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## **Factors contributing towards the Process of International Entrepreneurship: A Case Study of Light Engineering Units Operating in Gujranwala District**

Khizra Safdar Khan\*

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**Abstract:** The objective of this paper is to explore the importance of factors contributing towards the process of internationalization. Firm level characteristics, technological capabilities, commercial capabilities and factors inhibiting export activities are considered as the major factors affecting export performance in case of Light Engineering Units of Gujranwala District. Empirical data from a survey of 868 Light engineering units in Gujranwala District is being employed for analytical purposes out of which 209 units were found to be involved in export activities. Multinomial regression logistic model has been employed to find out the probability of being involved in internationalization process. Instrumental variable approach is being employed to encompass the role of innovation in the process of internationalization. The estimated results of instrumental equation are than incorporated in the basic model to find out the final estimation results. Results from the logit model represent that the factors of firm size, firm age, manufacturing status, affiliation with area wise trade union, average firm revenue, diversification (product mix), presence of registered trade-marks, participation in promotional activities through trade fairs, personal visits and references, availability of information, fitted values of innovation in terms of innovation in new product, new process and major improvements are found to be significantly and positively correlated with the probability of being an international entrepreneur. While export restricting factors like, non-cooperative attitude on behalf of government organizations, financial problems and expensive foreign trips are found to be significantly and negatively associated with the probability of being international entrepreneur.

**Keywords:** Industry, SME, Logit Model, innovation, Development policy, Trade Unions.

**JEL Classification:** F14, O31, O21, J51

### **1. Introduction**

The idea of international trade being the engine of the growth is very old;

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its inception can be found back in the 18<sup>th</sup> century's industrial revolution in England which later on spread to the rest of the world in the 20<sup>th</sup> century. However, during the second half of the 20<sup>th</sup> century, the idea lost its popularity. The dominance of protectionist theories in the policy making of many developing countries persuaded industrialization policies based on a very limited degree of openness known as “import substitution industrialization (ISI)” strategies, which had their source back in the thinking of Prebisch (1962).

The policy of industrialization through import substitution met with limited success. But growth oriented strategies based on import substitution exhibited their own limitations i.e., their implementation in many countries failed to address the major problems like low income earnings, unemployment and poverty (UNIDO 1991). Therefore emphasis was laid on sectoral restructuring and policy redesigning. In early 1980s, many countries who earlier followed an ISI, began to liberalize trade and adopted EOI. In addition, debt crises in 1982 also played an important role in reshaping the policy views.

Thus, the importance of industrialization cannot be denied being an improved strategy to provide employment opportunities, its contribution towards economic growth as compared to traditional agricultural sector, more foreign exchange earnings through exports of value added products and optimal utilization of domestic resources by establishing forward and backward linkages in the economy. In case of developing countries like Pakistan, motivation behind each development policy is to provide employment opportunities to its accelerated growth of population along with a considerable increase in their living standard but establishment of large scale industrialization requires resources in abundance, therefore alternatively, emphasis should be laid on the establishment of small scale sector in order to resolve all these problems.

The extraordinary growth in Pakistan's Industry in the later part of 1950s and in 1960s suggested that Pakistan might be one of the very few countries at that time which would join the developed world. However, much of the growth that had been taken place in the first two decades

soon unraveled, with growing income and regional disparities, resulting in the separation of East Pakistan.

In 1947, Pakistan inherited an undeveloped industrial base. Pakistan followed ISI initially by default. Industrialization process in Pakistan was initiated with the development of consumer goods (skill light). Very high rates of effective protection in the range of 100-200 percent or more were common in 1950 and 1960s in Pakistan, India, Argentina and Nigeria leading to negative value addition (Dollar and Art 2001). 1970's witnessed the board nationalization wave, while 1980's was a period of de-nationalization and cheap credit availability for large enterprises. In 1980s Pakistan also started EOI along with ISI. Overall industrial and related policies in Pakistan have traditionally neglected or at best remained impartial towards the development of small and medium enterprises. In spite of the indifferent attitude of successive governments in Pakistan, the SME sector has made significant gains over time. It grew at a rate in excess of 7.2 percent in capital formation growth as against the large scale capital formation growth of -5.02 percent in the 1990's (SMEDA 2004). A shift in the emphasis from large scale to small scale sector could be considered as a consequence of poor policy experiences of heavy industrialization or due to recognition of the inherent strength, vigor and potential scope of the SME sector in Pakistan.

The main objective of this article is to investigate the reasons that how some Entrepreneur experience better export performance as compared to others. For this purpose, the study has employed different factors like Firm level characteristics, technological and commercial capabilities along with the factors that restrict the export activities to examine the variations in export performance of under consideration firms. The inclusion of export inhibiting factors among the important determinants of export performance is an important contribution of the study, as limited work has been done in this respect to explore the relationship between different types of trade barriers and export performance of small industrial units.

## 2. Literature Review

The firm-level determinants of export performance have been investigated extensively (Chetty and Hamilton, 1993) and encompasses a variety of different factors regarding the significance of firms' demographics (Wagner, 1995) along with perception of the entrepreneurs regarding organizational activities (Bijmolt and Zwart, 1994). In the section, firm level characteristics, along with their consequent impact on process of international entrepreneurship are discussed. Within firm level characteristics, factors like firm size, firm age, manufacturing status, affiliation with trade unions along with the revenue per month and average wages have been considered along with their consequent impact on export orientation of entrepreneurs.

Among the structural factors, the firm size is considered to be the most debated in the literature. The conventional hypothesis that large firms have greater chances to compete globally is found to be significant in different studies (Chandler, 1990, Ogbuehi and Longfellow, 1994) but a number of empirical studies have established a negative or no relationship between Firm size and exports (Calof, 1993). The difference in the results can be attributed to the non-linearity of the relationship between two variables (Lefebvre et al., 1998).

The mature firms can behave more rigidly leading to competence traps, while younger firms can act in a more practical, aggressive and flexible manner (Lefebvre et.al, 2000). Some studies don't provide any empirical evidence to support any correlation between these two variables (Ong and Pearson, 1982; Reid and Rosson, 1982), some have suggested a positive correlation (Welch and Wiedersheim- Paul, 1980; Abbas and Swiercz,1991), while others have confirmed a negative relationship between age of a firm and its export potential (Kirpalani and MacIntosh, 1980; Ursic and Czinkota, 1984).

A bidirectional causal relationship is found to exist between successful export business and revenue it generates as it provides firms with more resources to invest in R&D and innovation processes (Huang et.al 2008).

Empirical evidence suggest that productivity was found to be high among export-oriented SMEs as compared with non-exporting SMEs, as measured by the total revenue per worker per SME and total profit per worker per SME (Trung et.al 2008).

Amongst technological capabilities, expenditures on R&D enables firm not only to innovate, but also facilitate them to incorporate external technological knowledge in an improved manner (Lefebvre et.al, 2000). R&D is therefore considered as one of the major factors affecting firm's export performance. Positive relationship between exports and R&D in small firms has been established (Ong and Pearson, 1984). Innovation is said to be most motivating factor driving the exports.

The direction of causation runs from innovation to export (Krugman, 1979). Empirical results from earlier studies did not provide any reliable results while investigating the relationship between innovation and export performances in case of small firms, because the process of innovation in small firms seems to have imprecise boundaries i.e., a lot of factors contribute to the process of innovation making it difficult to circumscribed (Nassimbeni, 2001).

Investment strategy of a firm involving its different dimensions as investment in capacity building, in replacing old equipment, for enhancing productivity, in improving quality of output and investment in producing new product suggested by Nguyen et.al. (2007) has been employed in the present study to find out the impact of the investment strategy adopted by a firm on its probability of being an exporter.

Differences in exporter performance can be explained by the variation in degree of difficulties faced by small firm in their international operations. Entrepreneurs while initiating a new project may face different problems, for instance, they may face credit access problems in the financial market. Market acceptance and lacking of skilled labor are also considered as major problems faced by small firms while starting up new projects, forcing them to leave the international markets (Alvarez, 2004).

Credit restriction, equity capital and lack of external debt are considered to be the main hindrance to the internationalization of SMEs (Chittenden, Hall, & Hutchinson, 1996; Friedman & Friedman, 1994; James, 1999).

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Small firms are found to be characterized with conservative attitude and risk adversity (Ward, 1998). According to empirical evidence the financial institutions behave more conservatively while providing loans to SMEs. SMEs are usually charged comparatively high interest rates along with high collateral and loan guarantees (Stieglitz & Weiss, 1981).

The efficiency with which a firm sells its products and services to the foreign market determines its export growth indicating that market acceptance an important determinant of firm's export process. Firm's market intelligence helps to coordinate its internal processes to respond swiftly and efficiently to preferences of foreign customers (Hult et al., 2003; Narver & Slater, 1990). Empirical evidence suggests that *market acceptance* is significantly associated to the overall growth performance of a firm (Kohli & Jaworski, 1993).

In addition to lack of resources and capacity utilizations, a significant barrier to growth is concerned with human resource management and the conditions relating to employ and dismissal of workers (Bartlett & Bukvic, 2001). Shortage of technological skills is considered to be one of the main drawbacks of SMEs, which is deemed essential for the adoption of highly developed manufacturing technology (Lefebvre *et al.*, 1996). The number of scientists, engineers, and technicians represents firm's technological knowledge, which is expected to be strongly correlated with its export performance.

Literature based on the determinants of firm growth considers both human capital and financial resources as most important factors effecting small business growth (Wiklund et al., 2009). On the firm level, the experience, skill and knowledge of the total employees contribute more promisingly as compared to the entrepreneur alone (Chandler & Hanks, 1994, Birley & Westhead, 1990). Human capital can be measured both in terms of specific and generic terms. Generic human capital is defined in terms of different levels of educational attainment by workers. Specific human capital can be measured by employing a dummy variable indicating whether firm is offering on job training to its workers or not (Lee and Temesgen, 2005).



Small firms carry out a large number of technological innovations based on their unique know-how approach in an unbalanced manner among industrialized nations (Pavitt et al., 1987, Rothwell, 1988) and also in newly industrialized countries like Korea (Lee, 1995). They play an important role in the diffusion of technology and their unique know-how is often based on the improvements of general technologies developed by large firms. Competitive advantage based on existence of a unique product is significantly related to firm's performance (Julien et al., 1994).

