



Impact of Human Capital on Sectoral Growth in Pakistan: A Review Essay

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ABSTRACT

Human capital is evaluated to have represented just one-fifth of the growth of Pakistan's GDP per capita. Since 1990s, the lacking of human capital approaches is negatively affecting the economic growth. The dichotomy between human capital and sectoral growth are particular highlighted in Pakistan's economy. Whereas the novel empirical work is has increase the impact on human capital and sectoral growth as compare to previous conventional approach. The review explored the consequence of human capital in different sectors of economy. The results showed that human capital has direct effect on sectoral growth. The importance of human capital cannot be denied in terms of sectoral growth (e.g. improvement in education, health and training) that ultimately raises productivity. This study will improve the business level of policy makers and enhance the study plans for the diverse issues of economic growth in the term of agriculture sector, manufacturing sector and services sector.

KEYWORDS: Human capital, Sectoral growth, Agriculture Sector, Manufacturing Sector, Services Sector, Pakistan.

1 INTRODUCTION

Economic growth alludes to an expansion in national income; it is estimated by GDP growth. It results from the increment in profitable limit which is an indicator of economy's ability to create more goods and services. Economic growth is straightforwardly or in a roundabout way connected with our way of life. A higher yield development infers increment income level and thus higher expectation for everyday life for inhabitants of the nation [1]. Higher economic growth is additionally connected with expanded work level in the nation. There are three segments of GDP; the agricultural sector, industrial sector, and the services sector. Human capital is essential as physical and authoritative structures required for the operation of agriculture or manufacturing and services sector growth for an economy to function. It can be for the most part characterized as human capital inter-related basic components that give system supporting a whole sectoral growth. Human capital is one of the establishments and the key factor for the economic growth of any country. The aim of this paper is to find out the impact of human capital on the growth of agriculture, manufacturing and services sector of Pakistan. The outcomes have uncovered that in Pakistan's human capital has a critical impact on sectoral growth. Economic growth is actually an essential objective of developing countries [88]. Human capital with research and development (R&D) is necessary for batter sectoral growth. GDP growth, agriculture, manufacturing and services sector growth rate in Pakistan's economy is showed in **Table 1** (1950-2009).

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Table 1: GDP growth Agriculture manufacturing and services sectors growth rate in the economy of Pakistan

Years	GDP Growth Rate	Agriculture Growth Rate	Agriculture Share in GDP	Manufacturing Growth Rate	Manufacturing Share in GDP	Services Growth Rate	Services Share in GDP
1950S	3.3	1.7	50.0	8.2	9.70	5.5	30.1
1960S	6.7	5.1	41.2	9.9	14.1	6.0	35.5
1970S	4.8	2.4	35.7	5.5	15.2	6.3	39.6
1980S	6.4	5.4	27.2	8.2	19.0	6.7	44.2
1990S	4.5	4.4	25.0	4.8	18.0	4.6	49.2
1999-00	3.9	6.1	26.2	1.5	14.8	4.2	51.2
2000-01	1.8	-2.2	24.4	9.3	15.7	3.1	52.5
2001-02	3.1	0.1	23.6	4.5	15.7	4.8	53.4
2002-03	4.8	4.1	23.6	6.9	16.2	5.2	53.4
2003-04	6.4	2.2	22.3	14.1	17.6	6.0	52.7
2004-5	8.4	7.5	21.6	12.5	18.2	7.9	53.3
2005-06	5.8	6.3	22.5	8.7	18.8	6.5	51.7
2006-07	6.8	4.1	21.9	8.3	19.0	7.0	51.8
2007-08	3.7	1.0	21.3	4.8	19.2	6.0	52.9
2008-09	1.2	4.0	21.9	-3.7	18.3	1.6	53.1
2009-10	4.1	2.0	21.0	5.2	18.5	4.6	53.5

Source: Pakistan economic survey and the World Bank

The role regarding human capital possesses amazing within determined sectoral growth. The development and growth program is actually constantly relied with on key button variables to be able to always be specific, human capital (training, ability, experienced and), physical capital, in which decided sectoral growth and economic growth. Just about all classical economists believed within growth as well as explained theories associated with growth in numerous ways along with designed a variety of growth models. Technological changes and investment within human capital positively affect the productivity [2]. Human capital plays a key role in the growth concerning the economy. Educated, skilled and specialized experienced workforce produces quality regarding goods as well as products and services inside of the economy [3]. Historical background of developed international locations similar to UK and USA showed positive results for the growth via utilized skilled human resources with managed way. The economy is divided into three categories such as developed, developing in an underdeveloped economy. The divisions of development will be based on the level associated with economic growth carried out coming from every country. Human capital covers the educated and skilled workforce as well as technological changes. Inside designed places, human capital effectively used with managed way can cause economic growth. Various accounts usually are found with respect connected with human capital less inside economic growth along with sectoral growth [4]. Human capital positively affects the growth of all sectors. Human capital creates a great impact on sectoral growth. Education along with training increase staff productivity the idea of increasing their income [5]. Role of human capital in the sectoral growth is presented in **Figure 1** [6].



Figure 1: Human Capital, Sectors of Economy and Economic Growth

An unequal scattering of human capital is required to negatively affect economic growth through two channels. To start with, instruction imbalance prompts a wasteful assignment of assets. Also, training imbalance negatively affects the rate of human capital aggregation. Training is a vital factor in significant if assets are utilized proficiently in the generation of goods and enterprises. At the point when normal tutoring levels are low, this implies the selection of new outskirts creation strategies may not produce the normal increments in yield. The productive utilization of new innovations requires the work of a superior taught workforce that can work with these advancements [7]. This paper can serve help for future researchers and policy makers by presenting several inter-related aspects related to human capital and various sectors of the economy in one place. Studies related to issues of determinants of human capital, agriculture sector, the manufacturing sector, and services sector related issues have been analyzed. In particular, this study may help policy makers/bankers/lending institutions of the country on which they are based in taking balanced review of status and performance of human capital and various sectors of the economy. The purpose of this paper is to go past the examination of sectoral commitment to national economic growth and to look at the connection between the sectoral connection from one perspective and forward and in reverse linkages then again. Specialized effectiveness is utilized as a metric of sectoral execution, while forward and in reverse linkage; coefficients are processed utilizing the no complete hypothetical extraction method [8]. The effect of in reverse and forward linkages on sectoral presentation is investigated with the specialized wastefulness impact demonstrated by utilizing a "multilateral" info removes work for 14 EU nations [9]. Sources of a normal level of human capital per individual, the normal level of physical capital per individual, and the level of workforce per individual are showed in **Figure 2**. The consequence of having the populace in the denominator is scientifically engaging. Increments in populace bring down per capita payments. In any case, expanding populace is critical for the normal individual just if the rate of wage development surpasses populace development. A more vital purpose behind developing for every capita generation work is to comprehend the commitment of human and physical capital.



Figure 2: Scheme illustrates the sources of the normal level of human capital per individual, the normal level of physical capital per individual, and the level of workforce per individual. The consequence of having populace in the denominator is scientifically engaging. Increments in populace bring down per capita pay. In any case, expanding populace is critical for the normal individual just if the rate of wage development surpasses populace development. A more vital purpose behind developing a for every capita generation work is to comprehend the commitment of human and physical capital.

2 THEORETICAL BACKGROUND OF HUMAN CAPITAL

2.1 Endogenous Growth Theory of Human Capital

In endogenous growth theory role of human capital on economic growth has been debated since 1980s. Lucas (1988), Barro's (1990), Romer (1986) is the inventor the studies of human capital and growth. Human capital considered as physical capital a factor of production function. Investment in human capital like investment in physical capital, productivity increase if people are educated and use their skills in managed way [10]. Education as human capital indicator that positively related to goods and services and economic growth further literacy rate expenditure on education and health as human capital indicator [11]. Technology and learning process are endogenous variable to find the growth. Firm's employees learn more qualified production process for producing output [12]. Human capital explained as a collection of resources individually and collectively by individuals in a population like, training, judgment knowledge, talents, skills, abilities, experience, intelligence and wisdom possessed. Important drivers of economic growth are technological progress and the development of new knowledge and new knowledge is generated by R&D. Training involves improving, changing and providing the skills and knowledge to do better task and job and attitude of individuals. Skills and training teaches new technology and area of knowledge for job activities [13]. Training, skills and enrollments assume a vital part in growth of all areas of economy. Expanding ability and learning of work power build the efficiency. Training gives the vocation chances to the work constrain and makes the informed establish to fill the opening. Education and training promote the literacy and skills of the population. Investment in human capital generated greater growth. Efficiency of labor increases as used advanced technology. Economic growth is directly related to human capital. There has a positive relationship between human capital and economic growth. Economic growth effects by human capital and develops an economy through skills and knowledge of people. Human capital refers the set of skilled, trained and educated people who play an important role for economy growth. Human capital recognizes that every person of economy has not worked with the same skill sets or knowledge. Quality of work can be enhanced by spending in people's education, training, and skills. Production of two products butter and guns in production possibility curve are showed in Figure 3. Initial production of butter and guns are shown by PP. Production increases of both things as increasing in human and capital resources the curve shifts outward PP to **PP**.

