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POSITIONING NIGERIAN SERVICE SECTOR TOWARDS VISION 2020: STYLIZED FACTS FROM BANKING SUB-SECTOR

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Abstract. The paper investigates the relationships between institutional enactments and the challenges of Nigerian commercial banks survival (1980-2006) towards policy option for realizing vision 2020. The divergence between government expectations and banks' reality coupled with macroeconomics, and competitors' activities could create failures in the sector. Using statistical data, the authors elucidate the impact of re-engineered interventions on banks' survival over the period. The empirical results, among others, indicate that the high level unemployment rate in Nigeria poses a threat to banks' survival. The statistical output also shows that government interventions could lead to a counter-productive effect on commercial banks' strength, if not properly guided. Thus, for commercial banks to be well positioned as the nation approaches the year 2020, efforts to reduce the level of unemployment and ensure that government policies in the sub-sector are consistent and well articulated, would be rewarding.

I. INTRODUCTION

Over the past decades, the Nigerian banking industry has experienced progressive governmental interventions. The interventions have engineered unprecedented transformations with far-reaching implications on the sector's population density, the industry's structure, practices, and operational profitability. Tactfully, some banks adopted strategic merger, some scaled through with involuntary acquisition in order to sustain operational continuity, and others untimely liquidation. Therefore, identifying and distinguishing principal variables that ignited such systemic transformation

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and discontinuity involves an empirical insight. Thus, this paper examines the determinants of banks' survival in Nigeria from 1980 to 2006 towards deepening scholars' and practitioners' insight and to generate policy option for the banking sector towards the realization of 'Vision 2020'.

Vision 2020 is a government strategy initaited via the instrumentality of the Central Bank of Nigeria (CBN) with the objective of integrating and consolidating the nation's socio-economic reforms. The core aims are to make Nigeria one of the focal points in Africa's financial system, as well as to be among the top 20 largest economies in the world by the year 2020 (CBN, 2006; Soludo, 2007). The policy instruments to achieve the objectives revolve around economic, structural, legal and political reforms. To assist the CBN, other Financial Services Industry Regulators and Operators towards attaining superior financial services by 2020, the following fundamentals, among others, where highlighted: to think in a proactive, comprehensive, and consistent manner and to approach the process of the reforms with the need to grow the size of the nation's financial system and the sectors to be comparable to other emerging economies; and Industry and Regulatory Scope change from Nigeria to West Africa and Africa. The above issues gave birth to Financial System Strategy 2020 (FSS 2020), which was launched in 2006 with these issues, *inter alia*, provide one of the top 50 mega banks, and develop a consistent strategic vision for the financial system (Soludo, 2007; Financial Standard, 2008: March 20).

Historically, the Nigeria banking sub-sector has received over protection due to the indigenization policy which was instrumental for its under performance. Prior to bank capitalization reform framework, the Structural Adjustment reform was inward-looking which exerted a profound neglect of financial institutions' task in financing economic activities. This unguided reform directly sheltered and transformed the banks into somewhat 'money-changing restaurants', which Ojo (2007) referred to as 'round tripping'. To recalibrate the banks' catalyst role towards financial stability and economic growth, a fundamental capitalization and consolidation policy was instituted, which took effect by 31st December 2005. As a consequence, the number of financial institutions, 58 in 1990, increased and climaxed to 89 thereafter dropped drastically to 25 in 2005, after observed closures, mergers, and acquisitions (Asogwa, 2005; Osabuohien and Duruji, 2007).

Along this, notable econometric models and perceptual-base documentations have been achieved in developed and some in developing countries. Some of the perceptual-based documentations previously generated to investigate banks' failure attributed the episodic observation to financial

institutions' deteriorated capitalization (Alawode, 1992). Others that deliberatively examined failure among firms identified legal enactment/ government's interjection (DiMaggio and Powell, 1983; Scott, 1987), managerial ineptness (Porter, 1985) industry-specifics (Altman, 1983), macroeconomics (Friedman and Schwartz, 1963), and competition (Porter, 1980 and 1985).

In achieving the research objective, this paper investigates empirically the contributions of institutional enactment, industry competition/ macroeconomic components to the challenges in the banking sub-sector. Thus, government intervention through institutional promulgations was considered with a critical involvement of managerial efficiency and financial ratios. In this context, the research work represents among others, an attempt to establish the relationship between banks' survivability along with government interjection, macroeconomics, and industry dynamics. This becomes very crucial in this present time, when the government is canvassing and pronouncing across the globe the need to lunch Nigeria into the top 20 performing economies in the world-the core of Vision 2020. The envisaged results constitute modalities for overhauling existing policies and alternatively crafting technical measures that will reposition the banking sub-sector. The paper is structured into five sections. Next to this introductory part is the literature review and theoretical framework, followed by the methodology, analysis of data, and conclusion in that order.

II. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

LITERATURE REVIEW

The financial intermediary has been identified as a vital vehicle of complimenting the supply of financial resource needed to ignite investment towards kick-starting economic growth (Adam, 2005; Osabuohien and Duruj, 2007; Asogwa, 2005). This task induces a high density of firms and the inflow of new entrepreneurs into the business environment. Also, the banking sub-sector is capable of creating job opportunities for the citizenry within and outside the sector through trickle-down effects. However, the ability of banks to actualize these social-economic goals depends on legal regulatory framework and engineered interventions by the government. If neglected, banking sector low performance could send over-stretching effects capable of destabilizing and roll-backing a nation's economic growth. From the aforementioned, the task of the banking sub-sector is germane for economic growth.

The literature on banks' failure has concentrated on explaining its causes and consequences. Some studies (Uribe and Vargas, 2002) with the exception of Wheelock and Wilson (1995), and Whalen (1991), use duration models to explain bank failure in the United States. However, Carree (2003) argues that the process of bank liquidation that occurred in Russia during the period 1995-1998 can be explained by the period of ease in financial regulation policies that took place during the early 1990s. More so, Ebholdaghe (1994) illustrates that the variable often identify as banks discontinuity determinant in Nigeria is government interjection. Bennett and Loucks (1996) propose an empirical model to demonstrate that political influence affects the length of time from initial undercapitalization to banks' ultimate failure (survivability). Taking cognizance of government intervention in financial intermediary role, government enactment was designed into the empirical work.

Others have observed in likewise manner that macroeconomic variables determine and or contribute extensively to banks' survivability. The proponents of this thesis are Friedman and Schwartz (1963) they connected banks' failure to economic decline/decline along national income and Kaufman (1998) to economic depression. Also, the findings of Demirguc-Kunt and Huizinga (2000) linked annual growth rate of GDP and GNP per capita to establish bank failure. Further, Bikker and Hu (2002) used macroeconomic variables along GDP, unemployment rate, and interest rate differential to substantiate bank failure. In similar perspective, Molyneux and Thornton (1992) and Perry (1992) indicated a positive relationship between inflation and bank profitability which concluded that inflation exerts a strong negative impact on profitability. Others are Lowe and Rohling (1993), Laker (1999), and Gonzalez-Hermosillo, Pazarbasioghe, and Billing (1997).

In light of the above, it is imperative that managerial weaknesses' contribution to banks' failure because managerial proactiveness could have curtained the discontinuity emanating from macroeconomic under-performance. Thus, Mintzberg (1987) asserts that detecting discontinuity in any industry is through cycles of strategic convergence and divergence. This implies a strategic manoeuvring during environmental instability to avoid bankruptcy. The challenge therefore, is detecting subtle discontinuity that may undermine a banks' operation in the future. This approach was first proposed by Hussey (1980) and sustained by Porter (1985) that managerial proactiveness, allocative, and technical efficiency desensitize the organization from environmental ambiguity. Within the Nigeria context, Oluranti (1991) and Ibe (1992) identify premature hand-over of banks management to local people and Mamman and Oluyemi (1994) identified

inexperienced managers as the primary reasons for banks' failure. Also, Oluranti (1991) and Ibe (1992) observed improper accounting practices as promoters of banks insolvent in Nigeria. The study of Ebholdaghe (1994) identified undermine quality management, lack of prudent lending (Mamman and Oluyemi, 1994), and diversion of loan to non-viable borrowers as the root causes of banks failure.

An analysis of existing competitors within a concentrated niche can provide a significant insight into discontinuity in the banking industry's population. In responses, Berger and Hannan (1998) observed that banks not exposed to liberal competition exercised monopoly power and seem less efficient juxtaposed against banks subject to intense competition. However, a deregulation through government's enactment liberalizing competition could generate radical decline in some inefficient banks' profit. This assertion was demonstrated in the United States by Amel and Liang (1997) as earlier purported by Levine (1996) and recently sustained by Claessens, Demirguc-Kunt and Huizinga (2001). Further, Stiroh and Strahan (2003) observed that increase in competition due to banking sector liberalization could aggravate the weeding-out of the weak banks. Thus, this notion that competition could accelerate a decline in the population of banks in the banking sector is consistent with Porter (1985) model.

The interest rate dynamics of banks is also assumed to be affected by the degree of competition among banks. This position is generally summarized in the literature. In relative-market-power thesis, the assumption that banks with large market shares and uniquely differentiated products are capable of influencing market interest rate and loanable fund to generate significant profit (Berger, 1995). On a divergent approach, efficient-structure theory denotes that industrial concentration would intensify the general efficiency of the industry. This approach sees gradualism coming into play since efficient banks grow rapidly than inefficient banks or acquire the less efficient banks to become efficient. From the literature, it could be seen that theoretical/empirical works that bridge the gap between these variables are relevant for sufficient understanding of the problem.

THEORETICAL FRAMEWORK

The survivability of banks within Nigerian business context downplays home-breed theories to anchor the theoretical discussions. However, the research theoretical purview is not restricted to management field, rather a wide range of inter-discipline perspectives. The authors assessed population ecology theory (Hannan and Freeman, 1989) as a radical explanation of the dynamics in the banking industry. The proposition emanates from observed

intense struggle between banks for competitive dominance (Porter, 1985) and profit maximization within the domestic market. The competitive dominance relegates strategic adaptation to environmental uncertainty which sustains Darwin's concept of survival of the fittest. Although this philosophy differs proportionally from resources dependency and contingency theory, it does not negate managerial proficiency, technology, and banks' interdependency in resources utilization.

Also, another divergent propositional response to banks' survivability is the neo-institutional consideration (DiMaggio and Powell, 1983) shaping the structural density of firms in any industry. The institutional perspective (DiMaggio and Powell, 1983) prescribes normative compliance to governmental promulgation as strategic means of acquiring legitimacy. This compliance with institutional enactment is with the understanding that survival is not muscles flexing, rather strategic adaptation to a complex and rapid changing environment. As such, red-queen theory, gradualism theory, and vulgarized Darwinism take primacy, since co-evolution and compliance with legal enactments enhance survival. The co-evolution and retouched Darwinism encourages banks to evolve and adapt to institutional policy rather than justifying resources inequality and unequal competitive advantages as survivability determinants.

From the extinction and selection perspective, Drucker (1968) connects organizational discontinuity to competitive industry (market). The precept holds that different banks that operate fundamentally in the same niche cannot co-exist in equilibrium. In similar overlap, Porter (1980; 1985) attributes failure of firms to industry competitive forces resulting from core capabilities that fortified companies operations. Hence, the assumption that failure results from environmental instability (Pfeffer and Salanick, 1978) and competition are substantiated in (Drucker, 1968) age of discontinuity.

A bank's survivability could also be a derivative of manager's in-depth creativity and initiatives proactively established to facilitate operational continuity. Along this assumption, reasonable empirical documentations have connected survival to managerial proficiency. A perceptual-based comparative study within the context of Nigeria and Britain associated survival within the purview of managerial proficiency and efficiency (Nwankwo and Richardson, 1994). The assertion of managerial strategic manoeuvering (Hussey, 1980) and pre-start plan were both identified as survival facilitators. From the foregoing, the managerial rational optimization and allocative efficiency of organizational resources sustain survival. Therefore, the severity of managerial ineptness depends on rational ineffici-

ency, skills-locked and responsiveness, domestic competition, availability of alternative resources, diffusion of innovation, information, and technology.

The works of Christensen (1997) illustrate that organizational technology, agility, and (Porter, 1985) first-mover advantage promotes survival. While these approaches have the tendency of negating organizational inertia, banks have better habitual mechanism: innovation, procedure for choosing alternative mixes of operational factors, pricing, portfolio investment, interest rate, and systems for allocating resources. Therefore banks with these habitual mechanisms prosper and grow relative to other whose core capability, competencies, and managerial behaviours are less appropriate to the dictates of the competitive environment.

Nevertheless, different authors have raised the size question (Scott, 1987) within ecological perspective as survivability determinant. The assumption is that banks within the industry have common predetermined objective with respect to survival and profit maximization. As such, these banks depend on the same material and social-legal environment for technical and operational choices. This unitary characteristic permits similar environmental effects on banks' operations in the industry.

Also, the need to emphasize that poor investment climate as a dominant factor in banks' failure is vital. Over the years, economic mismanagement, pervasive corporate governance practices, hybrid of fraudulent activities and corruption (Egwakhe, 2007) among others have been observed to create pessimism in investors' perception in Nigeria. Acknowledging the comprehensive impact of this negative perception on the nation's economy, a cursory examination of the macroeconomic indicators shows poor performance. The CBN Statistical Bulletin (2005) illustrates aggregate fluctuation characterized by persistence macroeconomic volatility in inflation and unemployment, exchange rate, and poor infrastructure.

Although these are exogenous and fiscal policy determined, these factors authentically proxy for analyzing banks' failure. Further volatility in productivity, price, and monetary (lending/borrowing interest rate) could ignite banks' discontinuity. Macroeconomic sub-components: gross domestic product (GDP) and real interest rate can measure aggregate performance. Also, the quantity of loanable funds determines the dynamics of interest rate and how banks maximize profit. The cost of borrowing and the actual loanable funds demanded are inversely related due to the invisible hand.

The Nigerian banking sub-sector provides an excellent insight into the determinants of financial institution discontinuity in relation to government

intervention or regulatory dynamics. The system has undergone some transformations over the past decades. Other services sub-sectors like insurance, aviation, among others, have witnessed similar survival challenge. However, this paper is focusing on the banking sub-sector by drawing some empirical fact. From the 1980s, the banking sector has undergone significant changes through systemic abolition of indigenous policy to capital-base intervention. Some of the reforms were unguided in adoption and foreign imposed while others were home-crafted to overhaul the hiccups in the economy. In 2003, a further intervention in the industry framework engineered a drastic reduction in the population of existing financial intermediary. This act created voluntary acquisitions, mergers, cessation of operations, but kick-started efficient banking sector that operates today.

III. METHODOLOGY AND MODEL SPECIFICATION

A unique way of conceptualizing banks' survivability (which can lead to discontinuity in operation) is to examine the disappearance of banks from the population density. This approach revamps population ecology theory application to banks' survivability within a niche in relation to institutional enactment. Therefore, individual bank's survivability is considered as the appropriate unit of observation, with the understanding that their dynamics are partially autonomous. Hence, banks' failure categorization was anchored on: Disbandment (a complete dissolution/cessation of operation) and Absorption (a bank is absorbed or disappeared through merger and acquisition to a dominant bank respectively). These parameters permit comprehensive approach to the observed failure, merger, and acquisitions within the industry from 1980 to 2006.

This paper investigates the effect of Government policy interjection, industry-specific with macroeconomic variables on banks' survivability. The research utilizes data from CBN Statistical Bulletin and annual reports over the period 1980-2006. In crafting the model, hazard model (Cox, 1972; Kiefer, 1988; Hannan and Carroll, 1992; Baum, 1996; and Wheelock and Wilson, 1995) relevancy to the work was considered. However, Carree (2003) survival parametric model used in the study of banks in Russia was favoured. Anchored on previous empirical works and contextual differences between studied nations and Nigeria, the researchers adopted internal procedures to capture the industry dynamics and interventions that were catalytic to banks' failure.

The duration considerations along military and democratic dispensations policies differential, was cushioned with the assumption that in traditional

model duration is considered as being continuous (Davidson and Mackinnon, 2004). Towards achieving the research aforementioned objectives, a linear model was estimated. The model examines the effect of institutional enactment on banks population and sustained it with competition, macroeconomic, and other dummy factors as accelerators of banks' failure. Other variables observed from the literature that were included in the model include: real GDP growth rate, inflation rate, and unemployment rate.

The model is stated functionally below:

$$\beta\kappa\text{Stren} = f(RGR, INFrt, INTrt, Urt, ENACT, \varepsilon) \quad (1)$$

Where:

$\beta\kappa$Stren	Banks' strength representing survivability
RGR	Real domestic product growth rate
INFrt	Inflation rate
INTrt	Lending rate
Urt	Unemployment rate
ENACT	Dummy variable measuring government policies in the sub-sector
ε	is the disturbance or idiosyncratic error is *iid* and $N(0, \sigma^2)$.

This can be restated as:

$$\beta\kappa\text{Stren} = \psi_0 + \psi_1 RGR + \psi_2 INFrt + \psi_3 INTrt + \psi_4 Urt + \psi_5 ENACT + \varepsilon \quad (2)$$

The *a priori* expectations is such that $\psi_i > 0$ ($i = 0, 1, 3$) and $\psi_j <$ ($j = 2,4$) < 0.

The dependent variable ($\beta\kappa$Stren) is proxied by the ratio of total commercial banks financial asset to GDP. This is because it could be conjectured that when the financial base of banks is "strong" the banks would be able to meet up with their obligations and hence the better the possibility of survival. And to bring it to the macroeconomic dimension of the economy, weakness could deflate the GDP. More so, this proposition was included amongst the new data-base for banks efficiency indicators by Thorsten, Demrguc-Kunt and Levine (2000). In addition, Soludo (2006) observed that the total asset of Nigerian commercial banks increased by 79.7% between 2003 and 2006, even though the number of banks drastically reduced from 90 to 25 within the same period. Thus, the use of total banks

financial assets as a measure of their strength appears better the use of number of banks.

Further, any significant growth in *RGDP* is expected to reduce the probability of closure. While a proportional decrease in inflation can also affect survivability rate. If otherwise, failure is expected to intensify over the period covered. The above estimated equation assumes government interventions to either strengthen the operational capital-base or deselect the inefficient banks in the population. Government intervention was dummy coded along a value of 1 if government interjects and 0 if otherwise with a failure option probability of ±. *ENACT* represents institutional policy or government interventions to re-engineer the dynamics in the industry towards sector's efficiency. The dummy variable was obtained by representing the years that witnessed major reforms in the financial sector as 1 and 0 otherwise following the reform chronology of Osabuohien and Duruji (2007) and Asogwa (2005). The variable captures the socio-political environment in which the banks operate as well as the competitive aptness vis-à-vis investors' perception of the nation's banking sub-sector.

The *INFrt* examines the cyclical business cycle in the nation, which gives an indication of the macroeconomic environment that the banks operate. The researchers expect that a stable economy should have stable prices, which would enhance macroeconomic performance (Adegbite, 2007). While *Urt* gives an indication of the patronage that the banks receive from the banking public. The high unemployment rate reflects the low level of disposable income in the society. Therefore, it is expected that an increase in *Urt* would reduce the citizens' income earning prowess, which would lead to low propensity to save. Interest rate (*INTrt)* represents the attractiveness of banks loan, which illustrates their credit creation ability in the sector.

IV. ANALYSIS OF DATA

The data used to estimate econometric model was collected from CBN statistical bulletin (2005) and annual report (2006) on the stated variables, which permit comprehensive approach to the observed issues within the banking-sub-sector from 1980 to 2006. The variables (except the dummy) were logarithmically (log) transformed. The log-linear form is usually considered most appropriate for empirical studies. This is because the functional form gives elasticity coefficients directly. In addition, log-linear form reduces the problem of heteroscedasticity in an empirical analysis (Rehman, 2007; Osabuohien and Egwakhe, 2008). The data were subjected to econometric tests and the results are presented in Table 1.

TABLE 1a

The Regression Result (1980-2006)
Dependent Variable: LOG ($\beta\kappa$Stren)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	2.3084	0.8286	2.7859	0.0111
ln (INFrt)	–0.0960	0.1048	–0.9166	0.3697
ln (INTrt)	0.8405	0.2428	3.4618	0.0023*
ENACT	–0.1153	0.1512	–0.7628	0.4541
ln (Urt)	–0.4120	0.2399	–1.91814	0.0905**
ln (RGR)	0.0094	0.0171	0.5504	0.5878
R-squared	0.651313	F-statistic		7.845178
Adj. R-squared	0.568292	Prob (F-statistic)		0.000268
S.E. of regression	0.331419	Akaike info criterion		0.822263
Sum squared resid	2.306608	Schwarz criterion		1.110227

* and ** means significant at 1% and 10 % respectively.

TABLE 1b

Some Standard Diagnostic Tests

J-B normality Test	0.1336 (0.6285)*
B-G Serial LM Test	1.9917 (0.6300)*
White Heteroskadasticity Test	2.4958 (0.1099)*

*denotes that the null hypotheses cannot be rejected at 10%.

Besides the use of logarithmic transformation to remove the possible errors in the results, the study carried out some diagnostic tests, which are reported in Table 1b. From the table, it is clear that Jargue-Bera (J-B) test of normality indicates that the error terms in the model were distributed identically independently. In a similar manner, the B-G (Breuch-Godfrey) serial correlation LM test emphasizes that the results obtained from the model were free from first order serial correlation. More so, the White's heteroskadasticity test revealed that the OLS' homoscedasticity assumption

was not violated by the regression results (See Gujarati, 2003 for details about their applications).

With regards to the chosen variables, the R-squared value shows that about 65.13% of the variations in the dependent variable was explained jointly by the explanatory variables. While the F-statistic, was statistically significant at 1%, apparently indicates that the formulated model had a high goodness of fit and would be useful in making inferences. This is equally stressed by the sum of error of regression, which points out that the errors were minimized in the estimation process.

On the respective individual independent variable basis, the results in Table 1a reveal that all the variables (government policy variable) came out with the expected sign. However, only two were statistically significant. The rate of unemployment with significant negative coefficient indicates that the prevailing unemployment level in Nigeria is a great threat to the strength (survival) of the Nigerian commercial banks. This is not out of place as it is expected that only those that earn income have income for patronage at the commercials banks. And when the level of 'bankability' of most citizens is reduced it would have negative impact on the banks' survival. The result equally shows that the growth rate of the economy had the potency of strengthening the commercial banks performance given the positive result. However, such potency had not significantly impacted them. This could mean that economies with higher performance in economic growth would have solid banks that propelled them into growth rather than the oscillation in the Nigerian phenomenon.

Another important finding from the result is that the lending rate had positive and significant influence on the strength of the commercial banks. The reason may be that as the leading rate increases, the more the returns banks can make from lending. This seems to contradict interest-investment relation, but the finding can be mirrored from macroeconomic viewpoint that a high rate of interest has the ability of attracting more portfolios (foreign capital inflow in general). The government policy variable had negative sign. This interpretation here is that government policy can lead to a counter-productive effect on commercial banks' strength in the long run (though it was not significant). This could also have resulted from the frequency of policy changes that is usually witnessed in most of the sectors in Nigeria especially the banking sector.

What the findings above inform is that within the period covered by this study, government policies need to be consistent and engineered policies change ought to be strategically essential. Most importantly, for the

commercial bank to be well positioned as the nation approaches the year 2020, efforts to reduce the level of unemployment would be highly rewarding. As a result the rate of 'bankabilty' of the citizens will be high, which augurs well for the sub-sector. This is becoming very obvious in recent times with the magnitude of patronage to the stocks and share purchased by ordinary Nigerians.

V. CONCLUSION

The Nigerian banking sub-sector like others in the service sector of the economy have experienced some measures of governmental interventions that engineered transformations with far-reaching implications on the sector's strength and survivability. The above motivated this paper to investigate the impact of enactments and to suggest policy options towards positioning the Nigerian commercial banks within the framework of vision 2020. The study subjected the data sourced from CBN statistical bulletin and annual reports to regression techniques.

The results from the study show that the unemployment rate had significant negative influence on the strength of commercial banks, meaning that the level of unemployment in Nigeria portends a serious challenge to the survival of the Nigerian commercial banks. Thus, it reduces the level of citizens' 'bankability' which would have negative impact on the banks. The study equally established that the lending rate of banks had positive and significant influence on the survival of the commercial banks. In addition, the government policy variable had negative sign, which means that government policy can be counter-productive, but induced efficiency in the system. The implication of the findings above is that government policies need to be consistent and strategically fashioned to kick-start positive change. Additionally, for the commercial bank to be well positioned especially along Vision 2020, efforts should be directed at reducing the level of unemployment.

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MEASURING INEQUALITY OF CONSUMPTION AND OPPORTUNITIES IN PAKISTAN 2001-02 and 2004-05

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Abstract. Inequality is increasingly recognized as an important issue in policy discussions. The paper examines the changes in inequality profile from the most recent nation-wide household survey data. The results suggest that consumption inequality increased in Pakistan. Though inequality increased in both rural and urban areas, the rise in inequality was more pronounced in urban areas than in rural areas. While both the poorest and middle income groups upto 7th decile lost their consumption share, the richest last two deciles gained in their consumption share implying that inequality in Pakistan increased at the expense of the poor and the middle income groups. The ratio of the highest to the lowest decile which measures the gap between the richest and the poorest also worsened indicating an increased rich-poor gap over the period.

The results relating to inequality of opportunities in education and health suggest a high degree of inequality across consumption deciles. The rich-poor gap was high in literacy, enrollment rates at primary, middle and matric level of the school going population by consumption deciles. Nevertheless, these indicators improved between 2001-02 and 2004-05 not only for the country as whole but also for the rural and urban areas. These results suggest that while rapid economic growth seems to have increased consumption inequality, the rise in government spending on education and health appears to have reduced the inequality of opportunity during this period.

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I. INTRODUCTION

With the rising economic growth rates, the discussion of inequality stimulated greater passion in Pakistan in mid of the recent decade. The inequality is viewed as a main cause of continuing poverty. Inequality is, therefore, being increasingly recognized as an important issue in policy discussions. This paper measures inequality in Pakistan between 2001-02 and 2004-05 using the most recent household survey data. Although an individual's income is an indicator of the command of an individual over goods and services that can be purchased in the market and that contribute directly to well-being, incomes of the poor often vary over time, particularly in rural areas where income depends on rain-fed agriculture. While majority of the poor in Pakistan derive their income from agriculture, the consumption expenditure seems to be a better indicator than income for measurement of inequality in the country. Therefore, adult equivalent household consumption expenditure is used as proxy for income in this paper to examine the changes in inequality between 2001 and 2005.

Like poverty inequality has various dimensions. Limiting the concept of inequality to the income or consumption is not appropriate. Income or consumption inequality is an outcome of the prevailing inequalities in the socio-economic structure of a society. Opportunities to earn a decent living are not equally distributed in the society. Individual may be constrained to earn income to enjoy consumption at the minimum acceptable level due to inequality in educational opportunity, access to health and other essential services. In addition to consumption inequality, a comparative profile of inequality of opportunities between 2001 and 2005 is also presented here.

The organization of the paper is as follows: Section II briefly reviews the inequality in Pakistan. Section III discusses the measurement of inequality. Section IV discusses the household data sets which have been used to estimate changes in inequality in Pakistan in this study. Section V examines the changes in consumption inequality in Pakistan between 2001-02 and 2004-05. Section VI examines changes in inequality of opportunities. Finally, Section VII draws some conclusions from the analysis.

II. REVIEW OF INEQUALITY IN PAKISTAN

The issue of income inequality in Pakistan has been central in the policy discussions since the 1960s. Since then, a number of attempts have been made to examine income or expenditure inequality. Existing work on inequality income or consumption inequality in Pakistan include Bergen (1967), Azfar (1973), Khundkar (1973), Naseem (1973), Mahmood (1984),

Kruik and Leeuwen (1985), Ahmad and Ludlow (1989), Anwar (1997), Ahmad (2000), FBS (2001), World Bank (2003), Anwar (2004) and Anwar (2005). However, most of the studies examine the extent of inequality by estimating various inequality indices. This approach has a limitation of sensitivity of changes in different indices since the inequality indices are sensitive to different part of income distribution. For example, Gini coefficient is more sensitive to the middle part of income distribution. Therefore, it may not be possible for this to capture small change in extreme part of income distribution. However, from a policy intervention point of view, it is important to disaggregate the population into deciles with ascending income or consumption so as to capture changes in different part of income distribution.

While existing work hardly disaggregates the population into deciles to examine inequality across population lowest to the highest income deciles, the inequality trends implied by these studies show a declining trend in income or consumption inequality between 1963-64 and 1970-71. The evidence in the 1970s and 1980s suggests that inequality seems to have worsened over these two decades. It appears that rapid economic growth seems to have increased inequality during the 1970s and 1980s. However, inequality continued to rise in Pakistan in the 1990s which has been the period of slow growth. Thus, it appears that while rapid growth worsened the inequality during the 1970s and 1980s, the slow growth also increased inequality in Pakistan during the 1990s.

A review of literature also shows that the concept of inequality in Pakistan has been confined to the income or consumption dimension of inequality. It should be recognized that income or consumption inequality is an outcome of existing inequalities in the socio-economic structure of a society. Individuals are constrained to earn income to enjoy consumption at the minimum acceptable level due to inequality in educational opportunity, access to health and other essential services. Existing work on inequality shows that these aspects of inequality have not received adequate attention in Pakistan. Therefore, this paper is an attempt to examine the changes in inequality of opportunities between 2001-02 and 2004-05.

It is worth mentioning that achieving high economic growth has been the main policy focus of the government during the last five years. Consequently, growth has been restored and GDP accelerated to 8.4 in 2004-05. Most recent data of household survey namely, Pakistan Social and Living Standard Measurement Survey (PSLSM), 2004-05 conducted by Federal Bureau of Statistics has been made available. The last household survey —

Pakistan Integrated Household Survey was carried out in 2001-02. These surveys provide information on income and consumption of household as well as the data on the availing of social services by them. In this situation, it would be interesting to examine the changes in inequality during this period of rapid economic growth 2001-02 and 2004-05.

III. MEASUREMENT OF INEQUALITY

There are several approaches for the measurement of inequality among individuals or households (Atkinson 1970; Cowell 1977). The Gini coefficient is a well-known measure and derived from the Lorenz curve, which plots the cumulative share of total income (or consumption), Y_i earned by households or population, X_i ranked from bottom to top. It can be expressed as follows:

$$G = 1 - \sum_{i=0}^{k-1} \left(Y_{i+1} + Y_i\right)\left(X_{i+1} - X_i\right)$$

Where Y_i are arranged in ascending order by their subscripts. The Gini coefficient is most sensitive to the middle part of distribution since it depends on the rank order weights of income recipients and on the number of recipients within a given range.

Although a number of different inequality indices[1] have been proposed on different bases, an inequality measures ought to satisfy a minimal set of fundamental properties. These included, (*a*) Inequality Aversion; (*b*) Replication Invariance; and (*c*) Anonymity.

Inequality aversion is also referred to as Pigou-Dalton Principle of transfer sensitivity. The principle requires that whenever a unit income is transferred from a richer person to a poorer person and such a transfer does not reverse the ranking of the two individuals, then the measure of inequality should decrease. Replication Invariance requires that if several populations identical in every respect were combined, inequality in the combined population would be the same as for the separate ones. Anonymity presumes that appropriate adjustment for differences in needs has been made. Gini coefficient satisfies these minimal sets of properties and is the most commonly used measure of inequality. Therefore, this paper estimates Gini coefficient to measure changes in income inequality in Pakistan. However, a main limitation of the Gini coefficient as measure of inequality is that it is

[1]For a good discussion of inequality measures See Kakwani (1980, 1990), Cowell (1993), Morris and Preston (1986), Lambert (1989) and Culyer and Wagstaff (1997).

most sensitive to the middle part of distribution than to that of extremes because it depends on the rank order weights of income recipients and on the number of recipients within a given range. Thus, Gini coefficient may not capture small changes in extreme parts of income distribution. In this situation, it is important to a look at income shares earned by deciles *i.e.* from the poorest 10% to the richest 10% of population. Finally, the paper also measures the gap between the richest and the poorest individual by computing the ratio of the highest to the lowest deciles over the period.

