-86.* **Geneva Papers on Risk and Insurance.**

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Appendices

Specifications of Cross Section Identifiers

Identifiers	Full name
1. AUS	Australia
2. BAN	Bangladesh
3. BRA	Brazil
4. CAN	Canada
5. CHN	China
6. FNC	France
7. IND	India
8. JPN	Japan
9. MAL	Malaysia
10. MEX	Mexico
11. PHL	Philippines
12. RUS	Russia
13. SK	Korea South
14. THI	Thailand
15. UK	United Kingdom
16. US	United States

Specifications of Variables

Variables	Specification
1. CFG	Capital Formation Growth (per capita).
2. DOO	Degree of Openness (trade as share of GDP in percentage).
3. FCG	Final Consumption Growth (rate of government expenditure and private. consumption together on final goods per capita).
4. FDI	Foreign Direct Investment (FDI as percentage of GDP).
5. GGR	GDP Growth Rate (per capita in real term).
6. INF	Inflation rate.
7. RIF	Remittance Inflow.
8. RIR	Real Interest Rate.
9. RSA*	Ratio of Service Sector Share to Other (Agriculture & Industry) Sector's Share.
10. RSA2	Squared RSA.

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* RSA stands for SPR – which is used in previous sections of this paper.

Regression Results

Regression output 1: Total Economic Growth: Concerning Sectoral Participation Ratio (for 16 countries).

Dependent Variable: GGR?
Method: Pooled EGLS (Cross-section weights)
Date: 08/06/08   Time: 09:02
Sample: 1995 2004
Included observations: 10
Cross-sections included: 16
Total pool (balanced) observations: 160
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.061567	1.802224	4.473122	0.0000
RSA?	-8.522732	2.054087	-4.149159	0.0001
RSA2?	1.805283	0.450754	4.005027	0.0001
FCG?	0.311807	0.036087	8.640504	0.0000
CFG?	0.148950	0.007913	18.82240	0.0000
RIF?	0.553554	0.121772	4.545822	0.0000
RIR?	-0.032473	0.010679	-3.040682	0.0028
Fixed Effects (Cross)				
_AUS--C	1.493976			
_BAN--C	-3.306369			
_BRA--C	0.265875			
_CAN--C	1.451036			
_CHN--C	0.762576			
_FNC--C	2.121445			
_IND--C	-1.951119			
_JPN--C	2.355513			
_MAL--C	-2.578554			
_MEX--C	0.356228			
_PHL--C	-5.811902			
_RUS--C	0.569242			
_SK--C	0.959633			
_THI--C	-1.016604			
_UK--C	1.910625			
_US--C	2.418401			

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.912808	Mean dependent var	3.721883
Adjusted R-squared	0.899540	S.D. dependent var	3.752163
S.E. of regression	1.189265	Sum squared resid	195.1804
F-statistic	68.79604	Durbin-Watson stat	1.849042
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.881605	Mean dependent var	2.822750
Sum squared resid	212.1098	Durbin-Watson stat	2.090205

Regression output 2: Total Economic Growth: Concerning Sectoral Participation Ratio (for low income countries).

Dependent Variable: GGR?

Method: Pooled EGLS (Cross-section SUR)

Date: 08/06/08   Time: 09:29

Sample: 1995 2004

Included observations: 10

Cross-sections included: 9

Total pool (balanced) observations: 90

Linear estimation after one-step weighting matrix

White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.824059	0.763950	7.623612	0.0000
RSA?	-5.933329	0.680868	-8.714364	0.0000
CFG?	0.135400	0.001709	79.22493	0.0000
FCG?	0.303017	0.003118	97.17406	0.0000
RIF?	0.691716	0.036522	18.93991	0.0000
RIR?	-0.057810	0.002103	-27.48298	0.0000
FDI?	0.106005	0.011599	9.139420	0.0000
Fixed Effects (Cross)				
_BAN--C	-2.152381			
_BRA--C	2.786265			
_CHN--C	1.893140			
_IND--C	-0.714095			
_MAL--C	-1.598478			
_MEX--C	2.852966			
_PHL--C	-5.515096			
_RUS--C	2.231443			
_THI--C	0.216236			

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.999645	Mean dependent var	14.99747
Adjusted R-squared	0.999579	S.D. dependent var	51.47797
S.E. of regression	1.056328	Sum squared resid	83.68709
F-statistic	15092.23	Durbin-Watson stat	2.177029
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.893613	Mean dependent var	3.195333
Sum squared resid	150.3948	Durbin-Watson stat	2.095828

Regression output 3: Total Economic Growth: Concerning Sectoral Participation Ratio (for high income countries).

