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POLITICAL CONDITIONS AND FEMALE LABOUR FORCE PARTICIPATION

Nooreen MUJAHID[1]

ABSTRACT

This paper examines the impact of political conditions on female labour force participation in case of Pakistan. The study covers the period of 1980-2010. We found the existence of cointegration between the variables. Democracy and government spending lowers labour female labour participation. Development spending increases female labour participation. This study opens up new insights for policy makers in Pakistan.

Keywords: Political condition, Labour force, Pakistan

INTRODUCTION

Both political governments and military governments do effect the participation of females in the market activities. We assume that during the democratic governments economic conditions are better and the monetary and fiscal policies are consistent with the objective of providing services to the masses. Therefore, due to efficient management and fiscal discipline the labour market conditions are better and attractive for the females. Political stability is one of the key factors that determine the female labour supply in the market. In fact, it promotes economic growth and development of a nation. A number of studies have used the political stability index to capture the level of economic development in a country. Whenever there is political stability, there is a positive and strong relationship between economic policies and, law and order situation in the country. Political instability is measured as the sum of the total number of general strikes by political agents, demonstrations, riots, government's longevity and changes in government including military coups and war. Whenever there is political instability it leads to fluctuations on the economic, political, and geographical fronts and hampers economic growth in the country. It directly affects the growth and investment activities. In fact, it is one of the key reasons of poor economic and social performance.

[1]Department of Economics, University of Karachi, Additional Directing Staff at National Institute of Management, Karachi, Pakistan

One of the dimensions of governance is political instability, and governance is defined as "*the traditions and institutions by which the authority is exercised, the process by which governments are elected and monitored, and the capacity of the government to effectively formulate and implement sound policies*" (Kaufmann and Kraay (2002) (p.176). In the definition of governance, the term political instability is included because "*the quality of governance in a country is compromised by the likelihood of wrenching changes in government, which not only has a direct effect on the continuity of policies, but also at a deeper level undermines the ability of all citizens to peacefully select and replace those in power*" Kaufmann and Kraay (2002) (p. 177). Development practitioners are increasingly aware of the role of social and political factors in shaping development outcomes. The World Development Report, "Equity and Development" (World Bank 2005a), emphasizes the importance of understanding how inequalities in power and wealth translate into unequal opportunities, which lead to loss of productive potential and increased political instability. The report also asserts that political power relations tend to reflect and shape social and economic distribution patterns in so-called "inequality traps" that constrain economic growth and poverty reduction and increase social tensions. Similarly, a report by the Independent Evaluation Group (IEG) 3 on the World Bank's development effectiveness has indicated that successful programs require a sound understanding of the country's political economy (Singh, 2005).

A number of studies have undertaken frequent changes of government or cabinet with the rate of inflation. A change in governments shortens their tenure and creates uncertainties among members of the government. In such a situation, the government focuses on short term goals and objectives rather than medium or long-term. Therefore, economic stability is hard to achieve and it becomes very difficult to maintain low inflation in the country. Again it indirectly affects the labour market and specially affects female participation. Some studies argue that urbanization tends to endorse more political uncertainties. As high urbanization promotes more instability, it is very difficult for the government to provide basic necessities and services to highly crowded cities (Auvinen, 1997 and Annett, 2000). In the developing countries, political instability is also one of the factors depressing the accumulation of human capital. In the developing countries, when the income of the masses is low, opportunity cost for an individual to protest, revolt or even to rise up is less (Collier and Hoeffles, 2004). Then the individuals have the space to quit from the economic activities and take parts in protests (Grossman, 1991). The masses come to believe that their government is incompetent due to which there is poor economic condition which in turn elevates political instability (Auvinen and Nafziger, 1999; Ellingsen, 2000; Posner, 1997).

It has been observed that governments in politically unstable and polarized countries are more likely to adopt inefficient or suboptimal policies. The risks associated with the instable governments are more; therefore, they implement temporary policies on an ad hoc basis such as the maintenance of inefficient tax systems, higher current government expenditures, or the accumulation of larger external debts, which, in turn, adversely affect long-run economic

growth.Political conditions play a very vital role in determining the female labour force participation in the market. When the political situation remains stable, the law and order conditions are smooth and the risk and uncertainties which are associated with lawlessness decreases, and all that promotes female labour force participation in the labour market. On the other hand, if there's a continuous disturbance in the country there's a probability that the females are not allowed to use their labour power in the labour market or vice versa. The present study considers the time period from 1980 to 2010, to evaluate the effect of these conditions on female labour force participation, keeping in mind that the situation varies with a change in government such as military and democratic governments. In the time period covered, there had been two coup regimes along the five democratic tenures of different political parties. This study is a modest effort to identify which regime is beneficial for the labour market conditions and to fill the gap and may represent a contribution in respect of political conditions and its impact on the economy and specifically on female labour supply.

