

Analyzing the Performance of Agriculture Sector in Pakistan

Dr Rummana Zaheer

Assistant Professor Department of Economics, University of Karachi (Pakistan)

ABSTRACT: *Agriculture is the most important sector of Pakistan's economy. Considering its importance, this report aims to examine the growth of the Agriculture sector in Pakistan from the 1950 to 2010, the challenges it faces and its possible solutions. The divisions of the sector which are major and minor crops (from 1980-2010), livestock, fisheries and forestry (from 2005-2010) are also examined. Also to access the total agricultural productivity, TFP from 1970 to 2010 is studied. Findings suggest that the growth of the Agriculture sector has fluctuated over the span of Sixty years, with its best performances in the 1960's and 1980's. Pakistan's agriculture sector has slowed down significantly in the recent year. Compared to its regional competitors Pakistan has the lowest growth and factor productivity rate. Problems such as water scarcity, lack of agricultural technology, natural calamities and many others have caused the agriculture sector to have a fluctuating progress and recently a slow growth. Addressing these problems can facilitate the growth of the Agriculture sector.*

I. INTRODUCTION

The Agriculture Sector of Pakistan consists of Major crops which include rice, cotton, wheat, sugarcane and maize; Minor crops such as masoor, mung, mash, potato, onion and chilies; Livestock; Fishery and Forestry. Two main crop seasons exist in Pakistan namely the Kharif, the sowing season which begins in April-June and harvested during October while the Rabi Season begins in October-December and harvested in April-May. Rice, sugarcane, cotton, maize, mung, mash, bajra and jowar are "Kharif" crops while wheat, gram, lentil (masoor), tobacco, rapeseed, barley and mustard are "Rabi" crops (Sethi, 2002).

In terms of significance Agriculture has been the most important sector for the economy of Pakistan since 1947, the time of Independence. It is still the foundation of the economy as it provides employment to 45% of the population and provides inputs for agro-based industry. Agriculture income has also created demand for industrial goods (Economic Survey of Pakistan, 2010-2011). Not only that it also contributes raw materials for manufacturing goods and provides market for manufactured products (Ahmed et al, 2008). Not only does the agriculture sector provide food to consumers and fibers to domestic industries, it also is a basis of sparse foreign exchange earnings and offers a market for industrial goods (Alam and Naqvi, 2003).

However the agricultural growth of Pakistan faces some problems such as severe water shortages, along with soil erosion, salt-affected soils, structural problems, lack of mechanization and natural calamities (Alam and Naqvi, 2003). To address the many problems faced by the most important sector, the Government of Pakistan has implicated many policies towards the growth of the agriculture sector. Policies such as high yielding varieties of food grain and cotton, public sector investment in agriculture, research and extension expenditures (R&E) and physical infrastructure have been introduced in the past decades. There has also been investment on irrigation, mechanization and water sector programmes such as canals and dams construction (Islam, 1996; Ahmad et al, 2008; Economic Survey of Pakistan, 2010-2011).

Achieving Agricultural growth is important and it can be achieved with an increase in the use of inputs and increasing the productivity (Rosegrant and Evenson, 1993; Collins and Bosworth, 1997). The first component of agriculture growth includes labor, water, land, pesticide and fertilizer consumption which are the vital physical inputs that are being employed in Pakistan's agriculture production process. The second component is the increase in productivity. When speaking of productivity, the growth in total factor productivity (TFP), it is the growth of the total output minus the growth in inputs (Rosegrant and Evenson, 1992). This productivity growth is very important as it can be considered as crucial condition or even a pre-condition for growth to take place in the entire economy. (Ali et al, 2008).

Similarly, increasing Agricultural growth or productivity is one of the most important determinants of Economic growth and poverty reduction. An increase in Agricultural growth provides direct impact on rural incomes, raising rural incomes and welfare. This rise in rural income raises the over all demand for goods and services in the Economy. Growth in crops also provides food security to the Economy, allowing it to concentrate on the growth of other sectors. Not only that Agricultural growth provides boost to exports which helps stabilize the Exchange rate of the country (Agriculture and Natural Resources Team of the UK, 2004).

After considering the importance of the Agriculture sector and its growth, the report focuses on the growth of the Agriculture sector over the years. The layout of the report is as follows: section II contains the Review of

Literature. Section III contains the relevant data and its analysis. Section IV contains the Discussion on the findings such as the performance of the agriculture sector over the 50 years, the recent performance of the Agriculture sector in 2010-11, problems faced by the Agriculture sector and recommended policies to improve growth of the Agriculture sector. Section V contains the Conclusion.

II. LITERATURE REVIEW

A lot of work has been done regarding the growth and progress of the Agriculture growth over the years. Fan et al (2010) examined China's Agricultural growth and its implications on China's Economy. Among many other positive impacts, they discovered major contribution of Agricultural growth to Economic growth. Rattso and Stokke (2003) analyzed the relationship between the productivity, growth and foreign spillovers for the agriculture and industrial sectors of Thailand. Their analysis found a long run relationship between productivity growth and foreign spillovers in both agriculture and industry. Ahmed and Amjad (1984) emphasized the importance of the development of the Agricultural growth for the growth of other sectors in Pakistan such as the Industrial Sector and Manufacturing sector.

Similarly, Zaidi (2005) accessed the Agriculture growth trends in Pakistan over the years and found the growth of the Agriculture to be highly dependent on government policies and the political scenario in Pakistan. Jehangir et al (1998) estimated the production potential of Major crops in Pakistan, it was found that with better farming methods more yield of Major crops can be achieved. In terms of accessing productivity growth, Ali and Hamid (1996) measured technological change, technical efficiency, TFP growth and their impact on input demand for the agriculture and manufacturing sectors of Pakistan. Their findings indicated that Technological change and technical efficiency was labor saving and capital using. Similarly, Kemal and Ahmed (1992) and Kemal et al (2002) analyzed technological change, technical efficiency and TFP for Pakistan. According to their findings, overall labor productivity grew at a rate of 1.48% for the period 1992-2001. They also made a comparison with other neighboring countries and found the labor productivity growth in Pakistan to be relatively lower as compared to India, Sri Lanka, Bangladesh, Malaysia, Taiwan and Korea. Hamid and Ahmad (2009) accessed the growth and productivity in Pakistan and concluded that Pakistan needs to abandon traditional farming methods and apply new technological techniques to achieve growth and productivity. This emphasis and trends were aimed at analysis the gaps that need to be accessed.