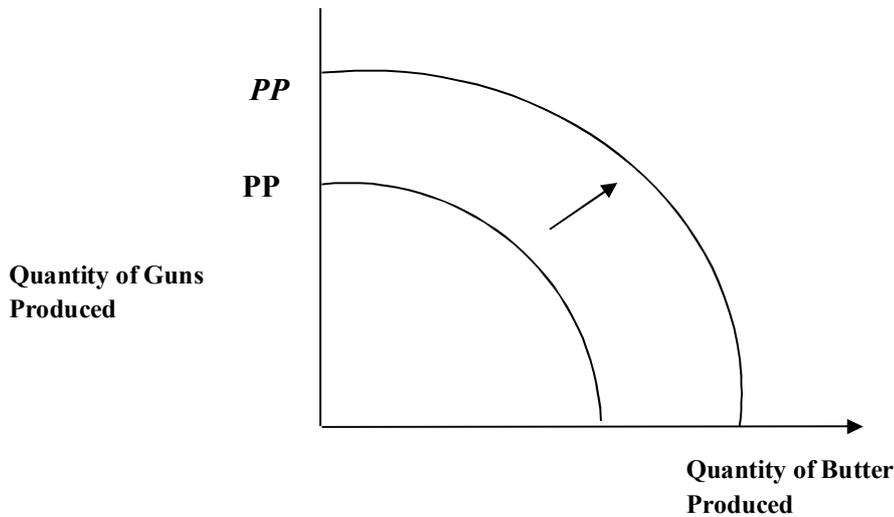


Figure3: Production of two products butter and guns in production possibility curve. Initial production of butter and guns are shown by **PP**. Production increases of both things as increasing in human and capital resources the curve shift outward **PP** to **PP**.

2.2 Arthur Lewis Theory

Lewis et al., [14] presented the dual economy model; Lewis divided the economy into two sectors. Agricultural and industrial sector are two major part of that model. Rural areas related to the agriculture sector and their earnings depend on this sector. It is assumed that in this sector labor supply more than other sectors of the economy. Labors marginal productivity is equal to zero; the output of this sector will not turn down if some labors withdraw from this sector. When labor work in industrial sector productivity increases the profit, wages of the agriculture sector also increases. Lewis two-sector model in which the production function of traditional agriculture graph shows that increase in labor employment increase the output productivity at a decreasing rate which presented in **Figure 4**. MPL is zero as production function becomes constant. Real wages determined by APL not by MPL. Total production and demand curve for labor show in the part (a). Wage rate assumed high in industrial sector than agriculture sector. That's reason labor of agriculture sector migrate to industrial sector. Due to unlimited labor supply in industrial sector wages remain constant in this sector. In other word employers can hire as much as they like in industrial sector without any panic of wages increment. For reinvestment profit capital stock is acceptable. Labor may use in the point where MPL is add up to wage rate in modern day segment. In that case capital spurs the work employment. Reinvestment regarding earnings in addition to reputation regarding excessive toil supply the surety regarding both equally enlargement in toil employment in addition to cash build up in the speeding up rate.

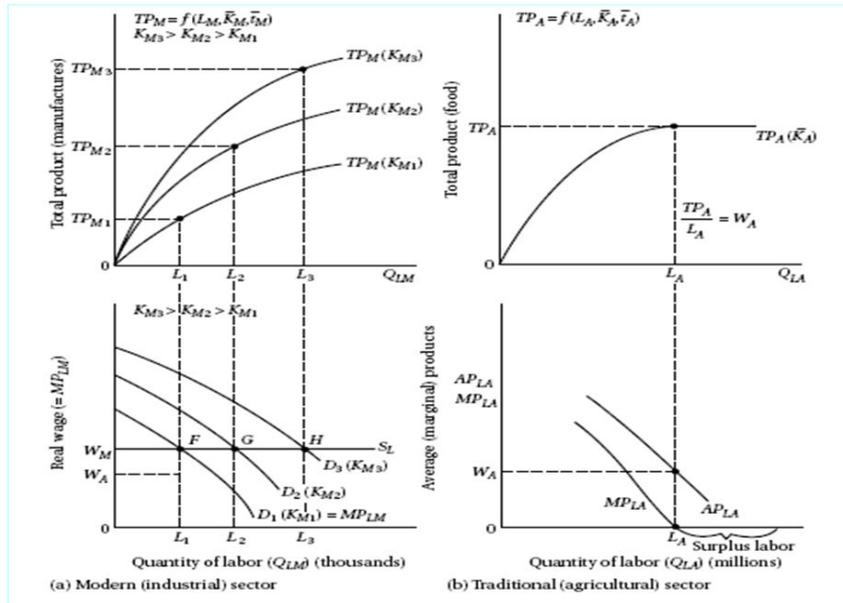


Figure 4: Lewis two sector Model in which the production function of traditional agriculture graph shows that increase in labor employment increase the output productivity at decreasing rate.

In the diagram OL1 showed the employed labor and OL1WmF. Profit showed by D1KmWmF in capitalistic. This particular profit is going to be reinvested which usually enhance funds stock options per member of staff and as a result overall merchandise blackberry curve will certainly change through Km1 to Km2. This process regarding industrial industry development will certainly go on until surplus toil consumed. Then, MPL does not keep on being comparable to zero anymore as well as disengagement regarding extra toil lessens the actual productiveness regarding regular industry.

2.3 Fie and Renis Model

Jhon Fie and Gustav Ranis [15] build up a model of double economy demonstrate with the assistance of three phases of economic growth. The significance of agriculture sector in the enhancing the industrial sector growth does not recognize: that is a drawback of Lewis model. Fie Ranis model goes over the few useful phases connected with the improvement that happen to be determined by the particular output associated with end result inside the agricultural sector showed in **Figure 5**. In part (a) of the Fig, the curve of labor supply is perfectly elastic, as between S and T. In-phase (I) as shown in (c) part of Fig., the MPL = 0. Specifically AL = MPL = 0. But here APL = AB. Following Lewis, the FR model argues that AD units of labor are the surplus amount of labor in agri. the sector which is prey to disguised unemployment. Therefore, they can be withdrawn from agri. sector without changing agri. output. In phase (II) APL > MPL, but after AD, MPL begins to rise (c part of Fig). The growth of the labor force in the industrial sector increases from zero to OG (a part of Fig). The APL in agri. the sector is shown by BYZ curve (c part of Fig). After AD as migration takes place from agri. sector to industrial sector MP, > 0, but AP falls. This shows a rise in real wages for industrial labors because of a shortage of food supply. An increase in real wages will reduce profits and the size of 'surplus' which could have plowed for further industrialization. The investment in the industrial sector (with the surplus earned) will shift the MP curve outward right as from aa to bb and then cc. In this way agri. the sector will be able to get rid of labor until the MPL = real wages = AB = constant institutional wage (CIW) which is obtained by dividing the total agri. output ORX (b part of Fig) by AD amount of labor. In other words, the slope of the ORX curve represents the real wage rate. Thus the MPL = CIW where the tangent to the total output line ORX at X is parallel to OX. In the second phase, DK amount of labor was employed, but still MPL < CIW or CIW > MPL. It means that in this phase still a certain amount of labor is surplus or they are prey to disguised unemployment.

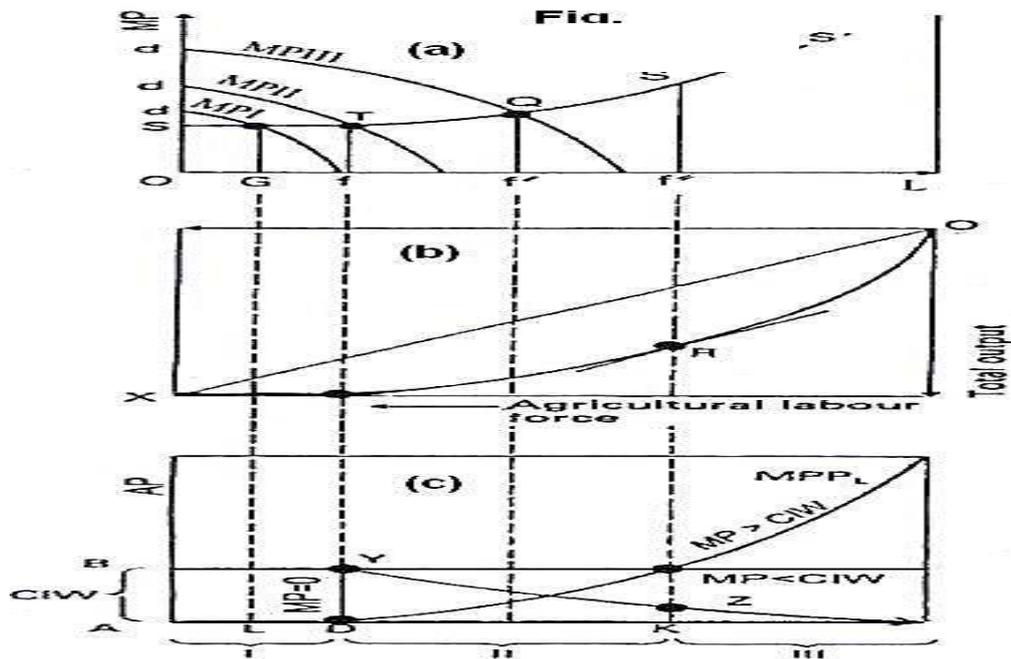


Fig. 5: Fie Ranis model goes over the a few useful phases connected with improvement that happen to be determined by the particular output associated with end result inside agricultural sector.