Human capital was found to be positively associated with exports in a study based on samples of German firms (Wagner, 2001). Negative relationship between human capital and exports was found among large samples of Brazilian firms (Willmore, 1992). According to the neo-technology theory, exports are positively affected by human capital because the technological capabilities of the firm depend mainly on skills. Literature suggests that firm's market intelligence and marketing capabilities are considered as basics for entrance and expansion in the process of internationalization. Small new high technology firms have capability to overcome complications with technology than with the market (Fontes and Coombs, 1997). Exporting strategy of SMEs based on diversification of products and product lines have proved to be successful in export growth (Denis and Depelteau, 1985). In the presence of diversified products, the expertise and knowledge acquired in the fields of commercial and competitiveness can be transferred from one sector to others, which are found to be associated with export success (Cafferata and Mensi, 1995).

Mandatory legal measures like trademark protection is necessary to execute at early stages of firm export process. The presence of trademarks can serve as an asset for SMEs working in foreign markets (Lefebvre et al., 2000). The study is going to analyze the impact of presence of trademarks on the firm's export performance.

The exhibitions and trade fairs organized by different government and non-government associations have proved to be very helpful in providing opportunities to small firms in order to break into international markets by bringing buyers and sellers from different parts of the world simultaneously at the same place (Vohra, 2008). These types of

opportunities add to firm's export experience, which helps entrepreneur to perceive risks and opportunities in the foreign market (Cavusgil et al., 1979; Cooper, 1981; Christensen et al., 1987; Aaby & Slater, 1989; Ogbuehi and Longfellow, 1994; Moini, 1995). These trade fairs also facilitate firms to observe international market's attitude and knowledge of international affairs significantly influencing their choices and chances of breaking into international markets..

Networks can contribute positively to firm's growth by increasing output and employment in linked enterprises, diffusion of knowledge and skills among firms in different countries, helping SMEs to enter in the international market, increasing commercial transactions between multinationals and small firms, and increasing the choice for the small firms to serve the market of their choice (Elhiraika and Nkurunziza 2006). Strong sociability helps entrepreneurs to develop social networks resulting in stronger relationships with partners, suppliers and customers (Barringer & Greening, 1998). The ability to establish and develop networks increases the probability of success and growth of business (Baron and Markman, 2000).

As for obstacles encountered by firms in the process of internationalization, the major problem is concerned with the lack of information regarding perception of risks and opportunities prevailing in foreign markets (Nassimbeni, 2001). Imperfect information and entry barriers imposed by large enterprises and foreign governments limit the international expansion of small firms (Acs *et al.*, 1997). The availability of information concerning both international markets and management of expansion is considered as a crucial factor for the development of internationalization process (Erikson et al., 1997). According to Uppsala School of thought, exports are based on a learning process enabling firms to gain information of the temperament and working of new markets. This necessary information will facilitate them to expand abroad with a minor extent of uncertainty factor (Johanson & Vahlne, 1977).

Firms entering in the export process have to face administrative and customs problems in both importing and exporting countries (Kedia and

Chhokar, 1986; Madsen, 1989; Styles and Ambler, 1994). The chances of small firms' international success diminish as they have to face the fiscal imposition as well as bear infrastructural inadequacies (Nassimbeni, 2001). Small firms seem to be heavily penalized as compared with their larger counterparts both by local governments and by foreign legislative restraints (Styles and Ambler, 1994; Chetty and Hamilton, 1996). In the consequence of present wave of globalization, SMEs have to face foreign competition in the home market, stimulating firms to explore international market along with domestic market (Etemad, 2005). Foreign competition is considered to be the highly rated problem, demonstrating that this problem is enduring and generic nature (Katsikeas and Morgan, 1994).

In the process of internationalization, small firms face financial constraints and under-capitalization (Buckley, 1997). Financial constraints correspond to the lack of financial resources. Credit restriction, equity capital and lack of external debt are considered to be the main hindrance to the growth of SMEs.

On the basis of the above mentioned review of literature, research model presented in Fig. 1 is being constructed by the author to analyze the impact of different factors on the process of International entrepreneurship.

### **3. Research Method**

#### **3.1 Sources of Data**

In the present study, primary data collected through a detailed survey of Light Engineering sector is being utilized for analytical purposes. The survey has been conducted in the district of Gujranwala from Feb, 2009 to Feb, 2010. The format of the SMEs questionnaire, covering broad aspects of each unit's individual characteristics, commercial and technological capabilities along with a detailed profile of factors that restrict small units to enter the international market. 868 units were investigated out of which 209 units were found to be involved in exporting activities.

**3.2 Logit Model for development of International Entrepreneurs**

To estimate the probabilities of being an international entrepreneur, logistic regression analysis with maximum likelihood estimation is employed. In the analysis, dependent variable takes the value 1 when the entrepreneur is involved in exporting activities and 0 when it is not participating in international markets. Explanatory variables in this model can be divided into four categories as firm’s characteristics, technological capabilities, commercial capabilities and export restricting factors. Basic model can be written as

$$\text{International Entrepreneur} = a_0 + a_1X + a_2\text{Innovation} + e \dots\dots\dots (1)$$

Where

International Entrepreneur = 1 (if Entrepreneur is participating in export activities) , = 0 (if Entrepreneur is participating in export activities)

X = firm’s characteristics, technological capabilities, commercial capabilities and factors inhibiting export activities. The interpretation of the model in terms of probabilities can be explained as odds ratios. Odd ratio greater than 1 indicates the increase the probability of being an international entrepreneur while less than one indicates the decrease in the probability of being an international entrepreneur. Where innovation can be measured in terms of innovation in new product, in new process and major improvements in the existing product and *e* is expressed as error term.

Out of the major determinants affecting firm’s export performance, innovation has found to have an endogenous relationship with development of an international entrepreneur. So, the direct estimation of the eq. 1 would lead to a biased estimate of causal impact of innovation on exports.

Two approaches can be employed to deal with this problem of endogeneity. These approaches are the instrumental variable approach and simultaneous equation technique. While in the present study an instrumental variable approach has been employed. In order to utilize the

instrumental variable approach, the first step is to explore those variables that are highly correlated with innovation but not with exporting activities of an entrepreneur.

Following specification is used as instrumental variable technique.

$$\text{Innovation} = b_1 + b_2Z + e \dots\dots\dots (2)$$

Where

Innovation = 1 (If an entrepreneur innovates), = 0 (If entrepreneur does not innovate)

Where Z is the instrumental variable and it comprises of Investment strategy adopted by a firm, entrepreneur’s perception in starting up new projects, on job training, presence of unique know how, number of skilled workers in the firm and use of imported raw materials in the final product. The specification expressed as eq. 2 is then utilized to find out the impact of instrumental variables on the three components of innovation as

$$\text{Product Innovation} = b_1 + b_2Z + e \dots\dots\dots (3)$$

Where

Product innovation = 1 (If entrepreneur is involved in innovating a new product), =0 (If entrepreneur is not involved in innovating a new product)

$$\text{Process Innovation} = b_1 + b_2Z + e \dots\dots\dots (4)$$

Where

Process innovation = 1 (If Firm entrepreneur is involved in innovating a new process), = 0 (If entrepreneur is not involved in innovating a new process)

$$\text{Major improvements} = b_1 + b_2Z + e \dots\dots\dots (5)$$

Where

Major improvements = 1 (If entrepreneur undergoes some major improvements), = 0 (If entrepreneur has not made some major improvements)

The fitted values of new product, new process and major improvements after the estimation of the three innovation equations will be then incorporated in final export equation of 1. The variables along with their conceptual definition are being presented in Table 1.

#### **4. Estimation Results**

The results of the instrument equation 3 are being shown in Table 2. The investment strategy is found to be positively and significantly affecting the process of international entrepreneurs as four out of six components of investment strategy are found to be significant at 90 and 95 percent confidence level. Investment in capacity building has a positive impact on the innovation of new product. A unit change in the investment in capacity building increases the odds of innovation of new product by 1.470 units (the probability of innovation in new product over the probability of not experiencing any innovation in new product). Investment in replacing old equipment is found to be significant at 90 percent confidence level as one unit increase in the investment in replacing old equipment increases the odds of innovation in new product by 4.082 units. As far as entrepreneur's perception regarding new product is concerned all the three components like lacking of skilled labor, market acceptance and financial problems are found to be significant with lacked skilled labor and financial problems exerting negative influence on the probability of involving of an entrepreneur in international markets.

The results of the instrument equation 4 are being shown in Table 3. The investment strategy is found to be positively and significantly affecting the process of international entrepreneurs as three out of six components of investment strategy are found to be significant at 90 and 95 percent confidence level. Investment in replacing old equipment has a positive impact on the innovation of new process. A unit change in the investment in replacing old equipment increases the odds of innovation of new process by 1.1.166 units (the probability of innovation in new process over the probability of not experiencing any innovation in new process). Factors like investment in capacity building, investment in new product and for other purposes are found to be insignificant in the present analysis.

As far as entrepreneur's perception regarding new product is concerned all the three components like lacking of skilled labor, market acceptance and financial problems are found to be significant with lacked skilled labor and financial problems exerting negative influence on the probability of involving of an entrepreneur in international markets. Determinants like on job training, unique know how and presence of skilled labor is also found to be significantly influencing the probability of innovating of an entrepreneur in terms of new process.

The results of the instrument equation 5 are being shown in Table 4. The investment strategy is found to be positively and significantly affecting the process of international entrepreneurs as five out of six components of investment strategy are found to be significant at 90 and 95 percent confidence level. Factor of investment in enhancing productivity, is found to be insignificant in the present analysis. As far as entrepreneur's perception regarding new product is concerned all the three components like lacking of skilled labor, market acceptance and financial problems are found to be significant with lacked skilled labor and financial problems exerting negative influence on the probability of involving of an entrepreneur in international markets. Determinants like on job training and presence of skilled labor is also found to be significantly influencing the probability of innovating of an entrepreneur in terms of new process.