IV. THE DATA SET

This paper uses primary data of the two household surveys namely Pakistan Integrated Economic Survey (PIHS), 2001-02 and Pakistan Social and Living Standard Measurement Survey (PSLSM), 2004-05 periodically conducted by the Federal Bureau of Statistics (FBS), Government of Pakistan Islamabad. These surveys provide information on income and consumption of household as well as the data on their access to social services. The universe of these surveys consists of all urban and rural areas of the four provinces of Pakistan defined as such by the 1998 Population Census. The primary data files contain population weights, which are designed to obtain the nationally representative estimates of population. The sample of PIHS 2001-02 consists of 14,705 households whereas sample of PSLSM, 2004-05 consists of 14,706 household both rural and urban in all the four provinces of Pakistan.

These surveys contain information and data on consumption expenditure of more than 196 food and non-food item collected from each household. The PIHS 2001-02 provide detailed information and data on household income which can be used to analyze income inequality. On the contrary, PSLSM, 2004-05 do not provide detailed information and data on household income. Thus, examining changes in income inequality from these two surveys is not comparable. Furthermore, due to the temptation of tax avoidance income components are less reliably reported to surveyors than are expenditure items. Therefore, household consumption expenditure on non-durables is used as an alternative for 'permanent income' for the measurement of inequality in this paper.

V. CHANGES IN CONSUMPTION INEQUALITY

This section evaluates the trends in consumption inequality between 2001-02 and 2004-05 from two household surveys — PIHS 2001-02 and PSLSM 2004-05. To take an account of differences in needs and economies of scale

in household consumption, this paper corrects the data for household size and composition using 1 for first adult and 0.8 for all family members.

The results indicate that consumption inequality as measured by Gini coefficient has increased in Pakistan between 2001 and 2005 (*see* Table 1). The regional distributions both for rural and urban areas also reflect an increase in inequality over the period. Table 1 also reports the percentage changes in Gini coefficient for Pakistan as well as the rural and urban regions. Changes in inequality at regional level indicate that increase in Gini coefficient was larger in rural areas compared to the urban areas.

TABLE 1

Gini Coefficient and Consumption Decile by Region for Pakistan Between 2001-2005

	PIHS 2001-02			PSLM 2004-05			% Change		
	Urban	Rural	Overall	Urban	Rural	Overall	Urban	Rural	Overall
Gini coefficient									
	32.27	**23.67**	**27.52**	**33.88**	**25.19**	**29.76**	**5.0**	**6.4**	**8.1**
Consumption Share by Decile									
Decile 1	2.3	5.6	4.4	2.0	5.5	4.1	–13.0	–1.8	–6.8
Decile 2	3.0	7.2	5.7	2.8	7.2	5.4	–6.7	0.0	–5.3
Decile 3	3.7	8.1	6.5	3.3	8.2	6.2	–10.8	1.2	–4.6
Decile 4	4.4	8.8	7.2	4.3	8.8	7.0	–2.3	0.0	–2.8
Decile 5	5.6	9.3	8.0	5.4	9.3	7.8	–3.6	0.0	–2.5
Decile 6	6.5	10.1	8.8	6.2	10.3	8.6	–4.6	2.0	–2.3
Decile 7	8.9	10.5	9.9	7.6	11.3	9.8	–14.6	7.6	–1.0
Decile 8	10.5	11.9	11.4	10.8	11.8	11.4	2.9	–0.8	0.0
Decile 9	14.6	13.3	13.8	15.3	13.4	14.2	4.8	0.8	2.9
Decile 10	40.4	15.1	24.2	42.4	14.2	25.6	5.0	–6.0	5.8
Ratio of Highest to Lowest									
	17.57	**2.70**	**5.50**	**21.20**	**2.58**	**6.24**	**20.7**	**-4.4**	**13.5**

Source: Computed from PIHS, 2001-02 and PSLM, 2004-05.

It is important to note that inequality is generally higher in urban than in rural areas. However, these results implied by the Gini coefficient may suppress significant differences in changes in different parts of distribution, which may not be reflected by the inequality measure. Table 1 also reports the percentage share of consumption expenditure by deciles between 2001 and 2005 for overall Pakistan as well as the rural and urban regions. The percentage share of expenditure by deciles indicate that while the lowest 70% lost their consumption share, the last two deciles the highest 20 percent gained in their consumption share implying that inequality in Pakistan

increased at the expense of the poor and the middle income groups during this period. The ratio of the highest to the lowest deciles which measures the gap between the richest and the poorest also worsened from 5.50 in 2001 to 6.24 in 2005 indicating an increased rich-poor gap over the period. While the gap between rich-poor increased significantly in urban areas, it declined marginally in rural areas over the period. Table 1 also reports the percentage changes in deciles for Pakistan as well as the rural and urban regions. The percentage changes in deciles indicate that larger changes occurred in urban areas compared to rural areas. Consequently, consumption shares of the lower deciles in urban areas were eroded more rapidly compared to rural areas. In rural areas, the share of the richest 10 percent declined more rapidly than the lowest 10 percent whereas changes in some lower deciles were stagnant implying that rural inequality played a little role in rise in overall inequality in Pakistan over this period.

VI. CHANGES IN OPPORTUNITIES INEQUALITY

Like poverty, inequality has many dimensions. Often the analysis is limited to monetarily-measurable dimension related to individual income or consumption. However, inequality can be linked to inequality in opportunities also called non-income dimensions *i.e.* inequality in educational opportunity or inequality in access to health and other amenities of life. This section discusses the trends in non-income dimensions inequality between 2001 and 2005.

To examine the distribution of educational opportunities, performance indicators of education have been computed by consumption deciles of population. Table 2 reports the literacy rates of the population by consumption decile between 2001 and 2005. The literacy rates reflect a high degree of inequality across consumption decile. In 2001, the literacy rate of 10 years and above for the poorest decile was 24 percent compared to 72 percent of the richest decile. Similarly, adult literacy rate (15 years and above) for the poorest decile was 22 percent compared to 71 percent of the richest decile. The disparity among the poor between rural and urban areas was very high. For instance, adult literacy rate of the poorest decile in rural area was 19 percent compared to 53 percent in urban area. However, both literacy rates — 10 years and above and the adult literacy seem to have improved for the country as whole as well as the rural and urban areas. Not only the distribution of literacy rates but also the average literacy rates have improved during the last five years. The percentage changes in deciles reflect that larger improvement occurred among the lower deciles compared to

TABLE 2

Changes in Literacy Rates by Consumption Decile, 2001-02 and 2004-05

	PIHS 2001-02			PSLM 2004-05			% Change		
	Urban	Rural	Overall	Urban	Rural	Overall	Urban	Rural	Overall
Aged 10 and above									
	64	**36**	**45**	**72**	**45**	**54**	**12.5**	**25.0**	**20.0**
Decile 1	35	21	24	53	33	37	51.4	57.1	54.2
Decile 2	43	27	30	50	36	39	16.3	33.3	30.0
Decile 3	44	29	32	58	39	43	31.8	34.5	34.4
Decile 4	50	32	36	59	42	46	18.0	31.3	27.8
Decile 5	55	35	40	66	44	50	20.0	25.7	25.0
Decile 6	62	37	44	68	45	52	9.7	21.6	18.2
Decile 7	66	39	48	71	47	55	7.6	20.5	14.6
Decile 8	65	43	50	74	52	60	13.8	20.9	20.0
Decile 9	74	48	58	82	58	69	10.8	20.8	19.0
Decile 10	86	56	72	90	63	80	4.7	12.5	11.1
Ratio of Highest to Lowest									
	2.46	**2.67**	**3.00**	**1.70**	**1.91**	**2.16**	**–30.9**	**–28.5**	**–28.0**
Adult Literacy (Aged 15 and above)									
	63	**34**	**43**	**69**	**40**	**50**	**9.5**	**17.6**	**16.3**
Decile 1	35	19	22	47	27	31	34.3	42.1	40.9
Decile 2	41	25	28	44	30	33	7.3	20.0	17.9
Decile 3	43	27	30	54	33	38	25.6	22.2	26.7
Decile 4	49	29	34	54	36	41	10.2	24.1	20.6
Decile 5	54	32	38	60	39	45	11.1	21.9	18.4
Decile 6	59	34	41	64	39	47	8.5	14.7	14.6
Decile 7	64	36	46	67	43	51	4.7	19.4	10.9
Decile 8	63	40	48	70	47	56	11.1	17.5	16.7
Decile 9	72	46	56	80	53	65	11.1	15.2	16.1
Decile 10	85	53	71	89	59	78	4.7	11.3	9.9
Ratio of Highest to Lowest									
	2.43	**2.79**	**3.23**	**1.89**	**2.19**	**2.52**	**–22.2**	**–21.5**	**–22.0**

Source: Computed from PIHS, 2001-02 and PSLM, 2004-05.

upper deciles for literacy rates across the country (Table 2). The ratio of highest to the lowest deciles reflects the gap between the rich and the poor. The higher the ratio, the higher is the gap between rich and the poor. Notably, this ratio declined for both literacy rates between 2001 and 2005 implying improvement of the conditions of the poorest.

TABLE 3

Changes in Gross Enrollment Rates by
Consumption Decile, 2001-02 and 2004-05

	PIHS 2001-02			PSLM 2004-05			% Change		
	Urban	Rural	Overall	Urban	Rural	Overall	Urban	Rural	Overall
Primary Level (Age 5 to 9 and Class 1 to 5)									
	91	**66**	**72**	**108**	**78**	**86**	**18.7**	**18.2**	**19.4**
Decile 1	61	40	43	81	59	63	32.8	47.5	46.5
Decile 2	62	55	57	80	72	73	29.0	30.9	28.1
Decile 3	69	55	58	98	76	80	42.0	38.2	37.9
Decile 4	81	63	67	99	80	84	22.2	27.0	25.4
Decile 5	90	71	76	115	80	89	27.8	12.7	17.1
Decile 6	93	73	78	122	81	90	31.2	11.0	15.4
Decile 7	102	78	85	109	79	87	6.9	1.3	2.4
Decile 8	106	87	93	117	88	98	10.4	1.1	5.4
Decile 9	111	88	95	125	97	109	12.6	10.2	14.7
Decile 10	109	103	106	122	105	115	11.9	1.9	8.5
Ratio of Highest to Lowest									
	1.79	**2.58**	**2.47**	**1.51**	**1.78**	**1.83**	**–15.6**	**–31.0**	**–25.9**
Middle Level (Age 10 to 12 and Class 6 to 8)									
	63	**32**	**41**	**66**	**38**	**46**	**4.8**	**18.8**	**12.2**
Decile 1	29	12	16	37	23	26	27.6	91.7	62.5
Decile 2	34	21	23	41	24	27	20.6	14.3	17.4
Decile 3	41	22	26	50	30	34	22.0	36.4	30.8
Decile 4	58	29	34	55	35	40	–5.2	20.7	17.6
Decile 5	41	31	34	43	33	36	4.9	6.5	5.9
Decile 6	64	31	40	62	39	46	–3.1	25.8	15.0
Decile 7	74	39	50	77	45	54	4.1	15.4	8.0
Decile 8	65	47	53	83	52	63	27.7	10.6	18.9
Decile 9	78	56	64	78	65	70	0.0	16.1	9.4
Decile 10	95	64	80	100	72	89	5.3	12.5	11.3
Ratio of Highest to lowest									
	3.28	**5.33**	**5.00**	**2.70**	**3.13**	**3.42**	**–17.7**	**–41.3**	**–31.6**
Matric Level (Age 13 to 14 and Class 9 to 10)									
	64	**32**	**42**	**68**	**38**	**48**	**6.3**	**18.8**	**14.3**
Decile 1	18	6	9	38	15	20	111.1	150.0	122.2
Decile 2	35	16	20	42	16	22	20.0	0.0	10.0
Decile 3	31	19	22	37	26	28	19.4	36.8	27.3
Decile 4	46	26	31	46	30	34	0.0	15.4	9.7
Decile 5	44	24	29	49	36	41	11.4	50.0	41.4
Decile 6	49	35	39	56	43	47	14.3	22.9	20.5
Decile 7	68	33	45	69	45	53	1.5	36.4	17.8
Decile 8	61	50	54	72	52	61	18.0	4.0	13.0
Decile 9	101	57	74	96	81	88	-5.0	42.1	18.9
Decile 10	111	91	102	102	78	94	-8.1	–14.3	–7.8
Ratio of Highest to Lowest									
	6.17	**15.17**	**11.33**	**2.68**	**5.20**	**4.70**	**–56.6**	**–65.7**	**–58.5**

Source: Computed from PIHS, 2001-02 and PSLM, 2004-05.

Table 3 reports gross enrollment rates at primary, middle and matric level of the school going population by consumption deciles between 2001 and 2005. There appears to be a great inequality in distribution of educational opportunities from the lowest to the highest deciles as primary enrollment rate for overall Pakistan was 43 percent for poorest 10% compared to deciles. Large rural-urban differences also exist in gross primary enrolment rate. The gross 106 percent for the richest 10% in 2001. Moving from the primary to the middle and matric level the gap widens. For instance, the gross enrollment rate at matric level was 9 percent for poorest 10% against 102 percent for the richest 10% in 2001. Nevertheless, gross enrollment rates improved between 2001 and 2005 not only for the country as whole but also for the rural and urban areas. Table 3 also reports the percentage changes in deciles for gross enrolment rates. The percentage changes in deciles reflect that larger improvement in gross enrolment rates at primary, middle and matric levels occurred among the lower deciles compared to upper deciles across the country. Generally, improvement in gross enrolment rates at primary, middle and matric levels were more pronounced in rural areas than in urban areas.

The ratio of the highest to the lowest deciles also declined at primary, middle and matric level highlighting an improvement of the educational opportunity for the poorest segment of the population. Net enrolment rate which is a refined measure for educational attainment portrays even a poorer outcome in terms of distribution of educational opportunity. The net primary enrollment rate for overall Pakistan was 24 percent for poorest 10% compared to 67 percent for the richest 10% in 2001 (*see* Table 3A). Substantial rural-urban differences exist in the distribution of net primary enrolment rates. These differences further widen in moving from primary to the middle and matric level. Strikingly, net enrollment rates at middle and matric level were respectively just at 6 and 1 percent for poorest 10% compared to 38 and 27 percent for the richest 10% in 2001. The gap albeit is still high, nonetheless, narrowed in 2005.

HEALTH

Table 4 reports indicator of immunization of children aged 12-23 months of population by consumption deciles between 2001 and 2005. A high level of disparity across consumption deciles is reflected in immunization. In 2001, proportion of fully immunized children aged 12-23 was at 31 percent among the poorest 10% as against 78 percent among the richest 10%. However, the disparity between the rich and the poor as well as the rural and urban areas narrowed remarkably in 2005.

TABLE 4

Percentage of Children Aged 12-23 Months
that Have Been Fully Immunized

	PIHS 2001-02			PSLM 2004-05			% Change		
	Urban	Rural	Overall	Urban	Rural	Overall	Urban	Rural	Overall
	70	**46**	**53**	**88**	**76**	**80**	**25.7**	**65.2**	**50.9**
Decile 1	63	25	31	82	72	73	30.2	188.0	135.5
Decile 2	55	50	51	73	73	73	32.7	46.0	43.1
Decile 3	41	45	44	89	80	81	117.1	77.8	84.1
Decile 4	73	45	52	84	71	74	15.1	57.8	42.3
Decile 5	63	45	50	73	73	73	15.9	62.2	46.0
Decile 6	79	47	55	87	76	79	10.1	61.7	43.6
Decile 7	77	55	62	92	79	83	19.5	43.6	33.9
Decile 8	61	56	58	93	81	85	52.5	44.6	46.6
Decile 9	84	58	68	94	84	88	11.9	44.8	29.4
Decile 10	95	59	78	99	89	94	4.2	50.8	20.5
Ratio of Highest to Lowest									
	1.51	**2.36**	**2.52**	**1.21**	**1.24**	**1.29**	**–19.9**	**–47.5**	**–48.8**

Source: Computed from PIHS, 2001-02 and PSLM, 2004-05.

Table 4 also reports the percentage changes of percentage of fully immunized children by deciles for Pakistan as well as the rural and urban regions. The percentage changes in deciles show that substantial changes among lower deciles occurred in rural areas compared to urban areas implying not only the rich poor gap but also the rural urban disparity improved over the period. Consequently, the percentage of children fully immunized increased from 53 percent in 2001 to 80 percent in 2005. Indicators related to utilization of maternal health facilities also appear to have improved between 2001 and 2005.

Table 5 reports pre and post natal care indicators. The results indicate that percentage of pregnant women receiving pre-natal consultation increased from 35 percent in 2001 to 49 percent in 2005. The increase in pre-natal consultation was mainly due to rise in consultation received at home from traditional birth attendants, lady health workers, lady health visitors and doctors (see Table 5A and 5B in Annexure 1). The decile distribution of percent of pregnant women received prenatal consultation indicate that while

this indicator improved for the richest decile in rural areas, it worsened for the richest decile in urban areas. However, this may be due to sampling error as a small proportion remained, if analysis is carried out by deciles and by regions.

TABLE 5

Percentage of Women Using Pre and Post Natal Care

	PIHS 2001-02			PSLM 2004-05			% Change		
	Urban	Rural	Overall	Urban	Rural	Overall	Urban	Rural	Overall
Percentage of Pregnant Women Received Pre-Natal Consultation									
	63	**26**	**35**	**68**	**41**	**49**	**7.9**	**57.7**	**40.0**
Decile 1	35	16	19	53	32	36	51.4	100.0	89.5
Decile 2	37	20	22	40	35	36	8.1	75.0	63.6
Decile 3	40	22	26	60	37	41	50.0	68.2	57.7
Decile 4	60	19	27	54	38	42	–10.0	100.0	55.6
Decile 5	62	25	34	56	41	44	–9.7	64.0	29.4
Decile 6	65	29	37	63	43	48	–3.1	48.3	29.7
Decile 7	64	29	39	76	45	54	18.8	55.2	38.5
Decile 8	67	34	44	70	52	59	4.5	52.9	34.1
Decile 9	75	40	53	84	52	64	12.0	30.0	20.8
Decile 10	92	49	71	88	68	80	–4.3	38.8	12.7
Ratio of Highest to Lowest									
	2.63	**3.06**	**3.74**	**1.66**	**2.13**	**2.22**	**–36.9**	**–30.4**	**–40.6**
Percentage of Women Who Received Post-Natal Consultation Within Six Weeks after Delivery									
	16	**6**	**9**	**35**	**17**	**22**	**118.8**	**183.3**	**144.4**
Decile 1	8	5	5	18	10	11	125.0	100.0	120.0
Decile 2	6	4	4	20	11	13	233.3	175.0	225.0
Decile 3	9	5	6	18	17	17	100.0	240.0	183.3
Decile 4	16	4	7	27	15	18	68.8	275.0	157.1
Decile 5	8	5	6	28	15	18	250.0	200.0	200.0
Decile 6	12	8	9	24	18	19	100.0	125.0	111.1
Decile 7	12	5	7	34	22	25	183.3	340.0	257.1
Decile 8	15	8	11	31	23	26	106.7	187.5	136.4
Decile 9	23	14	18	54	21	34	134.8	50.0	88.9
Decile 10	32	17	25	60	29	48	87.5	70.6	92.0
Ratio of Highest to Lowest									
	4	**3.4**	**5**	**3.33**	**2.9**	**4.36**	**–16.8**	**–14.7**	**–12.8**

Source: Computed from PIHS, 2001-02 and PSLM, 2004-05.

Although, the disparity between the rich and the poor is still very high but seems to have narrowed during the period. On the other hand, the post-natal consultation within six week after delivery increased remarkably from 9 percent in 2001 to 22 percent in 2005. Not only the average indicators improved but also their distribution improved significantly. The improvement was attributable to the rise in consultation from lady health visitors, doctors and government hospital (see Tables 5C and 5D in Annexure 1).

HOUSING

Living standards of the population are linked with the rising income or consumption. The rising income enables individuals to increase spending on attaining better living standards. Table 6 reports percentage of population using electricity as main source of lighting. The percentage of population using electricity increased from 78 percent in 2001 to 84 percent in 2005. Inequality of income (or consumption) is also reflected in inequality of living conditions of the population. Despite improvement, 63 percent of poorest 10% population uses electricity as against 93 percent of the richest 10% in 2005. High disparity also exists between the rich and the poor in the use of phone. Nevertheless, distribution of population using phone improved from 12 percent in 2001 to 19 percent in 2005. Table 6 also reports percentage of population using gas as main source of fuel. While there is a great disparity in provision of gas between the rich and the poor, the disparity between the rural and urban regions is extremely high. There is hardly a significant proportion of population either rich or the poor have access to gas facility in rural areas.

A large population in Pakistan does not have access to tap water. In 2001, the proportion of population access to tap water was 25 percent which increased to just 34 percent in 2005 (*see* Table 7). There is high level of disparity between rich and the poor in access to tap water. In 2005, 20 percent amongst the poorest 10% had access to tap water compared to 57 percent among the richest 10%. Rural-urban disparity is very high. Only 21 percent in rural areas had access to tap water compared to 62 percent in rural areas in 2005.

A bulk of the population does not have adequate sanitation facilities. Table 7 also reports percentage of population having a flush facility. Progress on this front remained slow. The proportion of population using flush was 45 percent in 2001 which rose to merely 53 percent in 2005. The distribution of flush facility is highly skewed in favor of the rich as 84% in

TABLE 6

Population (%) of Deciles Availing Facilities

	PIHS 2001-02			PSLM 2004-05			% Change		
	Urban	Rural	Overall	Urban	Rural	Overall	Urban	Rural	Overall
Electricity	**97**	**70**	**78**	**97**	**78**	**84**	**0.0**	**11.4**	**7.7**
Decile 1	86	58	63	96	70	75	11.6	20.7	19.0
Decile 2	94	63	69	94	73	78	0.0	15.9	13.0
Decile 3	95	67	73	94	73	77	–1.1	9.0	5.5
Decile 4	97	70	76	97	72	78	0.0	2.9	2.6
Decile 5	98	68	76	98	78	83	0.0	14.7	9.2
Decile 6	97	71	78	96	79	84	–1.0	11.3	7.7
Decile 7	99	73	82	98	81	86	–1.0	11.0	4.9
Decile 8	99	76	84	98	85	90	–1.0	11.8	7.1
Decile 9	99	79	87	96	89	92	–3.0	12.7	5.7
Decile 10	100	85	93	98	92	96	–2.0	8.2	3.2
Ratio of Highest to Lowest									
	1.16	**1.47**	**1.48**	**1.02**	**1.31**	**1.28**	**–12.1**	**–10.9**	**–13.5**
Gas	**64**	**4**	**22**	**67**	**5**	**24**	**4.7**	**25.0**	**9.1**
Decile 1	31	2	8	42	4	11	35.5	100.0	37.5
Decile 2	48	4	12	46	3	12	–4.2	–25.0	0.0
Decile 3	43	3	11	52	3	13	20.9	0.0	18.2
Decile 4	54	4	15	52	2	14	–3.7	–50.0	–6.7
Decile 5	58	4	18	59	3	19	1.7	–25.0	5.6
Decile 6	63	4	20	63	5	22	0.0	25.0	10.0
Decile 7	67	4	24	64	4	23	–4.5	0.0	–4.2
Decile 8	70	5	27	69	6	30	–1.4	20.0	11.1
Decile 9	74	6	32	80	9	40	8.1	50.0	25.0
Decile 10	83	6	48	89	13	60	7.2	116.7	25.0
Ratio of Highest to lowest									
	2.68	**3**	**6**	**2.12**	**3.25**	**5.45**	**–20.9**	**8.3**	**–9.2**
Phone	**26**	**6**	**12**	**29**	**14**	**19**	**11.5**	**133.3**	**58.3**
Decile 1	3	2	2	16	7	9	433.3	250.0	350.0
Decile 2	6	1	2	12	9	9	100.0	800.0	350.0
Decile 3	4	3	3	15	10	11	275.0	233.3	266.7
Decile 4	12	2	4	18	7	10	50.0	250.0	150.0
Decile 5	13	5	7	17	11	13	30.8	120.0	85.7
Decile 6	15	5	7	26	15	18	73.3	200.0	157.1
Decile 7	20	6	11	28	15	19	40.0	150.0	72.7
Decile 8	24	9	14	34	19	25	41.7	111.1	78.6
Decile 9	36	13	22	39	24	31	8.3	84.6	40.9
Decile 10	65	26	47	45	35	41	–30.8	34.6	–12.8
Ratio of Highest to lowest									
	21.67	**13**	**23.5**	**2.81**	**5**	**4.56**	**–87.0**	**–61.5**	**–80.6**

Source: Computed from PIHS, 2001-02 and PSLM, 2004-05

TABLE 7

Percentage of Population Availing Civic Facilities by Consumption Decile

	PIHS 2001-02			PSLM 2004-05			% Change		
	Urban	Rural	Overall	Urban	Rural	Overall	Urban	Rural	Overall
Tap Water	**58**	**11**	**25**	**62**	**21**	**34**	**6.9**	**90.9**	**36.0**
Decile 1	36	8	13	38	15	20	5.6	87.5	53.8
Decile 2	48	12	19	50	20	27	4.2	66.7	42.1
Decile 3	48	10	18	52	25	30	8.3	150.0	66.7
Decile 4	47	10	18	51	21	28	8.5	110.0	55.6
Decile 5	60	13	25	58	18	29	-3.3	38.5	16.0
Decile 6	56	12	24	57	23	33	1.8	91.7	37.5
Decile 7	62	12	28	63	19	33	1.6	58.3	17.9
Decile 8	64	11	29	65	24	40	1.6	118.2	37.9
Decile 9	64	11	31	72	24	45	12.5	118.2	45.2
Decile 10	66	13	42	77	23	57	16.7	76.9	35.7
Ratio of Highest to Lowest									
	1.83	**1.63**	**3.23**	**2.03**	**1.53**	**2.85**	**10.9**	**–6.1**	**–11.8**
Flush	**89**	**27**	**45**	**91**	**35**	**53**	**2.2**	**29.6**	**17.8**
Decile 1	69	11	22	81	22	33	17.4	100.0	50.0
Decile 2	78	15	27	82	25	37	5.1	66.7	37.0
Decile 3	77	18	30	86	30	42	11.7	66.7	40.0
Decile 4	83	23	36	90	30	45	8.4	30.4	25.0
Decile 5	89	28	43	88	33	49	–1.1	17.9	14.0
Decile 6	89	28	45	90	33	49	1.1	17.9	8.9
Decile 7	94	30	50	92	36	53	–2.1	20.0	6.0
Decile 8	94	37	56	95	43	63	1.1	16.2	12.5
Decile 9	94	43	63	95	56	73	1.1	30.2	15.9
Decile 10	99	59	81	96	64	84	–3.0	8.5	3.7
Ratio of Highest to Lowest									
	1.43	**5.36**	**3.68**	**1.19**	**2.91**	**2.55**	**–16.8**	**–45.7**	**–30.7**
No Flush	**5**	**55**	**41**	**5**	**41**	**29**	**0.0**	**–25.5**	**–29.3**
Decile 1	19	70	61	11	53	44	–42.1	–24.3	–27.9
Decile 2	10	63	53	12	49	41	20.0	–22.2	–22.6
Decile 3	8	64	53	7	46	38	–12.5	–28.1	–28.3
Decile 4	7	56	45	4	43	33	–42.9	–23.2	–26.7
Decile 5	4	54	41	7	40	30	75.0	–25.9	–26.8
Decile 6	5	54	41	5	39	30	0.0	–27.8	–26.8
Decile 7	3	53	37	4	39	28	33.3	–26.4	–24.3
Decile 8	2	49	33	4	35	23	100.0	–28.6	–30.3
Decile 9	3	43	28	3	25	16	0.0	–41.9	–42.9
Decile 10	0	33	15	4	19	10	–	–42.4	–33.3
Ratio of Highest to Lowest									
	0	**0.47**	**0.25**	**0.36**	**0.36**	**0.23**	**–**	**–23.4**	**–8.0**

Source: Computed from PIHS, 2001-02 and PSLM, 2004-05

the highest decile have flush compared to 33% in the lowest decile in Pakistan. The percentage changes by deciles in table 6 and 7 show that considerable changes among lower deciles took place in rural areas compared to urban areas leading to not only a lower rich-poor gap but also a lower rural-urban disparity in availing of facilities over the period.

VII. CONCLUSION

This paper analyzed the trends in inequality in Pakistan between 2001-02 and 2004-05. The results imply an increase in consumption inequality as measured by Gini Coefficient between 2001 and 2005. The regional distributions both for rural and urban areas also reflect an increase in inequality over the period. The results based on percentage share of expenditure imply that inequality increased in Pakistan during this period at the expense of the poor and the middle income groups while the benefits of high economic growth accrued to the rich income groups. At regional level, rise in inequality was more pronounced in urban areas than in rural areas during this period.

Income or consumption inequality is an outcome of prevailing inequalities in the socio-economic structure of the country. The non-income inequality indicators portray a high degree of inequality across consumption decile. Inequality of educational opportunity was very high between rich and the poor. There was a great disparity between rural and urban areas. Nevertheless, inequality of educational opportunity appears to have improved for the country as whole as well as for the rural and urban areas. Ratio of highest to the lowest decile declined between 2001 and 2005 implying better earning prospects for the poor.

A high level of disparity across consumption decile is reflected in access to health facilities. However, the disparity in access to health between the rich and the poor as well as the rural and urban areas narrowed in 2005. Besides, pre and post natal care indicators of women also improved significantly. The increase in pre and post-natal consultation was mainly due to rise in consultation received at home from traditional birth attendants, lady health workers, lady health visitors and doctors. The percentage changes in inequality of opportunity indicators showed that considerable changes among lower deciles occurred in rural areas compared to urban areas leading to not only a lower rich-poor gap but also a lower rural-urban disparity in availing of facilities over the period.

Inequality of income or consumption is also reflected in inequality in living conditions. High disparity exists between the rich and the poor in the

use of electricity, gas and phone. A substantial proportion of population in Pakistan does not have access to tap water and adequate sanitation facilities. The progress on this front has been slow between 2001 and 2005.

It is noteworthy that changes of inequality in opportunity are contrary to the trends in inequality in consumption that has increased during this period. This may have been due to the fact that while high economic growth seems to have increased consumption inequality, the rise in government spending on education and health seems to have reduced the inequality of opportunity during this period. Nevertheless, the degree of inequality of opportunity is still high across consumption deciles. While it is true that income or consumption inequality is an outcome of the existing inequality of opportunity, there is a need to improve the opportunities for the poor by diverting more resources toward the poor which would narrow the disparities between the rich and poor in Pakistan.