PAKISTAN'S PERSPECTIVE

In a country like Pakistan, there were frequent changes in governments during the 1990s. Even democratic governments cannot survive for more than two to three years. Pakistan's experience with democratic governments is not very progressive in terms of growth. Pakistan has experienced four military regimes whose performance in terms of economic development has varied widely. During military regimes, there is inflow of foreign aid, development programs are on their peak and the economic as well as the political policies are in line with the mandate of the government. The law and order conditions are relatively stable and there is an expansion in the investment sector which stimulates trade activities in the economy. Therefore, military leaders do matter for economic growth. The influence of military regime has been positive in the developing countries like Pakistan. The developing and poor countries are expected to grow faster than the developed countries and the developing countries have more scope to grow and expand under the military regimes. In the 1960s, under a military regime, the GDP growth rate was 6.8% and 6.9% during the Ayub's era, i.e. in 1960-65 (Second Plan Period) and in 1965-70 (Third Plan Period). In the same period Pakistan's GDP growth rate was higher than the other South Asian countries by almost 2%. However, during the democratic government of 1970s, the GDP growth rate went down to 4.2% in 1970 -75 (no plan period). Moreover, during 1983-88 (Sixth Plan) the GDP growth rate was 6.2% under a military government as against 4.2% during 1993-98 during the democratic regime. The incidence of poverty declined from 46% in the mid-1960s to 18% in the late 1980s and it again rose to 34% in the late 1990s.

According to the World Bank (2002), Pakistan became the slowest growing region in South Asia in 1990s. The negligence towards the development spending or public spending was one of the factors to slow growth in the 1990s. The 1990s was marked with weak governance, political instability,

frequent changes in government, and imbalance macroeconomics policies along with the unfavorable external environment. During non-military governments, the changes in the economic and social policies are due to the paradigm shift they bring in the overall setup. Frequent cabinet changes or government crises lead to uncertainties regarding their posts and power which shorten the horizon of the members of the government. As the chances of being replaced increases, the greater will be the importance attributable to short term goals. Therefore, it is very difficult in such a situation to maintain law and order and, invest in the productive channels of the economy. In the 2000-07 period of a coup, the economy grew at an average growth rate of 6% per annum. In 2000 onwards under the military government, the growth was impressive which resulted in quadrupling of per capita income and reduction in poverty. All these facts support our results that in the poor countries the impact and implications of a coup is more powerful and mobilize support for economic and social reforms.

Din, (2007) conducted a study for the periods 1983-84 to 1987-88 and 2002-03 to 2005-06 for Pakistan. The chosen years represents the military governments with an average growth rate of 7%. This growth differs from the rest of the years due to improved policies and favorable external environment. There is sufficient evidence that supports the rise in government size and its causal link with female labour force participation. In the developed and developing countries, the share of government spending increases with the growth of per capita income and it also increases female labour force participation. It is a proven fact that in the countries, whenever there is political stability with a stable law and order situation, the female labour supply increases in the labour market along with the child care and looking after the elderly people. The tasks like "redistribution" and insurance are taken up by the government to stimulate the labour supply in the economy. The economy of Pakistan is characterized by low economic growth (4.1%), high unemployment rate (15%) and high inflation rate (13.4%) in 2009-10. Inappropriate planning and implementation of economic policies, worsening of law and order and governance situation, deficit in balance of payments, high levels of non-productive military spending, rising external and internal debt and, large amount of debt services on external debt have all inversely affected the economic growth. The high unemployment rate in the country is due to backwardness of agriculture (more than 90% population of village economy is involved in agriculture and related activities). Because of the adoption of advanced technology, in the industries and agro related sectors the demand for unskilled labour has decreased. This situation has widened the gap of income inequality and enhances poverty as 40% of the population lives below the poverty line in the country. The government expenditure on security has been increasing since 2001 at the cost of development expenditures. Therefore, government spending has shrink in providing subsidies especially in the agriculture and the manufacturing sectors and neglecting the labour market.In the nutshell, when the size of the government spending rises, it increases the incomes of the female labour force and raises their participation in the labour market. The authors developed the link between female labour supply and the government size and observed that there is a strong and

positive relation between female labour supply and government spending as a share of GDP in the form of subsidies, consumption, transfers or total spending.

Analytical framework

The basic objective of present chapter is to examine the impact of political stability and other determinants such as government size and public development spending on female labour supply in the case of Pakistan. Using the cross-section data for developed and developing countries, it is evident that higher female labour supply in the labour market is directly linked with the larger governments. As women decides to render her services in the labour market, their demand for education and health care increases as per these services are provided by the government reduces the burden of females who are the main bearer of this kind of family activities (Cavalcanti and Tavares, 2004). Gelbach, (2002) highlighted that when government provide sponsored child care in the form of kindergarten, females increase their labour supply. In the sample of industrialized countries, the rise from 13% to 46% in the government spending from 1913 to 1996, leads to the rise in the female labour supply from 28% to 41% in the last two decades in OECD countries.