The estimated results of the basic export equation 1 are being presented in the Table (5). Size of a firm is found to be significantly and positively influencing the probability of being an international entrepreneur at 99 percent significance level. A unit change in firm size increases the odds of involving in export activities by 5.099 units (the probability of being an international entrepreneur over the probability of not being an international entrepreneur). Firm age is proved to be significant at 90 percent confidence level. Manufacturing status of the firm being a contractor increases the probability of being an international entrepreneur as a unit change in manufacturing status from sub-contractor to contractor increases the odds of involving in export activities by 2.940 units. Association with the area wise trade union exerts a positive influence on the attitude of an entrepreneur to participate in international activities. The factor of diversification in product line is proved to be significant in the current scenario. The existence of registered trademarks positively

increase the probability of being an international entrepreneur as a unit increase in the acquisition of registered trade mark increases the odds of involving in export activities by 3.280 units (the probability of being international entrepreneur over the probability of not being international entrepreneur).

Participation in the trade fairs along with personal visits and references are found to be adding positively towards the process of international entrepreneurs.

Exposure of a firm to the information regarding export markets increases the probability of being an international entrepreneur by 2.091 units. While non-cooperation on the side of Government agencies, financial problems, competition from the foreign firms and expensive foreign visits significantly reduces the probability of being an international entrepreneur. Level of competition in foreign market negatively and significantly hampers the process of international entrepreneurship. Financial problems along with expensive foreign trips also found to reduce the probability of being an international entrepreneur in the present analysis.

All the three imputed components of innovation like innovation in new product, process and major improvements in the existing equipment are proved to be significant at 99 percent of confidence level and positively increase the probability of being an international entrepreneur.

Factors like initial investment in the start of the project, affiliation with trade unions, average wage, presence of trademarks, and cost competitive structure of the firm are proved to be insignificant in the present analysis.

## **5. Conclusions and Recommendations**

The study has provided a comprehensive view of different factors that adds towards the development of international entrepreneurship. These important factors were classified into three main categories like firm level characteristics, technological capabilities and commercial capabilities. Another important dimension of the present study is that it has also



focused those factors that restrict firms to be involved in exporting activities.

According to the results, firm size, firm age, manufacturing status of the firm, area wise affiliation with trade unions, natural log of the average revenue per month, diversification, registered trademarks, trade fairs, personal visits and references, availability of information regarding foreign markets along with the three imputed variables of innovation in terms of product innovation, process innovation and major improvements in existing equipment are found to be positively and significantly adds towards the process of international entrepreneurship. The factors of non-cooperation of government agencies, financial problems and expensive foreign trips are found to be significantly hampering the growth of entrepreneurs in international markets. While, the factors like initial investment in the start of the project, affiliation with trade unions, average wage, presence of trade-marks, and cost competitive structure of the firm are proved to be insignificant in the present analysis implying no effect on export activities

There is a universal consensus that Government export assistance programs should be modified according to the requirements of SMEs. Restrictions to enter the international markets are analytically stricter for small firms as compared to their large counterparts. The problems of capital shortage and management skills, and lack of basic information are considered to be the main obstacles faced by small units in the process of internationalization imposed by government agencies. Though government has offered some support programs, they are not considered to be sufficient enough to encourage small firms to enter in the international market. Moreover, special attention should be given regarding the designing of policy options corresponding to the requirements of firms as they go through the different phases of the process of internationalization.

The estimated results imply some policy implications as it should formulate such policies that can support small firms in their process of internationalization. It can help them in with providing information regarding foreign markets, solving their financial problems, making them more cost competitive as far as their products are concerned and by

subsidizing their visits to foreign markets. All these arrangements can positively help small units to enable themselves more productive in this present era of internationalization.

**Table 1: Determinants of Export Performance**

Determinants	Measure
<b>Firms Characteristics</b>	
Firm Size	Number of full-time employees
Firm Age	Number of years since the foundation of the firm
Manufacturing Status	Subcontractor or contractor
Area-Wise Trade Unions	1 if the firm is affiliated with the trade union, 0 otherwise
Product-Wise Trade Unions	1 if the firm is affiliated with the trade union, 0 otherwise
Lnrev09/Month	Log of firm's revenue in 2009
Wage/Emp09	Ratio of total wage to number of employees (Pakistan Rs.)
<b>Technological Capabilities</b>	
Innovation	
New product	1 if firm introduces new product(s), 0 otherwise
New process	1 if firm introduces new production process, 0 otherwise
Mod product	1 if firm makes major improvements of existing product(s) or changes specification, 0 otherwise
<b>Investment Strategy</b>	
Inv Capacity (Investment Strategy)	1 if firm invests in their capacity, 0 otherwise
Inv Replace (Investment Strategy)	1 if firm invests in replacing old equipment, 0 otherwise
Inv Productivity (Investment Strategy)	1 if firm invests in improving their productivity, 0 otherwise
Inv Quality (Investment Strategy)	1 if firm invests in improving their quality of output, 0 otherwise
Inv New (Investment Strategy)	1 if firm invests in producing new output, 0 otherwise

Strategy)	otherwise
Inv Other (Investment Strategy)	1 if firm's investment is for other purposes, 0 otherwise
<b>Owner's Perception In Starting Up New Projects</b>	
Financial Problems	1 if firm's owner perceived the importance of lacking finance in starting up new projects, 0 otherwise
Market Acceptance	1 if firm's owner perceived the Importance of lacked market acceptance in starting up new projects, 0 otherwise
Lack Skilled Worker	1 if firm's owner perceived the importance of lacking skilled workers in starting up new projects, 0 otherwise
On Job Training	1 if firm normally trains its existing workers or new workers, 0 otherwise
Presence Of Unique Know How	1=yes 0=otherwise
Skilled Workers	Number of skill workers
<b>1. Commercial Capabilities</b>	
Diversification (Product Mix)	No of industrial sectors in which the firm operates
Trade Marks	Presence=1 Absence=0
Registered Trade Marks	Presence=1 Absence=0
Export Promotion Bureau Trade Fairs	Yes=1, No=0
Personal Visits And References	Yes=1, No=0
Import Activities/ Use Of Imported Raw Material	Yes=1, No=0
<b>2. Factors Inhibiting Export Activities</b>	
Availability Of Information	Yes=1, No=0
Non Cooperation Of Govt. Agencies	Yes=1, No=0
Increased Completion In Foreign Markets	Yes=1, No=0
Financial Problems	Yes=1, No=0

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Cost Competitiveness	Yes=1, No=0
High Cost Of Visiting Foreign Markets	Yes=1, No=0

**Table 2: Logistic Results New Product**

New product	Coefficients	Odd Ratios
Skilled Labor	0.759**	2.135
Inv in capacity	0.385*	1.470
Inv in replacing old equipment	1.407*	4.082
Inv productivity	0.156	1.169
Inv quality	1.589**	4.901
Inv new product	3.025	20.600
Inv other	0.617**	1.854
Financial problems	-0.020*	0.980
Market acceptance	0.136	1.146
Lacking of skilled workers	-0.117*	0.889
Training on job	0.469*	1.598
Presence of unique knowhow	0.248*	1.282
Imported raw material	0.640**	1.897
Constant	-4.012	0.018
Log Likelihood= 118.498 Pseudo R-Squared = 0.0613 LR Chi2 (13)=1138.934 No. of Observations=868 Prob. > Chi2=0.000		

\*\*\* indicates that coefficients are significant at 1 percent level

\*\*indicates that coefficients are significant at 5 percent level

\* indicates that coefficients are significant at 10 percent level

**Table 3: Logistic Results New Process**

New process	Coefficients	Odd Ratios
Skilled Labor	0.176**	1.192
Inv in capacity	0.109	1.115
Inv in replacing old equipment	0.153**	1.166
Inv productivity	0.104**	1.109
Inv quality	0.068*	1.070
Inv new product	0.040	1.040
Inv other	0.072	1.075
Financial problems	-0.130**	0.878
Market acceptance	0.210***	1.233
Lacking of skilled workers	-0.069*	0.933
Training on job	0.148*	1.160
Presence of unique knowhow	0.047*	1.049
Imported raw material	0.011	1.011
Constant	0.993***	2.699
Log Likelihood= 1551.09 Pseudo R-Squared=0.23 LR Chi <sup>2</sup> (13)= 85.38 No. of Observations=868 Prob. > Chi <sup>2</sup> =0.000		

\*\*\* indicates that coefficients are significant at 1 percent level

\*\*indicates that coefficients are significant at 5 percent level

\* indicates that coefficients are significant at 10 percent level

**Table 4: Logistic Results Major Improvements**

Major Improvements	Coefficients	Odd Ratios
Skilled Labor	0.377**	1.457
Inv in capacity	0.790*	2.203
Inv in replacing old equipment	0.103*	1.108
Inv productivity	0.270	1.309
Inv quality	0.841**	2.319
Inv new product	0.622*	1.863
Inv other	0.052*	1.054
Financial problems	-0.076*	0.927
Market acceptance	0.162**	1.176
Lacking of skilled workers	-0.109**	0.896
Training on job	0.122**	1.130
Presence of unique knowhow	0.481	1.618
Imported raw material	0.007	1.007
Constant	-0.077	0.926
Log Likelihood= 1621.816 Pseudo R-Squared=0.24 LR Chi <sup>2</sup> (13)=79.60 No. of Observations=868 Prob. > Chi <sup>2</sup> =0.000		