The principal phase of the FR show is fundamentally the same as Lewis. Camouflaged unemployment appears in light of the fact that the supply of labor is splendidly flexible and $MPL = 0$. Along these lines, disguised unemployed are to be exchanged to the industrial division at the steady institutional wage. In the second phase of FR demonstrate (stage) agri. laborers add to agriculture production however they create not as much as institutional wage they get. As it were, in the second stage the work surplus exists where $APL > MPL$, yet it isn't equivalent to subsistence (institutional) compensation. In like manner, such camouflaged jobless additionally must be exchanged to mechanical area. On the off chance that the relocation to mechanical segment proceeds with a circumstance is in the long run achieved where the ranch laborers create yield equivalent to institutional wages. This would imply that efficiency in agri. segment has gone up. With this the third stage (organize) begins.

In the third phase of FR demonstrate, the take-off circumstance arrives at an end and there starts the period of self-maintained development where the homestead specialists create more than the institutional wage they get. In this phase of financial development, the surplus work arrives at an end and the agri. part winds up the popularized division. All such is clarified with the Figure. In consequences, they must be moved to modern division. As work is exchanged to modern segment a deficiency of work will create in agri. segment. At the end of the day, it will be troublesome for the modern division to get the work at same winning consistent wages. Therefore, the wages in the mechanical segment will ascend as from T to Q in (a) some portion of Figure. After point T the turn which happens in the SZ bend is known as "Lewis Turning Point". In the third stage the agri. workers create more than CIW. (As here $MPL > CIW$ appeared in (c) some portion of Figure. In this stage, the takeoff reaches an end and self-supported growth begins.

3 LITERATURE REVIEW

Many researchers used different methods to find out the impact of human capital on sectoral growth. Sectoral growth represents the all sectors of economy that affect the overall economic growth of an economy like (Smolny, 1999; Khan, 1999; Noorbakhsh et al., 2001; Alfaro, 2003; Azzoni, & Neto, 2004; Khilji, 2005; Mustafa et al., 2005; Suryahadi, el al., 2008; Baldacci et al., 2008; Mastromarco, & Ghosh, 2009; Schneidera et al., 2010; Chaudhry et al., 2010; Smolny, 2010; Broadberry, & Gupta, 2010; Ogunade,

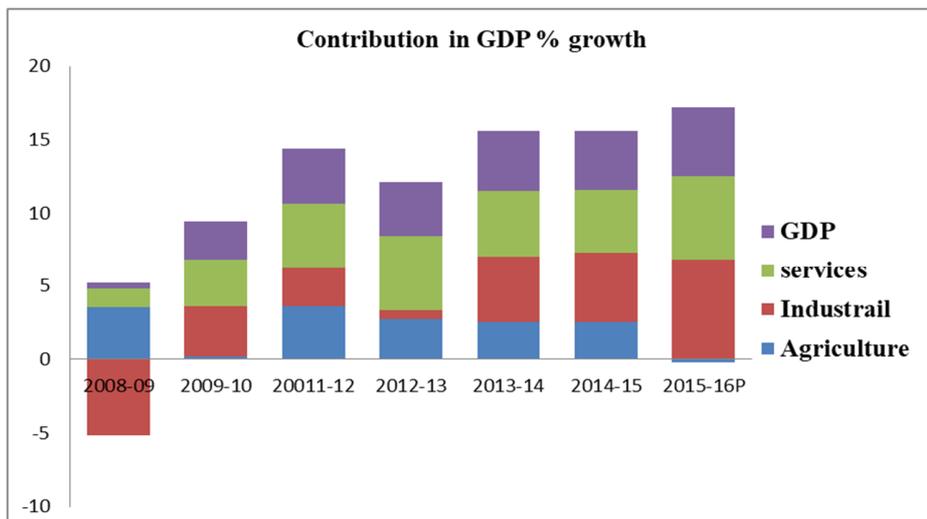
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2011; Mehdi, 2011; Imran et al., 2012; Ali et al. 2012; Mattalia ,2012; Chaudhry et al., 2013; Conti, & Sulis, 2015; Szirmai, & Verspagen, 2015; Rehman et al., 2015; Qureshi et al., 2015; Manganilli, & Popov, 2015). Using annual time-series and cross-sectoral data for 21 sectors over the period of 1960-1990, a variety of tests were undertaken to analyze the productivity convergence of the sectoral productivity gaps between the United States and Germany. A stationarity analysis for relative labor and relative total factor productivity, Solow model with constant return to scale and exogenous technical progress, for panel data Dickey-Fuller distribution was used to test the convergence productivity growth. A sectoral production function with labor, physical capital, human capital, and knowledge spillover and skills as inputs and productivity as output was used to estimate the relations. Estimation confirmed that endogenous growth models depend on knowledge spillovers. The coefficient for the productivity gap was slightly higher but less significant and the coefficient of business cycle indicator slightly higher but highly [16]. The number of key issues concerning the extent to which poverty reduced through sectoral growth (agriculture, services and some manufacturing sectors) in South Africa. Social accounting matrix (SAM) was used to explain the interdependence between productive activities, factor shares, household income distribution, balance of payments, capital accounts and economy as whole. In the South African case, growth of agriculture and services sectors most beneficial to the poor both in rural and urban areas and low impact of some manufacturing sectors in poverty alleviation. But poor Africans were not significantly employed in these sectors. Without human capital endowments the poor will not be linked adequately to the growth process. A modern traditional or intermediate technology also does not address which poor can be advantageously employed. Relentless investment in human capital with proficiency improvement is important to roll out poverty decrease managed through improvements in the labor market. Focused on modern technology and ignored the importance of traditional intermediate technologies that was necessary for new technology [17]. Foreign direct investment (FDI) with human capital enhanced the local skills and built up human resources capabilities in 36 developing countries (Africa, Asia and Latin America. Different channels or variables that were literacy, trade openness, wage cost, school enrolment and availability of technical and professional workers who batter use of modern production facilities and techniques were used. Human capital significantly related with foreign direct investment (FDI) and labor cost variability. Foreign direct investment with human capital positively related to GDP growth [18]. Alfaro analyzed the effect of foreign direct investment on growth in the manufacturing, agriculture and services sectors. Foreign technology was not equally effect all sectors of economy. Moreover foreign direct investment (FDI) had strong positive relation with manufacturing sector than agriculture and services sector, negative and significant with primary sector and ambiguous with services sector [19].

To found the aggregate production of a state four sectors as agriculture, manufacturing, construction and services were take account. Endogenous growth models with different test as Williamson's weighted coefficient of variation and Thiel's coefficient for both products per worker (PPW) and per capita income (PI). Initial income level negatively related with growth. Important deterrents that positively affect the performance of economy as human capital were not described. It only focused on the intra-sectoral sources instead of the important changes in employment across sectors to differentials in wages sectoral structure especially in poorer states [20]. Population has major form of human capital and educated human capital play a key role in economic growth, the way of utilization of increasing population for economic growth in developing countries play an important role. Education increased the productivity efficiency and improves the quality of life of individuals and important for social, political and economic growth. Technical efficiency, innovative training programmed, skill levels and proper education of human resources are the major factor of growth. Positive and significant relationship between technical training and additional year of schooling with earnings was examined [21]. To measure the inequality and share of human capital (education) labor force Gini ratio and GLS method was used with penal data in Indonesia with sectoral components in rural and urban areas. The analytic framework used the rural and urban services, industry and agriculture sector that affect the overall economic growth and poverty reduction. Urban services sector growth and rural agriculture growth reduce the rural poverty urban while industrial sector has small effect on rural poverty. Urban services growth significantly affects to reduce rural urban and overall poverty. Mostly Indonesian located in rural area and dependent on agriculture sector so growth of agriculture sector had highest effect poverty reduction [22]. Endogenous growth model was used to examine the impact of social spending in developing countries on education and health and took account other determinants of fiscal balance, trade openness, inflation rate and governance, a verity of empirical test were undertaken. Spending on education capital and health had positive and significant direct impact on

growth. Investment fiscal balance and trade openness also positively affect the growth [23]. To examine the relationship between human capital foreign investment and efficiency in developing countries log of real GDP was used as dependent variable and efficiency, stock of foreign direct investment (FDI), log of labor force, technological changes and physical capital were used as independent variables. Stochastic frontier and first stage maximum likelihood method were used to find the efficiency and relationship among variables. Fisher and Dickey fuller (ADF) were used to check the significance level. Positive and significant relationship between human capital, research and development (R&D), foreign investment (FDI), imported machinery and efficiency growth and research and development (R&D) with human capital more strongly effect the efficiency and insignificant with low human capital. Foreign investment (FDI) or imported capital on efficiency strongly effect by learning and insignificant with low learning [24].