METHODOLOGY

The general functional form of model can be illustrated as following:

$$FP_t = f(DUM_t, DE_t, GS_t) \quad (1)$$

We have chosen log-linear specification to attain unbiased and efficient results. In doing so, all the series have been transformed into natural logarithm. This transformation also helps us in reducing the sharpness in time series data. The empirical equation is modeled as following:

$$\ln FP_t = \alpha_1 + \alpha_{DUM} DUM_t + \alpha_{DE} \ln DE_t + \alpha_{GS} \ln GS_t + \varepsilon_i \quad (2)$$

where DUM_t proxy for political stability (D = 1 for democracy otherwise D = 0), DE_t is public development spending, GS_t is government size proxies by government current consumption expenditures[2] and ε_i is residual term assumed to be identically independent and normally distributed. The Unrestricted Error Correction Model (UECM) is modeled as following:

[2]For more details (see Shahbaz, 2008)

$$\Delta \ln FP_t = \vartheta_1 + \vartheta_T T + \vartheta_{FP} \ln FP_{t-1} + \vartheta_{DUM} \ln DUM_t + \vartheta_{DE} \ln DE_{t-1} + \vartheta_{GS} \ln GS_{t-1} + \sum_{j=1}^{q} \vartheta_j \Delta \ln FP_{t-j} + \sum_{k=0}^{r} \vartheta_k \Delta \ln DUM_{t-k} + \sum_{l=0}^{s} \vartheta_l \Delta \ln DE_{t-i} + \sum_{m=0}^{t} \vartheta_m \Delta \ln GS_{t-m} + \varepsilon_I \quad (3)$$

Where difference operator is indicated by Δ, T is trend variable and ε is residual term assumed to have normal distribution with finite variance and zero mean. The diagnostic tests have also been conducted to test the problem of normality, serial correlation, autoregressive conditional heteroskedasticity, white heteroskedasticity and specification of the ARDL bound testing model. Once long run relationship between economic development and female labour force participation is established then it is necessary to find short run impact of economic development on female labour force participation in case of Pakistan. In doing so, we apply error correction method (ECM).

Error correction model

The empirical equation of ECM is modeled as follows:

$$\Delta \ln FP_t = \delta_{\circ 1} + \sum_{i=1}^{l} \delta_{FP} \Delta \ln FP_{t-i} + \sum_{j=0}^{m} \delta_{DUM} \Delta \ln DUM_{t-j} + \sum_{k=0}^{n} \delta_{DE} \Delta \ln DE_{t-k} + \sum_{l=0}^{o} \delta_{GS} \Delta \ln GS_{t-l} + \vartheta ECM_{t-1} + \varepsilon_i \quad (4)$$

Where ECM_{t-1} is lagged error term. ϑ is estimate of lagged error term captures the speed of adjustment from short run towards long run equilibrium path. Here, we say that differenced of female labour force participation is explained by differenced of linear (non-linear) term of real GDP per capita plus lagged error term and stochastic term. We have conducted diagnostic tests to test the CLRM assumptions such as normality of error term, serial correlation, autoregressive conditional heteroskedasticity, white heteroskedasticity and specification of short model. The reliability of short run estimates is investigated by applying the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMsq) suggested by Pesaran and Shin, (1999).

Vector error correction model granger causality test

We should apply the vector error correction model (VECM) to investigate causal relationship between the variables once co-integration relationship exists between the series. it is argued by Granger, (1969) that the VECM is an appropriate approach to examine causality between the variables when series are integrated at I(1). The empirical equation of the VECM Granger causality approach is modeled as following:

$$(1-L)\begin{bmatrix}\ln FP_t\\ DUM_t\\ \ln DE_t\\ \ln GS_t\end{bmatrix}=\begin{bmatrix}a_1\\ a_2\\ a_3\\ a_4\end{bmatrix}+\sum_{i=1}^{p}(1-L)\begin{bmatrix}b_{11i}\ b_{12i}\ b_{13i}\ b_{14i}\\ b_{21i}\ b_{22i}\ b_{23i}\ b_{24i}\\ b_{31i}\ b_{32i}\ b_{33i}\ b_{34i}\\ b_{41i}\ b_{42i}\ b_{43i}\ b_{44i}\end{bmatrix}\times\begin{bmatrix}\ln FP_{t-1}\\ DUM_{t-1}\\ \ln DE_{t-1}\\ \ln GS_{t-1}\end{bmatrix}+\begin{bmatrix}\alpha\\ \beta\\ \delta\\ \vartheta\end{bmatrix}ECT_{t-1}+\begin{bmatrix}\varepsilon_{1t}\\ \varepsilon_{2t}\\ \varepsilon_{3t}\\ \varepsilon_{4t}\end{bmatrix} \quad (5)$$

Where $(1-L)$ indicates difference operator and lagged residual term is indicated by ECT_{t-1} which is obtained from long run relationship while $\varepsilon_{1t},\varepsilon_{2t},\varepsilon_{3t},\varepsilon_{4t}$, and ε_{5t} are error terms. These terms are supposed to be homoscedastic i.e. constant variance. The statistical significance of coefficient of lagged error term i.e. ECT_{t-1} using t-statistic shows long run causal relationship between the variables. The short run causality is shown by statistical significance of F-statistic using Wald-test by incorporating differenced and lagged differenced of independent variables in the model. Moreover, joint significance of lagged error term with differenced and lagged differences of independent variables provides joint long-and-short runs causality. For example, $b_{12,i}\neq 0\forall_i$ implies that democratic regime Granger-causes female labour supply and opposite picture can be shown by $b_{21,i}\neq 0\forall_i$.