From the literature review, it is evident that the agriculture sector growth is necessary to achieve stable economic growth worldwide. In Pakistan agricultural growth is also of great importance and exploring the past trends, problems and implications are important for the development of the Agriculture sector. Similarly, technical progress, technical efficiency and development of human capital in the agricultural sector are many of the important factors for the development of the Agriculture sector. Growth and Productivity are closely linked to each other and both need to be accessed for better analysis.

III. DATA ANALYSIS

The growth, change in the share of GDP and Total Factor Productivity will be examined over a course of Fifty to Thirty years.

Table 1: The Growth in the Agriculture Sector and the share of GDP over the Sixty Years

Years	Percentage Growth	Share in GDP
1950's	1.8	47.7
1960's	5.1	45.8
1970's	2.4	38.9
1980's	5.4	30.6
1990's	4.4	25.8
2000's	3.2	22.1

Source: Federal Bureau of Statistics (2010) ; Government of Pakistan (1999); Pakistan Economic Survey (1997-1998).

IV. CONTRIBUTION OF AGRICULTUE SECTOR

The growth rate of agriculture over the years has been volatile. In the 1950's decade the growth rate was 1.8% which was the lowest in a decade span. Later in the decade of 1960's the growth rate of 5.2 existed, due to the Green Revolution being at its peak. In the 1970's the growth rate fell to 2.4, due to their being lack in the tools being efficiently implemented. In the 1980's the agriculture saw a proper growth of 5.4%. However from 1990's onwards to 2000's the growth rate has continuously declined from 4.4% in 90's to 3.2% in 2000's. In

terms of share of the agriculture sector in GDP, it has declined continuously over the years from 47.7% in 1960's to 22.1% in 2000's.

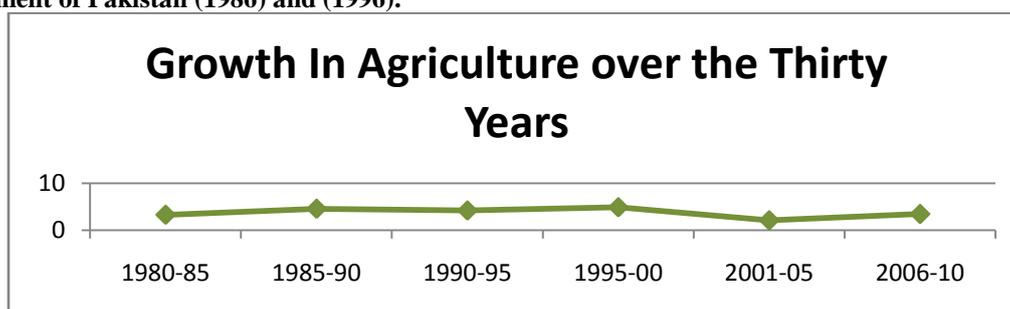
Table 2: The Trend in growth of the Agriculture Sector over the 30 years:

Year	Percentage Growth in Agriculture	Share in GDP	Major Crops	Minor Crops
1980-85	3.28	32.9	6.4	3.5
1985-90	4.57	35.0	3.2	4.8
1990-95	4.19	30.8	3.1	5.87
1995-00	4.88	26.5	5.06	1.82
2000-05	2.10	22.9	2.8	-0.48
2005-10	3.44	20.7	0.5	1.1

Recent Growth:

2010-11	1.2	20.2	-4.0	4.8
---------	-----	------	------	-----

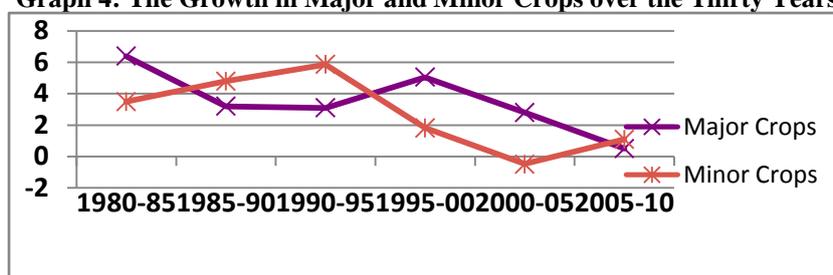
Source: Federal Bureau of Statistics (2010); Pakistan Economic Survey (2004-05), Islamabad; Government of Pakistan (1986) and (1996).



Graph 3: Source: Federal Bureau of Statistics (2010); Pakistan Economic Survey (2004-05), Islamabad; Government of Pakistan (1986) and (1996).

From 1980 to 2010, the growth rate of the agriculture sector has been steady between the range of 2% and 5%. From 2000 to 2005, the growth slowed down to 2.10 lowest in the five year span over the thirty years. In 2000 and 2002 there has been negative growth of -2.2 and -0.1 which lead to the slow growth in the period 2000 to 2005. The growth rate has however increased in 2006-10 to 3.44% which is a recovery in the growth of Agriculture. Recently, the growth has slowed down drastically in the period 2006-2010, with the low growth rate of 1.2 in 2010-2011.

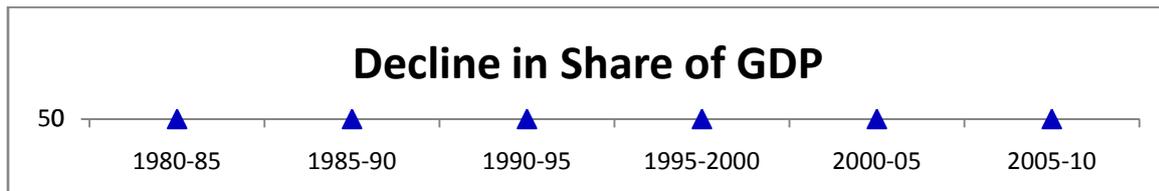
Graph 4: The Growth in Major and Minor Crops over the Thirty Years



Source: Federal Bureau of Statistics (2010); Pakistan Economic Survey (2004-05), Islamabad; Government of Pakistan (1986) and (1996).