Dependent Variable: GGR?

Method: Pooled EGLS (Cross-section SUR)

Date: 08/06/08   Time: 10:09

Sample: 1995 2004

Included observations: 10

Cross-sections included: 7

Total pool (balanced) observations: 70

Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.42816	2.577309	5.598146	0.0000
RSA?	-15.05117	2.617146	-5.750987	0.0000
RSA2?	3.376206	0.656744	5.140828	0.0000
DOO?	0.038831	0.016245	2.390303	0.0202
FCG?	0.398570	0.020224	19.70804	0.0000
CFG?	0.141459	0.004346	32.54681	0.0000
INF?	-0.165422	0.055471	-2.982153	0.0042
Fixed Effects (Cross)				
_AUS--C	0.349068			
_CAN--C	-1.671909			
_FNC--C	0.890821			
_JPN--C	1.750329			
_SK--C	-3.120264			
_UK--C	0.061164			
_US--C	1.740791			

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.987933	Mean dependent var	5.405152
Adjusted R-squared	0.985392	S.D. dependent var	8.974231
S.E. of regression	1.084651	Sum squared resid	67.05870
F-statistic	388.8744	Durbin-Watson stat	2.227325
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.888373	Mean dependent var	2.343714
Sum squared resid	38.99370	Durbin-Watson stat	1.702175

Regression output 4: Total Economic Growth: Concerning Sectoral Participation Ratio (for countries of low liberalized service sector).

Dependent Variable: GGR?

Method: Pooled EGLS (Cross-section SUR)

Date: 08/06/08   Time: 10:02

Sample: 1995 2004

Included observations: 10

Cross-sections included: 9

Total pool (balanced) observations: 90

Linear estimation after one-step weighting matrix

White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.440698	1.588161	5.314763	0.0000
RSA?	-12.36487	1.795019	-6.888436	0.0000
RSA2?	2.672831	0.391003	6.835828	0.0000
DOO?	0.119817	0.004317	27.75303	0.0000
FCG?	0.315008	0.005202	60.55394	0.0000
CFG?	0.129030	0.001928	66.91123	0.0000
FDI?	-0.127921	0.019757	-6.474569	0.0000
INF?	-0.013579	0.001328	-10.22546	0.0000
Fixed Effects (Cross)				
_AUS--C	0.870456			
_BAN--C	-2.382411			
_BRA--C	-0.870497			
_CHN--C	-2.035877			
_FNC--C	0.531093			
_IND--C	-1.371266			
_JPN--C	3.628293			
_MEX--C	-1.901710			
_US--C	3.531919			

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.998614	Mean dependent var	2.442866
Adjusted R-squared	0.998332	S.D. dependent var	26.01878
S.E. of regression	1.062481	Sum squared resid	83.53611
F-statistic	3553.265	Durbin-Watson stat	2.096061
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.944577	Mean dependent var	2.840889
Sum squared resid	38.41944	Durbin-Watson stat	1.936135

Regression output 5: Total Economic Growth: Concerning Sectoral Participation Ratio (for countries of highly liberalized service sector).

Dependent Variable: GGR?

Method: Pooled EGLS (Cross-section SUR)

Date: 08/06/08   Time: 11:28

Sample: 1995 2004

Included observations: 10

Cross-sections included: 5

Total pool (balanced) observations: 50

Linear estimation after one-step weighting matrix

White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.30781	2.603104	4.343974	0.0001
RSA?	-1.843071	0.869491	-2.119714	0.0404
DOO?	-0.057194	0.014421	-3.966106	0.0003
FCG?	0.266348	0.029023	9.177123	0.0000
CFG?	0.169540	0.012580	13.47666	0.0000
RIR?	-0.148645	0.029272	-5.078044	0.0000
INF?	-0.318953	0.122546	-2.602713	0.0130
Fixed Effects (Cross)				
_MAL--C	4.254126			
_PHL--C	-0.428044			
_SK--C	-0.924935			
_THI--C	-0.078249			
_UK--C	-2.822899			

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.978094	Mean dependent var	3.807714
Adjusted R-squared	0.972478	S.D. dependent var	6.744397
S.E. of regression	1.118888	Sum squared resid	48.82451
F-statistic	174.1365	Durbin-Watson stat	2.132402
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.923720	Mean dependent var	2.801000
Sum squared resid	61.05780	Durbin-Watson stat	2.078614