EMPIRICAL RESULTS

The Table-1 and 2 deal with descriptive statistics and correlation matrix. The results show that the series of government size, government development expenditures and dummy for political stability have normal distribution with constant variance and man value of error terms is zero. In the case of Pakistan, political stability in terms of government policies, law and order situation and economic indicators are prominent in the coup regimes as compared to the democratic regimes. This is in line with the findings of Pin and Yu, (2010). The correlation coefficients show negative link between political stability and female labour supply. The association between government size and female labour supply is negative. A positive correlation is found between female labour supply and government development expenditures. Political stability is negatively correlated with government size and government development expenditures. A positive association is found between government development expenditures and government size.

Stationarity properties of the variables are examined by applying ADF and PP unit root tests. These tests were developed by Dickey and Fuller (1981) and, Phillips and Perron (1988). First is parametric and second is non-parametric unit root test. The results of both tests are reported in

Table-3. It can be found that female labour supply ($\ln FP_t$), political stability (DUM_t), government size ($\ln GS_t$) and government development expenditures ($\ln DE_t$) are non-stationary at level with intercept and trend. These variables are found to be stationary at their 1st difference. These results are statistically significant at 1 and 10 per cent levels of significance respectively. The results provided by ADF and PP unit root tests may be biased due their poor power properties. These tests accept the null hypothesis when it is false and vice versa. These tests are inappropriate for small sample studies (Dejong et al. 1992 and Harris *et al.*, 2003).

Table1: Descriptive statistics

Variables	$\ln FP_t$	DUM_t	$\ln GS_t$	$\ln DE_t$
Mean	1.4293	0.4516	7.8060	6.6070
Median	1.3353	0.0000	7.8167	6.6166
Maximum	1.9675	1.0000	8.3925	8.0034
Minimum	1.1656	0.0000	7.3486	5.6199
Std. Dev.	0.2309	0.5058	0.2222	0.6756
Skewness	1.1060	0.1944	0.1992	0.6270
Kurtosis	3.1213	1.0378	3.7487	2.8149
Jarque-Bera	6.3398	5.1685	0.9292	2.0759
Probability	0.0420	0.0754	0.6283	0.3541
Observations	31	31	31	31

Table2: Correlation matrix

Variables	$\ln FP_t$	DUM_t	$\ln GS_t$	$\ln DE_t$
$\ln FP_t$	1.0000			
DUM_t	-0.0933	1.0000		
$\ln GS_t$	-0.1396	-0.1786	1.0000	
$\ln DE_t$	0.3072	-0.2631	0.1622	1.0000

Table3: ADF & PP unit root test

Variables	ADF Unit Root Test		PP Unit Root Test	
	T-statistic	Prob. Value	T-statistic	Prob. value
$\ln FP_t$	-1.3747 (1)	0.8463	-0.8427 (3)	0.9459
DUM_t	-1.6914 (0)	0.7301	-1.8310 (3)	0.6443
$\ln GS_t$	-2.7722 (2)	0.2182	-2.7742 (3)	0.2169
$\ln DE_t$	-1.8282 (1)	0.6648	-1.4233 (3)	0.8330
$\Delta \ln FP_t$	-4.8335 (1)*	0.0032	-5.7271 (3)*	0.0004
DUM_t	-5.1591 (0)*	0.0013	5.1577 (3)*	0.0013
$\Delta \ln GS_t$	-9.2322 (0)*	0.0000	-8.6518 (3)*	0.0000
$\Delta \ln DE_t$	-3.4969 (0)***	0.0585	-3.4761 (3)***	0.0610

Note: * and *** show significant at 1% and 10% levels respectively.

Table 4: Ng-Perron unit root test

Variables	MZa	MZt	MSB	MPT
$\ln FP_t$	-4.2816 (1)	-1.2598	0.2942	19.4041
DUM_t	-5.1493 (0)	-1.5722	0.3053	17.5505
$\ln GS_t$	-3.9665 (1)	-1.4081	0.3550	22.9711
$\ln DE_t$	-10.5174 (1)	-2.2088	0.2100	9.0517
$\Delta \ln FP_t$	-34.7297 (2)*	-4.1629	0.1198	2.6465
DUM_t	-17.8643 (4)**	-2.9880	0.1672	5.1048
$\Delta \ln GS_t$	-18.0147 (4)**	-2.9866	0.1657	5.1454
$\Delta \ln DE_t$	-31.5038 (3)*	-3.9620	0.1257	2.9308

Note: * and ** indicate significant at 1% and 5% levels respectively. Optimal lag order for ADF and bandwidth for PP unit root tests is determined by Schwert (1989) formula.

Above mentioned issues have been solved by applying the Ng-Perron unit root test. This unit root test is suitable for small sample studies due its size and power properties. The results reported in lower segment of Table-4 reveal that all the series have unit root problem and found stationary at 1st difference. This shows no variation in results and we can say that results are reliable and consistent which leads to robustness of unit root analysis. In the presence of structural breaks occurring in the series, ADF, PP, Ng-Perron unit root tests are inefficient in providing exact integrating order of the variables. The presence of structural break in the series may affect our findings regarding unit root properties of the variables and would impact our policy suggestion based on the results. In doing so, we applied Zivot-Andrews, (1992) structural break unit root test. This test allows having information about structural break stemming in the series. Table-5 deals with results of Z-A unit root test. The results also indicate that all the series are not found stationary at their level while at 1st difference, variables are integrated. This implies that the variables have unique order of integration i.e. I(1).