\*\*\* indicates that coefficients are significant at 1 percent level

\*\*indicates that coefficients are significant at 5 percent level

\* indicates that coefficients are significant at 10 percent level

**Table 5: Logistic results Exports**

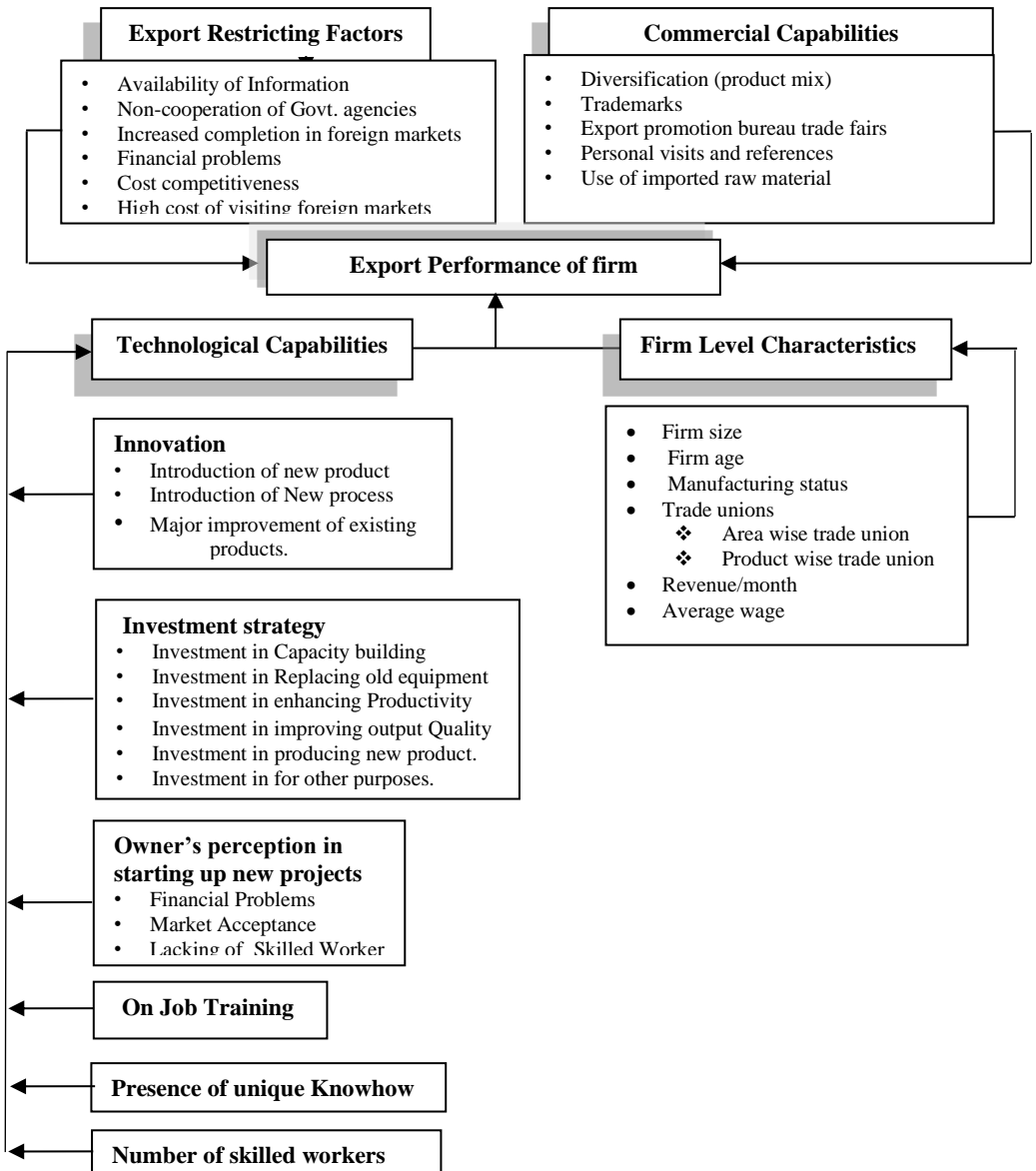
Export	Coefficients	Odd Ratios
employment	1.629***	5.099
Firm age	0.200*	1.222
Investment	0.009	1.000
Manufacturing status	1.078**	2.940
Affiliation with trade unions product wise	0.310	1.364
Area wise affiliation	1.115**	3.050
Firm revenue in month Rs	0.392*	1.480
Average wage	0.018	1.018
Diversification SIC	1.550**	4.711
Trade Marks	0.484	1.622
Trademarks registered	1.188**	3.280
Trade fairs	2.203***	9.049
Personal visits/references	2.696***	14.820
Information	0.738*	2.091
Non cop. Govt	-1.274**	0.280
Competition in foreign markets	-1.998**	0.136
Financial problems	-3.196***	0.041
Cost competitiveness	1.335	3.800
Highly priced foreign trips	-0.933**	0.393
Major Improvements	1.660***	5.261
New process	2.632***	13.897
New product	2.449***	11.574
Constant	-20.254***	
Log Likelihood= 1916.478 Pseudo R-Squared=0.068 LR Chi2 (22)=958.239 No. of Observations=868 Prob. > Chi2=0.000		

\*\*\* indicates that coefficients are significant at 1 percent level

\*\* indicates that coefficients are significant at 5 percent level

\* indicates that coefficients are significant at 10 percent level

**Fig 1: Research Model of major determinants contributing towards international Entrepreneurship.**



Source: Author (2012)



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## **An Evil in Policy Making for Developing Nations: Bureaucracy or Uncertainty**

Faiza Javed\* and Saima Sarwar\*\*

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**Abstract:** This study empirically analyzes the relationship and impact of bureaucracy and uncertainty on economic policies. In order to meet objective of this study, Panel data was collected from 1980 to 2013 for 83 developing countries. Different panel co-integration techniques have been applied to test hypotheses. Different panel unit root test have been used to check the stationarity. After taking first difference, variables become stationary. Hypothesis of the study were tested using Pedroni Residual Co-Integration Test and results indicated that long run relationship exist among the variables. Afterwards, we practice Vector Error Correction, to measure short run dynamics and deviation from equilibrium in the end. It was obvious from results that long run relationship exists with both bureaucracy and uncertainty. Finally, to check the strength and nature of relationship between the variables Fully Modified Ordinary Least Square (FMOLS) and Dynamic Ordinary Least Squares (DOLS) technique were performed. It is concluded that Bureaucracy and uncertainty are co-integrated with economic policies in developing nation.

**Keywords:** Bureaucracy, macroeconomic policy, political institutions, Panel Data, Fiscal Policy.

**JEL Classification:** D73, E62, F13, O17.

### **1. Introduction**

Political economy plays an important role for the economist to understand the process of policymaking. In many recent researches, shows that the economic policymaking in democracy political system is a result of legislative process and in autocracy are a decision made by dictator. In both of this system, political actors do not directly implement the policy but rather through the bureaucracy. In both democratic and autocratic regimes, rulers used a bureaucracy to implement policy.

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Institutions such as social and political factors are critically important for economic performance (north 1990). Political factors such as inefficient bureaucracy and uncertainty related to democracy and autocracy influenced the public policies. In the process of economic growth, the performance of state institutions is highly considered in recent research. This study will consider the performance of the central government bureaucracy and political regimes. Knack and Keefer (1995) found that institutional quality indices had significantly affect the growth in per capita GDP and also has positive relationship and Mauro found the same results by using index of bureaucratic efficiency.

Macroeconomic policies are not only the determinant of economic development rather the institutional factors such as rule of law, political system and bureaucracy has also effect the economic performance. Mauro (1995), Hall and Jones (1999), Rodrik et al (2004) and Easterly (2005) proposed that institutional indicators had significant influence on economic growth and development. While to develop the policy, there is no a standard rule for each country. Countries should develop the capacity to designed and implement good policies by considering their country specific and world factors. Therefore, in the end, each country has to make ground for policymaking process. Political institutions provide the base to political actors to make policies to determine the public policies.

Giavazzi and Tabellini (2005) examined the association between economic liberalization and political institutions and found the significant and positive relationship between them. This relationship could be occurred on both side but political factors more effect the economic liberalization. Person (2005) also measured variation in trade reforms due to democracy. He examined the different forms of democracy through the Wacziarg and Welch index and an index of property rights protection. Political regime of good democracy also had positive impact on trade liberalization. (Banerji and Ghanem, 1997 and Milner and Kubota, 2005). A few recent studies had also found that a country, which has better institutions, creates more trade flows (Dollar and Kray, (2003), Berkowitz et al, (2006) and Levchenko, (2007).

Government performance and institutional quality has matters a lot for economic growth and development. There is also some evidence that political instability has negative impact on economic activities. Alesina et al. (1996) found that as government collapses depresses economic growth. Barro (1991) also examined a negative relationship between economic growth and political instability. In a study of state entrepreneurialism in China, Duckett (2001) argued that in the process of economic development any government should paid more consideration to lower levels and also to the institutional and social departments where officials work and implement policies for public purpose.

According to recent literature, bureaucracy and uncertainty both can be effect to economic performance either in positive or negative way. Political stability provide base for rulers to make policies for public purposes. The bureaucracy carries out government administration, as minsters are at the top of administration but actually bureaucracy act as an adviser to ministers and bear the burden of sate administration. So the role of bureaucracy becomes more important in developing countries.

Recently political economics is becoming important for economic development. The policymaking process is a result of link between political institutions and policy results. Institutions do not have direct impact on outcomes but rather through the process by which policies are implemented. To make a sustainable policy and its results, we should have a good knowledge about the country political process to implement policy. Many theoretical and empirical evidences are available related to this issue but in this study, particularly investigate the impact of bureaucracy and uncertainty regarding political system i.e. autocracy and democracy on economic policies in developing countries. There are three core objectives of this study. First, is to investigate the impact of bureaucracy and uncertainty on financial policy in developing countries. Second, is to investigate the impact of bureaucracy and uncertainty on fiscal policy in developing countries. Third, is to investigate the impact of bureaucracy and uncertainty on trade policy in developing countries.

## 2. Literature review

Alesina and Perotti, (1995) critically analyzed the literature of political-institutional determinants of the fiscal policy related to accumulate public debt and facing fiscal imbalances in OECD countries. Economies of the countries were similar while their institutions were quite different. Alesina and Perotti (1995) suggested that OECD countries faced political and economic instability in the post 1973 period. Budgetary institution influenced the fiscal policies. The author suggested that the two institutional reforms are needed: one is to change in the legislation regarding budget formation and the second is electoral laws. Budget formation contains balanced budget, procedure for budget approval and central bank independence

Edward et al., (2000) discussed the relationship between political institution and trade policy. They developed the model to analyze the role of legislatures in democracies. Trade policy and political regime type based on legislation in democratic state and composed of democracy and autocracy during the period from 1960 to 1990. Democratic states showed more open trade relation than mixed pairs. Democracies are better able to lower their trade barriers. The bilateral trade model was used to consider the variation between democracies and autocracies, not within the political regime. The empirical results indicated that the trade between two countries composed on democracy and autocracy (mixed pairs) was roughly 15% to 20% less than the state composed on democracies.