The growth in Major and Minor crops in the thirty years has been fluctuating, with the growth rate being high in 1980-85 of 6.4% then declining between 1985 to 1995 to 3.2 and 3.1 respectively. In 1995-2000 the major crops witnessed a proper growth of 5.06%. From 2000 to 2005, the growth rate fell to 2.8 and in 2005-2010 the major crops growth rate was the lowest of 0.5%.

The Minor crops growth rate has some what similar trend of improving the growth from 3.5% in 1980-85 to 5.87% in 1990-95. From 1995 to 2010 the Minor crops has witnessed slow growth from 1.82% in the period 1995-2000. There was decline in growth of Minor crops of 0.48% in 2000-05, -0.48 being the negative growth. Although the growth rate rose to 1.1% in 2005-2010, it was however slow.

Graph 5:

Source: Federal Bureau of Statistics (2010) ; Government of Pakistan (1999); Pakistan Economic Survey (1997-1998).

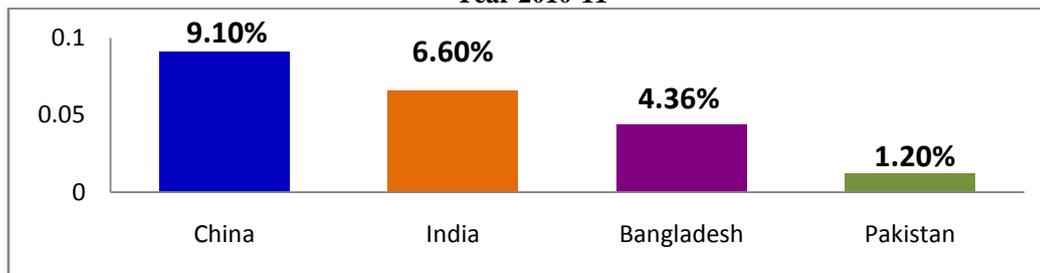
The share in GDP of the Agriculture sector rose from 32.9% in 1980-85 to 35% in 1985-90. Then from 1990 to 2010, the share in GDP of Agriculture continuously declined from 30.8 in 1990-95 to 26.5, 22.9 and 20.7 in the periods 1995-2000, 2000-05 and 2005-2010 respectively. Over the years agriculture is contributing less and less to GDP.

Table 3: Growth Rate of Agricultural Sector of Pakistan as compared to Major South Asian Economies in the Fiscal Year 2010-11:

Country	Agricultural Growth
China	9.1%
India	6.6%
Bangladesh	4.36%
Pakistan	1.2%

Source: Economic Advisory Council (2011), New Dehli; CIA report, 2011; Federal Bureau of Statistics (2010), Pakistan.

Graph 6: Comparison of Agricultural growth rate of Pakistan with its regional competitors for the Fiscal Year 2010-11



Source: Economic Advisory Council (2011), New Dehli; CIA report, 2011; Federal Bureau of Statistics (2010), Pakistan. Own Contribution

In the most recent Fiscal Year 2010-11, the Agriculture growth of Pakistan was the least of 1.2% with China's being the most of 9.10%. This slow Agriculture growth is of a major concern to Pakistan.

Table 4: The Total Factor Productivity Index over from 1971-2006:

Period	Output Index	Input Index	Calculation	TFP Index
1971-1980	2.88	1.90 (67)	2.88- 1.90	0.96 (33)
1981-1990	4.23	1.94 (47)	4.23 -1.94	2.24 (53)
1991-2000	3.02	1.32 (19)	3.02-1.32	2.46 (81)
2001-2006	3.46	0.59 (17)	3.46- 0.59	2.86 (83)

Source: Ali et al, 2008.

Last data available of Total Factor Productivity is of the year 2006. The Total Factor Growth in the period 1970-1980 of 0.96 contributed only 33% to the growth of the Agriculture sector while the Inputs such as fertilizers, tube wells and draught animals contributed more, as they doubled during this decade (GOP,1982). However during the following decades 1981 -1990, the Total Factor Productivity increased to 2.24 and its contribution increased as well to 53%. Similarly in coming years of 1991-2000 the Total Factor Productivity kept increasing from 2.46 and its contribution to growth increased as well to 81%. In the recent period of 2001-2006, the TFP increased to 2.86 and so did its share of 83%.

Recently, the total Labor productivity in Agriculture in 2010 has been quite low in Pakistan as compared to other countries in South Asia, with China having the highest labor productivity of 6.8%.

Table 5: Comparison of Labor productivity rates of Pakistan with its regional competitors:

Countries	Labor Productivity
China	6.8
India	2.2
Bangladesh	1.4
Pakistan	0.2

Source: Government of Pakistan (2011).

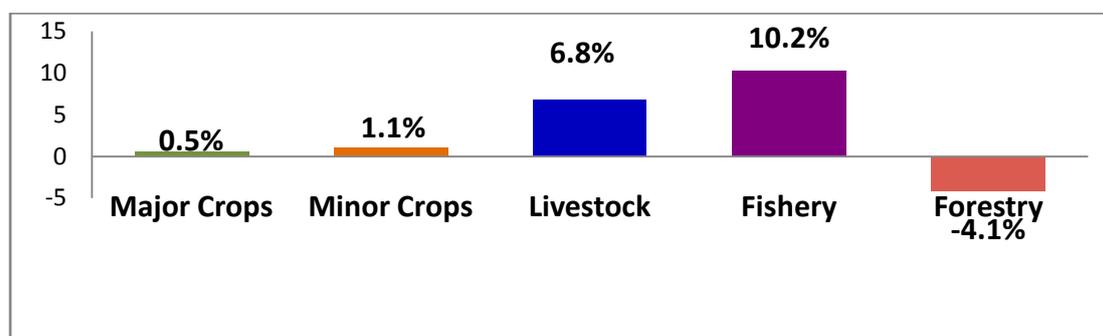
Table 6: Recent Growth in the Agriculture and its sectors:

Year	Agriculture	Major Crops	Minor Crops	Livestock	Fishery	Forestry
2005-06	6.3	-3.9	0.4	15.8	20.8	-1.1
2006-07	4.1	7.7	-1.0	2.8	15.4	-5.1
2007-08	1.0	-6.4	10.9	4.2	9.2	-13.0
2008-09	4.0	7.8	-1.2	3.1	2.3	-3.0
2009-10	0.6	-2.4	-7.8	4.3	1.4	2.2
2010-11	1.2	-4.0	4.8	3.7	1.9	-0.4

Average of the period 2005-10:

2005-10	3.44	0.5	1.1	6.8	10.2	-4.1
---------	------	-----	-----	-----	------	------

Source: Federal Bureau of Statistics (2010).