To examine the sectoral area concerning the extent to which innovation and skills exert differential effect in employer and employee analysis. The choices may be devoting of resources to R &D, formal education, training, health improvements and so on. The decisions might commit of assets to R &D, formal instruction, preparing, wellbeing upgrades et cetera. The primary concern is, profitability increment and development rate are indigenized as opposed to the exogenous innovative progress as in the traditional and neo-established growth hypotheses. Qualitative aspects were used in determining the firm’s innovative performance rather than quantitative aspects. Occupation measure was neglected that matter for innovation which better cover the individual skills and functions, or actual human capital also not properly described the effects of skills, research and development (R&D), firms size and exports [25]. Trade openness increases the investment, efficiency of investment and the market size. Economic growth and GDP positively affected by trade liberalization and labor force participation. Positive and significant relationship between labor force participation and lag GDP. Pakistan’s economy attain sustainable economic growth with human capital, vocational training institutions, professionals, technical and higher education, quality of health services. Trade liberalization will raise the sustainable economic growth rate economy of Pakistan [26]. Pakistan's economy has proceeded with the recuperation way, GDP development quickened to 4.71 percent in 2015-16 against the development of 4.04 percent recorded in the most recent year. The economy proved unable accomplish the focused on development rate 5.5 percent because of lower development of horticulture division (for the most part because of lessening underway of cotton, rice, and maize when contrasted with earlier year. The lower generation of harvests influenced the modern and also household co economy. Nonetheless, the development accomplished in this financial year is higher when contrasted with earlier years since 2008-09 and recorded development force reflects a change in monetary exercises of the nation. Horticulture recorded the negative development of (-0.19) percent against the development of 2.53 percent a year ago. Modern part recorded the development of 6.80 percent against 4.81 percent in a year ago, expansive scale fabricating posted development of 4.61 percent against 3.65 percent when contrasted with 3.65 percent a year ago. An outline of GDP is shown in **Figure 6**.



Source: The Pakistan Economic Survey 2014-16

Figure 6: Outline of GDP Development, Pakistan Economic Survey 2014-16.

4 DETERMINANTS OF HUMAN CAPITAL AND ECONOMIC GROWTH

A growing literature examines the effects of inequality on economic growth. A developing writing looks at the impacts of imbalance on economic growth. Numerous examinations identified with this writing have concentrated on the impacts of human capital and sectoral development. Later articles have additionally considered the unequal scattering of human capital as a conceivable clarification for territorial and cross-country varieties in yield development [28; 29; 30]. The sources of knowledge spillovers and scale economies that affect the economic growth in short run and long run with in Germany. The sources that affect the economic growth and productivity were knowledge spillover, labor and capital. Moreover, business cycle and economies scale also affect the productivity growth. Capital, labor and technological changes were used as inputs that determined the productivity growth [31]. A dynamic model was designed to highlight the impact of human capital, share of education and population on sectoral productivity in India and UK. Benchmark estimates were used to examine the long run labor productivity in three sectors of economy (agriculture, services and industry). Only services sector comparatively upward India and UK in labor productivity. Investment in human capital founded low in India during the selected period. It indicates that the upper class of the society had high education which positively affects the sectoral productivity [32]. Investment in human capital in developing world and investigated that skill, education, and technological change produce employment opportunities and increased productivity and GDP was examined. There is positive relationship between years of education and economic growth in developing countries. Moreover, human capital development (training, skills) enhanced the exports, foreign investment, total factor productivity and gross domestic products that increased the economic development. The study received evidence from Singapore, South Africa and India emphasized the essential of basic education, teamwork, organization and targeting in mapping out policy. Developing countries should, always attempt to create linkages between skills, productivity and employment in their mission to promote economic development [33].

The relationship between human capital and agriculture sector growth by applying autoregressive distributed lag (ARDL) model in Iran was examined. Human and physical capital, labor and educational system had significantly and positively affected the agriculture as well as economic growth. Business performance improved; industry's productivity capacity increased through arrangement workforce planning and human resource management skills. Vocational and technical training can increased in productivity growth. Human resources development (HRD) and human resources management (HRM) positively affect the economic growth. Improvement in vocational and technical trainings and public advanced trainings enhanced the productivity in goods and services [34]. Strong positive relationship between log of gross domestic Product (LGDP) with log of education enrollment Index (LEEI) and Log of Gross Fixed Capital Formation (LGFCF), Log of Education Enrollment Index (LEEI) and log of infant mortality rate (LIMR) strongly negative correlated. Positive relation between education enrollment index and gross domestic product and negative relation existed between head count ratio (HCR) which is used as a proxy for poverty with economic growth. Investment growth rate (IGR) negatively related with economic growth in Pakistan due to insufficient investment [35]. Co-integration and Granger causality approach was used to examine the long run relationship between human capital and economic growth in Pakistan. Public expenditure on health has significant impact on GDP, public expenditure on education and debt services payment were of non-significant impact on GDP. Moreover, the education directly affects the economic growth and debt services indirectly affect the economic growth. Public expenditure on education and health increase the economic growth. Human and physical capital determined the total factor productivity. It found that human capital was very low due to low public investment in social sector during the selected period. In developing countries human capital increased the economic growth and decreases the poverty [36]. Ordinary least squares (OLS) and Durban Watson (DW) methods was used to assessed the impact of inflation on three major sectors of economy (agriculture, manufacturing, services) in Pakistan. Inflation have positive effect on agriculture and services sector growth and negative on GDP and manufacturing sector, one percent increase in CPI inflation cause increased in services and agriculture, and one percent increase in CPI inflation decrease manufacturing growth. Inflation may not dangerous and have positive effects to manufacturing sector growth due to capital formation and decrease firm's suspicions and irregularities. Increased the agriculture sector growth and productivity with increased in inflation moreover; very low inflation badly affects the growth of agriculture and services sector [37]. In order to examine the positive and negative impact of human capital on employment protection and growth in Europe used large sample of manufacturing and services in 14 countries Several channels or variables through which high and low human capital intensive industries affect the

employment protection and total factor production growth (TFP) was used. There is strong and statistically significant negative relationship between human capital with research and development (R&D), riskiness intensity and employment protection legislation (EPL) [38].

Manufacturing and economic growth according to agriculture, industries and manufacturing sector in 88 developing countries was analyzed; result of Hausman-Taylor explained that there was significant and positive relationship on growth of developing countries in the post-war period. Manufacturing sector is important source of intermediate services inputs. Educated workforce and technology has positive effect on manufacturing growth. Services sector that play an important role in advanced countries and contribute two third share GDP development of services sector decline the role of manufacturing sector. It found that the share of manufacturing sector significant impact on GDP and the share of services sector not significantly affect the GDP. The coefficient of GDP was negative and significant. Man time rules and man time education with technology gap was introduce in this study for better growth [39]. In order to check the effect of energy consumption on long run total and Sectoral (industrial and manufacturing) productivity at aggregated and disaggregated levels Granger causality and Toda and Ymamoto (T-Y) causality tests was applied. It explained that the full utilization of energy in all sector in aggregated energy consumption and specific energy sector in disaggregated energy consumption. The result indicates statistically long run relationship in sectoral growth with both energy consumptions and positive and unidirectional causality relationship between GDP and energy consumption. Sectoral growth of Malaysia depends on energy consumption and investigates the positive relationship between disaggregated energy and economic growth. Human capital with important determinants as education, skills, labor productivity, technology and knowledge was missing there that significantly affect the overall productivity [40]. Granger causality and augmented dickey fuller (ADF) unit root tests was used to determine the long run relationship between energy crises, greenhouse gas and sectoral growth. Electric power shortage and growth significantly related with sectoral growth. Moreover, the relationship varies region to region and has different impact of electricity on growth.

The relationship between electric power shortage and electric power transmission and distribution issues was significant and positive in Sub- Saharan African region, less elastic in Europe, central Asian, south Asia and more elastic in East Asia and Latin America. Moreover accessed to electricity negative and significant related with electric power shortage in East Asia, Europe central Asia and south Asia region [41]. Ordinary least squares (OLS) regression was used to found the relation between variable and GMM used for lagged dependent variables in dynamic panel model in order to assessed the volatility of GDP that effected by financial development with Sectoral reallocation with 28 countries. The analytic framework used for investigating the financial development and GDP volatility and took account other determents of private credit for GDP and capital markets and found the significant result in both determents. Reductions in volatility in overall economy positively affect the financial development [42]. The vocational training and education was the primary source of increasing the productivity of the workforce, generating growth, creating jobs and improving economic growth. Human capital measures for Pakistan, 1960-2005 is presented in **Figure 7** [90, 91]. The growth of institutions, enrolments of students in high-level education and teachers positively affect economic growth. The growth of an institution is a positive and significant impact on output growth variability in the long run. Both human and physical capital plays a vital role in the development of services and industrial sectors in Pakistan [43].