Table 5: Zivot-andrews unit root test

Variable	At Level		At 1st Difference	
	T-statistic	Time Break	T-statistic	Time Break
$\ln FP_t$	-3.963 (0)	1996	-5.678 (0)*	1997
DUM_t	-3.925 (0)	1999	-6.442 (0)*	1999
$\ln GS_t$	-3.223 (2)	1997	-14.345 (0)*	2006
$\ln DE_t$	-4.081 (1)	2000	-5.629 (2)*	2005

Note: * represents significant at 1% level. Critical T-values are -5.57 and-5.08 at 1% and 5% levels respectively. Lag order is shown in parenthesis.

The unique order of the variables leads us to employ the ARDL bound testing approach to co-integration for long run relationship between female labour supply, political stability, government size and government developing spending. The assumption of the ARDL bounds testing is that the

variables should be I (0) or I (1) or I (0)/I (1). If any variable is found stationary at me (2) then computation process of F-statistic becomes unacceptable. That's why we have applied ADF, PP, and Ng-Perron and Zivot-Andrews unit root tests to ensure that none of variables is stationary at 2nd difference. The computation of F-test developed by Pesaran et al. (2001) also depends upon the lag length selection. Therefore, we have to choose appropriate lag order of the variables to attain unbiased F-statistic. There are many criterion are given in Table-6 but our focus is on Akaike information criterion (AIC). Lütkepohl, (2006) disclosed that AIC has superior power properties for small sample data compared to any lag length criterion. Our decision about leg length is based on the minimum value of AIC which suggests us to use lag order 2.

Table 6: Lag length selection

VAR Lag Order Selection Criteria						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	11.8096	NA	6.73e-06	-0.5578	-0.3675	-0.4996
1	92.7752	133.0149*	6.60e-08*	-5.1982	-4.2466*	-4.9073*
2	109.5365	22.7474	6.76e-08	-5.2526*	-3.5397	-4.7289

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Table 7: The ARDL co-integration analysis

Estimated Model	$\ln FP_t = f(DUM_t, \ln GS_t, \ln DE_t)$	
Optimal lag structure	(2, 0, 2, 1)	
F-statistics	6.120***	
Significant level	Critical values (T = 31)	
	Lower bounds, $I(0)$	Upper bounds, $I(1)$
1 per cent	7.763	8.922
5 per cent	5.264	6.198
10 per cent	4.214	5.039
R^2	0.6813	
$Adj - R^2$	0.3626	
F-statistics	2.1381***	
Durbin Watson Test	1.9891	
Diagnostic tests	F-statistics (Prob. value)	
$\chi^2 SERIAL$	2.5476 (0.1122)	
$\chi^2 ARCH$	0.0811 (0.7782)	
$\chi^2 RAMSEY$	0.0061 (0.9388)	

Note: *** represents significant at 10 per cent level. $\chi^2 SERIAL$ for LM serial correlation test, $\chi^2 ARCH$ for autoregressive conditional heteroskedasticity and $\chi^2 RAMSEY$ for Ramsey Reset test. Lower and upper critical are used developed by Narayan (2005). () shows probability values in lower segment.

The next turn is to calculate F-statistic using bounds F-test developed by Pesaran *et al.* (2001). The results of the ARDL analysis are reported in Table-7. We have used critical bounds generated by Narayan (2005) which are more suitable for small samples than critical bounds i.e. upper and lower critical bounds provided by Pesaran *et al.* (2001). Our results indicate that our computed F-statistic is higher than upper critical bound at 10 per cent level of significance using female labour supply ($\ln FP_t$) as predicted variable. This confirms the existence of co-integration between the variables over the study period in case of Pakistan. It implies that long run relationship between the series is found. The diagnostic tests show that the estimated model has no serial correlation and same inference is drawn for autoregressive conditional heteroskedasticity. The ARDL bounds testing model is well specified reported by statistics of Ramsey Reset test.

After finding co-integration relationship between the variables, next step is to examine the long run impact of political stability, government size and government development spending on female labour supply in case of Pakistan. Our results indicate that current female labour supply has significant impact on female labour supply in future. Keeping other factors constant, a 1 % increase in female labour supply in current period will enhance female labour supply by 0.7119 per cent in future. The impact of political stability is negative on female labour supply and it is statistically significant at 5 per cent level of significant. A 1% improvement in political stability is linked with 0.0376 per cent decline in female labour supply, all else is same. In Pakistan, it is a known fact that in order to meet its current expenditures the government cuts down its developmental expenditures. Terrorism is one of the key factors in reducing the development expenditures. Governance itself is questionable in Pakistan. Local investment as well as foreign direct investment declines due to the risk and uncertainties associated with terrorism, government policies and priorities. There is so much risk floats in the economy due to which investment activities declines to 13.4% of GDP in 2010-11 as compare to 22.5% of GDP in 2006-07 which in turn decreases the economic activities resulting in the lost employment opportunities for both males and females. Large scale manufacturing sector remained victimize and grew by only 1.7% in July-March 2010-11. All this contributes to the negative supply of female labour in the market activities.