Graph 7: Recent Growth in the Agriculture and its sectors (Average of the period 2005-10)

Source: Government of Pakistan (2011).

Recently, Livestock and Fishery growth has contributed greatly to the growth of agriculture with 6.8% growth in Livestock production and 10.2% growth in Fishery production in the period 2005-10. The Forest production has declined over the 5 years and during the period of 2005-10 the growth rate has decline to -4.1 %. Major and Minor crops production growth have contributed less with 0.5% growth in Major crops and 1.1% growth in Minor crops.

V. DISCUSSION ON FINDINGS

First the performance of the agriculture will be looked into over the course of fifty years. Secondly, the recent performance in 2010-11 will be examined. Thirdly, the problems that are faced by the agriculture sector will be observed. Finally the recommended policies to boost the agricultural growth will be discussed.

Performance of the Agriculture over the Sixty Years In the 1950's the agriculture sector grew at only 1.8% but still the share of agriculture in the GDP of 47.7% during that period was the most compared to other periods (refer to Table and Graph 1). In the period 1949 to 1958 the growth rate was only 1.43%, which was less than the annual growth rate in population. The Agricultural growth was ignored as the ruling elite at that time focused on industrial growth. The Industries were pampered and many policies were introduced to induce industrial growth. Many policies introduced during that period were mostly biased against the agriculture growth. It was towards the end of the 1950's that the importance of the agriculture growth was realized and policies were implemented to increase agricultural growth (Zaidi, 2005; Ahmed and Amjad, 1984).

1960's

In the 1960's the agriculture sector grew at 5.1% which is a huge improvement in the growth of agriculture as compared to 1950's growth. However, the share of agriculture in the GDP fell to 45.8% compared to 47.7% in the 1950's (refer Table and Graph 1). However, between 1959 and 1964, agriculture grew at an impressive rate of 3.7% but this rate was overshadowed by the even greater growth rate of 6.3% between 1965 and 1970. This was mainly due to the Green Revolution which was at its peak in 1966-68 (Zaidi, 2005). This growth has two phases. First phase 1960-65 led to the increase in irrigation facilities, mainly irrigation facilities. The Second phase which was between 1965 and 1970 where the high variety (HYV) seeds, chemical fertilizers, pesticides led to high growth. Mainly in 1966-68 the growth rate was remarkably high of 11.7% and maintained the growth rate of 9.6% in 1968-70. The growth was mostly attributed to the complete package of water, seeds, fertilizers and pesticides (Ahmed and Amjad, 1984; Zaidi, 2005).

1970's

In the 1970's the growth of agriculture was 2.4% which is a huge decline in the agricultural growth compared to the 1960's growth. The contribution to the GDP also declined to 38.9% (Refer to Table and Graph 1). The slow growth of 2.4% was due to many reasons. Firstly, although the Green Revolution was introduced and a lot of public expenditure was spent on inputs but spending on agricultural research, extension, education and training had almost been neglected. Secondly, the inputs introduced in the 60's such as fertilizers, seeds and pesticides were productive in the beginning but soon began to experience diminishing returns since not much attention was paid to the efficiency of their use (Ahmed and Amjad, 1984). Thirdly, the government undertook many institutional and structural reforms such as the land reforms that affected the agricultural growth adversely. Finally, crop output declined due to hostile weather conditions in forms of droughts in 1970-72 and in 1974. Also heavy rains, accompanied by floods in 1973-74 led to the heavy loss in crop output (Ali et al, 2008). The Total Factor Productivity (TFP) of 0.96 contributed only 33% while inputs 67% (refer to Table 4). The growth of 2.4% was mostly due to input growth as the utilization of pesticides and fertilizers increased by four to eight times during the 70's. The numbers of tube wells, tractors and draught animals also increased more than double during this decade (GOP, 1982).

1980's

In the 1980's the Agriculture sector grew at 5.4%, which compared to the 70's is a major improvement. However the share in the GDP declined to 30.6% (refer to Table and Graph 1; Table- 2 and Graph -3). This was mainly due to the increase in Total Factor Productivity of Agriculture of 2.24% which contributed 53% to increase in the growth rate (refer to Table 4). The new policy announced by the government in 1980, the government increased the procurement/support prices of major crops and also opted for deregulation policy. These policies led to agriculture growth of 4.4% and 3.5% in the periods 1979-83 and 1984-88 respectively (GOP, 1980). Evidently, the production index for cotton almost doubled as the per hectare yield rose from 312 Kg/hectare in 1977-78 to 615 Kg/hectare in 1990-91. Technical change in the shape of increased competence in complementary inputs such as fertilizers and availability of water greatly contributed to the productivity. Also, enhanced varieties of cotton seeds also contributed to the rise in productivity. The high investments in the 70's became visible in the 80's that led to high growth of 5.4% in the decade. In the period 1980-85 the growth rate of agriculture was 3.28% and 4.57 in 1985-90 and the GDP share of 32.9% and 35% respectively. This growth in the last half of the decade has contributed greatly to the GDP.

The livestock also grew at 5% (average annual rate) in the 1980's. This growth rate is impressive considering that there was no growth of livestock during 1970's. When examining the role of productivity growth in the 1980's, it can be seen that there was a tremendous increase in the production of food grain during 1978-88. Favorable weather conditions, sufficient availability of main inputs and the increase in the effectiveness of their utilization plus policy changes for stability in the crop price greatly favored the growth of TFP (Ali et al, 2008).

1990's

The growth rate of 4.4% prevailed in the 1990's (refer to Table and Graph 1). The Total Factor Productivity of Agriculture has increased from 2.24 in 1980's to 2.46 in 1990's (refer to Table- 2 and Graph -3). The contribution of TFP also increased from 35% to 81% with the inputs contribution falling from 47% to 19%. In the first five years from 1990-95 the growth rate was 4.19% and in 1995-00 the growth rate was 4.88% (refer to Table – 4).