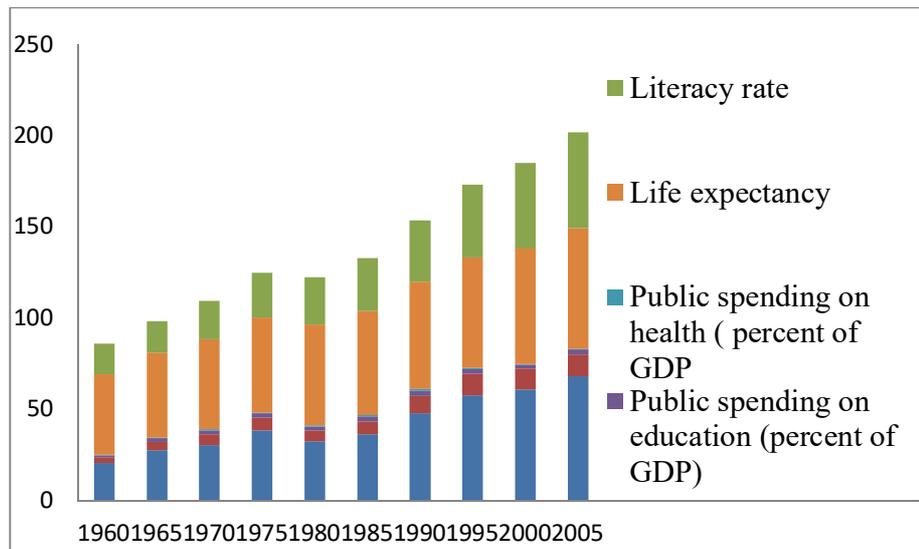


Fig. 7: Growth of institutions, enrolments of students in high level education and teachers positively affect the economic growth, human capital measures for Pakistan, 1960-2005

5 CONTRIBUTION OF AGRICULTURE SECTOR IN GDP GROWTH

Agriculture is second largest sector and backbone of the Pakistan economy. In 2006 accounts its share in GDP is 22 present exports earning based on agro products is 75 percent. Agriculture sector classified into five major components: as major crops, minor crops, livestock, fisheries and forestry. Any country cannot move to economic growth without the agriculture growth. The industry and other non-agriculture sectors directly or indirectly depended on agriculture sector. Agriculture sector provides raw metrical to industrial sector that creates demand for industrial goods that automatically cause economic growth. Mostly population of Pakistan lives in rural area and directly or indirectly belongs to this sector. The growth performance of agriculture's sub sectors e.g. fishing, livestock, forestry and crops is presented in **Figure 8**. Agribusiness represents 19.82 percent of GDP and 43.7 percent of work. Government has taken various measures under farming bundle to upgrade agribusiness create like help cost for generation, noteworthy increment in credit to agriculture part, better plans for the arrangement of data sources like seed, composts, bug sprays and better game plans for showcasing. Human capital plays a very important role in the agriculture sector productivity. Skilled and educated labor force better use of improved technology in farming sector. High yielding seeds and fertilizers are used in modern agriculture; if labor force is educated they better understand how improve the productivity. Prices for outputs, input accessibility, research and development, technology, farmer education, climates and agriculture credit are those factors that determine the agriculture productivity. Specific thoughts promote agriculture innovation and human capital of farmers and farm individuals. Human capital efficiency and health cooperation are investigated at macroeconomic and microeconomic level. The positive improvement in the raising expectations for everyday comforts enhancing health models and adjusting time portion choices. Poor and developing nations improve their leaving stander by enhancing or very important than enhanced food or caloric admission in clarifying late economic development.

All things considered the developing countries of the world keep on having a vast offer of their work power in agribusiness and development can't happen until they encounter their own particular farming change [44]. Different methods were used to measure the agriculture and manufacturing growth. by some authors like (Kwon, 1986; Nadiri, 1991; Burki, & Terrell, 1998; Martin, & Mitra, 1999; Birdsall et al., 1999; Kaboski, 2009; Hamid, & Pichler, 2009; Chaudhry, 2009; Nadeem et al., 2010; Hye, & jafri ,2011; Schneider, & Gugerty, 2011; Yasmeen at el., 2011; Nadeem et al., 2011; Chien et al., 2011; Hye, 2011; Brownson et al., 2012; Meeusen, & Broeck, 1977) studied in different developing countries while using same techniques like Cobb-Douglas and Translog production function. The Cobb-Douglas function was developed by Charles Cobb and Paul Douglas during 1927–1947. It is a functional form of the production

function, used for two or more inputs to examine the technological relationship. Different dependent and independent variables were used in different prospective of view to evaluate and flourish the Sectoral growth. [45] Investigated the number of key issues concerning the extent to which growth of technical change, non-constant returns to scale and change in capital utilization exert a differential on growth of total factor productivity in South Korean manufacturing sector. A decomposition framework was applied for investigating these issues took account other determinants expenditures on energy and materials, production efficiency, labor, capital utilizing the sample of Korean manufacturing, a verity of empirical function were undertaken. Elasticity's was used to replicate the changing phase of South Korean development. Cobb-Douglas production function and constant return to scale are used to investigate the performance of twelve two digit manufacturing industries influenced by public infrastructure capital and research and development (R&D). Technological changes, physical capital, infrastructure, research and development (R&D), labor, capital that positively affect the performance and productivity and increase in infrastructure and research and development increased productivity [46]. Number of key issues concerning the extent to which technical and scale efficiency of production exerts a differential effect of manufacturing firm's growth in the area of Gujranwala. The analytic framework was used for investing these issues took account of other determinants of education and skilled workers, data on labor, capital, energy, materials inputs machinery, land and education utilizing the sample of 153 small from nine industries with primary data. Three type of methodology was used, Tobit regressions model and nonparametric DEA approach was used to finding overall technical and scale efficiencies of small manufacturing industries. Maximum likelihood estimates from Tobit regressions was used to estimates the dependent variables as technical efficiency, pure technical efficiency, and scale efficiency. Positive relationship between educations and experienced of firms owners with production efficiency of small firms in Pakistan. Efficiency of firms lead to significant with using skilled workers, data on labor, capital, energy, materials inputs machinery and land. Education and experience of the firm's owners positively effects technical and scale efficiency of firms as well as growth of firms. Moreover, specialization and human capital positively affect the efficiency of firms or firms raise output 6 to 29% by improving overall efficiency. It does not properly explain the other channels that also positively affect the growth of manufacturing as education providing public education and training for entrepreneurs or information about subcontracting. The firm's efficiency may improve and decreased cost in industries. Research and development (R&D) directly and positively affects the cost and productivity growth in U.S manufacturing between infrastructure capitals with productivity [47].

For percentage change growth in labor and capital Cobb-douglas and Translog production function was used to examine the productivity growth in agricultural and manufacturing sector of 52 countries. To found the long run growth in both sector of economy standard growth accounting techniques was used and analyzed that the time trend and technology shock also had positive and significant for manufacturing and negative and highly significant for agriculture. Technical progress comes out in agriculture than in manufacturing and total factor productivity (TFP) was higher in agriculture then manufacturing. Agriculture growth played a significant role to overall economic performance in developing countries [48]. Several channels and variables through which direct and indirect role of human capital and natural resources on economic growth in Korea and Brazil was analyzed. Those were saving, technology, investment labor for increased skill, human capital, and agricultural land in many cases. Human capital investment has an indirect impact on national per capita income and Sectoral growth. Agricultural land and labor are the two most important assets of the poor. Agriculture sector growth affected the other sectors growth of the economy; one percent increase in agriculture growth raised one and half percent growth of other sector. Productivity increased and poverty reduces directly and indirectly by education. Productivity both in agriculture and non-agriculture sector positively affect by education. The governments of resource abundant countries defeat all challenges; the poor strongly affect the growth. The positive interaction between improved educational performance and faster export growth, export direction increased the demand for skilled workers, household demand for education, output and wage rate [49].

The causal effect of education on growth of Sectoral composition was analyzed taking data of industry, annual hours, occupation, annual labor earnings, age, sex and year of schooling during 1940-2000. It explored the relation between education gains and skilled biased technical change increase the demand in industry or occupation and introduction of new skilled intensive industry. Human capital with knowledge skills, year of schoolings and other inputs positively affect the growth. There is direct relationship between technology and skilled labor with labor inputs (education, occupation and industry experience) that enhance

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the growth. There was positive relationship between wages and year of schooling. Supply of labor force can enhance the ability of labor force and productivity [50]. Secondary data was used that is collected from agriculture statistic to explore institutional credit as policy that boosting the agriculture income of Pakistan by using simple linear and log linear estimations. Two principle variables that are salary per cropped section of land and agriculture wage per developed range. Simple linear model as well as long run linear model found the positive impact of credit on agriculture per cropped acre and agriculture income [51]. By using seemingly unrelated regression equations (SURE) technique study tried to explore that the manufacturing sector contribute 65%, human capital 14% and technological change and technical efficiency 22% in total factor production in Pakistan. Translog production was used to investigate the effect of labor, capital technology and human capital on productivity. There was positive relationship between human capital, technical efficiency and technology with manufacturing sector. The coefficient of capital stock was larger significant then coefficient of human capital and labor.