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ANNEXURE I

TABLE 3A
Changes in Net Enrollment Rates by
Consumption Decile, 2001-02 and 2004-05

	PIHS 2001-02			PSLM 2004-05			% Change		
	Urban	Rural	Overall	Urban	Rural	Overall	Urban	Rural	Overall
Primary Level (Age 5 to 9 and Class 1 to 5)									
	55	**38**	**42**	**67**	**47**	**52**	**21.8**	**23.7**	**23.8**
Decile 1	30	22	24	47	35	37	56.7	59.1	54.2
Decile 2	37	32	33	51	43	45	37.8	34.4	36.4
Decile 3	44	31	33	62	46	49	40.9	48.4	48.5
Decile 4	52	38	41	58	49	51	11.5	28.9	24.4
Decile 5	53	41	44	62	51	54	17.0	24.4	22.7
Decile 6	51	40	43	71	48	53	39.2	20.0	23.3
Decile 7	63	43	48	69	48	54	9.5	11.6	12.5
Decile 8	62	49	53	71	52	58	14.5	6.1	9.4
Decile 9	70	54	59	79	57	66	12.9	5.6	11.9
Decile 10	75	59	67	83	67	76	10.7	13.6	13.4
Ratio of Highest to lowest									
	2.5	**2.68**	**2.79**	**1.77**	**1.91**	**2.05**	**–29.2**	**–28.7**	**–26.5**
Middle Level (Age 10 to 12 and Class 6 to 8)									
	26	**12**	**16**	**27**	**15**	**19**	**3.8**	**25.0**	**18.8**
Decile 1	8	5	6	15	9	10	87.5	80.0	66.7
Decile 2	11	7	8	18	10	11	63.6	42.9	37.5
Decile 3	13	9	10	23	10	13	76.9	11.1	30.0
Decile 4	22	11	13	23	13	15	4.5	18.2	15.4
Decile 5	13	13	13	16	14	15	23.1	7.7	15.4
Decile 6	25	10	14	22	13	16	–12.0	30.0	14.3
Decile 7	31	15	20	29	18	21	–6.5	20.0	5.0
Decile 8	22	17	18	31	22	25	40.9	29.4	38.9
Decile 9	37	19	26	35	31	33	–5.4	63.2	26.9
Decile 10	50	25	38	45	34	41	–10.0	36.0	7.9
Ratio of Highest to lowest									
	6.25	**5**	**6.33**	**3**	**3.78**	**4.1**	**–52.0**	**–24.4**	**–35.2**
Matric Level (Age 13 to 14 and Class 9 to 10)									
	15	**6**	**9**	**18**	**8**	**11**	**20.0**	**33.3**	**22.2**
Decile 1	2	1	1	11	2	4	450.0	100.0	300.0
Decile 2	8	4	5	14	4	6	75.0	0.0	20.0
Decile 3	4	4	4	9	4	5	125.0	0.0	25.0
Decile 4	8	4	5	7	4	5	–12.5	0.0	0.0
Decile 5	7	3	4	15	5	8	114.3	66.7	100.0
Decile 6	8	5	6	16	9	11	100.0	80.0	83.3
Decile 7	17	6	10	12	9	10	–29.4	50.0	0.0
Decile 8	11	9	10	17	12	14	54.5	33.3	40.0
Decile 9	29	13	19	27	22	24	–6.9	69.2	26.3
Decile 10	31	23	27	31	17	26	0.0	–26.1	–3.7
Ratio of Highest to lowest									
	15.5	**23**	**27**	**2.82**	**8.5**	**6.5**	**–81.8**	**–63.0**	**–75.9**

Source: Computed from PIHS, 2001-02 and PSLM, 2004-05

TABLE 5A

Received Pre-Natal Consultation from Source (PIHS-2001-02)

Decile	Received at Home from				Govt. Hospital/ Clinic	Pvt. Hospital/ Clinic	Other	Total
	TBA	LHW	LHV	Doctor				
Pakistan	**4**	**3**	**3**	**1**	**42**	**43**	**5**	**100**
Decile 1	5.6	1.2	6.9	0.0	45.3	29.0	12.1	100
Decile 2	5.8	1.3	1.3	1.2	50.5	34.3	5.6	100
Decile 3	7.1	3.2	4.1	0.0	44.7	31.1	9.8	100
Decile 4	4.6	4.5	4.1	1.7	42.9	39.7	2.6	100
Decile 5	5.1	3.8	2.6	1.3	51.2	33.2	2.9	100
Decile 6	6.9	2.6	1.2	0.8	46.1	37.9	4.6	100
Decile 7	4.3	4.6	2.6	2.1	43.6	39.0	3.7	100
Decile 8	2.6	1.5	4.4	0.2	42.2	45.0	4.4	100
Decile 9	2.2	2.4	2.1	1.4	35.3	51.9	4.7	100
Decile 10	1.4	1.5	1.1	1.5	28.9	62.3	3.2	100
Ratio of Highest to Lowest								
	0.24	**1.31**	**0.16**	**0.00**	**0.64**	**2.15**	**0.27**	
Urban	**3**	**1**	**1**	**1**	**41**	**49**	**2**	**100**
Decile 1	12.5	1.8	5.6	0.0	53.1	23.3	3.8	100
Decile 2	4.3	2.2	1.8	0.0	45.2	37.9	8.6	100
Decile 3	4.5	3.1	1.8	0.0	46.7	43.0	0.9	100
Decile 4	1.2	1.4	0.9	1.3	47.3	45.1	2.9	100
Decile 5	4.5	1.9	0.5	1.0	54.3	37.0	0.9	100
Decile 6	5.4	1.3	0.8	0.4	49.7	40.9	1.5	100
Decile 7	4.9	0.8	3.1	0.8	51.4	37.2	1.8	100
Decile 8	2.1	1.7	2.3	0.3	39.9	51.9	1.7	100
Decile 9	2.3	0.7	1.2	1.1	33.4	57.6	3.6	100
Decile 10	1.1	0.6	0.4	1.9	26.8	67.7	1.5	100
Ratio of Highest to Lowest								
	0.09	**0.36**	**0.07**	**0.00**	**0.50**	**2.90**	**0.40**	
Rural	**5**	**4**	**4**	**1**	**42**	**37**	**7**	**100**
Decile 1	2.8	0.9	7.4	0.0	42.0	31.4	15.5	100
Decile 2	6.4	0.9	1.2	1.7	52.5	33.0	4.5	100
Decile 3	8.2	3.3	5.0	0.0	43.8	26.1	13.5	100
Decile 4	7.2	6.9	6.6	2.0	39.4	35.4	2.4	100
Decile 5	5.5	5.3	4.3	1.5	48.7	30.2	4.5	100
Decile 6	7.9	3.5	1.5	1.1	43.4	35.8	6.8	100
Decile 7	3.8	8.3	2.2	3.3	36.3	40.7	5.4	100
Decile 8	3.0	1.2	6.2	0.0	44.2	38.7	6.7	100
Decile 9	2.0	4.3	3.2	1.7	37.5	45.5	6.0	100
Decile 10	2.0	3.3	2.6	0.8	33.2	51.7	6.5	100
Ratio of Highest to Lowest								
	0.72	**3.60**	**0.35**	**0.00**	**0.79**	**1.65**	**0.42**	

Source: Computed from PIHS, 2001-02 and PSLM, 2004-05

TABLE 5B

Received Pre-Natal Consultation from Source (PIHS-2004-05)

Decile	Received at home from				Govt. Hospital/ Clinic	Pvt. Hospital/ Clinic	Other	Total
	TBA	LHW	LHV	Doctor				
Pakistan	**12**	**8**	**6**	**4**	**25**	**42**	**3**	**100**
Decile 1	17.9	14.5	10.1	1.3	24.0	29.4	2.9	100
Decile 2	16.8	13.0	8.6	2.8	24.2	30.0	4.5	100
Decile 3	19.8	7.2	6.2	4.1	25.0	35.3	2.5	100
Decile 4	11.1	7.7	3.6	3.4	32.4	37.2	4.7	100
Decile 5	16.8	10.9	7.7	3.0	28.9	30.6	2.2	100
Decile 6	13.3	7.9	5.2	3.3	28.6	38.5	3.1	100
Decile 7	13.2	5.3	4.5	2.5	28.1	44.3	2.1	100
Decile 8	6.8	5.7	6.5	6.7	25.6	46.8	2.0	100
Decile 9	7.1	5.5	5.8	4.4	23.1	52.4	1.7	100
Decile 10	7.0	3.5	2.4	7.5	16.3	61.7	1.6	100
Ratio of Highest to Lowest								
	0.39	**0.24**	**0.23**	**5.73**	**0.68**	**2.10**	**0.56**	
Urban	**7**	**4**	**3**	**4**	**29**	**52**	**1**	**100**
Decile 1	14.8	7.5	7.3	0.3	42.2	24.7	3.1	100
Decile 2	9.9	8.4	3.7	4.6	32.8	37.3	3.4	100
Decile 3	14.7	6.5	0.6	4.0	39.0	33.2	1.9	100
Decile 4	8.7	1.8	5.5	2.6	40.8	40.7	0.0	100
Decile 5	3.9	2.6	5.6	2.2	44.0	41.8	0.0	100
Decile 6	10.0	5.1	5.1	1.7	32.0	43.7	2.3	100
Decile 7	9.0	4.2	5.4	1.9	29.3	50.2	0.0	100
Decile 8	3.3	3.5	1.7	3.4	27.2	59.0	1.9	100
Decile 9	3.5	4.5	3.0	5.8	21.9	59.9	1.3	100
Decile 10	3.2	1.2	1.5	7.8	15.9	69.4	0.9	100
Ratio of Highest to Lowest								
	0.22	**0.16**	**0.20**	**29.00**	**0.38**	**2.81**	**0.29**	
Rural	**16**	**10**	**7**	**4**	**23**	**35**	**3**	**100**
Decile 1	19.0	16.8	11.0	1.7	17.9	30.9	2.8	100
Decile 2	18.7	14.2	9.9	2.3	22.0	28.1	4.8	100
Decile 3	21.6	7.5	8.1	4.1	20.0	36.1	2.6	100
Decile 4	12.3	10.5	2.8	3.7	28.3	35.5	6.9	100
Decile 5	22.8	14.7	8.6	3.3	22.0	25.4	3.2	100
Decile 6	15.1	9.4	5.3	4.1	26.9	35.8	3.5	100
Decile 7	16.1	6.0	3.9	2.9	27.2	40.3	3.5	100
Decile 8	9.6	7.4	10.3	9.3	24.3	37.2	2.1	100
Decile 9	10.9	6.6	8.8	3.0	24.4	44.3	2.1	100
Decile 10	15.4	8.5	4.3	6.8	17.2	44.7	3.1	100
Ratio of Highest to Lowest								
	0.81	**0.50**	**0.39**	**4.09**	**0.96**	**1.45**	**1.13**	

Source: Computed from PIHS, 2001-02 and PSLM, 2004-05.

TABLE 5C

Received Post-Natal Consultation from Source (PIHS-2001-02)

Decile	Received at home from				Govt. Hospital/ Clinic	Pvt. Hospital/ Clinic	Other	Total
	TBA	LHW	LHV	Doctor				
Pakistan	**13**	**6**	**5**	**3**	**27**	**44**	**2**	**100**
Decile 1	13.8	8.6	2.1	2.5	45.6	23.6	3.8	100
Decile 2	23.8	5.3	0.9	0.5	34.8	33.9	0.9	100
Decile 3	17.6	12.9	2.3	0.8	25.5	38.8	2.2	100
Decile 4	14.2	7.6	3.9	4.4	19.6	41.8	8.6	100
Decile 5	11.7	7.2	3.3	2.6	31.5	42.0	1.6	100
Decile 6	27.7	3.8	4.5	1.4	27.6	35.2	0.0	100
Decile 7	17.3	7.3	10.2	1.4	30.0	33.3	0.5	100
Decile 8	9.9	9.4	12.0	4.8	27.4	34.9	1.7	100
Decile 9	7.6	1.2	5.7	4.4	28.7	52.5	0.0	100
Decile 10	4.6	5.9	1.4	4.5	18.9	63.7	1.0	100
Ratio of Highest to Lowest								
	0.33	**0.69**	**0.68**	**1.81**	**0.41**	**2.70**	**0.25**	
Urban	**5**	**6**	**6**	**4**	**25**	**52**	**2**	**100**
Decile 1	5.0	19.2	1.5	9.1	60.7	4.4	0.0	100
Decile 2	16.3	11.2	4.0	2.3	41.4	20.7	4.1	100
Decile 3	19.0	0.0	7.4	0.0	21.4	52.3	0.0	100
Decile 4	0.4	6.8	0.5	0.0	32.3	48.1	12.0	100
Decile 5	19.8	0.4	0.0	3.0	29.5	47.4	0.0	100
Decile 6	14.8	4.7	5.0	2.4	32.5	40.6	0.0	100
Decile 7	9.0	8.2	17.7	2.7	31.3	30.3	0.9	100
Decile 8	2.8	2.5	15.8	4.6	26.1	48.3	0.0	100
Decile 9	2.8	2.4	8.8	8.8	18.6	58.7	0.0	100
Decile 10	0.7	8.9	1.4	2.7	17.3	67.6	1.5	100
Ratio of Highest to Lowest								
	0.14	**0.46**	**0.95**	**0.30**	**0.28**	**15.32**	**0.00**	
Rural	**19**	**6**	**3**	**3**	**29**	**38**	**2**	**100**
Decile 1	16.5	5.4	2.3	0.4	40.9	29.5	5.0	100
Decile 2	25.9	3.6	0.0	0.0	32.9	37.6	0.0	100
Decile 3	17.0	18.6	0.0	1.2	27.3	32.8	3.2	100
Decile 4	27.9	8.4	7.3	8.7	7.1	35.5	5.2	100
Decile 5	7.8	10.6	4.9	2.4	32.5	39.4	2.4	100
Decile 6	34.0	3.4	4.2	0.9	25.1	32.5	0.0	100
Decile 7	26.3	6.4	2.1	0.0	28.7	36.6	0.0	100
Decile 8	15.8	15.1	8.9	4.9	28.4	23.8	3.1	100
Decile 9	12.4	0.0	2.6	0.0	38.7	46.4	0.0	100
Decile 10	12.4	0.0	1.5	8.0	22.2	56.0	0.0	100
Ratio of Highest to Lowest								
	0.75	**0.00**	**0.65**	**19.39**	**0.54**	**1.90**	**0.00**	

Source: Computed from PIHS, 2001-02 and PSLM, 2004-05.

TABLE 5D

Received Post-Natal Consultation from Source (PIHS-2004-05)

Decile	Received at home from				Govt. Hospital/ Clinic	Pvt. Hospital/ Clinic	Other	Total
	TBA	LHW	LHV	Doctor				
Pakistan	**13**	**6**	**3**	**6**	**25**	**45**	**2**	**100**
Decile 1	22.0	12.6	3.8	3.7	28.6	28.2	1.1	100
Decile 2	23.6	6.6	7.5	2.3	29.0	28.8	2.3	100
Decile 3	25.0	7.3	2.7	3.9	32.4	24.9	3.8	100
Decile 4	14.1	9.0	3.5	8.4	19.8	39.0	6.2	100
Decile 5	20.2	8.4	3.7	4.4	28.0	34.7	0.7	100
Decile 6	7.4	4.8	1.7	5.2	32.5	45.8	2.5	100
Decile 7	15.3	7.1	1.2	5.9	25.4	45.2	0.0	100
Decile 8	7.7	7.5	5.9	9.0	27.9	40.8	1.2	100
Decile 9	7.4	1.5	1.1	6.1	25.8	58.1	0.0	100
Decile 10	5.8	1.1	1.3	5.4	15.3	70.3	0.8	100
Ratio of Highest to Lowest								
	0.27	**0.09**	**0.34**	**1.45**	**0.54**	**2.49**	**0.69**	
Urban	**7**	**4**	**1**	**6**	**25**	**56**	**1**	**100**
Decile 1	16.5	2.8	0.0	0.0	48.8	27.7	4.2	100
Decile 2	15.2	13.8	6.5	5.9	32.2	25.7	0.8	100
Decile 3	22.3	8.4	0.0	2.2	22.6	38.2	6.4	100
Decile 4	8.7	4.0	1.1	10.6	20.4	55.2	0.0	100
Decile 5	12.2	4.6	1.7	9.2	35.8	36.6	0.0	100
Decile 6	5.7	1.2	2.3	0.5	29.5	60.7	0.0	100
Decile 7	12.5	8.7	2.2	1.8	32.1	42.7	0.0	100
Decile 8	3.2	4.8	0.4	6.4	34.3	51.0	0.0	100
Decile 9	1.4	1.4	0.0	9.0	24.7	63.6	0.0	100
Decile 10	3.6	0.9	1.7	6.3	14.3	72.4	1.0	100
Ratio of Highest to Lowest								
	0.22	**0.33**	**0.00**	**0.00**	**0.29**	**2.61**	**0.23**	
Rural	**18**	**8**	**4**	**5**	**25**	**37**	**2**	**100**
Decile 1	23.9	16.0	5.2	5.1	21.5	28.4	0.0	100
Decile 2	27.1	3.6	7.9	0.8	27.6	30.1	2.9	100
Decile 3	25.6	7.1	3.3	4.3	34.7	21.7	3.2	100
Decile 4	17.2	11.9	4.9	7.1	19.4	29.8	9.8	100
Decile 5	25.2	10.7	4.9	1.4	23.1	33.5	1.2	100
Decile 6	8.3	6.6	1.4	7.5	34.0	38.7	3.7	100
Decile 7	17.0	6.0	0.7	8.4	21.3	46.7	0.0	100
Decile 8	11.2	9.5	10.2	11.1	22.9	33.0	2.1	100
Decile 9	17.6	1.7	2.9	1.2	27.8	48.8	0.0	100
Decile 10	13.7	1.7	0.0	2.7	19.0	63.0	0.0	100
Ratio of Highest to Lowest								
	0.57	**0.10**	**0.00**	**0.52**	**0.89**	**2.22**	**0.00**	

Source: Computed from PIHS, 2001-02 and PSLM, 2004-05.

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LONG-RUN AND SHORT-RUN RELATIONSHIP BETWEEN MACROECONOMIC VARIABLES AND STOCK PRICES IN PAKISTAN
The Case of Lahore Stock Exchange

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Abstract. The movements in the stock prices are an important indicator of the economy. The intention of this study was to examine long-run and short-run relationships between Lahore Stock Exchange and macroeconomic variables in Pakistan. The monthly data from December 2002 to June 2008 was used in this study. The results revealed that there was a negative impact of consumer price index on stock returns, while, industrial production index, real effective exchange rate, money supply had a significant positive effect on the stock returns in the long-run. The VECM analysis illustrated that the coefficients of ecm1 (–1), and ecm2 (–1) were significant with negative signs. The coefficients of both error correction terms showed high speed of adjustment. The results of variance decompositions revealed that out of five macroeconomic variables consumer price index showed greater forecast error for LSE25 Index.

I. INTRODUCTION

The well-organized stock market mobilizes the savings and activates the investment projects, which lead to economic activities in a country. The key function of stock market is to act as mediator between savers and borrowers. It mobilizes savings from a large pool of small savers and channelizes these funds into fruitful investments. The preferences of the lenders and borrowers are harmonized through stock market operation. The Stock market also supports reallocation of funds among corporations and sectors. It also provides liquidity for domestic expansion and credit growth. The leading

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stock markets of the world observed negative growth ranging from 50.7 percent (Pakistan) to 2.9 percent (China) during the fiscal year 2008-09 (Economic Survey of Pakistan 2008-09).

There are three stock exchanges (Karachi Stock Exchange, Lahore Stock Exchange and Lahore Stock Exchange) operating in Pakistan. Lahore Stock Exchange (Guarantee) Limited was established in October 1970. There are nearly 600 listed companies and 37 sectors of economy. The turnover of shares of the exchange during July-March 2008-09 was 1.5 billion. The total paid up capital with the LSE increased from Rs. 664.5 billion in June 2008 to Rs. 721.1 billion in March 2009 (Economic Survey of Pakistan 2008-09).

The stock market of Pakistan remained highly volatile for the last fifty months. Three intense financial crises were observed during this period. First, stock market was crashed in March 2005. Second collapse was observed in the second quarter of the year 2006. Third and the most serious crash was observed from May 2008 to January 2009. In this period, KSE100 index dropped more than ten thousands points while LSE25 dropped more than three thousands points. During this period, the Board of Directors of Karachi stock exchange placed a floor in August 2008 due to sharp fall in share prices, later on removed in December 2008. The Lahore Stock Exchange performed well in the years 2002 to 2004 but it showed negative growth in 2008-09. The LSE-25 index, which was 3,868.8 points in June 2008, decreased to 2,085.2 points in March 2009. The market capitalization of the LSE has reduced from Rs. 3,514.2 billion in June 2008 to Rs. 1,953.1 billion in March 2009.

The major source of this volatility was political uncertainty and instability — such as judiciary crisis, terrorist attacks, assassination of Benazir Bhutto (Chairperson, Pakistan Peoples Party, and former Prime Minster of Pakistan) — for the last crisis in the stock market but the first two crashes were due to bad governance and hold of speculators in the stock market. Hence, there was a need to study the behavior of stock market and determine the economic factors for policy recommendations that could safeguard the investors of stock markets.

REVIEW OF LITERATURE

According to Fisher's Hypothesis, the market rate of interest included the expected real rate of interest and expected inflation (Fisher, 1930). As nominal rate of interest and rate of inflation moved one-to-one, then, real rate of interest was not affected by a permanent change in inflation rate in the long-run.

Thus, it was concluded that stock returns and rate of inflation moved in the same direction. Hence, real assets such as shares perhaps provide hedge against inflation. Chatrath *et al.* (1997) investigated relationship between stock returns and inflationary trends in India. The author's study provided an evidence of a negative relationship between market returns and inflationary trends in India. Ratanapakorn and Sharma (2007) reported a positive relationship between stock prices and inflation while; Humpe and Macmillan (2009), illustrated negative impact of inflation on stock prices.

Fama (1981) examined the relationship between real output and stock prices and showed that there was strong relationship between stock prices and gross national product. Humpe and Macmillan (2009) explored positive long-run relationship between stock prices and the industrial production in US.

Several economists documented the impact of foreign exchange rate on stock prices during the last two decades. Aggarwal (1981), Soenen and Hennigar (1988), Bahmani-Oskooee and Sohrabian (1992), Abdalla and Murinde (1997), Bhattacharya and Mukherjee (2003), Smyth and Nandha (2003), Farooq and Keung (2004), Aquino (2004), Aquino (2005), Homma *et al.* (2005), and Hartmann and Pierdzioch (2007) tried to explore relationship between exchange rate and stock prices. The theory demonstrates that changes in the exchange rate have an important bearing on a firm's overall profits through firm's foreign operation which results fluctuations in stock prices. The intensity and direction of changes in share prices depends upon the nature of the firm. Mixed results were found among industrial countries by Aggarwal (1981) and Soenen and Hennigar (1988). Aggarwal (1981) established positive relationship between the exchange rate and US stock prices. Soenen and Hennigar (1988) found negative correlation between the two variables.

The money supply-stock market nexus was widely tested for various economies. Ratanapakorn and Sharma (2007) explored positive relationship between stock prices and money supply in US. While, Humpe and Macmillan (2009) found negative impact of money supply on NKY225 in Japan.

Some studies reported positive impact of interest rate on stock returns while; some studies explored negative relationship between these two variables, *e.g.* Ratanapakorn and Sharma (2007) reported positive relationship between S&P 500 and treasury bill rate in US and Humpe and Macmillan, (2009) found negative impact of treasury bill rate on SP55 in US.

STUDIES IN PAKISTAN

In Pakistan, some studies were conducted to explore the impact of macroeconomic variables on stock returns. For example, Farooq and Keung (2004) analyzed the impact of changes in exchange rate on stock returns and exchange rate by using four indices of Karachi stock Exchange: General index and three sector indices. The authors conducted Granger causality test and found that causality ran from general stock prices to exchange rate and causality ran from exchange rate to services indices. Nishat and Shaheen (2004) examined the relationship between a set of macro economic variables and the Index of Karachi stock exchange. The set of variables included index of industrial production, money supply (M_1), interest rate and CPI. Quarterly data stating from 1973:1 to 2004:4 were used. The results showed that five variables were cointegrated and two long-run relations were found among the variables. It was found that there was positive and strong impact of industrial production on stock prices. It was also found that inflation was negative determinant of stock market. Granger causality test showed that causality ran from macroeconomic variables to stock prices. While stock price affected industrial production. Shahbaz *et al.* (2008) analyzed whether there exist a relationship economic growth between and development of stock market in case of less developed countries like Pakistan. Findings suggested that there was a long-run relationship between stock market development and economic growth for Pakistan. Thus, the present study tried to find out the impact of macroeconomic variables on stock prices in Lahore Stock Exchange (Pakistan).

The rest of the paper is as follows. In section II we provide data sources and methodology to explore long-run and short-run relationships between stock prices and macroeconomic variables and section III gives empirical results. In the last, conclusion is explained in section IV.

II. DATA AND METHODOLOGY

Monthly time series data was used in exploring the relationship between the macro economic variables and LSE25 index relating Lahore stock exchange. The included variables in this study were consumer price index, real effective exchange rate, three month treasury bills rate, industrial production index, money supply (M_2), and LSE25 index for the period of December 2002 to June 2008. The main data sources were monthly bulletins of State Bank of Pakistan, The Business Recorder (Pakistani financial newspaper), Publications of the Federal Bureau of Statistics, and International Financial Statistics (IFS). The description of variables used in this research study was given as under:

LLSE25 = Log of LSE25 Index (Lahore Stock Exchange)

LCPI = Log of Consumer price index

LIP = Log of Index of industrial production

LREER = Log of Real effective exchange rate

LM_2 = Log of money supply (Broader money)

LTTBR = Log of three months treasury bills rate

STATIONARY CHECKS

Many of variables studied in macroeconomics, monetary economics and financial economics were non stationary time series (Hill *et al.*, 2001). If a time series was stationary, then shocks were considered transitory. On the other hand, mean or the variance or both the mean and the variance of a non-stationary time series depends on time. The variance depends on time and approach to infinity as time goes to infinity (Asteriou and Hall, 2006).

Augmented Dickey Fuller test (Dickey and Fuller, 1981), Phillips-Perron test (Phillips and Perron, 1988) and KPSS (Kwiatkowski, Phillips, Schmidt and Shin, 1992) unit root tests were applied to test the stationarity of the above mentioned series.

COINTEGRATION TEST AND VECTOR ERROR CORRECTION MODEL

Cointegration test was used to identify equilibrium or a long-run relationship among the variables. If there was a long-run relationship between variables, then divergence from the long-run equilibrium path was bounded and the variables were co-integrated. Johansen and Juselius (1990) procedure undertook the most of the problems of Engle and Granger approach such as (*i*) In EG approach we have to do with the order of integration, (*ii*) In case of more than two variables, there may be more than one cointegrating relationships, and (*iii*) It relies on two step approach. The Johansen and Juselius (1990) approach was based on maximum likelihood estimates and gives maximum Eigen Value and Trace Value test statistics for detecting number of cointegrating vectors. This procedure provides framework for cointegration test in the context of vector autoregressive approach. Johansen method was explained as follows:

$$x_t = A_0 + \sum_{j=1}^{k} A_j x_{t-j} + \varepsilon_t \qquad (1)$$

Where A_0 is an ($n \times 1$) vector of constants, x_t is an ($n \times 1$) vector of non stationary I(1) variables, k is the number of lags, A_j is a ($n \times n$) matrix of coefficients and ε_t is assumed to be a ($n \times 1$) vector of Gaussian error terms. The above vector autoregressive process was reformulated and turned into a vector error correction model (VECM) in order to use Johansen and Juselius test as under:

$$\Delta x_t = A_0 + \sum_{j=1}^{k-1} \Gamma_j \Delta x_{t-j} + \Pi x_{t-k} + \varepsilon_t \tag{2}$$

Where $\Gamma_j = -\sum_{i=j+1}^{k} A_j$ and

$$\Pi = -I + \sum_{i=j+1}^{k} A_j$$

'I' is an ($n \times n$) identity matrix, and Δ is the difference operator. The Trace and the Maximum Eigen Value test was used to find the number of characteristic roots that were insignificantly different from unity.

VARIANCE DECOMPOSITION

The vector autoregressive (VAR) by Sims (1980) was estimated to find short-run causality between macro economic variables and stock prices. To illustrate implication of relationships among macro economic variables and stock indices, variance decomposition was employed. In this study, Bayesian VAR model specified in first differences obtained in equations (3) and (4).

$$\Delta X_t = \alpha_1 + \sum_{i=1}^{k} \alpha_{11}(i) \Delta X_{t-i} + \sum_{j=1}^{k} \alpha_{12}(j) \Delta Y_{t-j} + \varepsilon_{xt} \tag{3}$$

$$\Delta Y_t = \alpha_2 + \sum_{i=1}^{k} \alpha_{21}(i) X_{t-i} + \sum_{j=1}^{k} \alpha_{22}(j) Y_{t-j} + \varepsilon_{yt} \tag{4}$$

Where ε's are the stochastic error terms, called innovations or shock in the language of VAR.

MODEL

To explore long-run relationship between macro economic variables and LSE25 Index, following econometric models was specified in the study.

$$\text{LLSE25} = \beta_1 \text{L CPI} + \beta_2 \text{LIP} + \beta_3 \text{LREER} + \beta_4 \text{L M}_2 + \beta_5 \text{LTTBR} + \varepsilon_t$$

To capture both the short-run dynamics between time series and their long-run Equilibrium relations following models were estimated.

$$\Delta LLSE25_t = \alpha_1 + \gamma_1 U_{t-1} + \sum_{i=1}^{P} \theta_{1i} \Delta LCPI_{t-1} + \sum_{i=1}^{P} \beta_{1i} \Delta LIP_{t-1} + \sum_{i=1}^{P} \mu_{1i} \Delta LREER_{t-1} + \sum_{i=1}^{P} \eta_{1i} \Delta LM2_{t-1} + \sum_{i=1}^{P} \lambda_{1i} \Delta LTTBR_{t-1} + \varepsilon_t \quad (5)$$

III. EMPIRICAL RESULTS

E-Views 6 software was used for estimation.

SUMMARY OF DATA

The summary of the data collected for this study is presented in Table 1.

TABLE 1

Descriptive Statistics

Variables	LLSE25	LCPI	LIP	LREER	LM2	LTTBR
Mean	8.15	4.87	5.19	4.54	14.91	1.60
Median	8.28	4.87	5.21	4.54	14.90	2.09
Maximum	8.64	5.17	5.51	4.59	15.36	2.44
Minimum	7.32	4.68	4.79	4.48	14.46	0.19
Std. Dev.	0.34	0.13	0.18	0.03	0.26	0.71
Skewness	–0.79	0.23	–0.52	–0.19	–0.07	–0.68
Kurtosis	2.58	2.13	2.46	1.86	1.85	1.80
Jarque-Bera	7.51	2.71	3.85	4.04	3.75	9.19
Probability	0.02	0.26	0.15	0.13	0.15	0.01
C V	0.04	0.03	0.03	0.01	0.02	0.44
Observations	67	67	67	67	67	67

UNIT ROOT TEST

It is compulsory to test the economic time series for stationarity before proceeding for cointegration test and establishing long-run relationships. The study used three different tests, *i.e.* Augmented Dickey Fuller (ADF) test, Phillips-Perron (PP) test and KPSS test (Kwiatkowski, Phillips, Schmidt. and Shin, 1992) for finding unit roots in time series. All these tests revealed that

all the variables were non-stationary in levels and stationary at first difference which is the common phenomenon in most of the economic time series. Hence, all three tests were undisputedly declared that all the variables were integrated of order one, *i.e.* I (1) as shown in Table 2.