This could be explained by the fact that during of 90's, fertilizer subsidy was abolished by the government and this led to high prices. High prices ultimately led to increase in the efficiency of fertilizer consumption. This greatly contributed to the increase in Total Factor Productivity. High procurement prices of major crops have been a considerable factor in invoking high growth in productivity during this period. This improvement in agricultural inducement was evident in the improvement of the terms of trade in the 90's. Also, the livestock greatly contributed to the growth as it had a high growth rate of 11.2% in 1995-96. During this decade the discrimination that existed against agriculture had gradually declined due to changes in trade policies

and modification in the nominal and real exchange rates. This improvement in the incentives for farmers has been an important factor which contributed to the sustained productivity (Ali et al, 2008).

However, the low agricultural output growth in the 90s was due to several factors such as the attack of the Cotton Leaf Curl Virus (CLCV) on cotton which is an important major crop, floods that occurred in the early 90s and severe droughts in the late nineties (GOP, 1997).

2000's

In the recent decade of 2000's the Agriculture sector grew at 3.2% and its share fell to 22.1% (Table and Graph -1). In the time period 2001-06, the TFP has increased by 2.86 compared to 2.46 TFP in the 1990's. The contribution of TFP to Agricultural growth contributed 83% which a lot more compared to 1990's performance (Table -4). The input contribution to Agricultural growth fell to 17%. Speaking of wheat production, it increased from 19 million tons in 2000-01 to 21.3 million tons in 2005-06. Likewise, cotton, maize and rice production increased to 2.2, 3.1 and 5.5 million tons from 1.8, 1.6 and 4.8 million tons respectively during the exact time period. However, during the six years, growth in input use was not high as the cultivated area grew from 2.2 to 2.3 million hectare only. Similarly, the labor force grew from 1.80 to 1.86 only. There was also a moderate growth in the pesticide and fertilizer utilization in the time period with stagnant fodder consumption during this time span (Ali et al, 2008).

The year 2004-05 was good for agriculture as the sector surpassed its target of 4% of growth for the year by a huge margin and had an impressive growth of 6.5%. This contribution was mainly due to the exceptional rise in the cotton and wheat crops that benefitted from the widespread and timely rainfalls in the winter as well as from the increase in their procurement prices. Rice production also contributed to the agricultural growth, as it expanded by 2.7% in 2004-05. This complete scenario clearly exhibits the good performance of the agricultural total factor productivity (TFP) and its contribution to the output growth of agriculture. The average growth rate of 2000-05 was 2.10% and the share was 22.9%. Severe water shortages along with soil erosions, salt-affected soils, natural calamities, structural problems and lack of mechanization contributed greatly to the slow growth rate (Alam and Naqvi, 2003; Economic Survey of Pakistan, 2009-10; Ali et al, 2008).

In the last five years of the decade of 2000's from 2005-10, natural calamities led to great loss in major crops and led to the slow growth of 3.44%. Major crops become the victim of natural calamities during the last few years and three out of last four years witnessed negative growth in the major crop sector. The unprecedented floods in July 2010 destroyed two major crops, i.e. rice and cotton leading to a slow growth of 1.2% (Refer to Table – 6) (Economic Survey of Pakistan, 2010-11).

Recent Performance of the Agriculture Sector in the Fiscal Year 2010-11

In the year 2010-2011, the sector grew at 1.2%, which is relatively slow. The structural problems and lack of mechanization remained a major problem to the growth of the Agriculture Sector.

During the recent year 2010-11, the overall performance of agriculture sector exhibited a weaker growth mainly due to negative growth of major crops and forestry. Against the growth target of 3.8 percent, and previous year's (2009-10) performance of 0.6 percent, agriculture was estimated to grow by 1.2 percent. Major crops that account for 31.1 % of agricultural value added, registered a negative growth of 4.0% for second year in a row mainly because of decrease in production of rice and cotton by 29.9 % and 11.3%, respectively. Minor crops that account for 10.9% of overall agriculture value addition, grew by 4.8% compared to the negative growth in the past 2 years of -1.2% and -7.8% in 2008-09 and 2009-10 respectively (Table-6). The water shortages led to low productivity in the yield of Major crops. Natural calamities greatly impacted Major crops last year and as a result they witnessed negative growth. The extraordinary floods in July 2010 destroyed two major crops, i.e. rice and cotton leading to a slow growth of 1.2% (Economic Survey of Pakistan, 2010-11).

However the Livestock sector which has 55.1% share in the Agriculture sector was also impacted by the massive floods and witnessed a slowdown in growth at 3.4% in 2010-11 as opposed to 4.3% last year (Table-6). The Fishery sector is immune from weather related problems and thus offers prospects for consistent growth. The Fishery sector grew by 1.9% as against last year's growth of 1.4 percent. Forestry has experienced negative growth of 0.4 percent this year as compared to last year's positive growth of 2.2 percent (Table-6) (Economic Survey of Pakistan, 2010-11).

Despite its slow growth, the agriculture sector has recently contributed significantly to the economic growth of Pakistan. The rise in prices of major crops has led to the transfer of additional amount of Rs. 342 million in to the rural areas in 2010-11 and about Rs.329 billion during the period 2001-2008. This rise in prices has created additional demand for goods and services in the economy. Not only that the Agriculture Sector had the highest ever wheat crop this year and it helped provide proper food security in the fiscal year 2010-11. The growth in Agriculture of 1.2% in 2010-2011 has provided the much need boost to the exports, revival of the manufacturing sector and is responsible for increasing consumption. The enormous price inducement is also likely to spread the economic growth in the next fiscal year as well (Economic Survey of Pakistan, 2010-2011).

Problems Faced by the Agriculture Sector

The agriculture sector faces many problems which need to be addressed in order to achieve stable economic growth in the Agriculture sector.

Firstly, lack of mechanization and technology improvement has led to a gap in productivity of the Agriculture sector (Alam and Naqvi, 2003). Currently, the farm power that is available is insufficient. The tractors which are in operation are around 464,000. This means that there is a horse power (hp) available of 0.90 as opposed to the requirement of 1.4 hp per hectare. According to the FAO suggestions for hp/ha, there should be at least 649,000 operational tractors. So, 185,000 are additionally required to achieve this ratio (Economic Survey of Pakistan, 2010-11). Similarly, there has been nothing done to combat soil erosion. No mechanism, what so ever, has been implemented to eliminate soil erosion. Even when harvesting is done, nothing is done to reinstate or improve the soil energy. Due to this, the richness of the soil is diminishing day by day. Even though Pakistan has the fertile layer thickness of more than 6 inches, its average yield is much lower than those countries that have layer of fertile soil of only 4 inches (Ali, 2010).