Kenneth (2002) analyzed the relationship between trade and bureaucracy efficiency. Southeast Asian countries made political development to increase trade. Bureaucracy was measured by three data survey set. The first data set compiled by Business international (BI). Second data set was taken from the Business Environment Risk Intelligence (BERI) and third taken from international country risk guide (ICRG). The OLS and 2SLS estimation technique were used. Results showed that better trade policies could lead to better bureaucracy efficiency through effective domestic factor market. There was empirically weak evidence that effective bureaucracy lead to more trade but for poor evidence was the result of some missing institutional features in the model.

Hyden et al., (2003) analyzed the indicators of good governance to generate a systematic data for 16 developing countries. In this study, the focus was on bureaucracy. This study analyzed the function of bureaucracy in terms of governance and kind of bureaucratic structure was adopted by the countries to process policies. The hiring of civil service is much influenced by the political leadership. Transparency and accountability in bureaucracy are related to performance, which will affect the economics outcomes.

Satyanath and Subramanian, (2004) examined the determinants which may affect macroeconomics stability in long run. The authors found that democratic political institutions had strong impact on macroeconomics stability and on monetary and fiscal policy. OLS estimation technique was used to Cross country regression data from the period of 1960 to 2000. Results showed that democracy is an important determinant of policy variable. It had a substantial impact on instability and on monetary policy but not had clear-cut impact on fiscal policy.

Persson (2005) found that different form of democracy has strong impact on structural policies. Empirical work has done to analyze the relationship by using cross-sectional and panel data from 1960 to 2000. GMM methodology was implemented along with others techniques. Results showed that if reforms in democracies are legislative, comparative and lasting than it will seem to increase the results of structural policies, which lead to economic development. Whereas if reforms in democracies are executive and short term it will seems not have positive effect on structural policies. Political economics and development economics taught us institutional reforms lead to economic development.

Anwar (2006) examined that Political governance indirectly related to economic growth. International financial institution should take in to account the performance of the economy as well as the political governance of the country. Bureaucratic interest plays an important role to get aid from international financial institution. Tobit estimation and various specification techniques were used to find the political determinants, which play important role to lending from international financial institution.

Anitha (2007) analyzed the role of bureaucracy from history perspective. In recent research the role of bureaucracy is discussed with administrative structure. The author analyzed the bureaucracy by focusing on institutional factors and human resource. Because these factor have impact on efficiency of bureaucracy. Individual's abilities and qualities had also influenced by environment. In this paper, different institutional factors were discussed. Results showed that the efficiency of the institution depend on the appointment of individuals with the right functioning of rules.

Huang (2009) examines that forces which insist governments to made reforms in policies to improve financial development by using the study of Abiad and Mody (2005). AM includes three different innovation one of them is democracy to measure the institutional quality. Political environment is important to approve or rejected any policy change. Pesaran (2006) used common correlated effect pooled (CCEP) estimator for a large heterogeneous panel. The results reveal that the economic and political structure have positive influenced on policy making whereas the democracy tends to have negatively to policy reform.

Tanwir and Fennell (2010) examined the role of bureaucracy in Pakistan by using the qualitative data. In Pakistan, the interference of politicians was a hurdle to the effectiveness of bureaucracy. A total number of 33 interviews had been conducted to the senior bureaucrats. The results showed that there is highly unequal power sharing among political parties and bureaucracy. Administration reforms of 1973 improved the role of bureaucracy.

Haider et al., (2011) proposed the theoretical framework for the understanding of economic performance during different regimes. Some researchers analyzed the economic performance empirically but not provided the strong theoretical evidence to understand the mechanism under different political regimes. Empirical modelling had also done by using data from 1950 to 2011 for Pakistan particularly. Markov-regime switching technique had been employed. Results showed that macroeconomics variables such as inflation, growth and bureaucratic

corruption lead to improvements during autocratic regime due to good governance as compared to democratic regime.

Papaconstantinou et al., (2013) hypothesized the impact of bureaucracy and corruption on economic development. The data of European Union (EU) countries had collected for the period from 1996 to 2006. Neo-classical approach of 'beta convergence' and Markov Conditional Bootstrap estimation techniques were used. Results showed that the bureaucracy and corruption had negative impact on economic development.

Ahmed and Khan, (2014) analyzed the role of political economy particularly the role of institutions towards economic growth. Fiscal policy was highly affected by political institution in Pakistan. The political economy structure is designed in such a way that protects the interest of elite group and the dominance province within the federation. The author concluded by using the different facts and figures that fiscal policy is heavily depend on the civil bureaucracy due to the autocrat nature of Pakistan political economy.

### 3. Model Specification

This study constructed three models to explain the relationship between bureaucracy, uncertainty and economic policies.

#### Model: 1

$$ECP_{it} = \alpha + \beta_1 BUR_{it} + \beta_2 UC_{it} + \epsilon_{it} \dots \dots \dots (1)$$

Where,

ECP = economic policies

BUR = Bureaucracy

UC = Uncertainty

Further economic policies are discussed in three ways:

#### Model: 2

$$Finp_{it} = \alpha + \beta_1 BUR_{it} + \beta_2 UC_{it} + \epsilon_{it} \dots \dots \dots (2)$$

Where,

Finp<sub>it</sub> is a financial policy measured by Domestic credit to private sector by banks (% of GDP)  
 BUR<sub>it</sub> denotes bureaucracy used proxy xrreg,  
 UCit denotes uncertainty measured by polity2 (regime switching)  
 ε<sub>it</sub> is an error term

**Model: 3**

$$FP_{it} = \alpha + \beta_1 BUR_{it} + \beta_2 UC_{it} + \epsilon_{it} \dots \dots \dots (3)$$

Where,

FP<sub>it</sub> is a fiscal policy measured by Tax revenue (% of GDP)  
 BUR<sub>it</sub> denotes bureaucracy used proxy xrreg  
 UCit denotes uncertainty measured by polity2 (regime switching)  
 ε<sub>it</sub> is an error term.

**Model: 4**

$$TP_{it} = \alpha + \beta_1 BUR_{it} + \beta_2 UC_{it} + \epsilon_{it} \dots \dots \dots (4)$$

Where,

TP<sub>it</sub> is a trade policy measured by Trade (% of GDP)  
 BUR<sub>it</sub> denotes bureaucracy used proxy xrreg  
 UCit denotes uncertainty measured by polity2 (regime switching)  
 ε<sub>it</sub> is an error term.

The institution of bureaucracy has carried out state responsibilities and function. Administration of the government is under the control of bureaucracy. Therefore, government and administration are mainly operated by permanent officers and that officers recruited by some other independent body. This study used Regulation of Chief Executive Recruitment (xrreg) which is defined as a polity has institutionalized procedures for transferring executive power.

According to this study, Uncertainty is refers to as political regimes such as democracy and autocracy. Switching from one political system to



another is matters a lot to economic policies. The polity variable score is calculated by subtracting the autocracy score from the democracy score. It ranges from + 10 to -10, representing + 10 strong democracy and -10 strong autocracy.

Financial policy is used to regularize the financial system through markets and institutions such as banks and financial identities in order to keep the financial stability and efficiency. This study used domestic credit to private sector by banks to measure the financial policy. Depository Corporation delivered financial help to the private sector in form of loans, purchases of no equity securities, and trade credits.

Fiscal policy is used to monitor the government revenue collection and expenditure. The main source for government to collect revenue is taxes. Tax is imposed by the state on the public to fulfil the requirement of finance. Tax revenue is defined as necessary payments to the state for public commitments. Whereas fines, punishment charges, and most social security contributions are not the part of tax revenue. Refunds of mistakenly collects tax is consider as negative tax revenue.

In general trade is an exchange of services, capital and goods crossway to international borders. In developed states or in emerging economics, trade is one of the most significant shares, which contribute in GDP of the country. Trade contained both exports and imports of goods and services and it is measured as a share of gross domestic product.

### **3.2 Data Sources**

Annual data for the period of 1980 to 2013 for 83 developing countries has been used in this study. Some of the developing nations have not been included due to the unavailability of data. Data regarding bureaucracy used Regulation of Chief Executive Recruitment (xrreg) and uncertainty used polity2 are gathered by the Integrated Network for Societal Conflict Research (INSCR). Polity IV: regime authority characteristics and transitions dataset has been used. Data regarding other variables, financial policy used Domestic credit to private sector by banks (percentage of GDP), trade policy used proxy trade (percentage of GDP) and fiscal

policy used proxy tax revenue (% of GDP) gathered by World Bank database, World development indicators (WDI).

## 4. Methodology

### 4.1 Unit Root Tests

To check the stationarity of data, panel unit root tests have been used. Panel unit root test is different from the unit root test because panel based unit root tests have higher power than the individual time series based unit root test. There are two main types of panel unit root test. One is called common unit root process; it is performed when the determinant parameters are common across cross section. Levin, Lin and Chu (1992, 2002), used this assumption. The other is individual unit root test. It is performed when determinant parameters move freely across cross section. Pesaran and Shin (1997), Harris and Tzavalis (1999), Maddala and Wu (1999), Hadri, C. Guermat and J. Whittaker (2003) used this assumption. In literature, during the past two decades time series has been integrated in econometric research. Here, we perform unit root process for panel data.

Levin, Lin, and Chu (2002) proposed a test to check unit root in 1993 but it is published in 2002. The null hypothesis is  $\rho_i = 0$  for  $i = 1, \dots, N$  with an alternative hypothesis is  $-1 < \rho_i$  for  $i = 1, \dots, N$ . The assumption is the serial correlation coefficient  $\rho$  is identical across all the cross section used on Frisch-Waugh Theorem to a linear regression. LM, Peasaran and Shin (1997 and 2003) proposed panel unit root test for two group-mean by using heterogeneous alternatives. Augmented Dickey-Fuller (ADF, 1984) test is based on residual by following the concept of Kao (1999) to check the of unit roots in panel data. ADF Panel unit root test statistics have normal limiting distributions. We can be summarized ADF equation as follows:

Phillips–Perron test used non-parametric transformation of t-statistics by using original DF regression under the null hypothesis  $\rho = 0$  in  $\Delta y_t = \rho y_{t-1} + u_t$ , where  $\Delta$  is the first difference operator. The Phillips–Perron test reports the issue that the process generating data for  $y_t$  might have a higher order of autocorrelation to meet this issue by introducing lags of  $\Delta y_t$  as regressors in the test equation.