TABLE 2

Unit Root Test

Variables	Augmented Dickey-Fuller test statistic		Phillips-Perron Test Statistics		Kwiatkowski-Phillips-Schmidt-Shin test statistic	
	Null Hypothesis: Variable is Non-stationary		Null Hypothesis: Variable is Non-stationary		Null Hypothesis: Variable Is stationary	
	Level	First Difference	Level	First Difference	Level	First Difference
LLSE25	–2.01	–7.02*	–2.09	–7.01*	0.90	0.31*
LCPI	3.42	–5.61*	2.70	–5.79*	1.06	0.46**
LIPI	–1.20	–7.75*	–1.91	–9.78*	0.90	0.03*
LREER	–1.73	–7.86*	–1.73	–7.84*	0.59	0.10*
LM2	–0.95	–3.15*	0.07	–14.61*	1.06	0.04*
LTTBR	–0.57	–5-25*	–1.73	–7.84*	0.59	0.10*
Test critical values (MacKinnon, 1996)						
5% Level	–2.90		–2.906923		0.463000	
10% Level	–2.59		–2.591006		0.347000	

* implies that the coefficient is significant at 0.05 percent probability level and

** implies significant at 0.10 percent probability level

COINTEGRATION ANALYSIS

The results of stationarity analysis shown in the Table 2 showed that all the modeled variables were integrated of same order, so the study applied the Johansen and Juselius (1990) (JJ) technique to explore the long-run relationships among the variables as this technique is appropriate, if all the model variables are integrated of same order. The first step in multivariate cointegration analysis is the appropriate lag selection for the variables. For selection of appropriate lag length, the study used two criteria Akaike Information Criteria (AIC) and Schwarz Bayesian Criteria (SBC). Both the criteria AIC and SBC selected lag length of 1. In order to find out the number of cointegrating vectors, Trace statistic and Maximal Eigen value tests were used.

TABLE 3

Unrestricted Cointegration Rank Test (Trace)

Hypothesized		Trace Statistic	0.05 Critical Value	Prob.**
No. of CE(s)	Eigen value			
None*	0.674	**153.989***	95.754	0.000
At most 1*	0.488	**84.559***	69.819	0.002
At most 2	0.318	43.098	47.856	0.130
At most 3	0.162	19.346	29.797	0.468
At most 4	0.108	8.414	15.495	0.422
At most 5	0.021	1.308	3.841	0.253

Trace test indicates 2 cointegrating eqn(s) at the 0.05 percent Probability level

* denotes rejection of the hypothesis at the 0.05 percent Probability level

TABLE 4

Unrestricted Cointegration Rank Test (Maximum Eigen Value)

Hypothesized		Max-Eigen Statistic	0.05 Critical Value	Prob.**
No. of CE(s)	Eigen value			
None*	0.674	**69.430***	40.078	0.000
At most 1*	0.488	**41.461***	33.877	0.005
At most 2	0.318	23.752	27.584	0.144
At most 3	0.162	10.932	21.132	0.654
At most 4	0.108	7.106	14.265	0.477
At most 5	0.021	1.308	3.841	0.253

Max-Eigen value test indicates 2 cointegrating eqn(s) at the 0.05 percent Probability level

* denotes rejection of the hypothesis at the 0.05 percent Probability level

The results for both Trace statistic and Maximal Eigen statistic were reported in Table 3 and Table 4 respectively. Both tests, *i.e.* the Trace statistic and the Maximal Eigen statistics recognized two cointegrating vectors, therefore, the study used two cointegrating vectors in order to establish the long-run relationships among the variables.

LONG-RUN RELATIONSHIP

After normalization the first cointegrating vector on LLSE25 normalized cointegrating coefficients were estimated as reported in Table 5.

TABLE 5

Normalized Cointegrating Coefficients

LLSE25	LCPI	LIP	LREER	LM2	LTTBR
1	6.226	–2.020	–3.332	–2.241	–0.058
S. E.	–1.955	–0.291	–1.140	–0.939	–0.074
t-value	–3.185	6.938	2.922	2.388	0.776

The first normalized equation[1] was estimated as below:

$$LLSE25 = -6.226LCPI + 2.020LIP + 3.332LREER + 2.241\ LM_2 + 0.058LTTBR \quad (6)$$

According to the first normalized equation, stock prices (LLSE25) showed significantly negative relation with consumer price index (LCPI) in long-run which suggested that stock market did not provide hedge against inflation. The negative relationship between stock prices and consumer price index was consistent with the results of Humpe and Macmillan (2009) for US data. However, findings were at variance with the findings of Abdullah and Hayworth (1993) and Ratanapakorn and Sharma (2007). Normalized equation (6) showed that there was a significant positive relationship between stock prices and industrial production. The result was consistent with the findings of many researchers (*inter alia* Fama, 1981; Chen *et al.*, 1986; Abdullah and Hayworth, 1993; Eva and Stenius, 1997; Ibrahim and Yusoff, 2001; Nishat and Shaheen, 2004; Ratanapakorn and Sharma, 2007; Cook, 2007; Shahbaz *et al.*, 2008; Liu and Sinclair, 2008; Humpe and Macmillan, 2009). LLSE25 index was also influenced by the real effective exchange rate (LREER) positively. This implied that along with the increase in exchange rate or depreciation in domestic money, there was a positive effect on export-oriented firms that led to increase in returns of the firms and ultimately resulting in hike in stock prices. Aggarwal (1981) and Ratanapakorn and Sharma (2007) had also reported similar findings between

[1]This equation was estimated by using E-views 6. Similar methodology was also used to estimate the equation and to explore the long-run relationships in the most recent studies (Nishat and Shaheen, 2004; Ratanapakorn and Sharma, 2007; Humpe and Macmillan, 2009).

stock prices and exchange rate but Soenen and Hennigar (1988) reported negative association between the two variables. The relationship between stock price and money supply was found significantly positive. The results were consistent with the study of Ratanapakorn and Sharma, (2007), however the results were contrary to the findings of Humpe and Macmillan (2009) for Japan. The study found that stock prices and three month treasury bills (LTTBR) had a positive but showed insignificant relationship with LLSE25 in the long-run. Ratanapakorn and Sharma (2007) also reported positive relationship between US stock market (S&P500) and three months treasury bills rate.

TABLE 6

Vector Error Correction Estimates

Variables	D (LLSE25)	D (LCPI)	D (LIP)	D (LREER)	D (LM2)	D (LTTBR)
Vecm1 (–1)	–0.201** (–2.49)	0.020* (2.71)	–0.099 (–1.19)	0.041* (3.75)	0.023 (1.31)	0.354* (3.66)
Vecm2 (–1)	–1.788* (–3.37)	0.085*** (1.74)	–1.173** (–2.14)	0.041 (0.57)	0.130 (1.21)	1.580* (2.49)
D(LLSE25(–1))	0.142 (0.92)	–0.003 (–0.2)	0.269 (1.7)	–0.071* (–3.49)	–0.056*** (–1.7)	–0.152 (–0.82)
D(LCPI(–1))	1.066 (0.59)	0.177 (1.08)	2.469 (1.33)	–0.746* (–3.11)	–0.316 (–0.82)	–1.269 (–0.59)
D(LIP(–1))	0.157 (1.32)	–0.002 (–0.19)	–0.095 (–0.77)	0.005 (0.34)	0.002 (0.06)	–0.020 (–0.11)
D(LREER(–1))	–0.240 (–0.25)	–0.065 (–0.74)	0.001 (0.01)	0.232*** (1.83)	–0.143 (–0.7)	1.499 (1.32)
D(LM2(–1))	0.073 (0.12)	0.073 (1.33)	0.130 (0.21)	–0.007 (–0.09)	–0.340* (–2.67)	–0.248 (–0.34)
D(LTTBR(–1))	–0.158 (–1.31)	–0.007 (–0.61)	0.138 (1.2)	–0.059 (–3.64)	0.010 (0.23)	0.184 (1.27)
C	0.004 (0.19)	0.005* (3.04)	–0.021 (–1.04)	0.007* (2.82)	0.020* (5.04)	0.030 (1.27)
R-squared	0.24	0.265	0.24	0.35	0.22	0.38
F-statistic	2.23	2.521	2.16	3.77	2.02	4.307

( ) shows 't' values of "t" statistics

* show the coefficient significantly different from zero at 0.01 percent probability level

** show the coefficient significantly different from zero at 0.05 percent probability level

*** show the coefficient significantly different from zero at 0.10 percent probability level

VECTOR ERROR CORRECTION MODEL

In order to capture the short-run dynamics of the model, error correction mechanism was applied. The results of vector error correction model were reported in Table 6. The coefficients of ecm1 (–1), and ecm2 (–1) showed the speed of adjustment of disequilibrium in the period of study. As both the error correction terms were significant with negative signs, hence the results of vector error correction model (VECM) depicted that the adjustments in LLSE25 were due to the first error correction term (ecm1) and the second error correction term (ecm2). Equation (7) showed that the coefficient of ecm1 (–1) was significant which implied that LLSE25 adjusted by 20.1 percent in one month to the long-run equilibrium. The results showed that it took more than approximately five months (1/0.201= 4.99) to eliminate the disequilibrium. The coefficient of second error correction term showed speedy adjustment.

$$\begin{aligned} DLLSE25 = {} & 0.004 + 0.142\ DLLSE25\ (-1) + 1.066\ DLCPI\ (-1) \\ & + 0.157 DLIP\ (-1) - 0.240 DLREER\ (-1) \\ & + 0.073 DLM2\ (-1) - 0.158 DLTTBR\ (-1) \\ & - 0.201\ Vecm1\ (-1) - 1.788\ Vecm2\ (-1) \end{aligned} \quad (7)$$

VARIANCE DECOMPOSITIONS

The variance decomposition provided further evidence of relationships among the variables under investigation. The variance decomposition showed the proportion of the forecast error of one variable due to the other variables. Therefore, the variance decomposition makes possible to determine the relative importance of each variable in creating fluctuations in other variables (Ratanapakorn and Sharma, 2007). Table 7 showed that the LLSE25 index was relatively less exogenous in relation to other variables, *i.e.* LCPI, LIP, and LTTBR because almost 34 percent of its variance was explained by its own shock after 24 months. LCPI explained 44 percent impact on stock prices. Movements in other macroeconomic variables, *i.e.* LIP, LEER LM_2, and LTTBR explained forecast variance 7.19 percent, 1.77 percent, 7.53 percent, and 5.6 percent respectively for LLSE25.

TABLE 7

Variance Decompositions

VDC of	Months	S.E.	LLSE25	LCPI	LIP	LREER	LM2	LTTBR
LLSE25	1	0.08	100.00	0.00	0.00	0.00	0.00	0.00
	6	0.17	64.11	18.89	3.63	0.13	9.20	4.04
	24	0.39	33.79	44.12	7.19	1.77	7.53	5.60

LCPI	1	0.01	12.35	87.65	0.00	0.00	0.00	0.00
	6	0.02	5.26	82.39	2.51	9.36	0.07	0.40
	24	0.14	19.70	61.60	7.31	4.46	1.10	5.82
LIP	1	0.08	0.61	1.93	97.46	0.00	0.00	0.00
	6	0.10	2.30	1.77	79.97	1.65	2.29	12.01
	24	0.11	4.17	5.69	68.18	3.69	5.00	13.27
LREER	1	0.01	1.89	9.57	1.72	86.81	0.00	0.00
	6	0.02	18.15	6.49	9.82	56.17	1.06	8.30
	24	0.05	25.97	43.15	8.20	8.29	4.90	9.49
LM2	1	0.02	0.67	3.55	2.20	1.97	91.61	0.00
	6	0.02	2.26	15.80	1.45	1.76	77.86	0.87
	24	0.15	16.33	63.28	6.73	5.15	3.00	5.51
LTTBR	1	0.09	0.25	2.73	5.32	0.37	0.27	91.06
	6	0.24	17.48	1.99	6.74	8.69	1.04	64.06
	24	0.39	24.58	14.78	6.08	6.89	11.88	35.78

Cholesky Ordering: LLS25 LCPI LIP LREER LM2 LTTBR

IV. CONCLUSION

This study investigated long-run and short-run relationships between five macroeconomic variables and stock prices in Lahore Stock Exchange. All the series used in this analysis was found non-stationary at levels but stationary at first difference. Two long-run relationships were found between macro economic variables and LSE25 Index. In the long-run, inflation had a negative impact on stock prices while Industrial production index, real affective exchange rate, and Money supply affected stock returns positively. However, three month Treasury bills rate showed insignificant positive impact on stock returns in the long-run. The VECM analysis depicted that the coefficient of ecm1 (–1) and ecm2 (–1) was significant showing speedy adjustment. The results of Variance Decomposition illustrated that among the macroeconomic variables, inflation was explaining the maximum variance.

The study proposed that appropriate monetary measures should be adopted by monetary managers to control inflation so that the volatility of the stock markets can be minimized. The increase in Industrial production can play significant positive role in development of the capital markets of Pakistan. Thus, it was recommended that authorities should formulate such a policy which supports stock prices through the promotion of industrial production. The Competition Commission should keep a close watch on the functioning of stock markets.

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PERFORMANCE EVALUATION OF PAKISTANI MUTUAL FUNDS

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Abstract. Extensive research has evaluated mutual fund performance in different financial markets which led to mixed results (Soderlind *et al.*, 2000; Korkeamaki and Smythe, 2004), however, limited work has been done to evaluate Pakistani mutual funds. The purpose of this study is to provide guidelines to the managers of open-ended Pakistani mutual funds and benefit small investors by pointing out the significant variables influencing the fund performance. An effort has been made to measure the fund performance by using Sharpe ratio with the help of pooled time-series and cross-sectional data and focusing on different fund attributes such as fund size, expenses, age, turnover, loads and liquidity. The quarterly sample data are collected for all the open-ended mutual funds listed on Mutual Fund Association of Pakistan (MUFAP), for the years 1999-2006. The results indicate that among various funds attributes lagged return, liquidity and 12B-1 had significant impact on fund performance.

I. INTRODUCTION

Increasing number of mutual funds in the developed financial markets indicate investor's preference for this mode of investment (Huhmann, 2005). Over the years mutual fund industry has experienced tremendous growth, whereas, mutual fund is still a recent phenomenon in some of the developing countries. The growth has been robust which in turn has led to the creation of various types of mutual funds. Broadly speaking, these funds can be categorized as open-ended and close-ended funds. Closed ended funds are those whose shares are initially offered to public and then traded in the secondary market between different investors whereas open-ended funds are

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those whose subscription and redemption of shares are allowed on continual basis. Zera (2001) pointed out the most unusual characteristic of open-ended funds by defining these as having no customers but only shareholders. In essence, mutual funds are institutions established for the purpose of benefiting small investors who cannot invest directly in various types of securities. For this purpose an asset management company is considered to be effective as it provides professional management by experts in the stock market.

Mutual Funds were introduced in Pakistan in 1962, with the public offering of NIT (National Investment Trust). Currently, this is the only open-ended mutual fund operating in public sector. The formation of the ICP (Investment Corporation of Pakistan) in 1966 offered a series of close-ended mutual funds which was afterwards divided into two lots in June 2000 and was then privatized. In the private sector, there are forty-three open-ended and twenty two closed-ended mutual funds. Although Pakistani mutual funds have experienced a phenomenal growth during the period under study (1999-2005) with net asset value grown from Rs. 16 billion to Rs. 137 billion till June 30, 2005, which also necessitates to ascertain whether the growth in this sector is a real one or is just a bubble. However, comparing Pakistani mutual fund industry internationally it is of a tiny size. According to Khorana *et al.* (2005) Pakistan holds only 1.33% mutual fund assets to primary securities, in contrast to India with 3.7%, Malaysia 4.0%, Hong Kong 20.3%, and South Korea 16.5%. These facts indicate that mutual fund industry in Pakistan has significant room to grow. Paid-up capital may look substantial but the size is still too small as compared to international standards.

The claim of management effectiveness by asset management companies has been a long-standing issue in finance literature and researchers have repeatedly evaluated management effectiveness of mutual funds. Earlier studies (Jensen, 1964; Shawky, 1982; Bogle, 1991; Pushner *et al.*, 1999; George, 2001) have examined management effectiveness by comparing risk-adjusted returns of mutual funds with those of unmanaged indexes. The results of these studies indicate that in general mutual funds have not been able to outperform the market. Management effectiveness has been also evaluated by many studies through examining relationship of fund returns with its selected attributes (Ippolito, 1992; Tan *et al.*, 1997; Gallagher, 2003; Joseph, 2004). These studies have generally taken attributes like fund size, fund expenses and turnover ratio in order to show their strong influence over open-ended fund returns.

Hence, management effectiveness of open-ended mutual funds should be evaluated as Pakistan's fund industry has a significant room to grow

further, which currently is smaller in size compared to other developing countries. Therefore, looking at the potential of the industry and the need of the small investors, it is important to assess the relationship of fund returns with its selected attributes in Pakistan.

II. LITERATURE REVIEW

A number of researchers have empirically evaluated the relationship of open-ended fund's performance with its attributes in different time periods for the developed economies (Soderlind *et al.*, 2000; Korkeamaki and Smythe, 2004). The effect of fund size on its return can be evaluated by measuring the relationship of fund's net asset with its return. Prior studies have indicated that smaller the size of fund, the higher is its operating efficiency. Robert (1988) concluded that the smallest quartile of US funds size achieved superior performance in comparison to other quartiles. The conclusion specifically indicated that the smallest quartile had significant positive risk adjusted returns as measured by Jensen Abnormal Performance Index at 90% level of significance. Gorman (1991) also found that small mutual funds, as measured by net assets, perform slightly better than large mutual funds. These results indicate that mutual funds quickly exhaust economies of scale and experience decreased returns (Becker and Vaughan, 2001; Chen *et al.*, 2004). Consistent with these researches, Soderlind *et al.* (2000) evaluated the relationship between fund performance and fund size in the Swedish market and concluded that better performance is achieved by the equity funds that are smaller in size.

The consistency of management effectiveness has been the focus of interest for many researchers. The theory of efficient market also suggests that fund managers should not be able to generate positive fund returns consistently over a period of time. In this context, Brown (1995) analyzed annual fund returns of US funds and found that returns are serially correlated over time thus negating the efficient market hypothesis. This study also confirms that past performance of mutual fund can be an important attribute in determining future fund returns.

Most of the studies on mutual fund performance conclude that actively managed funds fail to boost returns sufficiently so as to recover their expenses back. Hence, one of the most evident findings among the previous studies is the negative relationship between fund return and fund expenses. Livingston and O'Neal (1998) have also particularly stressed the significance of expenses in open-ended funds. In this context, Elton *et al.* (1993) examined the returns of US mutual funds and found that equity fund

performance is negatively related to the magnitude of expense ratios. Load, another form of expense was analyzed by Droms and Walker (1995) through examining international mutual funds and using a pooled cross-sectional/ time series regression model to determine whether load/no-load status, asset size, expense ratios, and turnover rate were related to unadjusted and risk-adjusted returns. Results indicated no performance difference between no-load and load funds when using unadjusted and risk-adjusted returns. McLeod and Mathotra (1995) analyzed 12B-1, yet another form of mutual fund expense and confirmed that the fund managers justify these expenses in the form of higher returns. Consistent with above-mentioned studies a recent study by Korkeamaki and Smythe (2004) examined this relationship in Finnish market and reported that bank-managed and older funds charge higher expenses but investors were not compensated for paying higher expenses with higher risk-adjusted returns.

The level of fund turnover represents active or passive management strategy chosen by the fund managers in order to achieve their goals, where higher turnover reflects active management and *vice versa*. Various researchers have assessed the relationship of fund performance with the level of turnover showing varied evidences regarding its effect. Carhart (1997) empirically investigated US fund market and found a negative relationship between fund turnover and fund returns. In contrast, Soderlind *et al.* (2000) and Wermers *et al.* (2000) reported that turnover is positively associated with fund returns. Glenn (2004) argues that since open-ended funds face the possibility of redemptions it has to keep more of its assets in the form of cash. Therefore, an open-ended fund will have relatively less money invested than a close-ended fund, which may result in lower returns for the open-ended mutual funds.

Various studies have also used fund's age as a determinant to estimate different variables of mutual funds such as fund-flows, expenses, returns, and size. The study by Rao (1996) with a sample size of 964 funds found an insignificant relationship of age with expenses for US mutual fund industry. Another study by Sawicki and Finn (2002) with a sample size of 55 Australians funds confirmed the age-effect on fund-flows to performance of young funds.

A large number of researches have examined US mutual funds Karlsson *et al.* (2005), whereas, mutual fund industry of other emerging markets have attracted researchers' attention fairly recently. Ramasamy *et al.* (2003) surveyed the relative importance of various factors in the selection of mutual funds by financial advisors in Malaysia and concluded that consistent past

performance, size of the fund and cost of transaction were the three important factors influencing the fund performance. India's fund industry is also of considerable importance because of its recent rapid growth. Narayan (2003) evaluated the performance of Indian mutual funds and reported that over all, funds were able to satisfy investor's expectations by giving, excess returns over expected returns based on both premium for systematic risk and total risk. Moreover, the analysis of the Indian pension fund industry by Mukul and Amarendu (2006) suggested the need for greater professionalism and more superior system-wide perspective by India's provident and pension funds.

Despite the growing interest of researchers in mutual funds world wide, Pakistan's fund industry has not been able to attract the attention of researchers resulting in very limited research for Pakistan's fund industry. Cheema and Shah (2006) in their study of Pakistani fund industry using the annual data for 1994-2004 period concluded that the sufficient protection of minority investors can only be possible if institutional investors in general and mutual funds in particular play a significant role in corporate governance. Another study by Sipra (2006), evaluated the performance of close-ended mutual funds in Pakistan based on the data for the period 1995-2004 and reported that according to Jensen and Treynor measures almost half of the funds outperformed the market portfolio over the last five years. However, when the risk measure was adjusted for Fama's net selectivity measure the market portfolio outperformed all the funds except one.

The present study attempts to evaluate the management effectiveness of open-ended mutual funds in Pakistan for the purpose of benefiting the fund managers and the small investors. There are certain reasons to accept that management effectiveness for open-ended mutual funds would be different from close-ended due to size effect, pricing structures and fund flows. Management effectiveness would be evaluated by examining the relationship of mutual fund return with fund size, fund expenses, fund's age, portfolio turnover, loads and level of cash.

III. DATA AND METHODOLOGY

The quarterly sample data is collected for all forty-three open-ended mutual funds listed on MUFAP,[1] from the years 1999–2006 with the average number of observations for each variable being Two hundred and fifty

[1]MUFAP is the official website which gives the direct facility of further web linkages to every mutual fund in Pakistan.

seven.[2] The study uses the regression model of Philpot *et al.* (1998), which was particularly used for evaluating management effectiveness of US bond mutual funds. Korkeamaki and Smythe (2004) also used a similar regression model to explain the returns over time for Finnish mutual funds for the period 1993-2000. Moreover, funds Age and liquidity are used as added variables to explain its relationship with fund returns. The inclusion of age variable may be justified by the logic that as the fund's age increases it would have more standardized procedures, in other words, greater operating efficiency would lead to have positive relationship with fund return. Glenn (2004) has discussed the negative effect of liquidity on open-ended funds as they have to maintain more cash compared to close-ended funds in order to meet the chance of redemption. Therefore, the liquidity is also included as an additional explanatory variable of the estimated model.

Model 1 (Philpot Model)

$$\boldsymbol{Return_{it}} = \alpha + \beta_1 (\text{Assets}_{it}) + \beta_2 (\text{Expense}_{it}) + \beta_3 (\text{Turnover}_{it}) + \beta_7 (\text{12B-1}_{it}) + \beta_4 (\text{Load}_{it}) + \beta_8 (\text{Return}_{t-1,i}) + \varepsilon_{it} \quad (1)$$

Model 2 (Modified Model)

$$\boldsymbol{Return_{it}} = \alpha + \beta_1 (\text{Assets}_{it}) + \beta_2 (\text{Expense}_{it}) + \beta_3 (\text{Turnover}_{it}) + \beta_4 (\text{Load}_{it}) + \beta_5 (\text{Age}_{it}) + \beta_6 (\text{Liquidity}_{it}) + \beta_7 (\text{12B-1}_{it}) + \beta_8 (\text{Return}_{t-1,i}) + \varepsilon_{it} \quad (2)$$

Where

i, represents the fund

t, represents the time period

The eight experimental variables used in present study represent the funds attributes with their expected outcomes where:

Return = The fund quarterly Sharpe ratio

Assets = Asset has been measured as the natural logarithm of fund's total net assets of each quarter. The asset variable should have a positive relationship with fund's return if they realize economies of scale.

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[2]Some of the mutual funds were in operation for the entire time period under study whereas, the others came into existence later on, therefore, the average numbers of observations for each variable were 257.

Expense = Expense ratio has been measured by mutual fund's quarterly operating expenses (including management fees, distribution fees, and other expenses) as a percentage of the fund's average net assets. If by spending more resources on active management, managers increase the return then expenses regression coefficient should be positive.

Turnover = Turnover ratio reflects the total trading activity undertaken by the fund during the quarter. Hence, if active management increases return the turnover variable will have a positive relationship with fund's return.

Load = A dummy variable coded one if the fund charges any load and coded zero otherwise. Thus, if load fund managers are more skilled then it should have a direct relationship with returns.

12B-1 = A dummy variable coded one if the fund charges a distribution fee, and coded zero otherwise. 12B-1 should have a positive relationship if it increases the fund size by promoting the share sales which in turn increases the fund return.

Age = Age will be measured by number of quarters the fund is operational. As age increases it is deemed that efficiency increases therefore, returns are also supposed to increase resulting in a positive relationship.

Liquidity = Liquidity will be measured by the fund's total cash on quarterly basis. If increase in cash balance prevents quick sales of assets then relationship of liquidity with fund return is expected to be positive.

$Return_{t-1}$ = Mutual fund Sharpe ratio lagged one holding period. If fund mangers are consistent in their performance, the expected relationship is positive.

IV. RESULTS

The descriptive statistics of forty-three open-ended mutual funds in Pakistan are presented in Table 1. On average, the mean net assets of Equity fund are 4.052 billion rupees while the median net assets figure stands at only 1.372 billion rupees, this clearly shows that some of the extraordinary large funds as National Investment Trust, to some extent have skewed the mean

upwards. Moreover, the largest funds have lower expense ratios but surprisingly the fund size is not helping them to excavate higher returns. In addition, the Islamic funds seem to be the most expensive in terms of total expense ratio but are also earning the highest mean returns. However, Hybrid funds on the other hand have lowest expense ratio and turnover with the highest amount of liquidity. The mean values of Sharpe ratio for all the fund categories during the sample period are negative and they are highest for fund of funds category while lowest for the Income and money market funds. Moreover, the fact that funds of funds being lowest in terms of raw return but highest for Sharpe ratio demonstrates its ability to reward the premium return relative to its variability.

Almost all of the funds in the categories of Islamic funds, balanced funds, hybrid funds, and funds of funds are charging load fee, with the exception of equity funds and income funds where 72% and 90.9% of the funds are charging this fee.

In comparison to the load fee, 12B-1 is charged by all the funds in the categories of hybrid funds and funds of funds only. With the balanced funds category having the lowest number of funds with (50%) charging the fee.

The relationship between fund attributes and fund performance are hypothesized on the basis of three financial theories namely, Efficient market theory, Agency theory and Trade-off theory. Efficient market theory deals broadly with two issues, whether mutual fund managers are consistent in their performance or not and whether active portfolio management increases portfolio returns. The agency theory discussed in this study is related with certain fund characteristics which might be manipulated by the management in order to maximize their own benefits rather than maximizing shareholders wealth. Finally, the trade-off theory addressed by this study is concerned with the optimal holding of cash, which suggests that firms set the amount of cash holding by weighing their marginal cost and marginal benefits.

The hypotheses indicated by the theories are tested in this study as H_1: The Mutual Fund return is negatively related to fund size. H_2: Mutual Fund returns have negative relationship with expenses. H_3: The mutual fund return is negatively related to turnover ratio. H_4: Mutual Fund charging loads provide lower returns as compared to funds not charging loads. H_5: 12B-1 has a positive relationship, if it increases the fund size. H_6: The Mutual Fund return has a positive relationship with fund's age. H_7: Mutual Funds holding more cash are expected to provide lower risk-adjusted return. H_8: A mutual fund return is un-related to its quarterly lagged return.

TABLE 1

Descriptive Statistics (1999-2006)

	Equity	Income/ Money market fund	Islamic funds	Balanced funds	Hybrid Funds	Funds of funds
Assets (Billions Rs.)						
Mean	4.052	4.041	1.582	1.692	1.189	0.183
Median	1.372	1.377	1.205	1.372	1.106	0.184
SD	11.47	11.44	12.82	1.240	0.209	0.013
Expense ratios						
Mean	1.194%	1.184%	1.297%	1.256%	0.403%	1.168%
Median	0.846%	0.832%	.907%	0.878%	0.289%	1.082%
SD	1.284%	1.285%	1.413%	1.349%	0.248%	0.575%
Turnover						
Mean	57.290%	57.63%	74.69%	70.47%	14.132%	91.08%
Median	19.86%	19.86%	23.65%	24.81%	17.81%	39.17%
SD	1.818%	1.814%	2.335%	2.085%	8.82%	1.19%
Liquidity (Billions Rs.)						
Mean	0.315	0.324	0.231	0.275	0.982	0.021
Median	0.127	0.131	0.104	0.115	0.855	0.023
SD	0.442	0.449	0.406	0.429	0.207	0.014
Return						
Mean	4.14%	4.17%	4.56%	4.46%	3.28%	–0.43%
SD	8.18%	8.10%	8.92%	8.29%	0.97%	5.99%
Sharpe ratio						
Mean	–0.423	–0.430	–0.322	–0.274	–0.544	–0.120
SD	1.191	1.192	1.245	1.031	0.724	0.100
Fund's Age Mean (quarters)	23	24	7	7	4	4
Funds Charg-ing Load	72%	90.9%	100%	100%	100%	100%
Funds Charg-ing 12B-1	90.9%	54.5%	66%	50%	100%	100%

The empirical evaluation of above eight hypotheses consists of regressions with Sharpe ratio as dependent variable and lagged Sharpe ratio, log of fund assets, quarterly expense ratio, portfolio turnover rate, load, 12B-1, cash and age of the fund as independent variables. The first model in Table 2 represents the results of independent variables included by Philpot (1998) while, in the second model two new variables cash and age of the mutual fund were added to be estimated. The first two regression models are run under ordinary least square and the third regression model is run under IGLS. This study uses a pooled-time series cross-sectional data to estimate the mutual fund returns relationship with independent variables. In doing so, IGLS is used to take care of the possible contemporaneous correlation and heteroskedasticity. Therefore, the conclusion should be drawn from the IGLS model.

TABLE 2

Results of Regression Analysis (Dependent Variable Sharpe Ratio)

Variable	Model 1 OLS	Model 2 OLS	Model 2 IGLS
Assets	3.04 (0.363)	4.35 (0.328)	4.73 (0.34)
Expense ratio	1118.7 (1.634)	980.04 (1.42)	980.08 (1.47)
Turnover	3.072 (0.675)	2.84 (0.625)	2.84 (0.65)
Load	–15.11 (0.528)	–15.61 (–0.652)	–15.61 (–0.67)
12B-1	24.21 (1.413)	36.64** (2.016)	35.78** (2.08)
$Return_{t-1}$	0.153** (2.513)	0.124** (1.996)	0.1235** (2.06)
Age		0.584 (1.11)	0.583 (1.15)
Liquidity		–4.0e-008* (–1.794)	–4.03e-08* (–1.85)
F-value	2.803**	2.873**	5.24***
Model R^2	0.122	0.153	0.218

*Significant at 0.1 level, **Significant at 0.05 level, *t* statistics in parenthesis

If the mutual fund data supports the theory of efficient markets then the outcome should match the theory's prediction also. Hence, the estimated coefficients should be negative or unrelated for the variables of lagged Sharpe ratio, expense ratio and turnover. If the predictions of agency theory are supported then the estimated coefficients for assets, load and 12B-1 must be negative. Finally, if the prediction of Yan (2006) made under static model of optimal cash holding holds true then the coefficient for liquidity variable will be negative.