There is a positive impact of government developmental spending on female labour supply. This is statistically significant at 1 per cent level. A 0.1540 per cent increase female labour supply is linked with 1 per cent increase in government developmental expenditures by keeping other things constant. There is sufficient evidence that supports the rise in developmental spending of the government and its casual link between female labour force participation and public development spending. In the developed and developing countries, the development expenditure of the government increases with the growth of per capita income and it also increases the female labour force participation. A public program that provides subsidies on child care and paid maternal and parental leaves encourages female labour supply. Gelbach, (2002) investigated and found that in countries where there is government sponsored childcare is provided in the form of kindergarten,

the female participation rate increases. And all this is possible when the political conditions in a country are stable and there is smooth functioning of all the government departments as well institutions.

As explored by Tanzi and Schuknech, (2000), that in the industrialized countries, the government spending had been raised from 13 to 46% of GDP in between 1913 and 1996. During the last two decades, there is a rapid increase in government share with the female supply in the labour market rises from 28% to 41% in OECD countries. The rise in government share also increases the female labour force participation, which proves the fact that the twin increases in female labour supply and government size are not by chance instead there is a casual relationship between government spending and female labour force participation. It is predicted that as the females start participating in the market activities, their demand for social services such as education, health care etc. provided by the government increases. With the provision of additional government services provides an opportunity to females to reduce their burden which falls disproportionately on them.

The impact of government size on female labour supply is negative and it is statistically significant at 10 per cent level of significance. A 0.1393 per cent reduction in female labour supply is due to 1 per cent increase in government size, all else is same. In this study we employ variable such as size of the government in regard with the administrative size i.e. in the form of ministries, divisions and departments. When the current expenditures of the government increases which includes the non-development expenditure such as pay and allowances, administrative expenses etc. In the present scenario, the government has been expanded in terms of increasing the number of ministries, divisions and departments. While nothing visible is done on the development side. In addition, the government spending on health and education is negligible which reflects the priority of the government. The government also reduces subsidies on food, agriculture and manufacturing sectors along with the increase in taxes. However, the development expenditure on health and education is meager. And the current expenses are sky rocketing and adversely affecting the labour market conditions and the employment opportunities of both the gender.

Due to energy crisis the industrial sector has not contributed much to absorb the increasing rate of labour force for last five-six years. In fact, electricity outage has affected already established industry and the unemployment rate has increased, which all together reduces the demand for labour and especially the female labour. The uneven economic growth raises income inequality and poverty as the fruits of development expenditures could not trickle down to the marginalized segment of the population. Therefore, the female labour supply contracts with the size of the government.

Table 8: Long run results

Dependent Variable = $\ln FP_t$				
Variable	Coefficient	Std. Error	T-Statistic	Prob. value
Constant	0.5181	0.5160	1.0040	0.3250
$\ln FP_{t-1}$	0.7119*	0.1057	6.7347	0.0000
DUM_t	-0.0376**	0.0184	-2.0385	0.0522
$\ln DE_t$	0.1540*	0.0461	3.3367	0.0027
$\ln GS_t$	-0.1393***	0.0807	-1.7261	0.0967
R-squared	0.9512			
Adj. R-squared	0.9435			
Durbin-Watson	1.7208			
F-statistic	122.0724*			
Diagnostic Tests				
F-statistic	Prob. Value			
$\chi^2 SERIAL$	0.2350	0.6321		
$\chi^2 ARCH$	0.0084	0.9276		
$\chi^2 WHITE$	0.3486	0.9219		
$\chi^2 RAMSEY$	2.1662	0.1081		

Note: *, ** and *** show significant at 1%, 5% and 10% levels respectively.

$\chi^2 SERIAL$ For LM serial correlation test, $\chi^2 ARCH$ for autoregressive conditional heteroskedasticity, $\chi^2 WHITE$ for white heteroskedasticity and $\chi^2 REMSAY$ for Ramsey Reset test

Table 9: Error correction model

Dependent Variable = $\Delta \ln FP_t$				
Variable	Coefficient	Std. Error	T-Statistic	Prob. value
Constant	-0.0111	0.0176	-0.6347	0.5319
$\Delta \ln FP_{t-1}$	0.8522*	0.2912	2.9266	0.0076
DUM_t	0.0004	0.0200	0.0215	0.9830
$\Delta \ln DE_t$	0.1966**	0.0795	2.4736	0.0212
$\Delta \ln GS_t$	-0.1642**	0.0746	-2.2015	0.0380
ECM_{t-1}	-0.1057*	0.0346	-3.0545	0.0056
R-squared	0.4081			
Adj. R-squared	0.2795			
Durbin-Watson	2.1885			
F-statistic	3.1725**			
Diagnostic Tests				
Test	F-statistic	Prob. value		
$\chi^2 SERIAL$	1.4309	0.2614		
$\chi^2 ARCH$	0.1653	0.6876		
$\chi^2 WHITE$	0.2582	0.9787		
$\chi^2 RAMSEY$	0.2826	0.6002		

Note: * and ** show significant at 1% and 5% levels respectively.