Manufacturing sector growth affects the export, employment and development of agriculture. Education policies should be designed according requirement of the economy. Vocational and professional education of labor force for manufacturing sector growth also not discussed that positively affect the productivity. If technological innovations and spillovers were used economy's growth may significantly increase [52]. Cobb-Douglas and Translog production function was used to assess the total factor productivity in agriculture and manufacturing sectors in Pakistan. These were technological orientation, futurity, riskiness and institutional changes. Human capital, technology, institutional change had significant impact on total factor productivity. Innovation capability on financial, customer and business process has positive impact on productivity. Increase in human capital and labor lead to increase of total productivity in manufacturing, agriculture and GDP growth [53]. Econometric approach, growth accounting (index number), arithmetic index (AI) and Tornqvist- Theil Index (TTI) were used to measure the total factor productivity growth of agriculture sector in Punjab. Partial and total factor productivity (TFP) showed that the performance of agriculture sector was significant by the productivity growth in Punjab during the selected period. The positive relationship between and GDP growth total factor productivity (TFP) growth was found. In Punjab the results indicated that productivity growth was a significant factor in the performance of agriculture sector. Opposite relationship between poverty and total factor productivity (TFP), poverty reduces due to vast private investment in agriculture sector and increase farmers outputs. Technological changes, technical efficiency and education of farmers positively affect the productivity growth [54].

Autoregressive distributed lag model (ARDL) was used to analyzed the relationship between human capitals, trade and agriculture sector growth in Pakistan. [10] Endogenous growth model were applied to explored relationship between trade openness and agricultural sector growth. The positive influenced of human capital, trade openness on economic and agriculture growth. Technology, physical capital and total numbers of workers affected the total output. Human capital enhanced the agriculture growth and productivity and decreased unemployment rate as well as poverty. It analyzed the one percent increase in physical capital and skill labor force increase the agriculture sector growth twice [55]. Computable general equilibrium (CGE) models were uses and found the direct relationship between agricultural productivity and changes in poverty measured at the macroeconomic level across countries. An increased in agricultural productivity reduced indirect poverty through generating the employment, increased output, household income, demand for food, demand for goods and services, real wages, real income, and decrease real food prices. The population who live below international poverty line decreases through increasing the household real income and real wage rate. Agricultural sector growth and poverty reduction are depend on a variety of related factors including technology development, institutional change, asset endowments, strength of market linkages of the poor's participation. Increased in productivity caused decreased poverty [22].

Ordinary least squares (OLS) and Durbin-Watson (DW) summary statistics with primary data of 330 household were used to examine the impact of educated farmer on agricultural productivity in the Mailsi District. Various factors like role of education, water availability, weather conditions, input-output price differential, and land tenure system, use of agricultural implements, high quality seeds, sunshine and fertilizers were taken into account toward agriculture productivity [56]. Cobb-Douglas production function was use to find the impact of social and physical infrastructure on an agricultural productivity in Punjab.

The Positive and significant relationship was found between public and physical investment on social infrastructure with the total factor productivity. Government spending on education, infrastructure and public agricultural research and development (R&D) increase the agricultural productivity and reduce the poverty. It examined that one percent increase in social, physical infrastructure and agriculture investment increase total factor productivity (TFP) double. Population directly or indirectly affects the agricultural productivity. The development in human and social capital increased the agriculture growth and reduced poverty [57]. Primary data of 300 farmer sample that was collected from two Tehsils of Faisalabad was used to analyzed the agriculture productivity affect by the agriculture credit in Pakistan economy. Education, farming experience, access to credit, size and number of cultivation practices used as independent variables. Two stage estimation with descriptive statistic was used for estimation the results. To compare the household size, farmers experience, and technical efficiency were used in percentage and frequencies. Oriented data envelopment technique was used in first step. In the second step Tobit model was used for DEA efficiency on socio economic independent variables and found the positive impact of education, farming experience, access to credit, size and number of cultivation practices with farmer efficiency [58].

Unit root, the Granger causality, the Wald (χ^2) coefficient statistic, and the generalized variance decomposition the vector autoregressive (VAR) technique were used to find the long run relationship between agriculture and economic growth in Thailand. Granger causality generalized variance decomposition was used to examine the causal relationship and found the statistical significance impact of agriculture to economic growth (GDP) while directional relationship between economic growth and agriculture growth. The findings reveal and Wald coefficient showed the positive relationship in long run between agriculture and economic growth. One percent change in agriculture caused economic growth. The economic growth dependent on agriculture sector growth developing countries because the workforce belonged with agriculture sector. It does not take into account the key variables that not only affect the agriculture growth but also economic growth as well. If it used educated farmers the productivity more efficiently effect [60]. JJ co integration approach, Gregory Hansen's test of co integration was employing to investigate the growth and raw material import for agriculture sector of Pakistan. Results of JJ co integration and Gregory Hansen's test of co integration exhibit that long run association exist among agricultural growth and agricultural raw material imports. Moreover, three specified vector autoregressive (VAR) model (VAR-L, VAR-D and ECM) were applied to find the direction and the result indicate that there is bidirectional causality between agricultural growth and agricultural raw material imports. Trade liberalization has positive impact on agricultural growth but obstruct agricultural raw material imports [60]. Autoregressive distributed lag (ARDL) model was utilized to identified the determinants of total factor productivity (TFP) growth in agriculture sector of Pakistan. Fertilizer, agriculture credit distribution and area under crops are the main determinants of the model. Human capital (education of farmers, skills), fertilizer and agriculture credit has significantly and positively affects the total factor productivity (TFP). Fertilizer with long-run and short run elasticity, agriculture credit long-run and short-run elasticity's enhancing total factor productivity (TFP) growth. Area under crops was not found statistically significant both in the long-run and short-run [62].

Dickey-Fuller unit root test the long run and short run impact on agricultural productive and variations of macro-economic variable in Nigeria and found the significant negative relationship between agricultural productivity and macro-economic variables as total exports, external reserves, inflation rate and external debt. The impact of industrial capacity utilization rate and nominal exchange rate has significant and positive association with agricultural productivity. Short run model observed the significant and negative inelastic relationship between agricultural productivity and other macro-economic variables, while industrial capacity utilization and nominal exchange rate have positive inelastic influenced. If economy enhanced the resource allocations and stabilized the inflation both industrial and agricultural sectors are promoting their productivity [63]. High levels of personal capital taxation negatively impact not only the supply but also the demand for risk-willing capital; by reducing individuals' incentives to become entrepreneurs. Dividend taxation also distorts the type of investments that are made. Investments which generate continuous returns, such as dividends and interest, are disadvantaged in relation to investments that generate increases in value. Capital gains tax also leads to investors retaining their investments in order to avoid paying tax, a behavior that prevents optimal composition of the investment portfolio. A further consequence of high double taxation, as studied by Huizinga & Vogel (2009), is the organizational

corporate structure following a purchase. Countries with high levels of international double taxation are, according to Huizinga and Vogel, less inclined to win over the parent company's location [64].

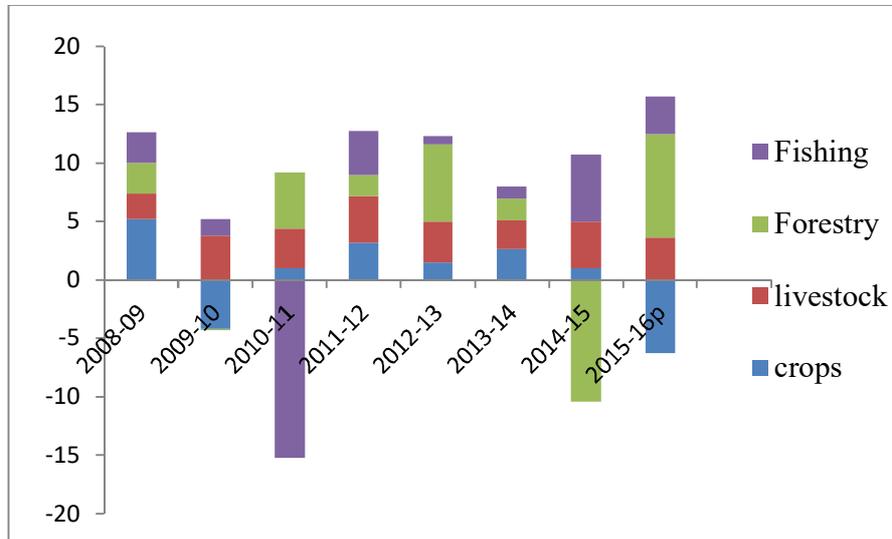


Figure 8: Growth performance of Agriculture's sub sectors e.g. Fishing, livestock, Forestry and Crops