The results of IGLS regression in the Table 2 shows that quarterly Sharpe ratio is positively and significantly related to its lagged Sharpe ratio. This means that fund performance in a quarter is directly related to its performance in the prior quarter. This result is of particular importance to financial planners and investment advisors who spend a lot of time studying the past fund performance as they regard it a key component of selection process (Droms, 2006). The result of this study provides the evidence that the mutual funds are consistent in their performance and also conforms that the fund managers have difference in their skills which persists over time. Hence, difference in fund performance is also expected to be proportional to differences in prior periods. However, the insignificant variables expense ratio ($t = 1.47$) and turnover ratio ($t = 0.65$) somehow support the efficient market theory. This means that funds' incurring of higher expenses and turnover ratio do not put any significant effect on the Sharpe ratio. However, these results are consistent with Lin (2004) who also confirmed that expense ratio and turnover ratio were unrelated to risk-adjusted return.

The funds charging 12B-1 has a significant ($t = 2.08$) positive relationship with the Sharpe ratio. In general, a 12B-1 fee is justified on the basis that it helps the fund to pay for its advertising, which over time builds the asset base of a fund and hence raises the performance due to growth and possible economies of scale. Thus, this result does not support agency theory which predicts that investors lose value when their funds are used to promote mutual fund share sales. The result is consistent with study of Griffith *et al.* (1998) which concluded that these costs do add to the fund's performance.

Relation between Asset and Sharpe ratio is insignificant ($t = 0.34$) which shows that large fund size neither benefits the shareholders through increased economies of scale nor does it costs them due to increased agency problems. Although, the large fund size certainly benefits the management because their management fee is a fixed percentage of fund assets.

The result suggests that load is not a distinctive factor for the recognition of superior or inferior funds but normally this expense should be avoided by

the investors. The load coefficient is negative which indicates that no-load funds outperform load funds marginally. This result may have supported the agency theory prediction that investors lose value when such fees are charged but the result however, is not significant.

The funds have an option of meeting investors redemption either by liquidating securities or holding cash. The fund manager has to maintain a balance between the options of holding cash or liquidating securities because holding more cash would decrease the expected return while liquidating securities requires transaction cost and also is not favorable to sell when the markets are down. The result in Table 2 indicates the effect of fund cash holding on performance is negative and significant which also supports the prediction of Yan (2006). However, this outcome is also consistent with the findings of (Glenn, 2004), that only those mutual funds are able to survive better which maintain lower level of cash holdings. The older funds are thought to exhibit superior performance due to more experience but somehow, the Age variable is positive and not significant indicating that old funds on average perform the same or slightly better.

The liquidity coefficient is significant ($t = -1.74$) and negative. This outcome appears to support (Glenn, 2004; Dukes and Davis, 2006) finding, that only those mutual funds are able to survive better which maintain lower level of cash holdings.

V. CONCLUSION

Existing literature has focused on the management effectiveness of Pakistan's close-ended funds and has concluded the performance of these funds as poor. However, the present study's primary contribution is in providing conclusive evidence on the important characteristics of open-ended mutual funds. The study investigates the impact of asset size, 12B-1, load, expense ratios, turnover, lagged return, liquidity and age on mutual fund performance. Mutual fund risk-adjusted return is positively related to expenses, turnover and Age however, they are statistically insignificant. In fact, this result points towards the opportunity for mutual fund industry to make themselves better informed and operationally efficient for the reason, that as the age increases it enables fund to achieve greater operating efficiency and decrease their expenses (Dellva and Olson, 1998).

The 12B-1 fees has a significant positive relationship with the Sharpe ratio in the second model signifying that this has become important due to the addition of other two factors. 12B-1 allows the fund for the payment of distribution fees to selling agents which in turn helps fund to increase its

performance due to growth and possible economies of scale. This result is also consistent with Griffith *et al.* (1998) study which concluded that these costs do add to the fund's performance. On the other hand, the regression results did not make any significant difference between funds charging load and no-load funds. The results of both the models suggest that asset size is not a distinctive factor for the recognition of superior or inferior funds conforming the results of Dellva and Olson (1998).

Thus, the conclusion of this study in addition to focusing on the relationship between funds attributes and performance for better funds management also implies that investors while making decisions should see the past performance of the fund, level of fund cash holdings and prefer a fund with 12B-1 plan.

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ROLE OF PAKISTAN POVERTY ALLEVIATION FUND'S MICRO CREDIT IN POVERTY ALLEVIATION A Case of Pakistan

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Abstract. Poverty alleviation has been one of the major agenda of all civilized societies throughout the history. Different strategies have been adopted in Pakistan for the purpose, which include special programs and short-term measures targeted towards improving the earning capacity of masses and provision of social safety nets for the really poor. With a view to enhance the access of the low-income communities to socio-economic services, the Government of Pakistan has set up an independent and professionally managed unit, the Pakistan Poverty Alleviation Fund (PPAF). The Fund is working through a network of partner organizations having strong community outreach programs. PPAF continuously monitors and analyzes effectiveness of its programs. This paper attempts to quantify the impact of PPAF micro credit on poverty alleviation.. Data collected in Gallup (2005) has been utilized for the purpose. Counter-factual 'Combined approach' has been employed in the analysis. The Paper concludes that Micro credit has reduced poverty by 3.05 percentage points in the period under study.

I. INTRODUCTION

Poverty has been a major challenge since the known civilization came into existence. In modern era, poverty is known to be the breeding ground for conflicts between nations and terrorism. Poverty is a wide spread world

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problem that afflicts particularly the developing countries. Poverty in Pakistan has been a major problem. Despite the fact that agricultural sector showed high growth rates during 1960s, the country witnessed high level (about 40 percent) of poverty, which is more severe particularly in the rural areas. One possible reason for this increasing trend in poverty was that the initial beneficiaries of agricultural subsidies were generally large farmers. After 1970 poverty declined and this trend continued until 1987/1988. Foreign remittances, increased private investment and good performance of agricultural sector can be pinpointed as the primary factors for the declining trend in the poverty. After 1987/88, however, this trend reversed. Poverty was estimated from 32 percent to 36 percent during 2001/2002 (this difference was due to different methodologies used for computing poverty lines in different studies). Despite the marginal differences in poverty statistics, all studies agree on the point that poverty increased during 1990s. The main reason behind this increase was the structural adjustment program of the government. However, poverty is reported to have decreased to 23.94 percent in the recent years (see Arif, 2001; Arif *et al.*, 2001; and Jafri 1999 for details).

The poverty alleviation approach followed in Pakistan consists of sustaining a moderate rate of economic growth with an emphasis on equity in distribution and human resource development. Different strategies have been adopted for the purpose, which include special programs and short-term measures targeted towards improving the earning capacity of the masses in general and provision of social safety nets for the really poor in Pakistan. With a view to enhance the access of the low-income communities to socio-economic services of the Government, an independent professionally managed unit, the Pakistan Poverty Alleviation Fund (PPAF) was set up in 2000. This is in the form of a private, not-for-profit, limited company, with an aim to reach the poor communities through the NGOs and Community Based Organizations (CBOs). It also focuses on institutional and capacity building measures so as to enhance the outreach of the existing NGOs and social organizations, which would come under the purview of the PPAF as its partners on the basis of transparent criteria. In addition to Government of Pakistan, World Bank is the major contributor to the PPAF project.

Initially, PPAF has signed agreements with five Partner Organizations (POs) to disburse Rs. 5 billion over the next five years. These five POs are: Taraqee Trust, Quetta (Balochistan), Agha Khan Rural Support Program (AKRSP), Gilgit (Northern Areas), National Rural Support Organization (NRSP), Islamabad (Federal Area), Family Planning Association of Pakistan (FPAP), Lahore (Punjab) and Kashf Foundation, Lahore (Punjab). Later on,

several other partners entered into agreements with PPAF and the Soon Valley Development Program is one of such enthusiastic organization. The target population of the PPAF project is poor and disadvantaged rural and urban communities. The benefits of the project will accrue directly to poor through: (*a*) income generation opportunities; (*b*) improved community physical infrastructure in the underserved areas; and (*c*) greater economic integration of women. Importantly the project will be complementing government efforts in improving the living condition of the poor sections.

PPAF evaluates its programs rigorously. It conducts surveys using its own research department or commissions other agencies for preparing baseline studies for the purpose of evaluation the effectiveness of its programs. In this paper, an attempt has been made to quantify the impact of the PPAF micro credit on poverty status of the borrowers. The rest of the paper is organized as follows.

After introduction, section II presents a brief review of literature. Section III deals with the methodology adopted in the paper and the data source. Section IV analysis PPAF micro credit and poverty status of the borrowers compared with the control group, while the last section V concludes the paper.

II. LITERATURE REVIEW

Microfinance has been gaining popularity for the last few decades, especially after the experience of the Grameen Bank in Bangladesh. The microfinance industry stands at a crossroads between increased commercialization and increased philanthropic aid (Emily, 2005). Micro financing has been successful in some of the regions but not everywhere. Microfinance providers in Asia and Latin America have been the world leaders, and the demonstration effect of their achievements has helped to build substantial microfinance industries in countries such as Indonesia, Bangladesh and Bolivia (see Kieran, 2004).

The most recent entrants to the microfinance industry are commercial banks. This modality includes many variants: transformed microfinance NGOs, government owned development banks, reformed state banks and diversification into microfinance by existing commercial banks. The Khushhali Bank in Pakistan is an extraordinary example of a newly-established retail commercial bank specialized in micro-finance. The transformation of NGOs into commercial banks is still a relatively new phenomenon. However they seem to be performing well in terms of profits and in expanding the scale of their operations significantly (Fernando, 2004).

In contrast, the state banks have generally under-performed. In the popular period of directed credit in the 1970s, subsidized loans were granted to politically-favored wealthy landowners rather than the poor farmers. Despite this, repayment rates were low and many programs operated at a loss. However, the case of commercial banks is different. The extensive branch networks, which enables them to achieve significant outreach. There are several examples of commercial banks diversifying into microfinance, either directly or through partnerships with financial NGOs. Even big multinational banks such as ABN Amro, Citibank and Deutche Bank are now involved in microfinance (Montgomery and Weiss, 2005).

The above examples of incorporation of microfinance into the formal financial system are paradoxical, given that the initial motive of microfinance was to serve the poor borrowers who could not have access to formal finance program. In some cases, such as in Nepal or India, sector specific lending requirements may be the impetus behind diversification of large commercial banks into microfinance. But ICICI Bank in India, for example, has expanded its involvement in microfinance beyond the minimum requirement. In cases where such requirements do not exist, the motive seems to be profits and diversification of business lines. In Latin America in particular, there is a growing market for relatively small loans and in several countries the larger MFIs have been generating considerably higher returns than have commercial banks. In contrast, smaller MFIs (principally NGOs) in the region are showing negative returns (Ramirez, 2004).

It is one of the most interesting generalizations to emerge from the microfinance and poverty literature that the poorest of the chronic poor (the core poor) borrow essentially for protectional purposes, given both the lower and irregular nature of their income. This group, it is suggested, will also be risk averse to borrow for promotional measures (that is, for investment in the future) and will, therefore, be only a very limited beneficiary of microfinance schemes (Hulme and Mosley, 1996). World Development Report on poverty (World Bank, 2000) has also expressed the view that it is the less badly-off poor who benefit principally from microfinance. Bhutt *et al.* (2001) are of the view that the future success of microfinance as a development tool will depend largely on the ability of public, private, and non-profit organizations to develop a diverse set of institutions to meet the different financial needs of various segments of low-income populations. The design of such institutions must be informed by a thorough understanding of the causes of poverty, as well as the specific reasons for the lack of viable formal financial intermediaries in specific communities. What are the major obstacles faced

by the target populations, especially the entrepreneurial and marginally self-employed poor, in their attempt for economic and social advancement? To what extent are these obstacles related to the lack of financial services? Would potential clients need additional non-financial services, such as training, technical assistance, and health and human services, to be able to make productive use of the loan, and to what extent would such services impact a client's cash flow and a program's subsidy dependence? A focus on such basic market research and needs assessments must be emphasized in feasibility studies before the plan for any microfinance program is drawn up.

There seems to be consensus that microfinance is an effective tool for poverty alleviation. However, it is also clear that the states and societies are in the process of learning to use this tool effectively. It is really important to take micro-financing strategies as a complete package and not simply extending micro loans to the poor failing which the results will be sub optimal or counter productive.

A few studies have also been conducted to quantify the impact of microfinance on poverty alleviation. Hulme and Mosley (1996), for instance, based on the counter factual combined approach, analyzed the impact of microfinance on poverty alleviation using sample data for Indonesia, India, Bangladesh and Sri Lanka and found that growth of income of borrowers always exceeds that of control group and that increase in borrowers income was larger for better-off borrowers. Similarly MkNelly *et al.* (1996) found positive benefits for the borrowers. Khandker (1998), based on double difference comparison between eligible and ineligible households and between program and control villages, focusing on Grameen, Bangaladesh and Bangaldesh Rural Advancement Committee (BRAC), found that microcredit alleviated poverty up to 5 percent annually. Furthermore, it was found that a loan of 100 taka to a female borrower, after it is repaid, allows a net consumption increase of 18 taka. For Thailand village banks, Coleman (1999), using the same approach as that of Khandker (1998), found no evidence of any impact of micro finance. Another study by Coleman (2004), found that programs are not reaching the poor as much as they reach relatively wealthy people. Khandker (2003), found that microfinance helps to reduce extreme poverty much more than moderate poverty, *i.e.* 18 percentage points as compared with 8.5 percentage points over seven years. Welfare impact is also positive for all households, including non-participants, as there were spillover effects.

Mosley (2001), using data from Latin American countries, found a positive growth of income and assets of the borrowers than control group.

The growth of income of the better-off borrowers was larger. However, he could not find any evidence of impact of microfinance on extreme poverty. Banegas *et al* (2002), employing Logit model, found positive impact on the income of borrowers. Gallup Pakistan (2005), using counter factual, combined approach, found positive impact of PPAF microfinance on the consumption, income and assets of the borrowers. However, the study did not explore the impact of the PPAF microfinance on poverty.

Keeping in view the relevant literature reviewed in brief above, firstly, it is observed that empirical findings are mixed and, secondly, no study has been conducted so far to quantify the impact of microfinance on poverty alleviation in Pakistan. This paper is devoted for the purpose.

III. METHODOLOGY AND DATA SET

METHODOLOGY

In this paper a counter-factual 'Combined approach' has been employed to study the impact of PPAF micro credit on poverty status of the households. This approach combines the 'with – without approach' and the 'before – after approach'. The "with – without approach" provides information on the poverty status of borrowers (target group) and compares it with the poverty status of non-borrowers (control group). The 'before – after' approach makes a comparison of the change in the poverty level of both groups *ex antae* and *ex post* for the time period in which the borrowers benefited. There are several other factors that affect the income of all households overtime irrespective of whether they borrowed or otherwise. This methodology will enable us to capture the net impact of micro credit, and to isolate the influence of other factors on the income level and thus on the poverty status of the households who borrowed.

More specifically the following formula has been used to find the net impact of micro credit on borrowers.

$$P^* = (Pb_{t1} - Pb_{t0}) - (Pnb_{t1} - Pnb_{t0})$$

Where P^* is Net impact of micro credit on poverty status of borrower households; Pb_{t1} is the poverty status of the borrower households with current income level; Pb_{t0} is the poverty status of the borrower households with previous income level; Pnb_{t1} is the poverty status of the non-borrower household with current income level; Pnb_{t0} is the poverty status of the non-borrower household with previous income level, and 't_1' represents the duration from Jan 2004 to Jan 2005 and 't_0' stands for the duration from Jan 2003 to Jan 2004.

POVERTY LINE

We have used the official poverty line of Rs. 878.64 per adult equivalent per month for the year 2004-05 and the same poverty line has been deflated by Consumer price index (CPI, published by the Federal Bureau of Statistics) to get the poverty line of Rs. 838.22 for the year 2003-04.

DATA SOURCE

We have utilized the data collected in Gallup (2005). Gallup Pakistan conducted the survey, of a sample of more than 3000 households, of which about 1500 were borrowers, *i.e.* those who had taken at least one loan from PPAF during July 2001 and June 2003. The repeat borrowers were also included in the sample. The other half of the sample comprised of non-borrowers, having more or less the same profile as that of the borrowers. As the PPAF's lending procedure is different from conventional banking, therefore the sample selection process of Gallup Pakistan was supported by the Partner Organizations (POs) of PPAF. It has been stated in Gallup (2005) that in some cases the planned number of borrowers could not be interviewed because either the respective community organization did not have sufficient number of borrowers or the concerned households had not yet qualified the condition of having completed one year after borrowing. This was particularly true for certain areas in the Baluchistan province. The Table in appendix A compares the planned and the achieved sample.

Gallup (2005) included those household in its sample who took micro credit during the period from July 2001 to June 2003. The field work for the data collection was carried out during February-April 2005. Respondents were asked questions about their current and past year's income in addition to many other questions related to different aspects of sample households. There seems to be some weakness in data collection methodology. For precise results, the data should have been collected in the start of the intervention of the target households, *i.e.* before advancing micro credit as well as after the laps of some time period, *i.e.* the same households who borrowed and those who did not borrow (control group) should have been investigated for a second time. Keeping these limitations in view, our poverty estimates will therefore be indicative.

IV. PPAF MICRO CREDIT AND POVERTY ALLEVIATION

POVERTY STATUS OF THE BORROWERS

The incidence of poverty of the borrowers has been depicted in Table 1. Using the poverty line of Rs. 838.22, we estimated the poverty level of the

sample borrowers for the year 2003-04. The estimated headcount was 30.58 percent, which is higher than the official poverty estimates. This could be attributed to non-comparable sample sizes and variations across the regions. The overall poverty level is further decomposed in different poverty bands and groups such as extremely poor, ultra poor, poor, vulnerable, quasi non-poor and non-poor.[1] This is shown in Table 1.

TABLE 1

Poverty Status of the Borrowers

2003-2004	% of HH	2004-2005	% of HH	% Difference
Poverty Line (PL) Rs. 838.32 per month	30.58	Poverty Line (PL) Rs. 878.64 per month	23.99	(–) 6.61
Extremely poor < 50%, *i.e.* (below Rs.419.11)	2.82	Extremely poor < 50%, *i.e.* (below Rs. 439.32)	1.6	(–) 1.22
Ultra Poor > 50% < 75%, *i.e.* (Rs. 419.11-Rs. 628.66)	10.42	Ultra Poor > 50% < 75%, *i.e.* (Rs. 439.32-Rs. 658.98)	5.82	(–) 4.6 0
Poor > 75% < 100%, *i.e.* (Rs. 628.66-Rs. 838.32)	17.34	Poor > 75% < 100%, *i.e.* (Rs. 658.98-Rs. 878.64)	16.57	(–) 0.77
Vulnerable > 100% < 125%, *i.e.* (Rs. 838.32-Rs. 1047.87)	16.83	Poor > 100% < 125%, *i.e.* (Rs. 878.64-Rs. 1098.30)	15.68	(–) 1.15
Quasi Non-Poor > 125% < 200%, *i.e.* (Rs. 1047.87-Rs. 1676.64)	37.17	Quasi Non-Poor > 125% < 200 %, *i.e.* (Rs. 1098.3-Rs. 1757.28)	40.42	(+) 3.25
Non-Poor > 200%, *i.e.* (Rs. 1676.64 & above)	15.42	Non-Poor > 200%, *i.e.* (Rs. 1757.28 & above)	19.71	(+) 4.29

Source: Our estimates.

Note: A negative sign indicates a decline and a positive sign stands for an increase.

[1] Categorizations of the households into different poverty bands is based on the definitions given in The Economic Survey (2006-2007).

It reveals that 2.82 percent of the sample was extremely poor (whose income is less than 50% of the poverty line), 10.42 percent was ultra poor and 17.34 percent of the sample was poor. The first three categories of poverty bands aggregate to 30.58 percent. Of the remaining data, 16.83 percent of was identified as vulnerable, 37.17 percent as quasi non-poor and 15.42 percent of the sample as non-poor.

Using the poverty line of Rs. 878.64, we also estimated the poverty level of the sample borrowers for the year 2004-05. It was found that poverty incidence was 23.99 percent. This shows an appreciable decline (6.61 percent) in poverty as compared to the last year. It further implies that the PPAF micro credit, in addition to other factors, has played a positive role in poverty alleviation. The overall households are further decomposed in different poverty bands. The last column of Table 1 shows the change in poverty status across different poverty bands. A decline of 1.22 percentage points has been recorded in the extremely poor households, while it was 4.60 and 0.77 percentage points in case of ultra poor and poor households respectively. A marginal decline of 1.15 percentage points in poverty status of the vulnerable households was also recorded in the same year. This is supported by an increase in percentage of quasi non-poor and non-poor groups of households over the reported period.

POVERTY STATUS OF THE NON-BORROWERS

Table 2 reports the estimates of poverty status of the households who did not borrow form the PPAF. The head count of the non-borrowers was 29.32 percent and 25.78 percent in 2003-04 and 2004-05 respectively. A decline of 3.54 percentage points was recorded over this time period. Furthermore, the decomposition of sample of non-borrowers shows that 4.03 percent of households were extremely poor, 9.03 percent were ultra poor and 16.26 percent of the samples were in the category of poor in 2003-04. This aggregates to 29.32 percent of the non-borrowers. Again 18.50 percent of the households were identified as vulnerable, 37.07 percent as quasi non-poor and 15.11 percent of the sample as non-poor in the same year. Comparing the poverty status of the non-borrowers in different poverty bands during 2003-04 and 2004-05, Table 2 shows that the number of households in the extremely poor band had declined by 1.85 percentage points (from 4.03 percent in 2003-04 to 2.18 percent in 2004-05), while in case of ultra poor the decline was substantial (3.15 percent). However in case of poor there was an increase (1.46 percent) in the poverty status of the households from 16.26 percent to17.72 percent during the same period. With the exception of vulnerable group, which has shown a decline of 2.92 percentage points, all

other households who were in higher income groups (quasi non-poor and non-poor) have shown an increase over the reported period (see Table 2).

TABLE 2

Poverty Status of the Non-Borrowers' Households

2003-2004	% of HH	2004-2005	% of HH	% Difference
Poverty Line (PL) Rs. 838.32 per month	29.32	Poverty Line (PL) Rs. 878.64 per month	25.78	(–) 3.54
Extremely poor < 50%, *i.e.* (below Rs. 419.11)	4.03	Extremely poor < 50%, *i.e.* (below Rs. 439.32)	2.18	(–) 1.85
Ultra Poor > 50% < 75%, *i.e.* (Rs. 419.11-Rs. 628.66)	9.03	Ultra Poor > 50% < 75%, *i.e.* (Rs. 439.32-Rs. 658.98)	5.88	(–) 3.15
Poor > 75% < 100 %, *i.e.* (Rs.628.66-Rs. 838.32)	16.26	Poor > 75% < 100%, *i.e.* (Rs. 658.98-Rs. 878.64)	17.72	(+) 1.46
Vulnerable > 100% < 125%, *i.e.* (Rs. 838.32-Rs. 1047.87)	18.50	Poor > 100% < 125%, *i.e.* (Rs. 878.64-Rs. 1098.30)	15.58	(–) 2.92
Quasi Non-Poor > 125% < 200 %, *i.e.* (Rs. 1047.87-Rs. 1676.64)	37.07	Quasi Non-Poor >125%< 200 %, *i.e.* (Rs. 1098.3-Rs. 1757.28)	41.49	(+) 4.42
Non-Poor > 200%, *i.e.* (Rs. 1676.64 & above)	15.11	Non-Poor > 200%, *i.e.* (Rs. 1757.28 & above)	17.15	(+) 2.04

Source: Our estimates.

THE NET IMPACT OF PPAF MICRO CREDIT ON POVERTY STATUS OF BORROWERS

Table 3 provides the net impact of micro credit on poverty status of the borrowers. This has been obtained by taking the difference of the last column of Table 1 and Table 2 as discussed in the section III on methodology. The PPAF micro credit has reduced the overall poverty level by 3.07 percentage points (from 6.61 percent to 3.54 percent) and the borrowers have shifted to

higher income groups during the reported period. The poverty status of the extremely poor borrowers has been marginally increased (by 0.63 percentage point), showing obviously no effect of micro credit on poverty status of these households. The results are consistent with the generalization that emerged from the literature that chronic poor households borrow essentially for protectional purposes (see Hulme and Mosley, 1996). In case of 'ultra poor', the net impact of micro credit shows a reduction by 1.45 percentage points (a positive impact). Although the percentage of vulnerable group shows a reduction, both with and without micro credit, however the net impact shows an increase in their number by 1.77 points. Likewise, the net impact of micro credit on the non-poor depicts an increase of 2.25 points due to redistribution, which is the expected result. The percentage of quasi non-poor group has increased, both with and without micro credit. However, the net impact shows a reduction by 1.17 percentage points, which is due to redistribution (compare with the case of non-poor and vulnerable). The case of poor group is interesting. Their number shows a reduction by 0.77 percent due to micro credit but an increase of 1.46 percent without the facility. The net impact, therefore shows a reduction in poverty by 2.23 points.

TABLE 3

Net Impact of PPAF Micro credit on Poverty Alleviation

	Last Column Table 1 (T1)	Last Column Table 2 (T2)	Difference (T1–T2)
Overall	(–) 6.61	(–) 3.54	(–) 3.07
Extremely poor	(–) 1.22	(–) 1.85	(+) 0.63
Ultra Poor	(–) 4.60	(–) 3.15	(–) 1.45
Poor	(–) 0.77	(+) 1.46	(–) 2.23
Vulnerable	(–) 1.15	(–) 2.92	(+) 1.77
Quasi Non-Poor	(+) 3.25	(+) 4.42	(–) 1.17
Non-Poor	(+) 4.29	(+) 2.04	(+) 2.25

Source: Calculated from Table 1 and Table 2.

V. CONCLUSION

In this paper an attempt has been made to investigate the impact of PPAF micro credit on poverty alleviation of the borrowers. For this purpose the data collected in Gallup (2005) has been used. A counter-factual 'Combined

approach' has been employed to study the impact of micro credit on poverty status of the borrowers. The official poverty line for the year 2004-05 and the adjusted poverty line for the year 2003-04 have been employed. Further, the said poverty lines have been used to decompose the households into different poverty bands and groups.

The PPAF micro credit has reduced the overall poverty level by 3.07 percentage points (from 6.61 percent to 3.54 percent) and the borrowers have shifted to higher income groups during the reported period. The poverty status of the extremely poor borrowers has been marginally increased (by 0.63 percentage point), showing obviously no effect of micro credit on poverty status of these households. The results are consistent with the generalization that emerged from the literature that chronic poor households borrow essentially for protectional purposes. In case of 'ultra poor', the net impact of micro credit shows a reduction by 1.45 percentage points (a positive impact). Although the percentage of vulnerable group shows a reduction, both with and without micro credit, however the net impact shows an increase in their number by 1.77 points. Likewise, the net impact of micro credit on the non-poor depicts an increase of 2.25 points due to redistribution, which is the expected result. The percentage of quasi non-poor group has increased, both with and without micro credit. However, the net impact shows a reduction by 1.17 percentage points, which is due to redistribution (compare with the case of non-poor and vulnerable). The case of poor group is interesting. Their number shows a reduction by 0.77 percent due to micro credit but an increase of 1.46 percent without the facility. The net impact, therefore shows a reduction in poverty by 2.23 points. The overall impact of micro credit on the borrower households has been positive. Keeping in view the positive impact of micro credit on the poverty level of the country, it is suggested that PPAF may extend its outreach through its participatory organizations to all the poverty clusters across the country.

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ANALYSIS OF MILK PRODUCTION SYSTEM IN PERI-URBAN AREAS OF LAHORE (PAKISTAN) A Case Study

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Abstract. This study is an attempt to investigate the market structure, sources of milk production and average unit of productivity in peri-urban[1] areas of Lahore. Using primary data of year 2007 from some selected peri-urban areas of Lahore, the results of this study reveal that the lack of training and dairy related education hinders opportunity of value addition with undue cost of poor transportation, low quality and mismanaged distribution. Lack of marketing and supply chain in dairy industry is another bottleneck of development. The results of this study call for the role of government in the development of dairy sector. The government needs to provide critical support for the promotion of smallholder producers in peri-urban areas.

I. INTRODUCTION

In Pakistan agriculture sector contributes more than 20 percent of the GDP and employs more than 40 percent of the total workforce. Pakistan has larger base of dairy sector allied with the agriculture. Dairy sector generates employment and business opportunities, particularly in the rural and peri-urban areas. A number of people in urban areas are also involved in dairy based business. The public sector departments hold primary responsibility to guide the farmers and play significant role in dairy sector development.

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[1]Immediately adjoining an urban area; between the suburbs and countryside.

Dairy enterprise is dominated by the private sector and the role of government is regulatory.

Although dairy enterprise was badly neglected by the Government, Pakistan is the 5th largest milk producer in the world. According to livestock census 2006, approximately 80 percent of the milk is produced in the rural areas. Only 3-5 percent of total milk production of the country is marketed through formal channels. The remaining 97 percent is produced and marketed in raw form by informal agents in the marketing chain portion of milk producers.

Presently, Pakistan's dairy industry is facing a number of problems which include the lack of commercial dairy farm, lack of dairy related education and lack of financial and infrastructure facilities. Furthermore, lack of quality check is the most neglected aspect of the whole system. There is no test at any stage along the marketing chain. Many shops in urban areas are exposed to dust and flies. Very few shops have refrigeration facility. The containers used in transportation are unhygienic and also the milk adulteration is another serious concern in peri-urban milk supply chain. On the other side, due to increase in inflation and poverty level, the majority of consumers in Pakistan are price-conscious. Therefore, demand for open raw milk is high as compare to processed milk. Hence, raw milk is the primary dairy product marketed in the country. Over 90 percent of the unprocessed milk is collected and marketed through the informal market. Because of high milk demand there emerges excess demand for milk. To overcome the shortage of milk, powdered milk is imported every year. Furthermore, milk collected from urban area is not sufficient to meet the entire urban demand, more milk is collected from rural areas and also the remaining deficit is met through the imported powdered milk.

The findings of Ali and Saifullah (2006) reveal that the milk production is labor intensive. They pointed out that there are a large number of biological, technical and socio-economic constraints like shortage of feed, high mortality rate, poor genetic potentials, high input cost, scarcity of resources and inadequate marketing system. Burki *et al.* (2005) provided a preliminary assessment of the state of Pakistan dairy, explored the sector potential in making impact on the dairy economy and identified areas where more detailed research is needed. According to them research on production structure in dairying could enable us to understand the structural changes needed in this sector.

This study is an attempt to address the various important aspects related to dairy sector in Pakistan like source of milk production, average unit

productivity, cost of milk production and milk supply channels. It may also provide an understanding of the opportunities and problems associated with the dairy enterprises in Pakistan. The findings of the study may help in ensuring development of country's dairy sector because the research based decisions of policy makers may have real impact on welfare of farmers and progress of all the stakeholders of the sector. The above mentioned objectives of study are achieved through surveying the farmers of peri-urban areas and milk centres in urban areas of Lahore (see BOX).