Secondly, there is a lot of water wastage in Pakistan. There still exists the practice of the archaic method of flood irrigation in the entire country which wastes about 50 to 60 % of water (Ali, 2010). Water use effectiveness is the primal factor for reviving agriculture sector. In Pakistan irrigation efficiency is very low and 60 percent of irrigation water is lost during transmission of water from source to the field. Almost 50 percent of the losses are at watercourse level and 33 % are at canal level due to lack of proper operation and maintenance of deteriorating canal system (Ahmed et al, 2007). This lack of proper water irrigation system has led to severe water shortages that causes fall in the crops yields (Economic Survey of Pakistan 2009-10; Alam and Naqvi, 2003).

Thirdly, due to old method of harvesting and cultivation, there is a low yield per acre in Pakistan. This indicates that Pakistan's average crop is just one fourth of that of highly developed countries. While other countries such as Nepal, India and Bangladesh are using modern scientific methods to increase their yield per acre (Ali, 2010; Planning Commission of Pakistan, 2011).

Fourthly, since small farmers are increasing in Pakistan, their deprivation of agriculture credit greatly impairs agricultural growth. These small farmers do not get credit facilities to purchase seeds, pesticides, fertilizers etc. Lack of Agricultural credit greatly impairs the growth in the sector (Economic Survey of Pakistan, 2009-10 and 2010-11; Ali, 2010; Planning Commission of Pakistan, 2011). Furthermore, feudal land lords own a large area of the lands and the farmers. These farmers are working on their lands as tenants. Such unsure circumstances of residence do not encourage work nor do they draw in capital investment (Ali, 2010; Saeed, 2007). Fifthly, salinity and water logging is rising as each day passes by and nothing useful has been done to control it. Also, the availability of water (per acre) is decreasing with the storage capacity of the current dams in Pakistan. Due to this, more and more tube wells are installed by the farmers to water their crops. This explains why salinity is starting to become the utmost concern in many areas of Sindh and Punjab (Ali, 2010; Alam and Naqvi, 2003). Sixthly, focusing on farmers and agricultural labor, less emphasis is made on spreading education and training to properly use equipments. This same problem led to the fall in growth rate in 1970's (Saeed, 2007; Ali, 2010). Finally, the most crucial problem is the low labor productivity that Pakistan faces. Compared to regional competitors such as China, India and Bangladesh; Pakistan has the lowest labor productivity of 0.2% (refer to Table-5). Pakistan's potential which has been unachieved is between 67 to 84% out of which the extension gap is 31 to 75% and the researched gap is 25 to 75%. The reasons for such a huge productivity gap include: inefficient irrigation methods, traditional farming practices, insufficient institutional credit for poor farmers, high input costs and lack of bio safety regulations etc (Planning Commission of Pakistan, 2011).

RECOMMENDED MEASURES

Steps should be taken to remove the problems of the Agriculture sector and improve the growth of Agriculture. Firstly, better technology of mechanization and more tractors should be provided to increase agricultural productivity. More tractors should be imported to provide Pakistani farmers with the technology and efficiency to compete with regional competitors. This provision should be on easy installments so that the farmers can avoid the burden of loans. More policies such as the Benazir Tractor Scheme should be introduced that provides tractors to poor farmers at subsidized rates (Economic Survey of Pakistan, 2010).

Secondly, more efficient irrigation systems should be introduced in Pakistan that stops water wastage. A new irrigation system known as the drip irrigation system has been introduced in many parts of the world. This not only saves water but also gives proper quantity of water according to the needs of plants (Ali, 2010). These efficient methods should be introduced in Pakistan as well. Thirdly, more dams should be constructed on Indus, Jehlum and Chenab rivers. This will enhance the storage capacity of water and reduce the per acre cost of all the crops. This step will also reduce the salinity chances of the lands as less tube well water will be flooded to the lands which cause salinity. The dams should also have enough capacity and strength to battle floods and droughts

that leads to decline in Agricultural growth. Fourthly, there should be an introduction of diverse Agricultural zones. For example, because Multan is famous for the production of its Citrus and Mangoes so it should be turned into the Citrus and Mango zone by which these fresh produce must be exported. Not only would this improve the agro based industry but would enhance foreign earning and reserves. Regarding this, there is a dire need for the Pakistan Agricultural storage and services corporation to take the necessary steps to implement this strategy (Ali, 2010). Fifthly, agriculture needs to be more competitive by introducing modernized packaging, storing and food processing especially for perishable commodities like fruits, vegetables, milk and meat products (Hamid and Ahmad, 2009). Sixthly, more policies should be made to address low productivity levels in Pakistan's Agriculture. Policies should be addressed to educate farmers regarding new farming techniques through awareness programs and through T.V and radio. Seventhly, agro-based and small- scale industries should be developed to not only provide opportunities to commercialize agriculture but also encourage more employment in the rural areas (Hamid and Ahmad, 2009). Eighthly, it is extremely important to bring to an end to feudalism and lands should be given to the poor farmers. This will improve per acre yield and productivity all over Pakistan. Ninthly, more capital investment is required in the Economy and especially in the Agriculture sector of Pakistan to facilitate growth. There should be structural changes made to encourage Foreign Direct Investment in the country to promote and facilitate growth in the Agricultural sector.

Finally, more investment in Research and Development activities in the Agriculture sector should be made, not only that, more investment should be made on Human Resource Development that will lead to technical efficiency and enhance productivity and growth. All these policies and many others should be considered to improve the Agricultural growth in Pakistan.

VI. CONCLUSION

Assessing the agricultural growth over the time span of 1950 to 2010, it has been volatile with its best performance in the decades of 1960's and 1980's. The 50's experienced the lowest growth while the 70's, 90's and 2000's decades experienced moderate growth. However, the agricultural share in GDP has continuously declined over the sixty years. The changes in the divisions of the sector such as major and minor crops, livestock, fishery and forestry have all contributed to these trends. Weather changes greatly impact major and minor crops and thus adverse weather conditions during a time period had led to slow agricultural growth in that period. On the other hand, the rise in the growth rate of the livestock and fisheries since the 1980's have greatly contributed to the growth rate of the agricultural sector. However, the almost continuous negative growth in the forestry sector has also contributed to the recent slow growth.