The ways in which the corporate tax system could affect composition of capital within an economy this arises due to the differential treatment within corporate tax systems of different asset types because of variations in asset lives, depreciation allowances, means of financing and special investment reliefs for certain types of capital assets. In other words taxation does not have a neutral impact on investor decisions across different capital asset types i.e. information and communication technology; transportation equipment; other machinery and equipment; and buildings. Different average marginal effective tax rates across these asset classes for several countries (including Ireland) arising from their tax treatment. Information and communication technology is observed to be particularly negatively affected by the corporate tax system which may serve to limit the accumulation of ICT capital. While corporation tax can be seen to increase investment by all firms a significant source of capital in many countries is inward investment capital. The next section considers the relationship between corporation tax and foreign direct investment (FDI) [65]. A similar strategy of looking at counties across state lines, but do so with respect to changes in the statutory state corporate tax rate over the period 1970 to 2010. Increases in statutory corporate tax rates reduce employment and wages, but reductions in statutory corporate tax rates do not raise employment and wages, except during recessions. Many corporate decisions, however, depend on effective tax rates, which in turn, depend on the base as well as the rate [66].

6 CAUSAL FACTORS OF HUMAN CAPITAL AND VARIOUS SECTORS OF AN ECONOMY

Different authors studied on services and manufacturing sector that played a key role in economic growth which are as a negative and significant effect on inflation in the short-run but its effect in the long-run is not significant. Least squares dummy variable with panel data was utilize to find the direct and moderating impacts of human capital and resources on firm performance by using the several independent variables: human capital, leverage, service diversification, and geographic diversification leveraging of human capital while the firm performance was used as dependent variable. A positive relationship was found between leveraging of human capital and firm performance [67, 68]. Across the nineteen Organizations for Economic Cooperation and Development (OECD) economies show the impact of trade openness at inflation through a strategic framework in monopolistic production at domestic sector to shows how the economy's inflationary bias reduces up to help the important level associated with trade openness. Beyond the actual threshold, wage setters may be induced to help behave more aggressively with open economies, leading to be able to higher equilibrium inflation. The idea inflation will be negatively

regarding openness while wage bargaining will be decentralized, whilst there exists virtually not a relation between openness as well as inflation with higher levels involving wage centralization [69].

Logit estimate used to identify the heterogeneous universe of services direct effect of innovation and high skilled on employment and find the positive relation between innovative strategies for new services generation of knowledge (R&D with market). The negative relation was found between direct employment and innovation, displacing initial labor with technological effect has positive with growth. Qualitative rather than quantitative aspect was used and showed the results in three forms; service innovations, incremental service innovations and process innovations (technology). Service innovation and incremental innovation positively affect the employment. There was positive and statistically significant relationship between innovations and high skilled and low skilled employment. Firm behavior also used to find the employment outcomes and indicates positive impact in innovative and knowledge-intensive sectors, while a negative financial-related sectors [70]. Recent theoretical and empirical research focused on efficiency total and partial productivity, and growth in production outsourcing in service and manufacturing industries. To find the relationship between productivity growth, efficiency and outsourcing in manufacturing and services at the micro level different parametric and non-parametric approaches were used. Heshmati [71] introduced technical changes measured with Divisia index approaches. It described that the labor, capital, research and development (R&D), human capital effect the productivity growth in both manufacturing and services sector. Positive and statistically significant relationship between technological advancement, wage growth and rate of outsourcing with manufacturing growth, while high labor intensity was insignificant and real output is positively correlated with service industry growth was analyzed [72].

To investigate the impact of human capital in newly born manufacturing and services firms in Italian industry Ordinary least square (OLS) method with primary data 391 samples. Different variables as education, professional experience, and general knowledge were used and examined the positive and significant relation between human capital (education, professional experience), infrastructure and entrepreneur education with newly born firms. Initial firms positively and significantly affected by economic education, insignificant with technical education. It was found that the education, work experience and personal wealth to finance significantly increased the firm size. It does not explain the number of observations decrease quite substantially [73]. Leontief's input-output analysis and Granger causality test with unit root for stationarity and identified the statistically significant relationships between the variables in the regression model to long and short term relationship between construction sector and economic growth in Pakistan economy. To check the causality Granger causality test was used and the results indicated the causality between construction sector and aggregate economy of Pakistan that significantly contributes to the explanation of GDP. The construction sector generates employments and offering jobs opportunities for work force of economy there was strong causal relationship between the construction sector and aggregate economy and uni-directional causal relationship between the two variables real growth rate of GDP and construction flows. Major issues affecting the efficiency of the sector as human capital, education, skills, experience and technology does not disused [74].

The Johansen's method with annual data was used to find the long-term relationship between variables and found that the value added in manufacturing, foreign investment, and human capital are cointegrated and long-run relationship exists among these variables in Singapore. There is significant role of foreign investment, human capital and manufacturing sector growth in Singapore. The value added in manufacturing increased with an increase in foreign investment and human capital (education). There was statistically Co-integrated relationship between human capital, foreign investment and value-added in manufacturing growth. The Singapore gain comparative advantage in human capital-intensive goods through increased spending on research and development and advanced education training that increased the supply of human capital. There was missing the services sector in this analysis that significantly affected the manufacturing sector with human capital and foreign investment [75]. Industrial sector that affected by human capital with information of communication technology (ICT) and the data was used to intensive industries. Benchmark model, ordinary least squares (OLS) and augmented aggregate production function model were used to examine the human capital and industry deviation within country. The result of augmented aggregate production function model indicates that the human capital positively effect the productivity and employment growth and the result of OLS estimates showed that there was not statistically significant effect of human capital on the labor productivity in human capital-intensive

industries. There is positive and significant relation between initial human capital accumulations on labor productivity growth on information communication technology (ICT) intensive industry in all models. Human capital improvement with economic size strongly affects and faster growth in the ICT incentive industries. Manufacturing industries appears stronger effect of human capital on the growth of ICT-intensive industries rather than services industries [76].

Trans log production technology and seemingly unrelated regression equations (SURE) techniques are used to assess the productivity growth in the manufacturing sector of Pakistan. It explore that the manufacturing sector contribute 65%, human capital 14% and technological change and technical efficiency 22% in total factor production. Translog production was used to investigate the effect of labor, capital technology and human capital on productivity. There was positive relationship between human capital, technical efficiency and technology with manufacturing sector. The coefficient of capital stock was larger significant then coefficient of human capital and labor. Growth in manufacturing sector affected the export, employment and development of agriculture. The recourses enhance on human capital, education, training, health and other physical factors for enhancing of economic growth does not accessed. Education policies should designed according requirement of the economy. Vocational and professional education of labor force for manufacturing sector growth also not discussed that positively affect the productivity. If technological innovations and spillovers were used economy's growth may significantly increase [52]. Two stage econometric models were used to measure the impact of business services (BS) with innovations on client industries performance and economic performances and variance inflation factor (VIF) to check the multicollinearity in innovations and business services that influence the sectoral growth a number of selected European countries. Value added growth was used to check the performance rather than productivity. It also described the different channels that affect the business services (BS) as well as economic performance. These are capital intensity, technological changes, human capital (education, skill). There was positive relationship between business services (BS) and innovation output and Sectoral value added growth. The coefficient of business services (BS) is positive and significant with client industries and economic performance. Technological changes positively related to manufacturing sector than business services (BS) [77]. Several channels and variables were described through which manufacturing firms either negative or positive affect the wages and productivity in Africa. These were value-added per worker, labor costs per worker, and monthly wages education and skills. In Africa the business environment was not good so firm's productivity survive because formal firms taxes and other costs was high. Enterprise Survey data was used identical questionnaires and identical sampling methodologies to measure the firm's and labor productivity. High wages positively related to productivity observed in Sub-Saharan Africa. The coefficients on dummy variable is statistically significant and negative in the regressions for labor costs, labor productivity and unit labor costs for the East Asia manufacture and coefficient of per capita income statistically insignificant. Moreover, a positive relationship between firm's productivity and high taxes and high indirect costs was found. The firms play very good role in international market due to reduction of tariffs, transportation costs and other barriers [78].