BOX

The data has been collected from peri-urban areas of Lahore, the second largest city of Pakistan. A self-constructed research questionnaire was used as a tool of data collection. All the stakeholders and active players of dairy industry share their observations and experiences based on objectives set in this study. The questionnaire was further validated by pilot testing of 15 respondents and number of errors regarding language, structure, flow and scale options were removed. 120 owners/managers of dairy farms and 60 milk shops/collection centres were interviewed. Quality of survey was ensured through 10 percent back checking. The details of the number of dairy farms visited for sample collection from different areas are given below:

Name of the Area	Number of Dairy Farms Visited
Harbanspura	30
Rakhchandra	40
Thokar Niaz Baig	13
Kamahn Pind	12
Bund Road	8
Chungi Amer Sidhu	8
Shahdara Town	9

The remainder of the paper is organized as follows. In section II an analysis of the sources of milk production are presented. Section III gives an analysis of average unit productivity and cost of the production. Milk supply channels are discussed and analyzed in section IV. The analysis of milk by products is presented in section V. The last section concludes.

II. SOURCES OF MILK PRODUCTION

This section provides the details of various sources of milk production. It addresses the issues like quantity of total milk production, production division by animals and farmers, production brackets according to quantity and associated variables. The analysis is produced from the views of sampled farmers, taken through self-structured study questionnaire.

TABLE 1

Milk Production Brackets and Farmers

Production Brackets (in litres)	No. of Farmers	Percent
• Up to 100	76	63
• 100 to 200	25	21
• 200 to 400	13	11
• 400 and above	6	5
Total	120	100

The classification of farmers into various brackets, based on quantity of produced milk, gives significant insights of the dairy industry profile. The statistics show that majority of farmers (63%) produce up to 100 litres milk daily, followed by 21% farmers, who produce 100 to 200 litres milk daily. The larger quantity of milk production is covered by very small proportion of dairy industry, as 11% produce 200 to 400 and 5% produce more that 400 litres of milk daily.

TABLE 2

Milk Production of Animals and Average Unit Productivity

Category	Total	Average (Per farmer)	Animal Share	Maximum
Total Milk Production	14,387	120		1,020
Milk from Buffaloes	11,803	98	82%	1,000
Milk form Cows	2,587	22	18%	240
Number of Buffaloes	2,132	18	11.8 litres	85
Number of Cows	468	4	11.6 litres	35

As per the sample of survey, averagely 120 litres of milk are produced by a farmer of peri-urban areas of Lahore. The maximum limit of a farmer is 1020 litres of milk as shown in the data of this survey. Buffaloes produce major share (98 litres averagely in a farm), which constitutes 82% of the dairy market. Cows contribute 18% of the milk of dairy industry; 22 litres averagely in a farm. Interestingly, population of buffaloes is quite larger as

averagely 18 buffaloes in a farm as compared to 4 cows in a farm. Maximum numbers of buffaloes in a farm are 85 and cows are 35 in the peri-urban areas of Lahore.

III. AVERAGE UNIT PRODUCTIVITY

The average unit productivity of buffaloes stands at 11.8 litres per day. The milking cows also get average unit productivity around 11.6 litres per day, quite similar to the buffaloes.

TABLE 3

Milk Production across the Production Brackets

Production Brackets (litres)	Category	From Cows	From Buffaloes	Total Production
• Up to 100 N = 76 (63%)	Average (per farmer)	9.2	38	48
	Bracket production	700	2921	3621
	Bracket share	27.10%	24.70%	25.20%
• 100 to 200 N = 25 (21%)	Average (per farmer)	28	108	136
	Bracket production	691	2688	3379
	Bracket share	26.70%	22.80%	23.50%
• 200 to 400 N = 13 (11%)	Average (per farmer)	53	243	296
	Bracket production	686	3154	3840
	Bracket share	26.50%	26.70%	26.70%
• 400 and above N = 6 (5%)	Average (per farmer)	85	507	592
	Bracket production	510	3040	3550
	Bracket share	19.70%	25.80%	24.70%
Total (all brackets)	Average (per farmer)	22	98	120
	Share in total	100%	100%	100%
	Total Sum	2785	127970	15582

The production of milk across the different production brackets gives very fruitful insights. Each bracket has different statistics of production. The production bracket of up to 100 litres covers 63% of dairy industry but contribute 25% of total milk share. The average production of farmer is 48 litres per day, contributed 38 litres by buffaloes and 10 litres by cows. The second bracket of 100 to 200 litres production stands 21% of dairy industry,

but contributes 23% of total milk production. In this bracket, a farmer averagely supplies 136 litres a day, shared 108 litres by buffaloes and 28 litres by cows. Almost 11% farmers fall in third bracket, which contributes 27% of milk in dairy industry. Average framer in this bracket supplies 296 litres a day, consists of 243 litres from buffaloes and 53% litres from cows. In fourth bracket (above 400 litres), 5% framers fall in this category averagely supply 592 litres of milk a day making 25% share in total milk production. The average total production is contributed by buffaloes 507 litres and by cows, 85 litres a day. All the production brackets have different averages of daily milk production, but interestingly, contribute in almost similar input/output ratio. The findings show again that cows are less in numbers than milk quantity, but milk production capacity is almost equal to buffaloes. Dairy industry observes good market equilibrium and not concentrated too few larger suppliers. The farmers having more than 400 animals are few in number, while people of less than 100 milking animals are quite large in numbers, which equate their total share of milk production in dairy industry.

COST OF MILK PRODUCTION

The expenses on milk production give valued figures for the strategic planners of dairy industry. The statistics of sampled farmers indicate that farmers spend daily average of Rs. 140 on family labour, Rs. 2906 on animal feed, Rs. 18 on vaccination and Rs. 36 on medicine/drugs and Rs. 56 on utility bills.

TABLE 4

Cost of Milk Production

Spending	Average (monthly)	Total	Average (Daily)
Family Labor	4,204	504,500	140
Feed	87,176	10,461,160	2,906
Vaccination	531	62,677	18
Medicine/Drugs	1,068	128,205	36
Utility bills	1,678	199,650	56
Transportation	3,561	423,810	119
Total spending in sample	16,370	11,780,002	3,274

The average cost of production per litre of milk in peri-urban areas of Lahore is Rs. 30 per litre but most of the time this cost boost up to Rs. 38 per litre due to poor management practices including shortage of labor, feed, morbidity and mortality of high yield animals. It results into losses and results into demotivation of stakeholders especially dairy farmers. It pushes farmers in unethical practices like adulteration of milk for compensating their losses. The farmers make expense of Rs. 1678 on utilities bills and Rs. 3561 on transportation of the milk on average. Almost 29% farmers, having less than 14 buffaloes and less than 3 cows, use their own transportation facilities, which incur insignificant extra cost. The results report the highest spending on feed, followed by labor, transportation, utilities and medicine. The vaccination ranked the lowest in priority list of farmer's spending.

IV. MILK SUPPLY CHANNELS

Milk is produced from dairy farmers in variable quantity depending on number of milking animals and better management practices. Dodhis/Gawals collect 60-70% of the total milk from dairy farmers in peri-urban areas. Milk collected from Dodhis/Gawals is distributed by different channels. The 70% of milk collected from them are distributed to End consumer as home delivery because civic population of Lahore mostly consumed milk from Dodhis/Gawals. The milk produced from peri-urban areas and small cities near Lahore are unable to fulfill the demand of civic population of Lahore. It means there is adverse imbalance in supply and demand of milk in Lahore. The remaining 30 percent of milk collected from Dodhis/Gawalas is also distributed through other channels including whole sale milk shops and milk sale points in urban areas of Lahore. The halwai and hotels are also part of milk supply channels in peri-urban areas of Lahore. It constitutes 10-20% of milk supplied. These halwai and hotels processed this milk into different milk by-products or milk directly consumed by consumers.[2]

The distribution of milk to different channels of supply indicate market portfolio of dairy industry. According to survey statistics of sample, almost 13.20% of milk production goes to Halwai/collection centres, 78.20% to Dodhis/Gwalas, 8.60% is sold to others sources without any clear

[2]The milk in peri-urban areas are also collected by milk collectors and transported to milk collection centres of milk companies including Nestle, Chaudary Dairy and Engro Foods. It constitutes rest of 5-10% of milk collected in peri-urban areas of Lahore.

specification. There is large number of farmers (72%) of total sample sell milk to Dodhis/Gawalas. It includes the farmers who sell milk by themselves and act as Dodhis/Gawalas. Most of them reside in major cattle colonies of Peri-urban areas of Lahore. It constitutes major percentage of total milk sold in peri-urban areas. Next to this category, there are Halwai/milk shops that purchase milk directly from farmers. It constitutes 22% of total sample size. Almost 6% of farmers sell milk to other sources which are unknown in sample of dairy farmers.

TABLE 5

Milk Sale across Supply Channels

Channels	Total	% of Total
• Halwai/collection centre N = 26 (22%)	1881	13.20%
• Dodhi /Gawalas N = 87 (72%)	11252	78.20%
• Others N = 7 (6%)	1254	8.60%
Total (N = 120)	14387	100.00%

V. MILK BY-PRODUCTS

According to conducted survey of sample milk purchasers/collection centres, almost 10% purchase up to 100 litres, 40% purchase 100 to 200 litres, 22% purchase 300 to 400 litres and 28% buy more than 400 litres milk daily. 10% milk centres buy averagely 68 litres daily, where they use 30 litres for by products and rest 38 litres sell to the end users (see table 6). This category of milk centres buys only 2% total centre market of Lahore. 40% of milk centres make purchase of 171 litres daily on average, where 86 litres are used for making by-products and 84% litres are sold to end users. This category has 18% share of milk purchase in dairy market. 22% milk centres purchase daily 318 litres on average, where 107 litres are consumed for developing by-products and 211 litres are sold for general users with 21% market share. 28% milk centres hold largest market share of 58% with 12930 litres daily purchase on average. They make various dairy products from 4520 litres and make sale of rest 8410 litres.

TABLE 6

Milk Consumption Across the Categories of Purchasers

Categories of milk purchasers (litres)		Total milk	Used for by-products	Sold to end users
Up to 100 N = 6 (10%)	Average	68.6	29.6 (43%)	39 (57%)
	Sum of this category	412	178	234
	Share of this category	1.90%		
100 to 200 N = 24 (40%)	Average	171	86 (50%)	84 (49%)
	Sum of this category	4110	2075	2035
	Share of this category	18.50%		
300 to 400 N = 15 (22%)	Average	318	107 (34%)	211 (65%)
	Sum of this category	4783	1610	3173
	Share of this category	21.50%		
Above 400 N = 15 (28%)	Average	862	301 (35%)	560 (62%)
	Sum of this category	12930	4520	8410
	Share of this category	58.20%		
Total N = 60 (100%)	Average	370	139 (38%)	230 (62%)
	Sum of this category	22235	8383	13852
	Share of this category	100.00 %	100.00%	100.00%

The yogurt is most prominent by-product in the dairy industry of Punjab. Milk centre purchase up to 100 litre of milk, produce 26 kgs of yogurt daily on average, with 2.5% share of total yogurt market (see Table 7). The milk centres of 100 to 200 litres produce 75 kgs yogurt daily on average with 27% market share. The purchasers of about 400 litre milk use 95 litres for yogurt production, making 22% yogurt market share. The milk centres, buy above 400 litres milk daily, consume 238 litres daily for yogurt production. Averagely, the milk centres produce 113 kgs of yogurt daily and sell on the price varies from 38 to 39 rupees per kg.

TABLE 7

Yogurt Production Across the Categories of Purchasers

Categories of milk purchasers (litres)		Production Daily in litre	Price per litre
Up to 100 N = 6 (10%)	Average	26.5	38.6
	Sum of this category	159	
	Share of this category	2.50%	
100 to 200 N = 24 (40%)	Average	75.3	38.6
	Sum of this category	1732	
	Share of this category	26.90%	
300 to 400 N = 15 (25%)	Average	95.8	38.5
	Sum of this category	1437	
	Share of this category	22.40%	
Above 400 N = 15 (25%)	Average	238.5	39.1
	Sum of this category	3100	
	Share of this	48.20%	
Total N = 60 (100%)	Average	112.8	38.7
	Sum of this category	6428	
	Share of this category	100.00%	

Along with yogurt, numbers of other dairy products are produced in urban and peri-urban areas of Lahore. Among milk centres of Lahore, 10% produce butter, 4% Cheese, 2% Ghee, 73% flavored milk and 12% produce Khoya (see Table 8). 85 Kg butter is averagely produced constituting 10% of by-products market other Yogurt. Butter is sold at Rs. 250 per kg. Cheese contribute 4% share with average production 32 kg by cheese producers. Cheese is being sold at Rs. 135 per kg. Very few milk centres produce Ghee,

which stands almost 1.5% market share of Ghee producers, with 25 kg average production, sold at Rs. 360 per kg. Majority of milk centres produced 89 litres flavored milk daily on average, taking 72% share of diary by-products, sold at Rs. 25 per litre. Khoya also have significant share of 12% in dairy by-products with average daily production of 105 kgs, which is sold at Rs. 233 per kg by Khoya producers.

TABLE 8

Production and Sale of other By-Products

Types of by products		Daily Production	Sale price[3]
Butter in kg (10%)	Average	85	250
	Sum of this category	170	
	Share of this category	9.90%	
Cheese in kg (4%)	Average	32.5	135
	Sum of this category	65	
	Share of this category	3.80%	
Ghee in kg (2%)	Average	12.5	350
	Sum of this category	25	
	Share of this category	1.50%	
Flavoured milk in litre (73%)	Average	89.3	25.7
	Sum of this category	1250	
	Share of this category	72.70%	
Khoya in kg (12%)	Average	105	233
	Sum of this category	210	
	Share of this category	12.20%	
Total	Average	78.2	
	Sum of all categories	1720	

[3]Sale prices may be different now because of substantial increase in the prices of food items in the last one and half year (after the completion of the study).

VI. CONCLUSION

This study analyzes the sources of milk production and average unit of productivity in peri-urban areas of Lahore. Dairy industry is a labour-intensive business with lot of hygienic considerations in milk transportation in Pakistan. The results of the study show that the demand of the raw and unprocessed milk in Lahore is higher than its supply. This leads to a lot of malpractices in the supply of milk making it equal to its demand. Furthermore, it does not seem commercially viable unless huge planning and dairy development efforts are made by the concerned department of the Government of Punjab.

This study also identifies several factors like lack of dairy related education and training, lack of marketing and supply chain in dairy industry. These factors are considered to be responsible for slow dairy development in Pakistan. Furthermore, the proportion of small milk producers is quite high in Pakistan which hinders the economies of scale and profitability in the dairy industry. It calls for effective decision making in the operations of dairy industry from planning department, key stakeholders, and policy makers. These measures may include extensive training in the area of marketing, management, supply chain, and credit schemes for small farmers.[4]

[4]In future it needs further investigation to pinpoint the exact percentage and quantity to make better policies to balance the supply-demand of milk in big cities like Lahore. This study can also provide a basis for further rigorous analysis of the issue by using the modern econometric estimation techniques.

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PUBLIC AND EXTERNAL DEBT SUSTAINABILITY IN PAKISTAN (1970s – 2000s)

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Abstract. Apart from reporting the traditional debt ratios, two theoretical models are used to derive and assess the necessary and sufficient conditions for public and external debt sustainability of Pakistan. Our main findings are that the primary fiscal and current account imbalances were the main causes of public debt sustainability issue. Both the public and external debt ratios have remained far from the sustainable levels during 1970s to 2000s. Results based on debt sustainability conditions indicate that although the necessary condition of debt sustainability holds, the sufficient condition for debt sustainability is not met throughout the period except for a brief period of first half of 2000's. This improvement in debt sustainability indicators could not be sustained in the subsequent period and have worsened lately which is a source of concern.

I. INTRODUCTION

After several years of economic reforms the primary imbalances are still the most critical issues on the reform agenda of the country and are central to the issue of debt sustainability analysis, although other factors including GDP growth, interest cost and exchange rate depreciation are also important, their effectiveness in impacting the debt sustainability issue has been less significant. Debt sustainability is generally defined by IMF and World Bank as the ability of a country to meet its current and future debt servicing obligations without recourse to debt rescheduling or accumulation of arrears and without compromising growth.[1] Accordingly, Pakistan is hardly in the position of meeting the said debt sustainability criteria. The benefits of debt rescheduling of 2000s have already been offset by the global recession, uncertain foreign inflows and recent increase in oil prices causing external

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[1]Zakaria Benethelin, Ndove Titus and Tjipe Tjiveze (2004), Central Government Debt Sustainability, WP 1/2004. Bank of Namibia Research Department, Namibia.

accounts difficulties. The domestic resource base is also limited as reflected in the primary fiscal imbalance. All these factors are likely to adversely impact the debt sustainability position in the future. The recent Stand by Arrangement signed with the IMF is also not a long-term solution to the fiscal and balance of payments difficulties of the country.

Although the GDP growth of Pakistan increased on average from 5 percent in 1970s to 6.5 percent in 1980s, it was the decline in growth rate to 4.4 percent in 1990s coupled with the high overall fiscal deficit of 6-7 percent of GDP that adversely impacted the debt ratios. Public debt was 54.4 percent of GDP in 1980, which increased to unsustainable level of 103 percent by 2000. The debt servicing liability also continued to rise and in 1990, almost 43 percent of total revenues were consumed to finance debt servicing and by 2000 it reached to almost 63 percent.

Similarly, the persistent current account imbalance was largely instrumental in determining the external debt and debt servicing ratios during 1980s-1990s. Although the economic reforms brought a major shift in trade policies and emphasis was laid on trade liberalization, yet the trade to GDP ratio remained significantly low and exports to GDP ratio stagnated around 12 to 14 percent of GDP despite huge depreciation of rupee. Thus it was the persistent current account deficit of 4 to 5 percent of GDP that pushed up the external debt to GDP ratio from 39.8 percent in 1980 to 57.5 in 2000. The ratio of external debt to foreign exchange earnings increased from 204 percent in 1980 to 334 percent in 2000, while the ratios of debt service payment to GDP and foreign exchange earning also rose from 3.2 to 4.7 and 16.5 percent to 27.3 percent respectively.

During the first half of 2000s the key factors impacting the public and external debt ratios improved to some extent, *i.e.* the growth rate of GDP was 5.3 percent on average, the fiscal and current account deficit declined to 4.6 and 2.55 percent of GDP and a declining trend was also registered in the inflation and interest rates. Thus the declining trend in the key determinants of debt sustainability impacted the rising trend in public debt ratios which declined from 102 percent in 2000 to 74.6 percent of GDP in 2005.[2]

[2]This decline in debt to GDP ratio was primarily led by several factors, for instance public debt ratios measured at the new base of 2000 were reported to have declined to 62.5 percent relative to 74.6 percent when measured at the previous base of 1995. Other factors that impacted the debt ratios are largely categorized as push factors, *i.e.* fall in interest payments led by large exogenous capital inflows from workers remittances and logistic support, prepayment of expensive debt and restructuring of expensive loans with cheap loans, increased access to European markets and high growth in export earnings.

However, after a declining trend in debt to GDP ratios since 2001-02 onwards, adverse movement in the fiscal and current account deficit, slow pace of GDP growth high interest rate and uncertain exchange rate environment in the second half of 2000s led to a reversal of public and external debt ratios. Public debt to GDP ratio after steadily declining to 67.9 by 2007, showed signs of deterioration and increased to 68.5 in 2008. The public debt to revenue ratio has also increased from 380.2 in 2007 to 393.6 percent in 2008. Similarly the external debt to export of goods and services after reaching a low level of 169 percent in 2006 has increased to 174 percent in 2008.[3]

The debt ratios may continue to deteriorate in the future if the twin deficits persist and remain high, the pace of GDP growth remains to be slow and the exchange rate and interest rate environment continue to be uncertain. It is therefore worthwhile to examine and identify the relative importance of these key determinants of the debt sustainability issue and establish the link between debt sustainability and its main determinants.

Plan of the paper is such that, Section II gives the methodology adopted in assessing the debt sustainability issue, *i.e.* the debt ratios and the debt sustainability conditions approach based on two theoretical models, Section III reports the traditional threshold debt ratios and also the results for public and external debt sustainability conditions. The main conclusions are given in the last section of the paper.

II. METHODOLOGY AND DATA SOURCE

To assess the debt sustainability level of Pakistan this paper adopts two approaches. The first approach is based on widely used traditional threshold debt ratios; whereas the second approach based on theoretical models derive debt sustainability conditions for the public and e external debt separately. The paper attempts to examine whether these conditions hold in case of Pakistan and identify the factors central to the issue of debt sustainability. It

[3]In contrast to the Economic survey data reporting debt figures in terms of public and external debt, the data reported in annual reports of SBP is measured in terms of total, domestic and external debt. Therefore, the debt ratios reported in the annual report of SBP 2008 indicate that total debt after reaching the lowest level of 57.9 in 2006 increased to 61.3 percent in 2008. Similarly domestic and external debt increased from, 29.8 and 27 percent of GDP to 31.2 and 29 percent of GDP between 2006 and 2008. Debt servicing as percent of tax revenue has also increased from 56.4 percent in 2006 to 63.5 percent in 2008 and as percent of GDP has increased from 5.6 in 2006 to 6.4 percent in 2008.

also aims at establishing the effectiveness of the economic reforms in impacting the issue of debt sustainability in the pre and post reform period of 1970s to 2000s.

TRADITIONAL THRESHOLD DEBT RATIOS

In most developing countries the issue of debt sustainability is typically examined through the traditional debt indicators approach Gray (1998). This approach of debt sustainability analysis expresses the debt stock and debt servicing as a ratio of selected macro economic indicators. To determine the debt sustainability level, these estimated debt ratios are compared with the benchmark threshold debt sustainability indicators recognized by international organizations.

Although the ratio of public debt stock to GDP is the most common measure of debt sustainability, a more useful indicator of debt sustainability is the ratio of public debt to government revenue.[4] It reflects not only the true burden that a country has to manage overtime; it also shows the impact of fiscal reforms on debt sustainability level. Similarly in case of external debt, besides the external debt to GDP ratio, it is important to express external debt in terms of foreign exchange earnings and export of goods and services, which are the mirror image of the capacity to manage the external sector imbalances and also the impact of economic reforms on external debt to foreign exchange earnings and export ratios.

Therefore the traditional threshold public debt indicators reported in this paper include the ratios of public debt to GDP and public debt to revenue. Whereas besides the traditional indicators for external debt the present value based debt ratios of external debt to GDP, export of goods & services and to foreign exchange earnings are also taken for reasons of comparison.[5]

However, the traditional debt ratios approach is not free of limitations, for instance these ratios may obscure information, can be statistically

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[4]Public debt includes (*i*) domestic debt (bank and non-bank) and (*ii*) external debt (excluding non-guaranteed debt by government). Whereas external debt is comprised of public and publicly guaranteed debt and private non-guaranteed debt borrowed from bilateral and multilateral sources internationally.

[5]Besides the debt threshold indicators developed by international organizations, the Maastricht Treaty of the European Union, the Commonwealth Secretariat, and the Debt Relief International have also developed various debt sustainability indicative threshold ratios (Johnson, 2001). The EU and Common wealth threshold indicators are: Fiscal deficit as 3%, public debt as 25%, public debt servicing as 15%, domestic debt as 20% external debt as 5% of GDP.

manipulated and therefore misleading.[6] Moreover, these ratios are unable to identify the factors that are instrumental in determining the sustainable level of debt to GDP ratios. Thus, the second approach of debt sustainability conditions given below is adopted to overcome this shortcoming of the debt ratio analysis.

THEORETICAL MODEL

Although most of the studies evaluating the debt sustainability issue are based on theoretical models in developed countries, the use of theoretical models for analyzing the debt sustainability issue in Pakistan is hardly made.

A few studies using the debt ratios approach for the earlier period report quite similar results. For instance, Hassan (1999) reports that despite debt relief, the burden of external debt remains extremely heavy and the public debt servicing burden has made the fiscal adjustment difficult. Interest payment is reported as the main component of debt which has led to reduction in development spending and decline in investment rate.

Measuring the debt ratios of Pakistan two other studies suggested that external debt is unsustainable and significantly higher than the average of South Asia (Chaudhary and Anwar, 2000; Siddiqui and Malik, 2001).

Using debt Laffer curve, it is reported that Pakistan's debt is not high enough that it could be written off, in other words it only qualifies for debt rescheduling (Chaudhary and Anwar, 2001).

It is also suggested that the external debt problem worsened during the 1990s mainly because of the heavy dependence on short/medium-term financing to meet external obligations. Short/medium-term debt accounted for 18 percent of Pakistan's external liability and 55 percent of the debt

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[6]The GDP statistics of pre-2000 is converted at the new base, *i.e.* at FY 2000 prices, and the figures of post 2000 period are adjusted at the previous base for making proper and meaningful comparison of debt ratios. This exercise takes into account the difference of results unlike those based on the new GDP base of 2000 without any adjustments in the data.

To examine the true burden of external debt sustainability issue the PV approach is also used in the literature. It is preferred over the simple traditional ratios because a discount rate reduces the burden of real debt payments in the later years and also takes account of the concession element of the various interest rates as well as the grace and maturity period. The lower the interest rate the more is the grant element. Similarly the longer the maturity and grace period the more it reflects the grant element of the loan (World Bank, 2005). Thus the debt ratios expressed in terms of present value of external debt to GDP and foreign exchange earnings are also reported in this study.

servicing cost. Debt-servicing accounted for as high as 62.1 percent of the total exports and 46.0 percent of the total foreign exchange earnings in 1996-97 (Kemal, 2001).

It is shown that small deviations in the major components of external debt including real GDP growth, non interest current account balance o GDP ratio, the ratio of net non debt creating capital inflows to GDP and exchange rate depreciation may increase external debt to GDP ratio but it would remain within safe limits. However, substantial shocks to these components of external debt have the potential to cross the debt threshold level (Jafri, 2008).

This section develops a theoretical framework for assessing debt sustainability using a model primarily developed for the industrial countries.[7] This model is modified according to the prevailing pattern of public finance in Pakistan and the derived necessary and sufficient conditions of debt sustainability are tested using the accounting approach, largely used by IMF and World Bank (2005), to determine the debt sustainability position of Pakistan for public and external debt separately. It will also identify the key factors that are instrumental in determining the debt sustainability level of Pakistan.[8]

PUBLIC DEBT AND FISCAL SUSTAINABILITY CONDITIONS

The budget deficit in developed countries is mostly financed by incurring domestic debt, *i.e.* by issuing interest bearing bonds; therefore their typical budget constraint can be expressed in the form of an identity given as below (Papadopoulos and Sidiropoulos, 1999).[9]

$$G_t - R_t + i_t B_{t-1} = \Delta B_t$$

In contrast to developed countries, governments in less developed countries rely heavily on seigniorage revenue and external borrowings to meet the fiscal and external accounts deficit. Therefore the two models incorporate the

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[7]The budget constraint approach to sustainability of fiscal policy was initially developed for the industrial countries where it is assumed that seigniorage revenue was unimportant and all public debt was in domestic currency. In the context of developing countries, issues like reliance on seigniorage to finance deficit, foreign currency borrowing, concessional lending and grants are also important. Hence, the model specification requires necessary improvement.

[8]Martin, Mathew, "Has Debt Relief Made Low Income Countries Debt Sustainable", Debt Relief International (2004).

[9]Our model is heavily drawn from Cuddington (1996), Papadopoulos and Sidiropoulos (1999) and Santaella (2000).

effects of seigniorage revenue and external borrowing in deriving the debt sustainability conditions for public and external debt. While seigniorage revenue derived from budgetary support of the Central Bank is highly inflationary and impacts the interest cost of debt, external borrowings add to the total debt stock and debt servicing burden of less developed countries.

Pakistan, like other developing countries, has been financing on average 30 percent of its fiscal deficit from external sources and the domestic sources include on average 30 percent bank borrowing and 40 percent non-bank borrowing. Although the composition and percentage share of the two sources of deficit financing has varied over time, reliance on the two sources has remained to be substantial in financing budget and current account deficit.

Variables/Years	1970s	1980s	1990s	2000s
	Percent of GDP			
Primary Deficit	5.9	3.5	1.3	–2.0
Overall Deficit	7.6	6.8	7.3	4.6
	Percent of Overall Deficit			
External Financing	50.9	22.6	30.7	26.5
Domestic Financing	49.1	77.4	69.3	73.5
Bank borrowing	21.2	27.8	28.5	12.0
Non-Bank borrowing	28.0	49.6	40.8	57.5

Source: Self-generated using CD-IFS (2007)

The above mentioned budget constraint can, therefore, be modified and applied to the debt sustainability analysis of developing countries given as below:

$$G_t - R_t + i_t B_{t-1} = \Delta B_t + \Delta H_t \tag{1}$$

The LHS of the budget constraint shows the components of budget deficit, *i.e.* primary deficit plus the nominal interest payment on public debt and the RHS of the budget constraint identifies the sources of financing the fiscal gap. Where,

$$B_t = B_t^D + B_t^F$$

R = Tax revenue + Non-tax revenue + Surcharges + Grants[10]

[10]Grant proceeds are a financing component and is not debt generating. So we include it in the revenue receipt.

G = Government expenditure (exclusive of interest payments). It includes current and development expenditure

B_t = Where B_t, the stock of public debt at the end of year t

B_t^D = Domestic Debt

B_t^F = External Debt expressed in US $ (excluding guaranteed & non-guaranteed private debt)

i_t = (average) Nominal interest rate

H_t = Monetary Base for budgetary support

With a few manipulations and rearranging the terms we get the fundamental fiscal sustainability identity given as below:

$$b_t = \frac{(1+r_t)}{(1+g_t)} b_{t-1} - \bar{s}_t \tag{2}$$

$\bar{s}_t = ps_t + \mu h_{t-1}$ is government surplus interpreted as the primary surplus inclusive of seigniorage revenue (*i.e.* budgetary support from central bank), μ is the rate of growth of money and $h_t = H/Y$ is the seigniorage revenue, g_t is the real economic growth, r is real interest rate, b_t is stock of public debt to GDP, ps_t is the primary balance to GDP, and $(1 + r_t) / (1 + g_t)$ is the discount factor.

If the interest-growth differential is positive or large ($r_t > g_t$), the debt-to-GDP ratio is regarded as explosive debt dynamics, *i.e.* $r_t > g_t \Rightarrow (1 + r_t) / (1 + g_t) > 1$, unless the last term in the above equation (2), *i.e.* s_t, the primary surplus (inclusive of seigniorage revenue), is large enough to suppress the explosive tendency of the debt stock. In contrast, the convergent debt-dynamics holds when interest rate is less than the GDP growth rate, *i.e.* $r_t < g_t$.

$$\Rightarrow (1 + r_t) / (1 + g_t) < 1$$

Subtracting b_{t-1} on both sides of equation (2) gives the change in the debt-to-GDP ratio:

$$\Delta b_t = \frac{(r_t - g_t)}{(1+g_t)} b_{t-1} - \bar{s}_t \tag{3}$$

Thus, equation (3) suggests that if the ratio of primary surplus (inclusive of seigniorage revenue) to GDP ratio is equal to zero ($\bar{s}_t = 0$), the change in

debt to GDP ratio Δb_t will grow at the rate $(r - g) / (1 + g)$, and if the government has a primary deficit, the debt to GDP ratio will grow at the rate greater than $(r - g) / (1 + g)$.

The necessary and sufficient conditions of debt sustainability derived from equation (3) suggest that the debt ratio will stabilize when $\Delta b_t = 0$ and the economy will remain solvent if:

- The necessary condition for debt to be sustainable holds, *i.e.* $r_t < g_t$. On the contrary if $r_t > g_t$ the debt ratio is unsustainable and it will not stabilize so long as interest rate is greater than GDP growth.
- The required sufficient condition to keep the debt to GDP ratio constant is met, *i.e.* average primary surplus is positive $(s_t) > 0$ inclusive of seigniorage revenue $\bar{s}_t = \left(ps_t + \mu_t h_{t-1}\right)$.