## 4.2 Pedroni Residual Test

Pedroni (1999) proposed the technique of residual-based panel co-integration tests based on more than one independent variable. He suggested several residual-based test of null hypothesis of no co-integration panel test statistics. Pedroni (1999) proposed seven panel co-integration tests of statistics. Out of seven test statistics, last three are grounded on between dimensions and first four are based on within dimension. The Null hypothesis for panel co-integration, within dimension may be written as:

## 4.3 Vector Error Correction Model

VECM technique is used when a set of variables have one or more co-integration vector. If a set of variables are all of order one than ordinary regression analysis is not appropriate. VECM can be adjusted for deviation from equilibrium and short run changes in variables by using Johansen's technique. Vector Error Correction Model are a category that represent multiple time series models that show convergence to equilibrium. It estimates the effect that brings changes in dependent variable due to independent variable. Vector Error Correction Model take into account the relationship between the variable, which are integrated but should be stationary. The test takes no co-integration as null hypothesis are created on structural changing aspects and did not apply any limitation of common factor.

## 4.4 Fully Modified Ordinary Least Square

FMOLS estimation was originally introduced to estimate the long run co-integrated relationship by philips and hansen (1990). The benefit of the model, it is corrected for serial correlation and endogeneity present in the predictor. OLS estimator give biased result for co-integrated panel data so pedroni (1999) proposed the group mean FMOLS estimator. It also provides consistent estimates of  $\beta$  parameters even for small sample size.

### 4.5 Dynamic Ordinary Least Square

Stock and Watson (1994) proposed a parametric estimation for co-integrated panels called dynamic ordinary least squares (DOLS) method. It includes lags and leads term of the repressors to correct the serial correlation and endogeneity. It also provides consistent estimates for  $\beta$  parameters.

### 5. Results

This was panel data based study; the data was for five variables from 1980 to 2013. Table 1 presents the results; value of t-statistic and p-value of above discussed panel unit root test. . It is revealed from results P-values computed for variables were greater than 0.05, implies that null hypothesis is accepted which mean that at level variables are non-stationary. However, after taking first difference the variables are found stationary, because p-value found less than level of significance. If data is stationary we can apply further tests, without stationarity of data we cannot apply further techniques.

**Table 1: Panel Unit Root Test**

Variables	Common Unit Root	Individual Unit Root		
	Levin, Lin & Chu (LLC)	Im, Pesaran and Shin (IPS)	ADF-Fisher chi-square	PP- Fisher chi-square
BUR	-1.1611 0.1153	-1.6027 0.1046	0.0200 0.2005	0.9400 0.1045
$\Delta$ BUR	-6.7468 0.0000	-12.7179 0.0000	209.5720 0.0000	400.0900 0.0000
UC	-1.4117 0.7429	-1.1587 0.1154	1.3417 0.1945	1.1011 0.2101
$\Delta$ UC	-38.4322 0.0000	-24.8959 0.0000	601.489 0.0000	1058.13 0.0000
Finp	2.7965 0.9979	2.8587 0.9979	160.267 0.6109	131.378 0.9780

$\Delta$ Finp	-17.9825 0.0000	-23.1383 0.0000	860.322 0.0000	1452.87 0.0000
FP	0.2840 0.6118	0.1705 0.1298	1.320 0.1803	1.427 0.230
$\Delta$ FP	-31.4095 0.0000	-42.5233 0.0000	1461.04 0.0000	2114.35 0.0000
TP	-1.4486 0.1833	0.9087 0.1282	1.150 0.4047	1.102 0.4312
$\Delta$ TP	-28.4071 0.0000	32.0045 0.0000	1221.61 0.0000	1920.59 0.0000

Source: Author's own compilation.

From Table 2, it is obvious that there are seven different test statistic are computed. Majority of test showing that p-value is less than our specified level of significance i.e.  $\alpha=0.05$  which leads us to reject our null hypothesis rather accept it. Hence we may conclude that there exist long term relationship among bureaucracy, uncertainty and economic policies.

**Table 2: Pedroni Residual Co-integration test bureaucracy and uncertainty as independent variable (within-dimension)**

<b>Panel Statistics</b>	<b>Finp</b>	<b>FP</b>	<b>TP</b>
Panel v-	1.1931 0.1164	-4.3914 1.0000	-2.5581 0.9947
Panel $\rho$ -	-2.2750 0.0115	-5.0724 0.0000	-3.7866 0.0001
Panel PP-	-3.5614 0.0002	-6.2751 0.0000	-5.1691 0.0000
Panel ADF-	0.3435 0.6344	-3.6452 0.0001	-2.9191 0.0018
<b>Between Dimension</b>			

Group $\rho$ -	0.6671 0.7477	-3.5297 0.0002	-2.8344 0.0023
Group pp-	- 1.9506 0.0255	-7.9278 0.0000	-7.2241 0.0000

Group ADF-	2.8785 0.0098	-2.7236 0.0032	-4.8023 0.0000
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Source: Author’s own compilation

Vector Error Correction Estimates has been performed to measure short run dynamics and deviation from equilibrium in the long run. Bureaucracy and uncertainty has shown convergence in all economic policies and negative sign shows convergence towards equilibrium. T-statistics shows in [ ]. For all economics policies, short run relationship was observed.

- 0.14% of convergence towards equilibrium in financial policy
- 0.19% of convergence towards equilibrium in fiscal policy
- 9 % of convergence towards equilibrium in trade policy

**Table 3 Error Correction Model:**

Variables	Finp	FP	TP
Error Correction Term (ECT)	-0.0014 [-1.7037]	-0.0019 [-2.0772]	-0.0877 [-2.5338]

Source: Author’s own compilation

From the above results, the long run relationship among variables; however, it did not calculate regression co-efficient. To find the long - run elasticity and to estimate the regression co-efficient, Fully Modified Ordinary Least Square (FMOLS) technique is performed here. FMOLS results of four models are presented here:

**Table 4: Fully Modified Ordinary Least Squares (FMOLS) for financial policy**

Independent variable	Co-efficient	t-statistics	Prob
C	17.9157	4.5776	0.0000***
BUR	-3.4435	-1.9695	0.0490**
UC	-0.4997	-2.2303	0.0258**

\*\*\*, \*\*, \* shows level of significance at 1%, 5%, 10% respectively.

Source: Author’s own compilation

Table 4 showing results of FMOLS for relationship between bureaucracy, uncertainty and financial policy. Results shows that bureaucracy has negative impact on financial policy, as bureaucracy increased by 1 unit, financial policy will decrease by 3.4 units and also this impact is significant at  $\alpha = 0.05$  Furthermore 1 unit increase in Uncertainty (UC), financial policy will decrease by .49 units. t-statistics 2.2303 with p-value 0.0258 which tells that uncertainty is playing significant role in explaining variation in financial policy and impact is also significant at  $\alpha = 0.05$ .

**Table 5: Fully Modified Ordinary Least Squares (FMOLS) for fiscal policy**

Independent variable	Co-efficient	t-statistics	Prob
C	14.8127	12.4634	0.0000
BUR	-0.0472	-1.8891	0.0929*
UC	-0.1856	2.7283	0.0064***

\*\*\*, \*\*, \* shows level of significance at 1%, 5%, 10% respectively.

Source: Author's own compilation

It is obvious from Table 5 that 1 unit increase in Bureaucracy (BUR), fiscal policy will decrease by 0.05 units. Furthermore, this effect is significant, as t-statistic -1.8891 with P-Value 0.0929. Bureaucracy found significant at  $\alpha = 0.10$  which tells that Bureaucracy is playing significant role in explaining fiscal policy. 1 unit increase in Uncertainty (UC), fiscal policy will decrease by 0.18 units. t-statistics 2.7283 with p-value 0.0064 shows that uncertainty plays an important role in explaining variation in fiscal policy at 1% level of significance.

It is obvious from Table 6 that relationship between bureaucracy (BUR) and trade policy found negative, if bureaucracy increased by 1 unit, trade policy decreased by 5.0 units. However this relationship is found insignificant at  $\alpha = 0.05$  but found significant at  $\alpha = 0.10$  because p-value is 0.0613. 1 unit increase in Uncertainty (UC), trade policy will decrease by 1.2 units. t-statistics 3.5549 with p-value 0.0004 shows the relationship is significant at  $\alpha = 0.01$  which means uncertainty plays an important role in explaining variation in trade policy. It also has negative relationship.

**Table 6: Fully Modified Ordinary Least Squares (FMOLS) for trade policy**

Independent variable	Co-efficient	t-statistics	Prob
C	81.3807	13.5902	0.0000
BUR	-5.0076	-1.8717	0.0613*
UC	-1.2194	3.5549	0.0004***

\*\*\*, \*\*, \* shows level of significance at 1%, 5%, 10% respectively.

Source: Author’s own compilation.

As we discussed in earlier section that the variables are long run co-integrated, so Panel Dynamic Ordinary Least Squares model is appropriate. Panel DOLS is very efficient and sophisticated model for panel data. The co-efficient obtained by this method are known to be long run estimates.

**Table 7: DOLS for financial policy**

Independent variable	Co-efficient	t-statistics	Prob
C	18.8019	4.3718	0.0000
BUR	-1.0902	-2.9036	0.0007***
UC	-0.4691	-3.0154	0.0034***

\*\*\*, \*\*, \* shows level of significance at 1%, 5%, 10% respectively.

Source: Author’s own compilation.

Table 7 showing the results of panel DOLS of financial policy. It is obvious from the results that bureaucracy has negative impact on financial policy, estimated co-efficient has negative sign. Furthermore, if bureaucracy increased by 1 unit then financial policy goes down by 1.1 units. The impact is significant at  $\alpha = 0.01$  similarly, uncertainty also has negative impact on financial policy. 1 unit increase in uncertainty, financial policy will decrease by 0.46 units. T-statistics is -3.0154 and p-value is 0.0034 found significant at  $\alpha = 0.01$ . There is negative relationship between financial policy and uncertainty.