$\chi^2 SERIAL$ for LM serial correlation test, $\chi^2 ARCH$ for autoregressive conditional heteroskedasticity, $\chi^2 WHITE$ for white heteroskedasticity and $\chi^2 REMSAY$ for Ramsey Reset test

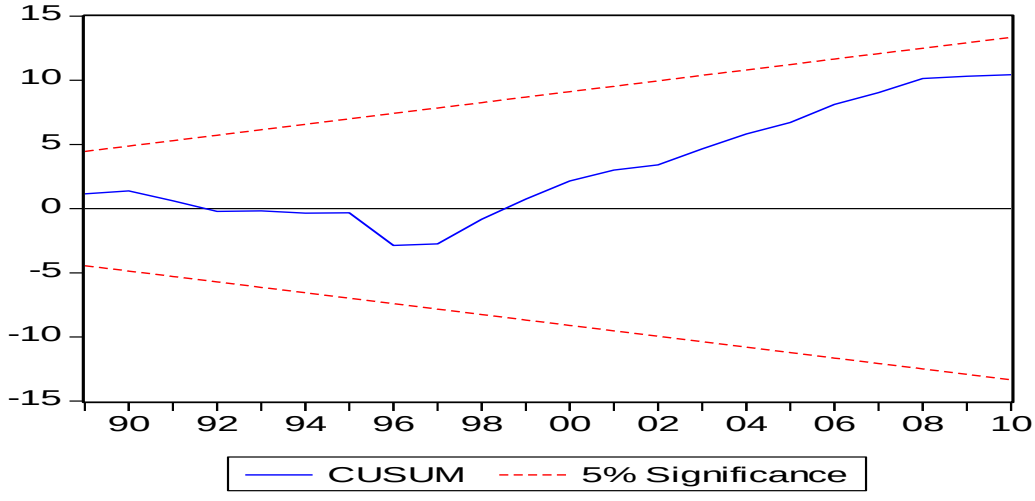
The lower part of Table-8 reports the results of diagnostic tests i.e. serial correlation, ARCH test, white heteroskedasticity and specification of long run model. The results provide the evidence of no serial correlation. The autoregressive conditional heteroskedasticity is not found and same inference can be drawn for white heteroskedasticity. The statistic Ramsey Reset test confirms the well specification of long run model. This shows that long run model meets the assumptions of classical linear regression model (CLRM).

After the discussion on long run results, next step is to examine short run effect on political stability, government size and public development spending on female labour supply by applying error correction method (ECM). The results reported in Table-9 indicate that current female labour supply has positive effect on female labour supply in future. The affect of political stability on female labour supply is positive but it is statistically insignificant. The government development spending has positive effect on female labour supply at 5 per cent level of significance. The negative effect of government size on female labour supply is found at 5 per cent significance level. The results show that a 1 per cent increase in public development spending (government size) is linked with 0.1966 per cent increase (0.1642 per cent decline) in female labour supply. The statistical significance of estimate of error correction term i.e. ECM_{t-1} indicates the speed of adjustment and further confirms our established long run relationship between the series (Banerjee *et al*. 1993). The speed of adjustment shows that how short run changes converge towards long run stable equilibrium path. Our results indicate that sign of estimate of ECM_{t-1} is -0.1057 is highly significant at 1 per cent level. This corroborates our long run relationship between female labour supply and its determinants and validates the view by Bannerjee *et al*. (1998). Our empirical evidence reveals that 10.57 per cent deviations are corrected from short run towards long span of time. The coefficient of ECM_{t-1} is -0.1057 shows low speed of adjustment towards long run stable equilibrium path. This indicates that following female labour supply model, Pakistan would take 9 years and 6 months to reach long run stable equilibrium path.

The diagnostic checks have also been applied and results are provided in lower segment of Table-9. Our analysis shows that short run model has passed all diagnostic tests successfully. The results report that there is no problem of serial correlation between the error terms of the series. The ARCH test statistic reveals no presence of autoregressive conditional heteroskedasticity. There is a homoscedasticity which is a negation of white heteroskedasticity. The Ramsey Reset test statistics validate the well specification of short run model. This indicates that short run model fulfills assumptions of classical linear regression model (CLRM). The cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMsq) are applied to test the reliability of long run and short run parameters[3]. Pesaran and Shin, (1999) also supported to apply CUSUM and CUSUMsq tests. We