An endogenous growth theory with sectoral growth model and benchmark model was designed to highlight the impact of human capital on new information communication technology (ICT) based economy in US. To find the long run growth the model divided economy in four sectors that were final goods sector, equipment's sector, intermediate sector and research and development sector. Cobb-Douglas technology was used to examine the impact of human capital and technology on the four sectors and estimate that the GDP growth in US economy strongly significant with information communication technology (ICT) and human capital. The productivity growth in US was increased with the contribution of labor quality (qualification), human and physical capital and technology. It found that productivity growth positively and significantly with the interaction of human capital and technology [79]. The partial least square (PLS) equation with primary data was used to estimate the effect of knowledge resources on firm performance and found the positive relationship between knowledge assets and knowledge process capabilities. Moreover, business development process capabilities were associated with social complication, knowledge resources and historical conditions. These capabilities enhance the competitive advantage and long term profitability. The outcomes of knowledge management (KM) were differently affected on high tech and traditional manufacturing firms. Knowledge management increased the innovation capabilities and

organizational outcomes so the high tech firms highly invest on knowledge management (KM). Knowledge management (KM) not direct positively affected the firm's outcomes [80].

Technical skills, knowledge and skills through education and training investments in the human or the individual with Probit estimation were used to determine the innovation capabilities which may significantly affect the growth. Moreover innovative human capital education, training, willingness to change in the workplace and job satisfaction to overcome the limitation with service and process innovations have positively affect the productivity in the case of small firms, less significant in the large firm size. Human capital supplies a competitive gain for firms in terms of skills, capability and their willingness to work. Physical capital, knowledge management was missing in this study that may indicate the more batter [81]. To examine the relationships between intellectual capitals, innovation, strategy and firm performance regression analysis and multiple linear regression analysis was used in Antalya. It identified that there was positive significant relationship between intellectual, structural, and human capital with companies profitability. Business performances directly affect by intellectual capital with the exception of human capital. Three elements: innovation capital, process capital, and customer capital indirectly affects the human capital performance. An increased in intellectual capital, innovation and organizational strategy increase the firm performance. Moreover, it explained that the intellectual structural, human capital improved the business and firms performance [82].

Physical and human capital development is major instruments for creative industries to maintain economic growth. Education played significant role for rapid economic growth and social changes for individuals and nations of the world. Integrated learning education generated creative thinkers that easily understand and solve the problems that faced the firms and created new ideas and experience that enhanced the productivity growth. It analyzed that the collaboration between teachers and students had significant impact on creative industries. Aim of education was not just delivering knowledge, but also finding partnership ways with the students. The objective of education should encourage personal growth and skills of individuals according to their interest [83]. Granger causality and Toda and Ymamoto (T-Y) causality tests as use to analyze the energy consumption on long run total productivity and sectoral (industrial and manufacturing) productivity at aggregated and disaggregated levels. Full utilization of energy in all sector in aggregated energy consumption and specific energy sector in disaggregated energy consumption and indicates statistically long run relationship in sectoral growth with both energy consumptions and positive and unidirectional causality relationship between GDP and energy consumption. Sectoral growth of Malaysia depends on energy consumption and investigated the positive relationship between disaggregated energy and economic growth. Human capital with important determinants as education, skills, labor productivity, technology and knowledge was missing there that significantly affect the overall productivity [84]. Maximum likelihood estimation method and chi-square test with primary data that covered 158 manufacturing and 117 service firms in Australia utilized to analyze impact of market orientation on innovation performance. Several channels and variables through which market orientation affected the innovation performance those were technological development research and development (R&D) inputs, new product and process. Without services innovations market orientation (MO) direct effect on innovation performance. Market orientation and service innovation with innovation performance positively influenced. The coefficient of market orientation (MO) and innovation performance found to be significant and positive. Education, work experience, knowledge management and training significantly affect the productivity that was not including in this analysis [85].

The analytic framework used for these issues took account other determinant firm size, annual turnover, age of firm, production organization and exporting, technology, research and development (R&D), a variety of tests were undertaken to examined these variables in Ankara. The positive relationship between innovation activities technology, research and development (R&D) expenditure with human capital in defense and designed industry was analyzed. Ability enhance to understand existing processes and to use new knowledge for new product and process by human capital, education skill knowledge and training. There was statistically sufficient relationship between the research and development and innovation. Moreover, employee's education had positive impact on innovation. There is stronger and significant relation between human capital and innovation capacity in defense and industry [86]. Structure of the economy has changed over time, in 1969-70; agriculture was the biggest item delivering area with 38.9 percent commitment in GDP, which has decreased to 19.82 percent showing that the offer of the agriculture

has been declining after some time for the nonagricultural area. The offer of administrations area has expanded to 59.16 percent in FY 2016 demonstrating an expanding pattern in the administrations part of the GDP after some time. The offer of every single significant division and related sub-parts of GDP as of late is introduced in **Figure 9** (Pakistan Bureau of Statistics).

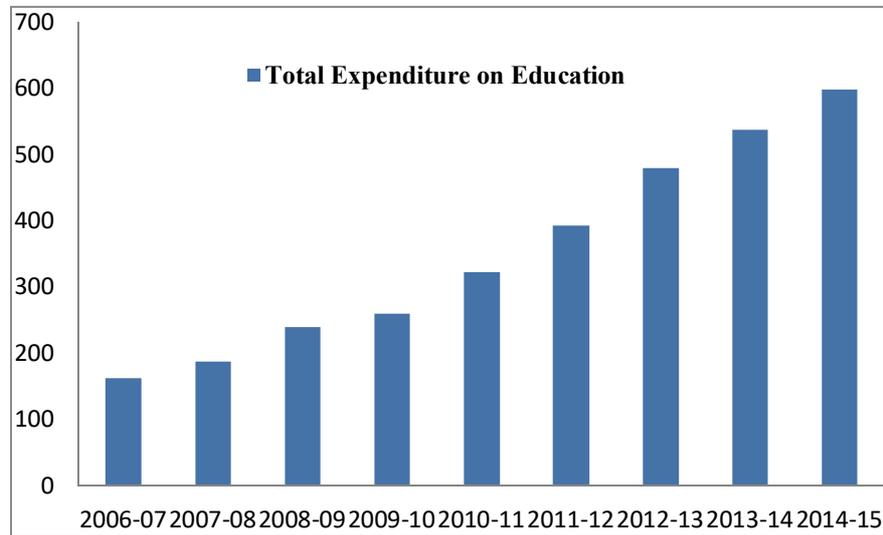


Figure 9: Data of Pakistan’s Spending on Education as a percentage of its GDP from 2006 to 2015. According to Pakistan Economic Survey 2015-2016 the Expenditure was 537.6 which positively affect the growth. The global standard for training distribution is 4% yet at the same time there was no expansion Pakistan in 2013 and 2014.

7 POLICY ISSUES AND IMPLICATIONS

In line with the objective of presenting and classifying the reviewed studies, several issues relating human capital and sectoral growth in developing countries have been discussed. The review presented in this study can be used by policymakers, economists, and researchers to judge the performance of human capital and sectoral growth in these nations and analyze the situation of human capital in this direction sectoral growth. A review of the relevant literature highlights that the interest of researchers has been growing towards this topic over the past few years. However, there exist huge disparities in the number of publications in these countries [87]. Determining the factors which affect growth of these sectors of a particular source of human capital has been heavily emphasized by eminent researchers in the literature. Several factors have been used to study this relationship at the micro-level, the most prominent of which are- Employed labor, Agriculture irrigated land, Tractor, Agriculture credit, Water availability to agriculture sector Gross Fixed Capital Formation, Inflation Rate, Energy Consumption, Tax on GDP, Domestic Credit, Gross Fixed Capital Formation, Taxes on GDP growth, Foreign Direct Investment, Trade openness, Communication [88]. A majority of studies have reported significant impact of Employed labor, Agriculture irrigated land, Tractor, Agriculture credit, Water availability to agriculture sector Gross Fixed Capital Formation, Inflation Rate, Energy Consumption, Tax on GDP, Domestic Credit, , Gross Fixed Capital Formation, Taxes on GDP growth, Foreign Direct Investment, Trade openness, Communication on Sectoral growth.

8 CONCLUSIONS AND WAY TO FUTURE RESEARCH

Human capital has been viewed as the noteworthy factor of financial development and improvement. This investigation has made an endeavor to break down the effect of human capital on the genuine GDP or development of Pakistan. The neoclassical development hypothesis recommends that the human capital is the information factor of generation however they think of it as like physical capital which has consistent losses. Except if there is no mechanical development, monetary development can't be accomplished. The endogenous development hypothesis holds that the human capital is the different solid factor of generation and instruction; in any case, the information-based economy has its overflow and

multiplier impact, which prompts monetary improvement. Studies on developing countries relating to human capital and Sectoral growth have been systematically presented and reviewed. Human capital is a topic of considerable interest in Pakistan. After reviewing the studies, a noticeable growth in the number of studies have been observed particularly after the year 2001. The human capital has assumed more importance in recent years amid rising concerns about sectoral growth. In the Pakistan context, this was the period when government focused extensively on the increased use of human capital measures policy measures were initiated to promote Sectoral growth. Majority of the studies are focused on determinants of sources and amount of sectoral growth by employing exploratory cross-sectional research. However, less research has been done on identifying some others resources of human capital side determinants, constraints of Sectoral growth with economic growth. This could be an area of future research. The outcomes demonstrate that there is quite a while relationship between human capital and sectoral growth. In this way interest in human capital has constructive outcome on the development.

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