**Table 8: DOLS for fiscal policy**

Independent variable	Co-efficient	t-statistics	Prob
C	14.6531	11.2183	0.0000
BUR	-0.0312	-2.0531	0.0077***
UC	-0.1728	-2.3564	0.0185**

\*\*\*, \*\*, \* shows level of significance at 1%, 5%, 10% respectively.

Source: Author's own compilation.

Table 8 showing the results of panel DOLS of fiscal policy. It is obvious from the results that bureaucracy has negative impact on fiscal policy estimated co-efficient has negative sign. Furthermore, if bureaucracy increased by 1 unit then fiscal policy goes down by 0.03 units. P-value is 0.0077 which shows significant at  $\alpha = 0.01$  similarly, uncertainty also has negative impact on fiscal policy. 1 unit increase in uncertainty, fiscal policy will decrease by 0.17 units. T-statistics is -2.3564 and p-value is 0.0185 shows that uncertainty and fiscal policy has negative relationship.

**Table 9: DOLS for trade policy**

Independent variable	Co-efficient	t-statistics	Prob
C	79.8183	12.1314	0.0000
BUR	-4.3275	-2.9875	0.0006***
UC	-1.2478	3.3773	0.0007***

\*\*\*, \*\*, \* shows level of significance at 1%, 5%, 10% respectively.

Source: Author's own compilation.

Table 9 shows the results of panel DOLS of trade policy. It is obvious from the results that bureaucracy has negative impact on trade policy, estimated co-efficient has negative sign. Furthermore, if bureaucracy increased by 1 unit then trade policy goes down by 4.3 units. it is significant at  $\alpha = 0.01$  Similarly, uncertainty has negative impact on fiscal policy. 1 unit increase in uncertainty, trade policy will decrease by 1.2 units. T-statistics 3.3773 and p-value 0.0007 shows significant at  $\alpha = 0.01$  that uncertainty plays an important role in explaining variation in trade policy.

## **6. Conclusions and Recommendations**

The main purpose of this study is to analyze the relationship and impact of bureaucracy and uncertainty on economic policies. In order to meet objective of this study, Panel data was collected from 1980 to 2013 for different economic variables: Bureaucracy, Uncertainty, Fiscal policy, financial policy, and trade policy.

The findings indicate that these two variables have significant impact on economic policies. Political economy plays an important role for Policymaking in developing countries. Uncertainty regarding political regime i.e. democracy and autocracy has strong impact on fiscal policy because political instability lead to poor economic performance. Poor economic outcomes were the results of weak governance and poor quality of institutions, which creates hurdles in policymaking (Haider et al., 2011).

This study found significant impact of bureaucracy and uncertainty on economic policies, both in short run and long run relationship. Results of this study suggested that the political system of any country plays significant role to implement economic policies. Other macro-economic variables can be included with political economic variables to find the evils that directly related to economic policies. The consistent political system of a country can be helpful for the better results of economic policies.

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## **Determinants of Corporate Liquidity in Pakistan Incorporating the Role of Future Expectations and Coincident Macroeconomic Indicators**

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**Abstract:** This study targets on the relationship between various coincident macroeconomic indicators and cash holdings of firms in Pakistan economy. Panel fixed-effect least square regression model has been used by employing annual data of 264 nonfinancial KSE listed firms of Pakistan, gathered for the period of eight years 2006-2013. Using the framework of trade-off, precautionary motive and pecking-order theory, the findings revealed that cash flow advantage and size of the firm are the significant determinants of corporate liquidity in Pakistan. All coincident macroeconomic variables that comprise of credit spread, economic growth rate, government budget deficit, short-term interest rates, private credit and inflation have shown persistent significant impact on corporate liquidity in Pakistan economy. Moreover, the major contribution of this study is the incorporation the role of future expectations about macroeconomic conditions in economy as well and the results prove that these are also play a vital role in determining the cash holdings of Pakistan firms.

**Keywords:** Corporate Liquidity; Cash Holdings; Trade-off Theory; Pecking Order Theory; Precautionary Motive; Firm Specific Variables.

**JEL Classification:** H62, E43, E31, E41, G33.

### **1. Introduction**

The macroeconomic settings in which firms operate influence their performances, decisions, policies, strategies and financial standings. Managing optimal amount of cash holdings is one of the important financing decisions of the firms as it represents their ability to timely pay off their liabilities such as debt. The macroeconomic conditions also known as coincident indicators of the economy i.e. inflation, GDP growth, financial interest rates, investment and unemployment differ from country to country and affect the performance of a nation accordingly. Firms don't operate in isolation and they are constituent of macroeconomic environment of any country. The firm specific determinants of corporate liquidity derived from one economy cannot be generalized without paying

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heed to all the other factors that have tendency to impact cash holdings. Hence, cash holdings are greatly influenced by the prevailing macroeconomic conditions. For instance, firms are motivated to save cash to take advantage of opportunity to invest when economy is growing. Whereas, when economic uncertainty is higher, firms' managers are inclined to save more cash as a cushion because of uncertainty in future cash flows and these firms have poor access to capital markets. Correspondingly, if managers predict high inflation in future, then they will hold less cash because of opportunity cost associated with it. Likewise, if the managers anticipate rise in interest rates, then it will be beneficial for them to utilize cash reserves in opportunities that are expected to give higher return in future.

As most of the developing countries are characterized by high inflation, low economic growth rate, higher government budget deficit, immature capital markets and other economic difficulties. These macroeconomic conditions actually erode firm's earnings or cash flows. Therefore, it is vital for firms to explore that which factor out of these has significant impact on corporate liquidity. The previous researches that determined corporate liquidity mostly emphasized on the underlying theories such as free cash flow theory, pecking order theory and trade-off theory as well as motives of cash holdings (transaction motive, precautionary motive, agency motive). But, the recent studies show the significant influence of macroeconomic conditions on corporate liquidity and they urged to include these factors as important determinant of firms' liquidity. However, the impact of macroeconomic conditions on cash holdings of corporate sector of Pakistan economy has not been previously studied and if few determinants have been identified then those were firm specific. Therefore this research objectivize to find whether the coincident macroeconomic conditions of Pakistan also affect the corporate liquidity in banking sector not and if it affects then in which direction and magnitude. This analysis can be helpful for managers of the firms to take into account the expected impact of these macroeconomic conditions while taking decision related to liquidity management. This is because of the reason that liquidity is an important corporate decision, and useful implications regarding how to maintain liquidity optimally can be provided for firms operating in today's macroeconomic environment. So



the influence of macroeconomic environment cannot be overlooked while examining the factors that impact cash holdings. The rationale behind this research is to fill the gap of liquidity researches in Pakistan by examining the role of these coincident macroeconomic factors in determining the corporate cash holdings in Pakistan economy.

## **2. Literature Review**

This section summarizes the works done in the past showing the determinants of corporate liquidity in various times and regions.

Keynes (1936) explained the speculative motive of money demand theory with changes in interest rates and claims that expected return to non-interest bearing cash and interest bearing cash affect the liquidity decision. If interest rates are low, firms should hold non-interest bearing cash only while interest bearing cash must only be held in case of high interest rates. Therefore, the theory shows that non-interest bearing cash is negatively affected by interest rates. Another important consideration here is that when interest rate increases, external financing also becomes expensive so, it implies that firms hold more cash in such case because internal funding is cheaper. Hence, the relationship of interest rate with cash holding will become positive. The net impact of interest rates depends upon which of the factors has an overwhelming effect on cash holdings.

Natke (2001) collected a panel data of Brazilian manufacturing companies for the period of four years and investigated the impact of inflation on corporate demand for liquid assets. The author found that in a controlled inflation environment, interest rates have a significant impact on corporate demand for liquidity. The findings conclude that firms reduce liquid asset holding when inflation is higher.

Baum et al. (2006) examined the hypothesis that macroeconomic uncertainty has a negative impact on corporate cash holdings. The dataset of 4125 non-financial firms of the US from the period 1970 to 2000 is collected. Using a GARCH model, they established that uncertainty has a negative impact on the cash holdings of the firms.

Chen and Mahajan (2010) investigated the influence of macroeconomic variables on cash holdings of firms from 34 different countries for the period from 1994 to 2005. Using fixed effect panel model, the findings confirm that cash holdings of firms are influenced by the macroeconomic variables like short term interest rates, GDP growth, inflation, credit spread, government budget deficit, rate of corporate tax and private credit. Furthermore, the authors found evidence that macroeconomic conditions also indirectly affect the cash holdings because firms' characteristics that influence corporate liquidity are also influenced by macroeconomic variables.

Chen and Yo (2012) asserted that there is a relationship between government deficit and corporate liquidity. For research purpose, firm specific quarterly financial data and macroeconomic data from 1989Q1 to 2009Q3 was gathered. Using fixed effect panel model the results indicated that corporate liquidity is negatively linked with government deficit, inflation and short-term interest rates and positively related to economic growth, credit spread and private credit.

Acharya et al. (2012) were interested to observe the nature of relationship between credit risk of non-financial US firms and their cash holding patterns in the light of precautionary motive. The results of the study indicated that firms with high default risk hold more cash as a safeguard against credit risk comparatively that is consistent with precautionary motive.

Abushammala and Sulaiman (2014) examined the influence of macroeconomic factors on cash holdings of 65 Jordanian firms by collecting a yearly panel data for the period of 2000 to 2011. With the help of OLS technique, the results showed that among all macroeconomic variables, GDP and credit spread have positive while government deficit is negatively linked with cash holdings.

Shabir et al. (2016) made an effort recently to work upon the determinants of cash holding in Pakistan for non-financial firms and found that firm size, cash flows and growth opportunities have positive effect on corporate cash holding. Even though leverage and liquidity has negative

impact confirming the prevalence of both pecking order and trade off theory in determining the factors affecting corporate liquidity.

In summary, the previous studies indicate that the macroeconomic conditions have imperative role in determining the cash holdings of firms. The macroeconomic variables that significantly influence on corporate liquidity i.e. inflation, real short term interest rates, economic growth rate, private credit, government budget deficit and credit spread.

### 3. Data and Methodology

#### 3.1 Variables and Data Sources

The annual data for firm specific variables is gathered from the report issued by the State Bank of Pakistan (SBP) on financial statement analysis of KSE listed non-financial firms while the data for macroeconomic variables is obtained from World Bank database (WDI). The time span for the study is of 8 years from 2006 to 2013. The description of the variables is given below in Table 1.