The TFP from the 1970's to 2006 has increased continuously. Over the years, TFP has contributed more and more to the agricultural growth compared to input use. The growth rate, share in GDP, TFP and labor productivity in Pakistan indicates that in the recent time period Pakistan is quite behind its regional competitors. Among several natural calamities, other factors can be held responsible for the slow growth of agriculture in Pakistan. The country faces several problems such as lack of mechanization, water wastage, lack of modern technology, less credit availability to small farmers, feudalism, low labor productivity and lack of education to farmers about farming techniques. Addressing these problems is important for growth of the sector and ultimately of the economy.

To address these problems, some implementations are suggested such as introducing better technology such as mechanization; better packaging etc and efficient irrigation techniques to farmers; constructing more dams; inducing different agricultural zones; providing more agricultural credit; inducing capital investment in the sector especially in the form of research and development and introducing more policies such as abolishing feudalism. Implementing these recommendations and other policies aimed at developing the agricultural sector can lead to strengthening the sector and improving its growth rate.

REFERENCES

- [1]. Agriculture and Natural Resources Team of the UK. (2004). Agriculture, Growth and Poverty Reduction. Pg : 3-4. [URL: http://dfid-agriculture-consultation.nri.org/summaries/wp1.pdf](http://dfid-agriculture-consultation.nri.org/summaries/wp1.pdf)
- [2]. Ahmed, V and Amjad, R. (1984). The Management of Pakistan's Economy 1947-82. Oxford University Press. Pakistan. Pg: 65-116.
- [3]. Ahmed, K ; Chaudhary, M and Ilyas, M .(2008). Trends in Total Factor Productivity in Pakistan Agriculture Sector in Pakistan Economic and Social Review. Volume 46, No.2 (Winter 2008). Pp.117-32.
- [4]. Ahmed et al (2007). Pakistan Journal of Water Resources in Planning Commission. (2011). Government of Pakistan. Pg: 17-19. [URL:http://www.planningcommission.gov.pk/nda/PDFs/conceptual_framework_2.pdf](http://www.planningcommission.gov.pk/nda/PDFs/conceptual_framework_2.pdf)
- [5]. Ali, A; Mushtaq, K ; Ashfaq, M and Abedullah. (2008). Total Factor Productivity (TFP) Growth of Agriculture in Pakistan: Trends in Different Time Horizons. Pakistan Journal of Agriculture, Science. Volume 45(4). Pg: 508-512. [URL: http://pakjas.com.pk/upload/27334.pdf](http://pakjas.com.pk/upload/27334.pdf)
- [6]. Ali, K and Hamid, A. (1996). Technical change, technical efficiency and their impact on input demand in the agricultural and manufacturing sectors of Pakistan. The Pakistan Development Review, Volume 35(3), pp. 215-228.
- [7]. Ali, M. (2010). Agriculture problems in Pakistan and their solutions. SAP-PK Blog.
- [8]. [URL: http://sappk.wordpress.com/2010/03/08/agriculture-problems-in-pakistan-and-their-solutions/](http://sappk.wordpress.com/2010/03/08/agriculture-problems-in-pakistan-and-their-solutions/)