EXTERNAL DEBT: Current Account Sustainability Condition

Pakistan being a small open economy has been resorting to external borrowing to finance its savings-investment gap. To determine the factors that led to prolonged use of external borrowings and external debt sustainability position, a separate model is developed making use of balance of payments identity to derive the external debt sustainability conditions (Jaime, 2001).

The identity for external debt is given as below:

$$D_t - D_{t-1} = i_t^* D_{t-1} - CB_t \tag{4}$$

Where D_t is external debt i^* is nominal foreign interest rate, and CB is current account balance exclusive of interest payments.

Expressing the above identity in terms of ratios of GDP we get the following equation:

$$\frac{D_t}{Y_t} = \frac{\left(1 + i_t^*\right) D_{t-1}}{Y_t} - \frac{CB_t}{Y_t} \tag{5}$$

Rearranging the above ratios in lower case letters and expressing in terms of growth of debt to GDP ratio we get equation (6) as the basic equation of external debt

$$\Delta d_t = \frac{r_t^* - g_t}{1 + g_t}\, d_{t-1} - cb_t \tag{6}$$

Where r^* is real foreign interest rate and g is real GDP growth rate. The above equation explains that if the external sector current account is in balance, then cb is equal to zero and debt to GDP ratio will grow at the rate of $(r - g) / (1 + g)$. Otherwise, if the current account balance is negative, the debt to GDP ratio will grow at a rate greater than $(r - g) / (1 + g)$ and *vice versa*.

Setting the debt ratio equal to zero ($\Delta d_t = 0$) in equation 6, the necessary and sufficient conditions for external debt sustainability are derived.

The two conditions given below indicate that the economy will attain solvency if:

- The necessary condition for debt ratio to stabilize holds, *i.e.* $r_t^* < g_t$, otherwise if $r_t^* > g_t$ then debt accumulation is unsustainable unless the required sufficient condition for debt sustainability is met.
- The required sufficient condition to keep the debt to GDP ratio constant holds and the current account balance is positive. It means $(cb \geq 0_t)$ must hold on average to keep the debt to GDP ratio at a steady state level.

Our analysis is based on data source that includes International Financial Statistics (IFS) CD ROM for the period 1971-2008, Global Development Finance and various issues of Economic Survey of Ministry of Finance, Government of Pakistan.

III. RESULTS

This section presents a detailed discussion on the results regarding public debt as well as external debt sustainability using the debt threshold indicators approach and the debt sustainability conditions approach.

PUBLIC DEBT SUSTAINABILITY THRESHOLD INDICATORS

Various public debt sustainability indicators are reported for Pakistan in Table 1 and Figure 1. Firstly, it is shown that the public debt stock was as low as Rs. 127 billion .in 1980s, which more than quadrupled in 1990s to Rs. 674 billion and reached an unsustainable level of Rs. 3266 billion by 2000. It continued to increase in the decade of 2000s and was Rs. 4092 billion by the end of 2005 which has lately increased to Rs. 5901 billions by 2008. It means public debt grew from 8.6 percent in the pre reform period of 1980s to as high a rate as 16 percent during the 1990s. Although growth in public debt

declined to as low as 1.1 percent in 2002, thereafter it accelerated to 19.6 percent by 2008.

TABLE 1

Indicators of Public Debt Sustainability

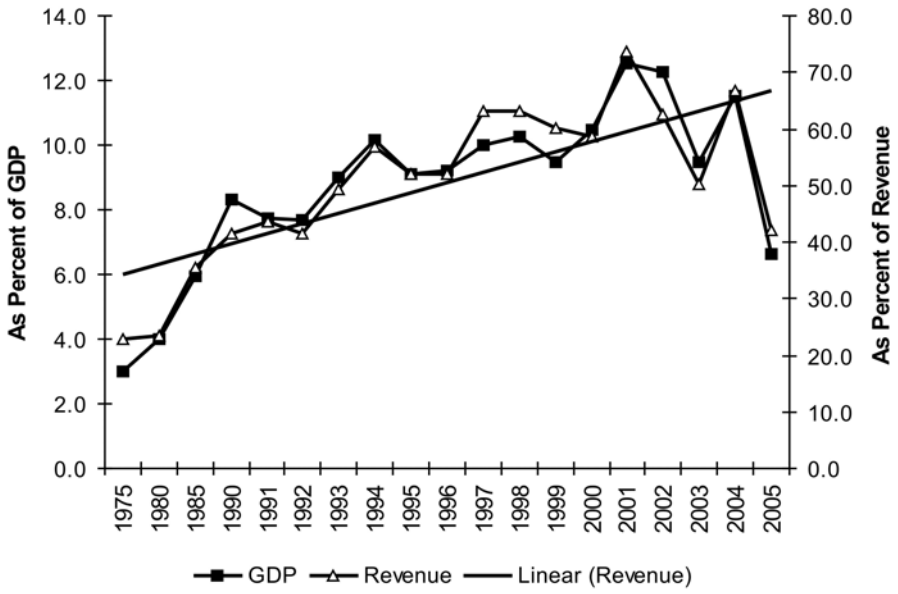
Years	1980	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008
Public Debt (Rs. Bls)	127	674	3266	3500	3540	3770	3979	4092	4469	4935	5901
Public Debt (Growth)	8.6	16.0	13.1	7.2	1.1	6.5	5.5	2.8	9.2	10.4	19.6
Public Debt as % of											
Gross Domestic Product [1995]	54.4	79.0	102.8	102.3	97.6	93.8	85.9	74.6	70.3	67.9	68.5
Gross Domestic Product [2000]	45.6	66.1	86.1	85.6	81.7	78.6	71.9	62.5	58.8	56.9	57.4
Revenue	334.6	411.6	614.8	654.1	571.8	537.4	522.8	484.3	415.1	380.2	393.6
Interest payment % of											
Gross Domestic Product	2.1	5.6	7.4	9.1	8.8	6.4	6.9	6.3	4.5	5.8	6.3
Revenue	12.8	29.4	44.5	58.4	51.5	36.7	41.8	41.2	26.7	32.3	36.4
Debt Servicing % of											
Gross Domestic Product	4.0	8.3	10.5	12.5	12.3	9.5	10.5	8.4	6.6	7.2	7.7
Revenue	24.5	43.2	62.8	80.2	71.9	54.3	63.8	54.5	38.8	40.5	44.4

Sources: Government Financial Statistics Yearbook (various issues)
Data for the last two years from Pakistan Economic Survey (2008-09)
Annual Report State Bank of Pakistan 2008

Moreover, in the pre reform period the public debt stock was kept at a relatively low level of 54.4 percent of GDP mainly because of access to abundant foreign assistance along with significant volume of worker's remittances. During the 1990s, concessional loans and capital inflows declined and the growing primary imbalances led to the initiation of the economic reform programs. As a result, a major shift in the maturity structure of debt occurred which led to the use of shorter term expensive external debt and unfunded debt domestically, thereby increasing the debt stock and debt servicing to the highest and unsustainable levels towards the end of 2000. The public debt to GDP ratio increased persistently from 79 percent in 1990 to 102.8 percent of GDP by 2000. Similarly the debt to revenue ratio almost doubled from 335 percent to 615 percent of revenue between 1980s and 2000.

FIGURE 1

Public Debt Servicing Indicators



Although, the two ratios declined substantially in the post 2001 period, *i.e.* after adjusting the GDP data for the previous base year of 1995[11] debt to GDP ratio declined to 74.6 percent and debt to revenue declined to 484 percent by 2005, yet both the ratios remain higher than the pre reform period. Not surprisingly decline in the two ratios could not be sustained in the second half of the decade of 2000s, the deteriorating fiscal and current account position led to the reversal of the two ratios. After a steady decline to 67.9 percent of GDP and 380 percent of revenue by 2007 the two ratios registered increase to 68.5 and 394 percent in 2008.

So far as interest payments on public debt is concerned, it rose from a low level of 2.1 percent of GDP in the pre reform period of 1980s to 5.6

[11]For FY 2004, computed value of Public Debt to GDP ratio is 85.9 per cent, whereas the Debt Policy Statement [2006-07] underestimates the ratio as 67.1 per cent of GDP. On the contrary, the debt to GDP ratio is estimated to be 85 percent in a 'report of activities' by Economic Affairs Division (2002-04). Therefore, the measured value in this study is consistent with the value shown in the report of activities. The Debt Policy Statement figure is a mere statistical artifact of changing GDP base at FY 2000 prices as shown in Table 1.

percent in 1990s and was 6.3 percent of GDP by the end of 2005, after reaching a peak level of 9.1 percent of GDP in FY 2001. This improvement however, was short lived and the interest payment on public debt increased from 4.5 percent in 2006 to 6.3 percent of GDP by 2008.

In a similar manner, interest payment on public debt consumed 12.8 percent of the revenues in 1980s; which rose to 29.4 percent of the revenues in 1990 and further to 44.5 and 58.4 percent of the revenue in 2000 and 2001. Since then it continued to decline to 26.7 percent of revenue by 2006, this declining trend has also reversed since 2007 and has increased to 36.4 percent of revenue in 2008.

Table 1 also shows that public debt servicing as a ratio of GDP increased consistently from 4 percent in 1980s to 12.5 percent in 2001 and after a declining trend in the first half of 2000s, the debt serving ratio has reversed since 2006 and continued to rise till 2008.Similarly, public debt servicing consumed 24.5 percent of the revenues in 1980; it rose to 43.2 percent in 1990 and almost doubled to 80.2 percent in 2001. Although it declined to 38.8 percent of the revenue in 2006 it has increased to 44.4 percent by 2008.[12]

The results of different debt sustainability indicators based on the traditional threshold approach clearly indicate that, the overall position of public debt has always remained above the critical level of 25 percent of GDP set by the EU and the Common Wealth public debt threshold indicators level and the World Bank (2004) sustainable debt threshold indicator of debt stock to GDP of 50 percent. Moreover of particular relevance is the situation in the decade of 2000s. The improved debt ratios in the first half of 2000s could not be sustained and the deterioration of all the debt ratios in the later years is a source of concern.. In terms of budgetary revenues, the public debt of 393.6 percent of revenue in 2008 still exceeds the prescribed debt sustainability limits of 250 percent for non-concessional debt and 350 percent for concessional debt (of 20-30 percent) set by the Debt Reduction and Management Committee report (2001). It also exceeds the ratio of present value of debt to revenue of 250 percent set by the international organizations as mentioned in Table 4.

Similarly, the public debt servicing to revenue ratio remained above the target level of 15 percent, as set by the Maastricht Treaty of the European Union, the Commonwealth Secretariat, 13 percent as suggested by the Debt

[12]Annual Report of State Bank of Pakistan (2007-08).

Relief International (DRI), 30 percent set by IMF and 35 percent suggested by the Country Policy and Institutional Assessment (CIPA) World Bank. The fiscal deficit as percentage of GDP ratio remained above the target level throughout and despite enormous economic reforms it appears to be more than 5 percent in 2000s which is definitely above the standard sustainable level of 3% of GDP as agreed upon by the International bodies.

EXTERNAL DEBT SUSTAINABILITY THRESHOLD INDICATORS

Table 2 shows that Pakistan's accumulated total outstanding external debt was as low as US $ 9.4 billion in 1980s, it more than doubled in 1990s to $ 19.40 billions and reached to an unprecedented stock of $ 36.30 billions in 2004 which declined to US $ 34.07 billion by the end of FY 2005 and has lately increased to US $ 44.5 billion by 2008 (SBP, 2008). It means external debt grew at unsustainable levels and varied widely, the decade of 2000s show that growth in external debt has varied substantially from –5.5 percent in 2005 to 15.0 percent in 2008.

TABLE 2

Indicators of External Debt Sustainability

Years	1980	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008
External Debt Stock ($ mls)	9425	19402	35306	29878	32465	35033	36035	34037	35655	38699	44500
External Debt (Growth Rate)	20.1	11.1	12.2	–15.4	8.7	7.9	2.9	–5.5	4.8	8.5	15.0
External Debt as % of											
Gross Domestic Product	39.8	48.7	57.5	51.1	54.9	51.0	44.8	36.8	33.5	32.2	32.3
Export of Goods and Services	329	306	369	292	287	258	232	196	169	173	174
Foreign Exchange Earning	204	234	334	264	237	197	185	158	139	139	139
Debt Servicing as % of											
Gross Domestic Product	3.2	4.6	4.7	4.9	4.9	4.3	4.6	2.9	2.8	2.3	2.2
Export of Goods and Services	26.6	29.2	30.1	28.3	25.6	21.7	23.9	15.6	14.3	12.3	12.0
Foreign Exchange Earning	16.5	22.3	27.3	25.5	21.1	16.5	19.2	12.6	11.8	9.9	9.5

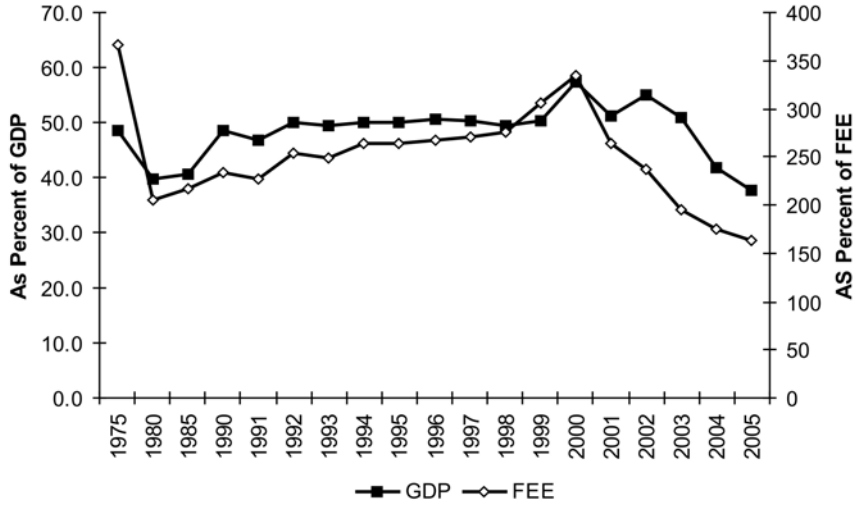
Source: Global Development Finance (various issues).

The external debt to GDP ratio reported in Table 2 shows that it was 40 percent in 1980; it remained stable around 50 percent in the second half of 1990s and increased to 57.5 percent in 2000. Later it declined to 36.8 percent by the end of 2005 and is now 32.3 percent of GDP by 2008. Although the declining trend in external debt to GDP ratio continued after 2005, it however slowed down in the subsequent period and remained stagnant between 2007-08 with a fractional increase in 2008.

In the same manner it is shown that external debt as percentage of export of goods and services declined to 196 percent in 2005 as compared to 369 percent in 2000 and 329 percent in 1980s (see Figure 2, Table 2). This ratio has begun to increase since 2006 and is 174 percent of export of goods & services in 2008 against 169 percent in 2006. The present level of 174 percent is higher than the threshold level set for the ratio of external debt to export of goods and service and also the present value of external debt to exports of 150 and 140 percent according to the HIPIC and DRI criteria.

FIGURE 2

External Debt Indicators



Moreover, external debt as percentage of foreign exchange earning was as high as 334 percent in 2000 in comparison to 204 percent in 1980 and 234 percent in 1990. It declined to 184 percent in 2004 and further to 158 percent in 2005. Ever since 2006 the ratio has remained stagnant at 139 percent and remains to be so in 2008.

So far as debt servicing on external debt as a percent of GDP is concerned it increased from 3.2 percent to 4.6 percent during the 1990s and remained to be so up till 2004, after which it declined substantially to 2.9 percent in 2005 mainly on account of the debt relief resulting from the rescheduling of debt from Paris Club and Non-Paris Club donors. In 2008 debt servicing to GDP remains to be as low as 2.2 percent.

A similar trend was also observed in the ratio of debt servicing to export of goods and services, which has declined significantly from as high as 30.1 percent in 2000 to 12 percent in 2008. The debt servicing on external debt as percentage of export earnings also shows that it increased from 16.5 percent in 1980 to 22.3 percent and 27.3 percent in 1990 and 2000. Since 2000 it has been declining and was lowered to as low as 9.5 percent of foreign exchange earnings in 2008.

Despite the low external debt ratios reported in the second half of 2000s, the existing debt to exports ratio is higher than the sustainability ratio developed by the Maastricht Treaty of the European Union, the Common Wealth Secretariat and the Debt Relief International.[13] However, the present level of debt servicing ratios just fulfill the World Bank criteria and is within the limits prescribed by DRI and HIPC Initiative (2004), *i.e.* 12 percent and 15-20 percent respectively.

TABLE 3

Present Value Indicators of Debt Sustainability

Years	1990	2000	2001	2002	2003	2004	2005
Indebtedness Classification		S	S	S	S	M	M
PV of External Debt/GNI		45	44	45	41	35	43
PV of External Debt/EGS		249	222	238	234	156	134
PV of Debt Servicing/GNI	4.9	4.8	5.1	3.5	2.4	4.6	2.3
PV of Debt Servicing/EGS	25.1	26.8	21.3	16.8	12.7	21.2	10.2

Sources: Global Development Finance (2005)
World Development Indicators (various issues)
Indebtness classification of the country
S: Stands for Severely Indebted
M: Stands for Moderately Indebted
Income Group: Low Income Group

[13]See Johnson (2001) for a detailed discussion of these ratios.

When the external debt ratios are analyzed in terms of the present value of external debt to GNP and export of goods and services, the main results reported in Table 3 suggest that according to the World Bank's criteria of the critical ratio of present value of debt to GNP and present value of debt to exports of goods and services, Pakistan was classified as a Highly Indebted Country in 2003. The debt to exports ratio was significantly high, *i.e.* 249 percent in 2000 and 234 percent in 2003 which is significantly above the critical limit of 150 percent set by international organizations given in Table 4.

TABLE 4

Sustainable Debt Thresholds

Institutions	PV Debt/ Exports	PV Debt/ Revenue	Additional Criteria
HIPC (2004)	150	250	Debt servicing / Exports ratio is 15-20%
DRI	140	151	Debt Servicing / Exports ratio is 12% and Debt Servicing / Revenue ratio is 13 %
IMF	180	201	PV/GDP is 42% and Debt Servicing/Revenue is 30%
World Bank* (2004)	190	189	[PV/Exports is 220% and PV/GNI is 80 %]* [Also Debt stock/GDP is 50%, Debt stock/ Exports is 275%, Debt Servicing/Exports is 30%]**
CIPA Index[14]	Poor/medium/ strong	Poor/medium/ strong	Debt servicing as 15, 20 and 25 % of exports for poor, medium and strong institutions
	100/150/200	200/250/300	Debt servicing as 25, 30 and 35 % of revenue for poor, medium and strong institutions

*Global Development Finance 2004, **From World Debt Tables, 1990, DRI: Debt Relief International.

In contrast to the traditional sustainability threshold debt indicators set by the DRI, IMF (2004) and World Bank (2004), the present value debt indicators of debt sustainability are significantly higher. For instance, in case

[14]Empirical evidence suggests that the debt sustainability indicators also depend on the strength of economic/ debt management policies and institutional framework of less developed countries. Therefore for a Country Policy and Institutional Assessment (CPIA) the World Bank, indicative thresholds are based on the CPIA Index. Countries with a CPIA Index below or equal to 3.25 are defined to have a poor quality of policies and institutions, while a CPIA Index above 3.75 indicates strong institutions and qualitative policies.

of the present value criteria the two critical values for debt to GDP and debt to export ratios are 80 percent and 220 percent respectively and a country is considered as Severely Indebted Low Income Country if any one of the two ratios is above the critical values. In case of a Moderately Indebted Low Income Country, the two ratios must lie below the critical value and can exceed 60% of the critical value. To be a less indebted country both the ratios must lie below 60% of the critical value.

	Severely Indebted	Moderately Indebted	Less Indebted
Debt/GDP = x	$x > 80\%$	$48 < x < 80$	$x < 48$
Debt/Exports = y	$y > 220\%$	$132 < y < 220$	$y < 132$

Although, the external debt to GDP ratio was as low as 41 percent in 2003, it worsened to 43 percent in 2005, whereas the ratio of debt to exports declined substantially from 234 percent in 2003 to 134 percent. In other words as per the 2005 data on external debt, Pakistan can be categorized as a moderately indebted country with sustainable debt threshold levels.[15]

PUBLIC AND EXTERNAL DEBT SUSTAINABILITY CONDITIONS

Given the fact that the debt ratios have always remained above the threshold levels, the key factors responsible for public and external debt sustainability issue are identified in this section. The necessary as well as sufficient conditions for debt sustainability derived above were tested for the period 1970 to 2007. Table 5 below shows that public debt has always remained unsustainable except for the early phase of the decade of 2000s. The necessary condition for debt sustainability is fulfilled through out the period under consideration, *i.e.* $r_t < g_t$. It indicates that besides positive average GDP growth of 5 percent throughout the period, Pakistan has been relying on concessional loans and controlled interest rates in the pre reform period. The central bank financing to the government was available at 0.5 percent much lower than the benchmark six-month Treasury bill rate. Although the expensive non-bank borrowing and financial reforms led market-based auction system for Government borrowing raised the government interest payment on domestic debt, the high inflation component of seigniorage led to negative real interest rate throughout except for the early period of 2000s. Therefore, the interest rate factor has been less significant in the debt sustainability issue.

[15]The non-availability of Global Finance Data beyond 2005 restricts our calculations of present value upto 2005.

TABLE 5

Public Debt Sustainability Conditions

Decade	r	G	ps	μh_{t-1}	s	$r < g$	$s > 0$	Conclusion
1970s	–9.8	4.8	–6.1	0.8	–5.2	$r < g$	$s < 0$	Unsustainable
1980s	–1.4	6.6	–3.5	–0.1	–3.6	$r < g$	$s < 0$	Unsustainable
1990s	–1.2	4.0	–1.3	0.1	–1.2	$r < g$	$s < 0$	Unsustainable
2000s	1.6	5.0	2.0	0.2	2.2	$r < g$	$s > 0$	Sustainable
FY 2007	–1.9	6.4	–1.5	1.1	–0.4	$r < g$	$s < 0$	Unsustainable

Source: Data from IFS CD ROM

Despite the fact that part of the primary deficit was always financed by growth in money supply and seigniorage revenue was high, the primary deficit continued to remain high and the sufficient condition of a primary surplus that is required to keep the debt/GDP ratio constant was never fulfilled. Primary balances although kept improving have remained negative throughout the period except the period when fiscal discipline was observed in early 2000s.

Thus, among the key determinant of public debt sustainability issue the persistent fiscal deficit has remained central to the issue of debt sustainability, whereas the role of interest rate remained less significant in deteriorating the steady state debt to GDP ratios, despite the fact that economic reforms pushed up the interest cost of raising public debt on domestic bank and non-bank borrowing through auction of T-bills and government bonds. Although the share of interest payment in current expenditure rose from 30 to 37 percent and interest expenditure rose from 6 percent of GDP in 1990s to 6.6 percent of GDP in 2000s on average, seigniorage revenue and high inflation rate kept the average real interest rate at 1.6 percent lower than the average GDP growth of 5 percent. In fact in the first half of the decade of 2000s large inflow of capital sharply reduced the interest payment and even the nominal interest rate remained below the average GDP growth of more than 6 percent. The bench mark T-bill rates declined from 12.8 percent to a record low of 1.6 percent which led to retirement of government debt. Despite the recent increased borrowing from the State Bank of Pakistan, high inflation and increase in T bill rates, the real interest rate still remained negative and below the GDP growth.

Similarly, while Table 6 reports the factors important in the external debt sustainability issue, it is shown that the necessary condition of $r^* < g$ is met for the entire period. Real foreign interest rate has mostly remained negative and low relative to GDP growth which was 5 percent on average. It means interest rate and GDP growth were less significant in accumulation of external debt and raising the debt ratios. However the sufficient condition of primary current account balance to be positive does not hold signifying the fact that current account imbalance has been the core underlying variable in the external debt sustainability issue. Although frequent devaluation and shift in trade policy towards liberalization was meant to boost exports and stimulate economic growth; the fact was that while exports remained stagnant devaluation increased the cost of imported inputs and added to the rupee value of foreign debt. Throughout the period 1970-1990s, the current account remained negative and under pressure due to large trade deficit and slow export growth.

TABLE 6

External Debt Sustainability Condition

Decades	Rate of Interest	Growth of GDP	Primary CAB	Conditions for Debt Sustainability		Outcome
	Real	Real	% of GDP			
	r^*	g	pcab	$r^* < g$	pcab	
1970s	–10.7	5.5	–4.1	$r^* < g$	pcab < 0	Unsustainable
1980s	–3.5	7.1	–1.2	$r^* < g$	pcab < 0	Unsustainable
1990s	–3.6	4.4	–1.1	$r^* < g$	pcab < 0	Unsustainable
2000s	0.9	4.7	4.5	$r^* < g$	pcab > 0	Sustainable
2005	–2.9	6.4	0.4	$r^* < g$	pcab > 0	Sustainable

During the first half of 2000s the combined effect of improved twin deficits and GDP growth, decline in interest rate and stability in exchange rate along with exogenous capital flows, rescheduling and restructuring of debt led to improved debt ratios. Thereafter the factors central to the sustainable debt thresholds worsened and consequently the debt ratios deteriorated in the second half of 2000s.

Although the current account improved substantially in the beginning of 2000s and the sufficient condition for external debt sustainability was met,

however the recent increasing gap in current account from 3.9 percent of GDP in 2006 to 8.5 percent in 2008, imply that the structural weaknesses of the external sector persist and improved current account in the early period of 2000s was largely led by exogenous factors. In other words the external debt sustainability indicators may deteriorate in the near future if the current account deficit persists and rupee continues to depreciate. The primary current account balance had started deteriorating since 2005 as percent of GDP from 4.5 in 2000 to 0.4 percent in 2005 and further turned negative in 2006-08.

Thus, the results reported for public debt sustainability analysis confirm that the primary fiscal imbalances were the main contributing factor to the rise in debt ratios. On the other hand, the interest rate factor was not 'generally' responsible for any positive contribution towards the change in debt ratios, except for the period of 2000s. The high growth of public debt in 1990s coupled with low growth in the revenues, especially in second half of the decade, increased the debt burden tremendously.

On the external debt sustainability analysis, primary current balances played a significant role in contributing to the rise in external debt ratios and the interest rate factor was marginally responsible for contributing towards the rise in debt to GDP ratio in 1990s and 2000s.[16]

IV. CONCLUSION

Main conclusion drawn from the above analysis is that the levels of public debt and external debt indicators have been far from the debt sustainability levels since the last three decades.

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[16]While analyzing the dynamics of external debt in a separate paper the authors found that exchange rate related effect on public debt was an important factor behind the increase in the public debt ratio since 1980s. Frequent depreciation of the Pakistani Rupee against major currencies of the trading partners raised the debt to GDP ratio. In fact capital loss on external debt due to exchange rate depreciation made significant contribution towards increase in public debt to GDP ratio. Although the exchange rate effect minimized as a result of appreciation of the Rupee against US $in the first half of 2000s ,the gains of restructuring and rescheduling during the same period have subsided with the recent depreciation of rupee.

In the same paper it is reported that as the foreign exchange reserves were quite often needed for the balance of payments support, the process of accumulation of reserves at times also contributed to the increase in external debt although the magnitude remained small. During 2000s, change in reserve was highly significant, and the increase in external debt was partly being offset by increase in remittances and inflow of funds to Pakistan.

Results based on both the sustainable threshold indicators and the debt sustainability conditions are similar and reveal that both the public debt and external debt was unsustainable throughout the decades of 1970s to 1990s. Whereas, the debt situation that improved in the first half of 2000s, has started to deteriorate in the second half of 2000s.

Despite a prolonged reform process, fiscal and current account deficits were persistently high, tax to GDP ratio remained stagnant, diversity in exports continued to be low and the GDP growth pattern was unsustainable and unbalanced. All these factors were largely responsible for little improvement in debt repayment capacity of Pakistan. Moreover, rescheduling of debt seems to be far from truth in managing debt at sustainable levels. The gains of debt rescheduling and debt restructuring have already been eroded by the worsening of debt ratios lately and if the rising trend in debt ratios persists the debt ratios may increase with the growing fiscal and current account deficit. As the debt ratios worsen, macroeconomic management will continue to be difficult and growth prospects will remain uncertain. Any attempt to reduce fiscal deficit through either increase in taxes or reduction in expenditures imply low investment and reduced real income.

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EFFECT OF LEADERSHIP DEVELOPMENT ON EMPLOYEE PERFORMANCE IN PAKISTAN

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Abstract. The study was aimed to examine the effect of leadership development on employee performance in Pakistan. This study was conducted considering five factors of leadership development, *i.e.* coaching, training and development, empowerment, participation and delegation and it was found that the combined effect of these factors influences employee performance with 50%. However, rest of the 50% contribution towards employee performance other than leadership development factors can be the result of other factors such as: attitude, commitment, motivational factors, and trust in the organization, and other factors such as compensation, reward and bonuses etc. can also increase the employee performance. The five variables collectively as leadership development factors prove a synergic effect and increase the overall employee performance. The policy alternative should be that organizations must be cleared about the learning requirement of the employees. Therefore, both managers and employees must collaborate effectively and communicate the requisite for performance.

I. INTRODUCTION

Employee performance is an important building block of an organization and factors which lay the foundation for high performance must be analyzed by the organizations. Since every organization cannot progress by one or two individual's effort, it is collective effort of all the members of the organization. Performance is a major multidimensional construct aimed to achieve results and has a strong link to strategic goals of an organization (Mwita, 2000). Managers at all the levels have to input their efforts and make maximum use of their abilities which sometimes are produced under supervision or without it. However, there are many expectations from managers working for an organization. These expectations are sometimes

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fulfilled but in some situations these managers may be running to their boss for guidance. Therefore, the managers must be developed so that they can think and work on their own and fulfill their responsibilities innovatively, while understanding and foreseeing the market and business situations. Consequently question arises that how an employee can work more efficiently and effectively to increase the productivity and growth of an organization. An effective leadership program can be of an immense assistance to help identify and build leadership qualities among individuals within the organization. The relationship between leadership and performance was indirect as well as direct (Gadot, 2007), which proves the importance of developing leaders through leadership development programs. Latest studies provide that organizations heavily invest in Human Resource Development interventions to update and skill the employees in order to attain job performance, job satisfaction and job involvement. These skills can be imparted by providing necessary technical/non-technical training and coaching (Rowold, 2008). Currently leadership is widely recognized, and verified through research. Leadership development can be imparted through experiential learning, vicarious learning and transformational learning and it is imparted as leaders can influence the people and motivate them (Popper, 2005).

Leadership development is becoming an increasingly critical and strategic imperative for organizations in the current business environment (Sheri-Lynne, Parbudyal 2007). Leadership development is an important area which is considered and implemented in organizations to increase human capability and some other benefits like to gain competitive advantage. Some developmental assignments can be carried out concurrently with regular job responsibilities, whereas others require taking a temporary leave from one's regular job (Yukl, 2002). These development assignments can be used to develop managerial skills at current jobs, some may be used to develop new projects or begin new projects serving as department representative on a cross functional teams. Training sessions play an important role to improve the performance of organizational managers regarding communication skills, listening skills, motivate others, support others, and share information (Klagge, 1997).

A leadership development program is aimed to improve the skills of managers at all levels whether operational, tactical, strategic and personal as well. Performance is a vital feature of an organization; furthermore, development programs can be helpful in identifying and managing teams, where group development and specifically personal development and growth of managers also take place. The most important aspect nowadays is that

how a manger can adopt the leadership attributes and effectively use them to perform his job responsibilities assigned, these attributes can help him work further than the job responsibilities and add more achievement to the organization. Leadership development process intends to develop leaders and also includes transfer of organizational culture and values ultimately resulting into collective sharing among all the members of the organization to achieve the organizational objectives (Hamilton and Cynthia, 2005).