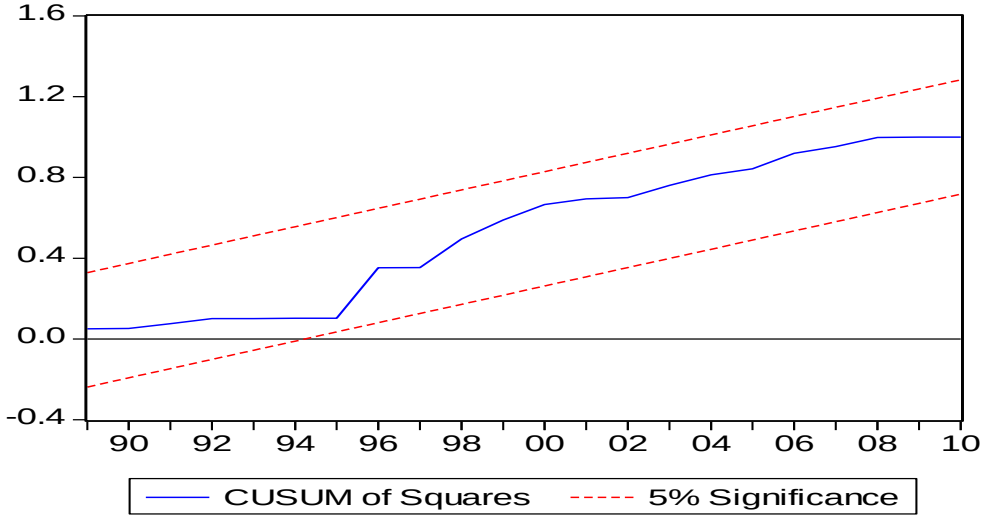
[3]The first of these involves a plot of the cumulative sum (CUSUM) of recursive residuals against the order variable and checking for deviations from the expected value of zero. The CUSUMSQs have expected values ranging in a linear fashion

may accept the null hypothesis of both CUSUM and CUSUMsq if plots of both graphs are between critical limits (red lines). The null hypothesis is "regressions equation is correctly specified" (Bahmani *et al.*, 2004).



The straight lines represent critical bounds at 5% significance level

Figure 1: Plot of cumulative sum of recursive residuals



The straight lines represent critical bounds at 5% significance level

Figure 2: Plot of cumulative sum of squares of recursive residuals

from zero at the first-ordered observation to one at the end of the sampling interval if the null hypothesis is correct. In both the CUSUM and CUSUMSQ tests, the points at which the plots cross the confidence lines give some in diction of value(s) of the ordering variable associated with parameter change.

The results of both CUSUM and CUSUMsq tests reported in figure 1 and 2 show that graphs of both tests are between critical bounds i.e. red lines. This shows that we have stable and reliable long and short runs parameters.

The VCEM granger causality analysis

It is pointed by Granger, (1969) that the VECM Granger causality should be applied to investigate the causal relationship between the variables if variables are co-integrated for long run relationship and order of integration of series is I(1). The exact detection of causal relationship between the variables would help us in knowing about which factor is causing female labour supply. Our analysis validated the co-integration between political conditions, development expenditures, government size and female labour supply which further leads us to apply the VECM Granger causality to test the existence of causal relationship between said variables. The results of the VECM Granger causality are reported in Table-10.

The convergence is slow in female labour supply (-0.1049) equation. In long run, our causality empirical evidence reveals that political conditions, development expenditures and government size Granger cause female labour force participation. In short run, bidirectional causality is fund between female labour force participation and government size. The unidirectional causality is found running from political conditions and development expenditures to government size. Development expenditures and political conditions Granger cause female labour force participation in the country. The joint significance of short-and-long runs also reveals the robustness of short run and long run causality results.

CONCLUSION

Political steadiness and permanency is said to be one of the main factors determining the female labour supply in the labour market. On the basis of the above factors, we investigate the relationship between political stability, government size, government development expenditures and female labour supply in case of Pakistan by employing ARDL. The study covers data period of 1980-2010. ADF, PP, Ng-Perron and Zivot-Andrews unit root tests have been applied to test the stationarity properties of the variables. Our empirical evidence shows co-integration relation confirming long run affiliation between the variables. The results indicate that political stability discourages female labour supply. Female labour supply is positively linked with government development expenditures.

Table 10: The VECM granger causality analysis

Dependent Variable	Direction of Causality								
	Short Run				Long Run	Joint Long-and-Short Run Causality			
	$\Delta \ln FP_{t-1}$	ΔDUM_{t-1}	$\Delta \ln DE_{t-1}$	$\Delta \ln GS_{t-1}$	ECT_{t-1}	$\Delta \ln FP_{t-1}, ECT_{t-1}$	$\Delta DUM_{t-1}, ECT_{t-1}$	$\Delta \ln DE_{t-1}, ECT_{t-1}$	$\Delta \ln GS_{t-1}, EC$
$\Delta \ln FP_t$	….	0.0031 [0.9966]	5.8162* [0.0102]	7.8061* [0.0031]	-0.1049** [-2.4504]	….	2.5340*** [0.0849]	5.7099* [0.0054]	5.2045* [0.0081]
ΔDUM_t	0.5647 [0.5773]	….	0.2661 [0.7690]	0.1336 [.8015]	….	….	….	….	….
$\Delta \ln DE_t$	1.1691 [0.3301]	0.4663 [0.6336]	0.5839 [0.5665]	….	….	….	….	….	….
$\Delta \ln GS_t$	6.2587* [0.0074]	10.8015* [0.0006]	4.8013** [0.0192]	….	….	….	….	….	….

Note: * and ** show significance at 1% and 5% levels respectively.

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