- [9]. Alam, S.M and Naqvi, M.H. (2003). The gap between demand and supply of agricultural products is widening day by day. N.I.A., Tando Jam.
- [10]. [URL: http://www.pakistaneconomist.com/database/cover/c2003](http://www.pakistaneconomist.com/database/cover/c2003)
- [11]. Chaudhry, M.G and Chaudhry, G.M. (1997). Pakistan's Agricultural Development since Independence: Intertemporal Trends and Explanations. Pg: 593-595.
- [12]. [URL: http://www.pide.org.pk/pdf/PDR/1997/Volume4/593-612.pdf](http://www.pide.org.pk/pdf/PDR/1997/Volume4/593-612.pdf)
- [13]. CIA- World Fact Book. (2011). China's Economy's Overview.
- [14]. [URL: https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html](https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html)
- [15]. Collin, S. and B.P. Bosworth. (1997). Economic Growth in East Asia: Accumulation VS Assimilation in A. Ali; K. Mushtaq ; M. Ashfaq and Abedullah. (2008). Total Factor Productivity (TFP) Growth of Agriculture in Pakistan: Trends in Different Time Horizons. Pakistan Journal of Agriculture, Science. Volume 45(4). Pg: 508-512. [URL: http://pakjas.com.pk/upload/27334.pdf](http://pakjas.com.pk/upload/27334.pdf)
- [16]. Economic Advisory Council. (2011). In Prabhudesai, A. (2011). Indian Economic Outlook 2011-12–GDP growth at 8.2%. Indian Business Blog.
- [17]. [URL: http://trak.in/tags/business/2011/08/01/indian-economic-growth-2011-12/](http://trak.in/tags/business/2011/08/01/indian-economic-growth-2011-12/)
- [18]. Economic Survey of Pakistan 2009-2010. Ministry of Finance. Government of Pakistan. Pg.13-15.
- [19]. [URL: http://finance.gov.pk/survey_1011.html](http://finance.gov.pk/survey_1011.html)
- [20]. Economic Survey of Pakistan 2010-2011. Ministry of Finance. Government of Pakistan. Pg.15-20.
- [21]. [URL: http://finance.gov.pk/survey_1011.html](http://finance.gov.pk/survey_1011.html)
- [22]. Fan, S; Nestorova, B and Olofinbiyi, T. (2010). China's Agricultural and Rural Development: Implications for Africa. China-DAC Study Group on Agriculture. Food Security and Rural Development.
- [23]. Federal Bureau of Statistics. (2010). In Economic Survey of Pakistan 2009-2010. Ministry of Finance. Government of Pakistan. Pg.13-15. [URL: http://finance.gov.pk/survey_1011.html](http://finance.gov.pk/survey_1011.html)
- [24]. Government of Pakistan. (1986). Pakistan Economic Survey 1985-86 in M.G, Chaudhry and G.M,Chaudhry. (1997). Pakistan's Agricultural Development since Independence: Intertemporal Trends and Explanations. Pg: 593-595. [URL: http://www.pide.org.pk/pdf/PDR/1997/Volume4/593-612.pdf](http://www.pide.org.pk/pdf/PDR/1997/Volume4/593-612.pdf)
- [25]. Government of Pakistan. (1996). Agricultural Statistics of Pakistan 1994-95 in M.G, Chaudhry and G.M,Chaudhry. (1997). Pakistan's Agricultural Development since Independence: Intertemporal Trends and Explanations. Pg: 593-595. [URL: http://www.pide.org.pk/pdf/PDR/1997/Volume4/593-612.pdf](http://www.pide.org.pk/pdf/PDR/1997/Volume4/593-612.pdf)
- [26]. Government of Pakistan. (1999). 50 Years of Pakistan in Statistics, Volume I- Summary in K. Ahmed; M. Chaudhary and M. Ilyas.(2008). Trends in Total Factor Productivity in Pakistan Agriculture Sector in Pakistan Economic and Social Review. Volume 46, No.2 (Winter 2008). Pp.117-32.
- [27]. Government of Pakistan. (1980). Support Price Policy for Wheat, Cotton, Rice and Sugarcane in A. Ali; K. Mushtaq ; M. Ashfaq and Abedullah. (2008). Total Factor Productivity (TFP) Growth of Agriculture in Pakistan: Trends in Different Time Horizons. Pakistan Journal of Agriculture, Science. Volume 45(4). Pg: 508-512.
- [28]. [URL: http://pakjas.com.pk/upload/27334.pdf](http://pakjas.com.pk/upload/27334.pdf)
- [29]. Government of Pakistan. (1982). Agricultural Statistics of Pakistan (Various issues) in A. Ali; K. Mushtaq ; M. Ashfaq and Abedullah. (2008). Total Factor Productivity (TFP) Growth of Agriculture in Pakistan: Trends in Different Time Horizons. Pakistan Journal of Agriculture, Science. Volume 45(4). Pg: 508-512.
- [30]. [URL: http://pakjas.com.pk/upload/27334.pdf](http://pakjas.com.pk/upload/27334.pdf)
- [31]. Government of Pakistan. (1997). Fifty years of Pakistan in Statistics, 1947-1997 in A. Ali; K. Mushtaq ; M. Ashfaq and Abedullah. (2008). Total Factor Productivity (TFP) Growth of Agriculture in Pakistan: Trends in Different Time Horizons. Pakistan Journal of Agriculture, Science. Volume 45(4). Pg: 508-512.
- [32]. [URL: http://pakjas.com.pk/upload/27334.pdf](http://pakjas.com.pk/upload/27334.pdf)
- [33]. Hamid, A and Ahmad, H.K. (2009). Growth and Productivity in Purview of Transitional Dynamics in Pakistan Agriculture Sector. Pakistan Economic and Social Review. Volume 47, No.1. Pg: 49-78.
- [34]. Islam, N. 1996. Growth, Poverty and Human Development.
- [35]. [URL: http://hdr.undp.org/en/reports/global/hdr1996/papers/nurual_islam.pdf](http://hdr.undp.org/en/reports/global/hdr1996/papers/nurual_islam.pdf)
- [36]. Jehangir, W.A ; Ali, N ; Rana, Z.H and Gill, Z.A. (1998). Estimating the Production Potential of Major Crops in Pakistan's Irrigated Agriculture during the 21st Century. The Pakistan Development Review. Pg: 257-277.
- [37]. Kemal, A.R and Ahmed, I. (1992). Report of the Sub-Committee on Sources of Growth in Pakistan. Islamabad: Pakistan Institute of Development Economics.
- [38]. Kemal, A.R; Muslehuddin and Qadir, U. (2002). Global Research Project: Pakistan Country Report. Dhaka: Global Research Project.
- [39]. Pakistan Economic Survey (1997-98). Statistical Supplement in K.A. Saeed(2007). The Economy of Pakistan. Revised and Updated Edition. Oxford. Pakistan Pg: 41.
- [40]. Pakistan Economic Survey (2004-05) in K.A. Saeed(2007). The Economy of Pakistan. Revised and Updated Edition. Oxford. Pakistan Pg: 41.
- [41]. Planning Commission. (2011). Government of Pakistan. Pg: 17-19.
- [42]. [URL: http://www.planningcommission.gov.pk/nda/PDFs/conceptual_framework_2.pdf](http://www.planningcommission.gov.pk/nda/PDFs/conceptual_framework_2.pdf)
- [43]. Rattso, J and Stokke, H. (2003). Learning by doing and domestic and foreign technology spillovers in Thailand: Some empirical evidence. Nordic Journal of Political Economy, Volume 29(1), pp. 47-66.
- [44]. Rosegrant, M.W. and R.E. Evenson. 1992. Agricultural Productivity and Sources of Growth in South Asia in A. Ali; K. Mushtaq ; M. Ashfaq and Abedullah. (2008). Total Factor Productivity (TFP) Growth of Agriculture in Pakistan: Trends in Different Time Horizons. Pakistan Journal of Agriculture, Science. Volume 45(4). Pg: 508-512. [URL: http://pakjas.com.pk/upload/27334.pdf](http://pakjas.com.pk/upload/27334.pdf)
- [45]. Rosegrant, M.W. and R.E. Evenson. 1993. Agricultural Productivity Growth in Pakistan and India: A Comparative Analysis in A. Ali; K. Mushtaq ; M. Ashfaq and Abedullah. (2008). Total Factor Productivity (TFP) Growth of Agriculture in Pakistan: Trends in Different Time Horizons. Pakistan Journal of Agriculture, Science. Volume 45(4). Pg: 508-512. [URL: http://pakjas.com.pk/upload/27334.pdf](http://pakjas.com.pk/upload/27334.pdf)
- [46]. Sethi, H.N. (2002). The Environment of Pakistan, Pakistan Studies. Peak Publishing. Pg.69.
- [47]. Saeed, K.A. (2007). The Economy of Pakistan. Revised and Updated Edition. Oxford. Pakistan Pg: 41.
- [48]. Zaidi, S.A. (2005). Issues in Pakistan's Economy. 2nd Ed. Oxford University Press. Pakistan. Pg: 28-38.