Leadership requirement in today's organizations in Pakistani perspective is very important to meet the global business challenges. On the other hand, leadership development is also a major consideration and challenge across the globe and has a major influence on employee's performance.

There is a large amount of work done on leadership development and its impact on various factors including employee performance in many parts of the world, however, there is very limited research conducted in Pakistan because of which this important area of organization and employee development remains unexplored at large. However, Tirmizi (2002) has provided a 6-L framework model of leadership research and development in Pakistan and has developed a leadership development instrument based on 6-L framework. On the other hand, this study identifies 6 dimensions to be developed but how to develop remain unanswerable or the factors due to which leadership development can be conducted are not found but provides a clear evidence of importance and need for the leadership development in Pakistan. The six 6-L framework dimensions developed by Tirmizi are:

1. Leads and encourage change
2. Lives by example
3. Lauds achievement
4. Lends a vision
5. Leverages learning and development
6. Looks out for others

Hence, it is important to recognize the leadership development and means to develop, and its impact on the organization and its employees in Pakistani business environment. Therefore, keeping in view the importance of leadership development and its acknowledgment and benefits drawn in all parts of the world, this research is aimed to study leadership development value and benefits on business sector in particular employee performance in Pakistan. Apart from this, leadership development can also be helpful in implementing change efforts. There can be many methodologies to imple-

ment this program through training, workshops, seminars etc. Nowadays in Pakistan there is an emerging trend of corporate training conducted by the organization to develop the human capital and personal development of managers. This trend is also recognized by various government institutions as well.

The overall objective of the research is to study the leadership development and its impact on employee performance. The study will be performed on Pakistani organizations which are focusing on formal methods of developing their employees. This study will be conducted in few sectors of Pakistan such as Banking and Telecommunication sector. Therefore, this study will highlight the importance of leadership development, its power to increase the performance and it influence on Pakistan's business environment.

II. RESEARCH METHODOLOGY

This whole study revolves around the importance of leadership development and its impact on employee performance. In this study we have developed a proposition based on the fact that leadership development can be accomplished through various identified elements which can be used in imparting leadership qualities among the work force of an organization. We will try to study their significance and value in Pakistani organization. Those identified elements are coaching, training and development, empowerment, participation and delegation and their impact on performance will be measured.

RESEARCH DESIGN

This research is intended to study the relationship between the variables of leadership development and employee performance. Each variable defines its own dimensions. And has varied influence on employee performance. However the strength and direction of relationship would be measured to identify the type and intensity of the relationship. Therefore the research is exploratory in nature.

SELECTION OF SAMPLE

To conduct the research respondents were selected who were working in an organization and had a sufficient qualification and experience. Therefore convenience sampling technique was used in the study. Another reason of this sampling technique was time constraint and since the study was only aimed in twin cities, *i.e.* Rawalpindi and Islamabad only therefore this type of sampling technique was preferred.

The data will be gathered from the top and middle level managers, however new entrants or in other words front line mangers were not considered for the study as they had insufficient work experience and majority were not delegated, participated, empowered specifically despite of the fact they were trained. Therefore to have authentic information this particular group was omitted.

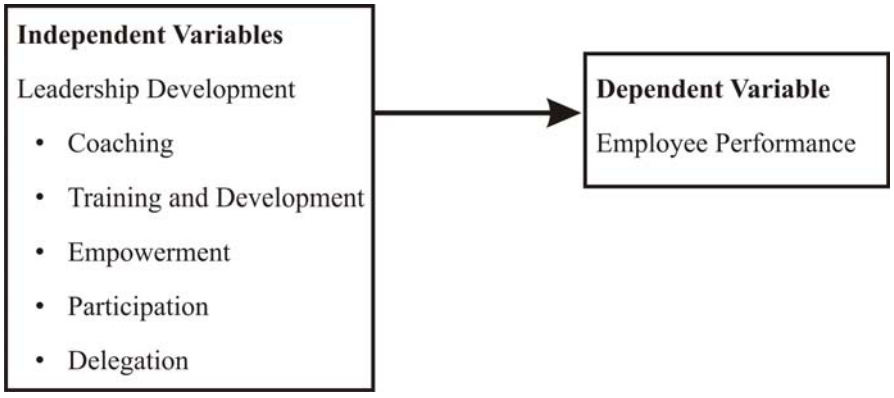
THEORETICAL FRAMEWORK

To implement the study various dependent, independent and moderating variables will be defined for theoretical framework. The independent variable is leadership development and employee performance is a dependent variable. The reason why these two variables have been chosen is to see the relationship between them, *i.e.* if leadership development is implemented then does it affects the employee performance? To study these two variables their tools are also identified through which the relationship between the two would be studied. It is evident from the existing literature that there are identified variables which influence the employee's. Therefore leadership development on employee performance will be measured through coaching, training and development, empowerment, participation and delegation.

The theoretical framework can be seen from the following schematic diagram (Figure 1).

FIGURE 1

Theoretical Framework Model



HYPOTHESIS DEVELOPMENT

On the basis of the theoretical framework presented above, the hypotheses developed are as follows.

COACHING AND EMPLOYEE PERFORMANCE

Coaching can be used on job to identify the problem area where an employee is lacking, or solving the problem of an employee and to encourage and solve problems themselves. According to Champathes (2006), coaching has become an important technique to improve performance. It is not a one way communication and proves to be a two way communications where coaches identify what can be improved and how it can be improved. Further coaching addresses the beliefs and behaviors that hinder performance (Toit, 2007). It can be further seen that coaching is all about helping some one else to improve performance (Starr, 2004). Therefore we can draw the following hypothesis as:

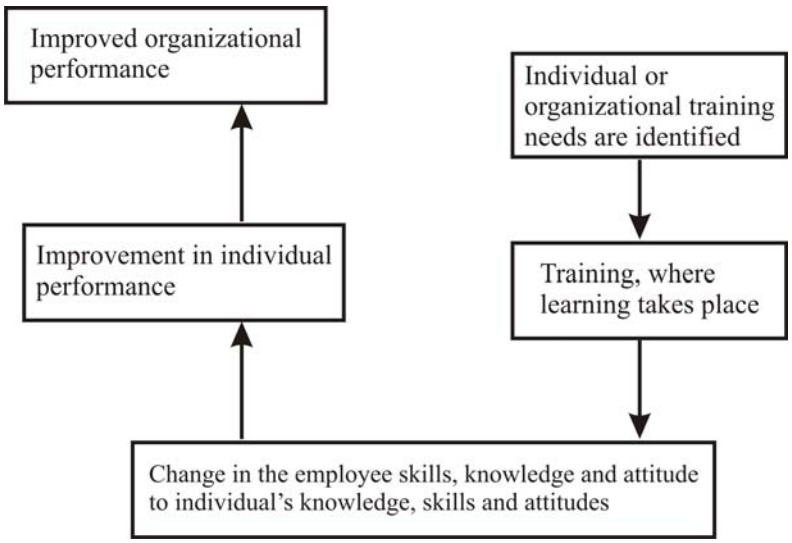
H_1: There is a positive relationship between leadership development tool, *i.e.* coaching and employee performance.

TRAINING AND DEVELOPMENT AND EMPLOYEE PERFORMANCE

Training and development are designed to skill employees so they can perform well. This can be done by formally developing Training and Development programs or informally on job training can be offered.

FIGURE 2

Bramley's Individual Model of Training



Source: Cited from Sahinidis and Bouris (2008)

Employees may not feel motivated and lack commitment due to insufficient knowledge and skills which can be imparted to them through training. This insufficiency may result into conflict with organizational goal achievement and eventually affecting organizational performance. Therefore organizations must fill in the gap desired and actual performance (Sahinidis and Bouris, 2008). This can be further illustrated by Figure 2.

Therefore, it can be concluded that training and development influences employee performance and we can draw the hypothesis.

H_2: There is a positive relationship between leadership development tool, *i.e.* Training and Development and employee performance.

EMPOWERMENT AND EMPLOYEE PERFORMANCE

Duvall (1999) defines success as achievement, accomplishment and attainment which is a consequence of empowerment. He reveals this consequence in form of success through empowerment as (1) Individual success in form of employee's role performance, (2) Organizational success which is achieved as members of the organization accomplish collective organizational goals and objectives, and (3) As organizational members share a mutually beneficial and satisfying work experience meeting both social and personal growth needs. Further Bartram and Casimir (2007) reveal in their study that empowerment had significant positive correlations with both performance and satisfaction. And specifically empowerment was more strongly correlated with the in-role performance of followers than with satisfaction with the leader. Therefore out of these supportive arguments the following hypothesis is proposed.

H_3: There is a positive relationship between leadership development tool, *i.e.* empowerment and employee performance.

PARTICIPATION AND EMPLOYEE PERFORMANCE

Researchers suggest that participation is a useful way of involving employees to use their skills in problem solving. Chen and Tjosvold (2006) have studied the participation and its importance by American and Chinese managers in China. There research reveals that participation management is about involving employees in the decision making process where the employees feel that they have the opportunity to discuss problems and can influence organizational decisions. The overall impact of participation is increased employee job performance and low turn over.

Further, Lam *et al.* (2002) suggest that organizations can act to increase or decrease the levels of these mediator variables within their personals and

potentially strengthen the positive performance effects of employee participation.

Therefore out of the above mentioned discussion a hypothesis can be drawn as follows:

H_4: There is a positive relationship between leadership development tool, *i.e.* participation and employee performance.

DELEGATION AND EMPLOYEE PERFORMANCE

Yukl (2002) discusses, delegation involves assignment of new responsibilities to employees and additional authority to carry them. However delegation is used to describe a variety and different forms of power sharing with individual subordinates. There are many reasons for delegating but amongst them the strongest reason is to develop subordinates skills and confidence.

H_5: There is a positive relationship between leadership development tool, *i.e.* Delegation and employee performance

LEADERSHIP DEVELOPMENT AND EMPLOYEE PERFORMANCE

Combing the entire above mentioned hypothesis it can be seen that leadership development is accomplished through coaching, training and development, empowerment, participation and delegation. Therefore the following hypothesis is derived.

H_6: There is a positive relationship between leadership development and employee performance.

Therefore, based on the theoretical framework and hypotheses drawn a schematic illustration can be drawn as shown in Figure 3.

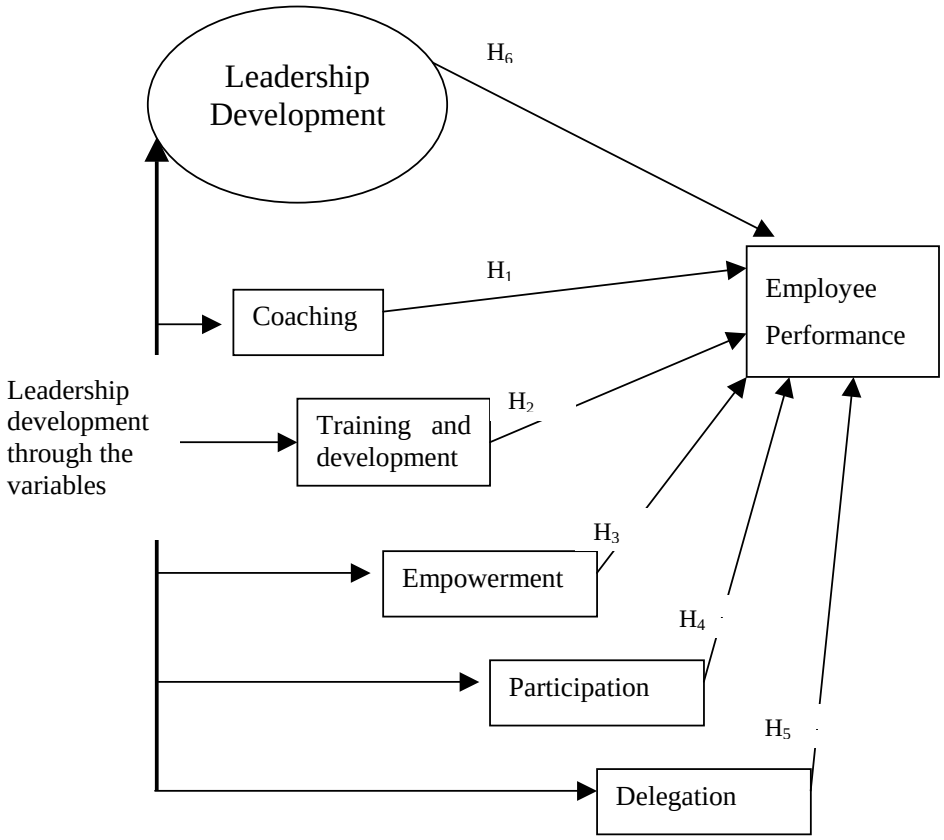
DATA COLLECTION TOOL

To identify the result of the study primary and secondary sources of data collection are used. To measure the outcome of the above mentioned six hypotheses a questionnaire as a primary source was designed, and supportive material and research already performed from international journals available online as a secondary source was used to support the findings of the current study. The leadership development and employee performance were measured keeping in view the above mentioned hypothetical model. Therefore, the questionnaire consisted of five questions each of coaching,

training and development, empowerment, participation, and delegation to see the significance on employee performance consisting of seven questions.

FIGURE 3

The Hypothesized Model of Leadership Development and Employee Performance Relationship Diagram



The questionnaire was designed to study the impact of coaching, importance of training and development, feeling of empowerment, level of participation in decision making and delegation of authority on their performance. Therefore few questions were based on their personal evaluation such as training & development and empowerment and few with respect to their supervisor, *i.e.* coaching, participation, and delegation. The questionnaire included a total of 32 questions and was designed on Likert scale type from 1 to 5 such as strongly disagree, disagree, neutral, agree, and strongly agree.

DATA ANALYSIS

A total of 200 questionnaires were circulated and 184 were received, out of which 44 questionnaires were unfilled and 16 questionnaires were discarded due to missing data. Therefore, 140 questionnaires were considered for the study as respondents working in different organization. No specific sector is defined for the research as the study is aimed to find the influence of leadership development on employee performance.

The data received from the respondents was analyzed with help of statistical software program SPSS-14. To test the hypothesis Pearson Correlation analysis was conducted to examine whether the hypothesis was accepted or rejected. Like correlation, regression analysis was also performed measuring the five independent variables impact individually on employee performance and combined effect in of the all the variables in one variable, *i.e.* leadership development on employee performance.

III. ANALYSIS AND DISCUSSION

DATA SAMPLE INFORMATION

A total of 200 questionnaires were distributed to employees working in public and private organization. The survey was done in banking sector, hotel industry telecommunication sector and other organizations in Rawalpindi and Islamabad. The organizations where the questionnaires were circulated included PTCL, Mobilink, Askari Bank, Habib Bank Limited, Marriot, Serena, Pearl Continental Hotel, NADRA, NHA, Schlumberger etc. Out of which one hundred and eighty four were returned, sixteen questionnaires were rejected due to missing data and forty four were returned unfilled. Therefore, 140 questionnaires served as data for analysis to present the findings and draw conclusion. Further the data analysis is performed to reach the findings.

Table 1 reveals the demographic information of the respondents. Most of the respondents were falling in the age group of 30-39 years of the age with 38.6% and then <=29 years of age with 30%. The demographics also reveal a gender division of the respondents, majority of the respondents were males, *i.e.* 87% representing a bigger part of the sample group. However, 13% percent respondents were females.

This study was only aimed at the top and middle management and front line managers were not taken into account. The main reason for not involving there response was that majority of frontline managers work experience was less than 6 months and they had not undergone any kind of

training, coaching, or were not empowered, delegated or participated in a decision making process that is why this group of respondents were negated. However, very few top managers served as a respondent but there information was sufficient enough to conduct the analysis. Therefore, Table 4 reveals about the respondents level in the organization. The top managers were mostly Vice presidents, CEO, and assistant vice presidents and General Managers and represented an 18.6% of the sample group. Whereas middle managers represented 81.4%.

TABLE 1

Frequency Distribution of Demographic Variables (N = 140)

Variable	Frequency	Percent
Age		
<= 29 years	42	30
30–39 years	54	38.6
40–49 years	24	17.1
>= 50 years	20	14.3
Total	140	100
Gender		
Female	18	13
Male	122	87
Total	140	100
Level in Organization		
Top	26	18.6
Middle	114	81.4
Total	140	100
Educational Level		
Bachelors	30	21.4
Masters	110	78.6
Total	140	100
Work experience after qualification		
<=4 years	29	20.7
5-10 years	61	43.6
11-15 years	21	15
16-20 years	11	7.9
>=21 years	18	12.8
Total	140	100

Majority of the sample group were holding a masters degree. While analyzing the demographic distribution it was also identified that greater part of the respondents had multiple qualification. For instance, if a respondent was an engineer or lawyer he also held a masters degree such as MBA or MPA. Concisely there were 87.4% middle and 18.6% top level managers as the sample respondents. Work experience after qualification was also taken into account. Most of the respondents fell under the range of 5-10 years of work experience that is 43.6%. The minimum range for work experience was <= 4 years with 20.7% respondents and the maximum >= 21 years with 12.8% respondents.

CORRELATION ANALYSIS

Pearson's Correlation was performed to study the direction of relationship between the dependent and independent variables.

TABLE 2

Correlations Coefficient of the Relationship Between Leadership Development Variables and Employee Performance

	Coaching	Training and Develop-ment	Empower-ment	Partici-pation	Delega-tion	Employee Perfor-mance
Coaching						
Pearson Correlation	1	.557(**)	.374(**)	.604(**)	.526(**)	.549(**)
Sig. (2-tailed)	–	0.000	0.000	0.000	0.000	0.000
N	140	140	140	140	140	140
Training and Development						
Pearson Correlation	.557(**)	1	.467(**)	.547(**)	.806(**)	.644(**)
Sig. (2-tailed)	0.000	–	0.000	0.000	0.000	0.000
N	140	140	140	140	140	140
Empowerment						
Pearson Correlation	.374(**)	.467(**)	1	.406(**)	.429(**)	.514(**)
Sig. (2-tailed)	0.000	0.000	–	0.000	0.000	0.000
N	140	140	140	140	140	140

Participation						
Pearson Correlation	.604(**)	.547(**)	.406(**)	1	.538(**)	.522(**)
Sig. (2-tailed)	0.000	0.000	0.000	–	0.000	0.000
N	140	140	140	140	140	140
Delegation						
Pearson Correlation	.526(**)	.806(**)	.429(**)	.538(**)	1	.573(**)
Sig. (2-tailed)	0.000	0.000	0.000	0.000	–	0.000
N	140	140	140	140	140	140
Employee Performance						
Pearson Correlation	.549(**)	.644(**)	.514(**)	.522(**)	.573(**)	1
Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	–
N	140	140	140	140	140	140

**Correlation is significant at the 0.01 level (2-tailed).

Table 2 represents the correlation matrix between leadership development variables, *i.e.* coaching, training and development, empowerment, participation, delegation on the dependent variable (employee performance).

All relationship between the dependent and independent variables are positively and significantly correlated. The most significantly correlated and strong relationship of all the variables of leadership development is training and development $r = 0.644$, $p < 0.01$ with employee performance. The next significant and moderate correlation is found between delegation and employee performance with $r = 0.573$, $p < 0.01$. Whereas coaching is correlated at $r = 0.549$, $p < 0.01$. Employees when involved in decision making process, *i.e.* participation is also positively correlated at $r = 0.522$, $p < 0.01$. Finally empowerment and employee performance is also positively significant at $r = 0.514$, $p < 0.01$. Hence, Table 2 presents positive relationship among all the variables of leadership development and employee performance. However mean value of all the variables was also calculated into one variable, *i.e.* leadership development and it was correlated to employee performance and the following relationship was observed.

Table 3 shows a correlation between combined effects of all the five variables, *i.e.* coaching, training and development, empowerment, participation, delegation into one variable leadership development and its correlation with employee performance resulted into strong positive relation

with $r = 0.711$, $p < 0.01$. This value of correlation indicates a stronger relationship and significant at p value less than 0.01.

TABLE 3

Correlations Coefficient of the Relationship Between Leadership Development and Employee Performance

	Leadership Development	Employee Performance
Leadership Development		
Pearson Correlation	1	0.711(**)
Sig. (2-tailed)	–	0.000
N	140	140
Employee Performance		
Pearson Correlation	0.711(**)	1
Sig. (2-tailed)	0.000	–
N	140	140

**Correlation is significant at 0.01 level (2-tailed).

REGRESSION RESULTS

The regression analysis was also performed and results are reported in the Table 4.

TABLE 4

Estimated Results of Regression Analysis

Coefficient	Variables					
	Coaching	Training and Develop-ment	Empower-ment	Partici-pation	Delega-tion	Leader-ship Develop-ment
Constant	2.171* (7.795)	1.850* (7.393)	2.359* (8.470)	2.282* (8.064)	2.338* (9.677)	0.92** (3.212)
Beta	.549* (7.714)	0.644* (9.876)	0.514* (7.036)	0.522* (7.194)	0.573* (8. 204)	0.711* (11.870)
F	59.508*	97.536*	49.506*	51.751*	67.299*	140.885*
R^2	0.301	0.414	0.264	0.273	0.328	0.50
N	140	140	140	140	140	140

* Significant at $p < 0.01$, ** Significant at $p < 0.05$

Table 4 reveals that the effect of coaching on employee performance is positive and statistically significant at 1% level of significance. These results are also supported by Kirkpatrick (2006), Agarwal *et al.* (2006) and Ellingeic *et al.* (2003). And they suggest that supervisory coaching is positively associated with employee's job satisfaction and performance.

The effect of training and development on employee performance is also positive and statistically significant at 1% level of significance. These results are also supported by Russell *et al.* (1985) and Hwang (2003). Hwang suggests that it is top who view future to build competencies must develop ways to develop employees and he further discusses his strategies to training to increasing competencies and organizational members can develop the required know how and expertise. Similarly empowerment is also statistically significant at 1% level of significance and it is also supported by Geralis and Terziovski (2003) as they identified in their work that empowerment leads to greater level of employee well being which results in superior performance levels.

Participation is also statistically significant at 1% level of significance and the relationship of participation and employee performance is also found significant by Wagner III (1994). In his study discuss that participation has positive effect on employee satisfaction and employee performance however it is not alone factor determining performance. Which is also seen in this study that every factor places a significant impact on employee performance however their collective impact places more strong relationship.

Delegation is also statistically significant at 1% level of significance and its impact on employee performance and is also found significant by Muir (1995). He suggests that effective delegation in both directions helps supervisors to pay close attention to employees to strengthen them.

In Table 4 regression analysis of variables of leadership development have been discussed separately and a combined effect of all the variables into one leadership development is analyzed with employee performance to measure the combined effect of the intended study. The estimated regression analysis of the leadership development and employee performance is also statistically significant. It is observed that leadership development has a maximum impact on employee performance. It can be observed from the following that the F-statistic = 0.92 is significant at $p < 0.05$ which means that leadership development explain the variation in employee performance. R square shows 0.50, $p < 0.01$ proportion of variation in the dependent variable explained by the regression model. The overall hypothesis of

leadership development and employee performance is hence statistically significant and is also supported by Petersons and Luthans (2003).

HYPOTHESIS TESTING

The hypothesis tested statistically are discussed separately as follows:

Hypothesis H_1: Leadership Development Tool Coaching and Employee Performance

The previously mentioned correlation results reveal that there is a significant relationship between coaching and employee performance, *i.e.* ($r = 0.549$). Therefore, the hypothesis H_1 is supported. Further coaching can be analyzed from regression analysis significant with Beta value 7.714 at $t = 7.714$ and the R square value of coaching and employee performance is 0.301 significant at $p < 0.01$. As many researchers have already studied the significance of the coaching on employee performance. Coaching is concerned with creating condition where people can perform to the best of their ability, also coaching help's people to adopt change new behaviors, and skills can also be developed through coaching (Philips, 1995).

There could be many reasons for coaching but mostly it is performed in organization's to solve most of the problems among the employee's and fulfill few purposes for instance coaching is provided to employees in order to let them know what is expected from them, who do not feel trusted, who do not get enough appreciation, and to those who are not getting the career development they want (Wilson, 2004). Coaching is about developing individuals by increasing their self-esteem through improved performance, not fear of failure (Potter, 1994).

Hypothesis H_2: Leadership Development Tool Training and Development and Employee Performance

There is a positive and a highest relationship of Training and Development on Employee Performance as compared to the other variables with correlation value $r = 0.644$ and therefore the hypothesis H_2 is also proved. Further the regression analysis is also indicate a significant relationship with R square = 0.414 and F-statistic = 97.536, $p < 0.01$. Therefore impact of training and development on employee performance is not only significant but studies prove that it also increases Job Satisfaction and commitment towards the organization. It can be seen from the research conducted that training transfer is more likely to increase performance, job involvement, and increases motivation to learn and transfer (Velada *et al.*, 2007).

Hypothesis H_3: Leadership Development Tool Empowerment and Employee Performance

The relationship between empowerment and employee performance is also positively correlated $r = 0.541$, $p < 0.01$. The regression analysis is also significant with R square = 0.264 and F-statistic = 49.506, $p < 0.01$ hence proving the hypothesis H_3. We can conclude from the study that empowerment if exercised can have healthy influence on employee job performance further it is observed that it is observed through plenty of studies already performed, they prove that empowerment leads to autonomy, motivation giving sense of ownership which results into performance and achievement of shared organizational goals.

Empowerment can lead to creativity. Empowerment contributes more when implemented in specific situation, structured carefully and controlled (Paul *et al.*, 2000). Empowerment can be seen as a useful tool to map the desired skills and competence level in the work force (Houtzagers, 1999). Employees who have high levels of job satisfaction and morale would have superior performance levels (Geralis, Terziovski, 2003). Further leadership mediated by empowerment help combat negativity which most employees experience (Avey *et al.*, 2008) Therefore employees who are empowered are mostly creative are satisfied and in return produce increased performance.

Hypothesis H_4: Leadership Development Tool Participation and Employee Performance

As studied earlier that Participation has a positive correlation $r = 0.522$ on employee job performance. The regression analysis presents the R square value = 0.273 and F-statistic = 51.751, $p < 0.01$. Therefore, this statistical analysis proves the hypothesis H4 in support of participation with employee performance. There are many researches done earlier to indicate that participation can influence job performance. Participation, *i.e.* involving employees in the decision making process can increase employee job performance and job satisfaction which can broadly contribute to organizational performance and strategy process (Kim, 2002).

In one particular study the Participative Decision making is studied and its impact on performance is also positively correlated. The employees feel they are competent and participation at higher level is effective and also leads to greater autonomy. However increased work load can also lead to dissatisfaction (Ladd *et al.*, 2004).

Hypothesis H_5: Leadership Development Tool Delegation and Employee Performance

The leadership development tool delegation is also proved positive with the correlation $r = 0.573$ and regression analysis can be analyzed with R square = 0.328, F-statistic = 67.299, $p < 0.01$ and therefore the hypothesis H_5 is also proved. Delegation can be exercised when the employees possess appropriate skills, and with delegation an individual is also responsible and accountable (Potter, 1994). The Employees who prove more knowledge is likely to be delegated more (Yukl, Fu, 1999).

Hypothesis H_6: Leadership Development and Employee Performance

The entire hypotheses suggested earlier have been proven and discussed above. Therefore this leads to the support of the overall hypothesis of the study, *i.e.* there is a positive relationship between leadership development and employee performance. After studying this relationship on organizations operating in Pakistan it was discovered that leadership development contribution in terms of coaching, training and development, empowerment, participation and delegation was approximately 50% towards employee performance.

Kotter (2001) says that organization's need to develop their capacities to exercise the leader and successful organizations don't wait for the leaders to come. They seek for potential leaders and expose them to experiences and nurture them to play their important role as a leader and develop a culture to create leaders for the organization.

Organizations must recognize that what they are doing in order to create a high performing environment (HPE). As HPE revolves around the expected performance form the employees, provide constructive challenge that people can succeed on, high performance beliefs and attitudes and many more outcomes. Therefore, the organization must recognize the leadership responsibility and lead and deliver high performance (Jones, 2005).

IV. CONCLUSION

The study was aimed to examine leadership development on employee performance and the study supports a strong positive relationship between them. From the supported material and results of the study it is concluded that manager must possess leadership skills to perform well and meet performance standards defined by the organization. However it is also known that human resource does not possess a full blend of competency to perform,

when they are inducted during selection process. This study was conducted considering five factors of leadership development, *i.e.* coaching, training and development, empowerment, participation and delegation and the combined effect of these factors influences employee performance with 50%. However, rest of the 50% contribution towards employee performance other than leadership development factors can be result of other factors such as, attitude, commitment, motivational factors, and trust in the organization, and other factors such as compensation, reward and bonuses etc. can also increase the employee performance.

The entire six hypotheses established to conduct the study are accepted and are positively related to employee performance. Training and development has strongest impact among all the variables of leadership. Empowerment has positive impact but shows less impact as compared to five variables. However, the five variables collectively as leadership development factors prove a synergic effect and increase the overall employee performance. Since all the variables of leadership development also present an independent viewpoint as well, they may not be working concurrently as they may be exercised according to organizational requirement. Further seeing that coaching is the process which deals with the problem solving situation faced by an employee and training and development deals with knowledge and learning of work procedures necessary to perform on job. However empowerment, participation and delegation are only exercised when the employees have sufficient skills and present the potential. Training and development is a major practice in Pakistan and majority of the organization train their employees before and even during job. Training and development can be used to effectively increase the learning and make use of developed skills during problem solving. Therefore it can be analyzed that all the factors precede or succeed each other. And their combined effect influences the employee performance and if they are properly planned then these factors can results into high performance by the employees and collectively resulting into organizational performance.

Organizations must be cleared about the learning requirement of the employees. Therefore both managers and employees must collaborate effectively and communicate the requisite for performance. For instance if a training and development session is organized then it must be arranged and designed accordion to their need to enhance their capability to perform. Similarly coaching must also be provided to pass the necessary knowledge and guidance to the learner.

LIMITATION OF THE STUDY

While conducting this study it is identified that it makes a lot of contributions but it has limitations as well. This study eliminates the young individuals who have recently completed their finally degrees and were on job for less than 1year time period and were not considered for the sample group. The reason for not considering them was that most of the fresh jobbers were not trained before job and if few of them have been provided sufficient training before pursuing their job position then, they were not delegated, empowered, or participated in decision making as they had little or no job experience.

FUTURE RESEARCH

This study directly focuses on the leadership factors and its influence on employee job performance. However, the design and implementation are not studied therefore this study can be further enhanced to explore that how leadership development programs can be strategically designed and aligned with organizational goals to meet the desired performance. As leadership development is a form of investment towards the employees to improve productivity, therefore this study can also be performed keeping in view the details of each variable which can be further explored in terms of Return on investment on human capital, increase in commitment, or impact on intellectual skills of employees.

This research can be further explored in terms of psychological factors of involved in coaching, training and development, participation, empowerment and delegation such as their effect on attitude, behavior. Employee perception of leadership development and its impact on employee performance can be measured. Organizations can also understand the importance of leadership development by developing a feedback system as well. Another aspect of future study is that this study can be performed in terms of leadership style and performance appraisal using 360 degree feedback. Also this study can be enhanced to see the role of leadership development to create learning organizations in Pakistan.

Finally concluding the whole research conducted it is found that leadership development programs are highly effective program which should be planned and implemented by organization to run a cycle of increasing skills in employees to increase performance. Which in turns increase their collective performance, and this further result as organization productivity growth and performance.

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