**Table 1: Description of the Variables**

<b>Variables</b>	<b>Definition</b>
Corporate Liquidity (cash holdings)	This variable is a proxy for the cash ratio. It is calculated as natural logarithm of cash and its equivalents divided by net assets. Cash and its equivalents include cash, bank balances and marketable securities.
<b>Firm specific Variables</b>	
Size	It is measured by Natural logarithm of total assets. By using logarithm, the differences of size between firms have become smaller.
Cash flow (CF)	It is a proxy that measures firm's profitability and it is calculated as $CF = (\text{profit after deduction of tax} + \text{Depreciation})$ divided by Net assets
Net working Capital (NWC)	It is a proxy for liquid asset substitutes and is calculated as $NWC = (\text{Current assets} - \text{Cash and cash equivalents})$ divided by Net assets
Leverage (LVG)	It is a substitute for cash as an alternative

	financing source and it is measured as LVRG = Total Debt divided by net assets
Capital expenditure (CAPEX)	It is used as a proxy for investment and growth opportunities and it is measured as additions to fixed assets divided by net assets.
<b>Coincident Macroeconomic Indicators</b>	
Gross domestic Product (GDP)	It is a proxy used for economic growth rate is measured as percentage change in GDP.
Government deficit (deficit)	It is a proxy used for economic uncertainty and downfall is calculated by dividing government budget deficit to GDP.
Credit spread (CS)	It is a proxy used for credit risk and transaction cost is calculated as lending rate minus risk free rate (Treasury bill rate).
Inflation rate (INF)	It is a proxy for purchasing power is calculated by taking the percentage change in consumer price index.
Private credit (PC)	It is a proxy for depth of debt market calculated as ratio of funds provided to private sector by banks divided by GDP.
Real short term interest rates (IR)	Banks borrow from SBP at overnight basis at these SBP reverse repo rates. This rate is also called discount or policy rate.

### 3.2 Methodology

Fixed-effect panel model has been used for estimation purpose. In order to select the static panel data model for the study, the Hausman specification test will be carried out to choose between fixed-effect and random-effect panel model.

The model is as follow:

$$\ln\text{Cash}_{kt} = \alpha + \sum \lambda_f X_{kft} + \sum \lambda_m Y_{kmt} + \mu_{kt} \dots\dots\dots(1)$$

Where,

$\ln Cash_{kt}$  represents the natural logarithm of ratio of cash and its equivalents to net assets.

$X_{kft}$  represents the  $f_{th}$  firm specific variable of cash holdings for firm  $k$  at time  $t$ .

$Y_{kmt}$  represents the  $m_{th}$  macroeconomic variable for firm  $k$  at time  $t$ .

$u_{kt}$  shows an error term.

$X$ = firm specific variables (size, leverage, net working capital, cash flow, capital expenditure).

$$\sum \lambda_t X_{ift} = \beta_1 \text{Size}_{i,t} + \beta_2 \text{LVG}_{i,t} + \beta_3 \text{NWC}_{i,t} + \beta_4 \text{CF}_{i,t} + \beta_5 \text{CAPEX}_{i,t} \dots \dots \dots (2)$$

Where,

$Y$ = (inflation, credit spread, private credit, deficit, short term interest rates, economic growth rate)

$$\sum \lambda_m Y_{imt} = \beta_6 \text{INF}_{i,t} + \beta_7 \text{CS}_{i,t} + \beta_8 \text{PC}_{i,t} + \beta_9 \text{Deficit}_{i,t} + \beta_{10} \text{IR}_{i,t} + \beta_{11} \text{GDP}_{i,t} \dots (3)$$

### 3.3 Expected Direction of Relationship of Coincident Macroeconomic Variables with Corporate Liquidity

#### 3.3.1 Inflation and Cash Holdings

When there is higher inflation, keeping cash becomes costly for firms. Therefore, management should reduce the non-interest bearing cash. Firms can also increase interest-bearing cash equivalents, when inflation is increasing because interest rates go up with inflation. Hence, Inflation should have a negative influence on cash holdings.

#### 3.3.2 Economic growth and cash holdings

According to the theories of economic booming, GDP is an indicator of economic growth and it shows a positive increase, then firms' management should hold more cash to have sufficient funds to reap benefit of profitable growth opportunities ensuing from a higher GDP growth. This shows that GDP growth rate is positively related to corporate liquidity. On the other hand, higher economic growth means firms have higher number of investment options with high returns so holding cash

bears opportunity cost of not investing in assets that yields greater return. In this case, corporate liquidity is negatively related to economic growth. Therefore, the overall impact depends upon which of the force has overpowering influence on corporate liquidity.

### **3.3.3 Government Deficit and Cash Holdings**

Government budget deficit has a tendency to affect other macroeconomic conditions. When government budget deficit is higher, then government will borrow to finance deficit by issuing debt at lower price and offers higher interest rate that results in crowding out the private investment. Due to this, the cash holdings of firms will decline as opportunity costs of holding cash increases. Higher government budget deficit can negatively affect economic growth, so firms must reduce cash holdings as the need of cash to invest in profitable projects decreases.

### **3.3.4 Credit Spread and Cash Holdings**

Credit spread is used as a proxy for credit risk and transaction cost (the cost of buying credit). It is expected to have a positive relationship with corporate liquidity. The reason is firms hold more cash when markets are illiquid because of higher transaction cost. In addition, in the light of precautionary motive, riskier firms hold more cash reserves and have higher credit spreads because of difficulty in debt financing.

### **3.3.5 Private Credit and Cash Holdings**

Chen and Mahajan (2010) found that private credit could also influence cash holdings of firms because, if the borrowing from banks is easy then there is no or less need to hold cash by firms. On the opposite side, with the increase in private credit, the risk of financial distress also increases resulting in better management of cash by firms. In this situation, firms hold more cash as a buffer against the higher default risk. Therefore, the net impact of private credit on cash holdings is not clear and it depend upon the effect that are overpowers the other.

### 3.3.6 Short term Interest rates and cash holdings

If interest rates are low, firms should hold non-interest bearing cash only whereas interest-bearing cash must only be held in case of high interest rates. Hence, this shows that non-interest bearing cash is negatively affected by interest rates (Keynes, 1936).

## 4. Results Estimation

The first step was to run a test, which could decide the right choice of model. For this purpose, Hausman test was employed and results are given below. The test result indicated that the p-value is significant ( $<0.05$ ) and the null hypothesis has been strongly rejected, thus fixed-effect model is more appropriate than random-effect model.

**Table 2: Hausman Test**

Correlated Random effects-Hausman Test				
Test cross-section random effects				
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	
Cross-section random	226.5148	5	0.0000	
Cross-section random effects test comparison:				
Variable	Fixed	Random	Var (Diff.)	Prob.
CF	1.1665	1.6584	0.0018	0.0000
LVG	0.8750	0.7392	0.0066	0.0955
NWC	-0.0076	-0.0580	0.0025	0.3223
SIZE	-0.7492	-0.0343	0.0037	0.0000
CAPEX	0.1164	-0.0701	0.0005	0.0000

Source: Author's own compilation.

Now after making the selection of appropriate estimation technique, the next step is to incorporate the effect of macroeconomic variables along with firm specific variables into the model. The Table 3 shows six different fixed effect panel models in which different variables are used as explanatory variables to study their impact on corporate liquidity in Pakistan economy.

**Table 3: Impact of Macroeconomic Variables on Corporate Liquidity**

Models	1	2	3	4	5	6
Constant	6.78* **	-2.85**	-0.99	-1.52	1.40	0.02
	(6.04)	(-2.08)	(-0.74)	(-1.14)	(1.14)	(0.01)
CF	1.17* **	1.04***	1.15***	1.05***	1.06***	1.04***
	(7.03)	(6.49)	(7.14)	(6.54)	(6.73)	(6.60)
LVG	0.88* **	0.91***	0.87***	0.91***	0.89***	0.91***
	(5.09)	(5.51)	(5.19)	(5.48)	(5.47)	(5.55)
NWC	-0.01	0.14	0.11	0.15	0.14	0.16
	(0.06)	(1.08)	(0.86)	(1.15)	(1.06)	(1.22)
Size	- 0.75* **	-0.30***	-0.38***	- 0.35***	- 0.34***	-0.30**
	(- 10.05)	(-3.51)	(-4.60)	(-4.24)	(-4.25)	(-3.70)
CAPEX	0.12	0.02	-0.08	-0.07	-0.03	-0.05
	(0.80)	(0.15)	(-0.59)	(-0.48)	(-0.20)	(-0.37)
PC		4.64***	3.30***	8.66***	3.77***	5.48***
		(7.41)	(5.33)	(10.99)	(6.19)	(6.27)
INF				- 8.89***		-2.95***
				(-11.24)		(-2.72)
CS			47.99** *			
			(10.30)			
GDP		21.23** *				
		(11.84)				
Deficit		- 17.69** *	- 10.26** *	- 24.43** *	- 8.13***	- 13.90** *



		(-8.60)	(-5.53)	(-9.95)	(-4.59)	(-5.04)
IR					- 17.71** *	- 14.29** *
					(-13.60)	(-7.90)
R <sup>2</sup>	0.70	0.78	0.78	0.78	0.78	0.79
Adjusted R <sup>2</sup>	0.68	0.74	0.74	0.74	0.75	0.75
N	2112	2112	2112	2112	2112	2112

\*\*\* shows coefficient is significant at 1% level, \*\* shows coefficient is significant at 5% level, and \* shows coefficient is significant at 10% level, respectively.

Model 1 is firm specific fixed effect benchmark panel in which no macroeconomic variable is added. The findings of this model present that the variables cash flow, leverage and firm size are significant at 1% level which supports the findings of previous studies. Cash flow (CF) that represents firms' profitability has positive effect on cash holdings. It is suggested that firms hold more cash when they have higher cash flows consistent with financing hierarchy view of corporate liquidity those firms prefer internal financing to external financing to fund their investment. Leverage (LVG) and cash holdings have positive relationship that is in favor of precautionary motive, which means that highly leveraged firms tend to keep more cash because of difficulty in financing to mitigate the risk of financial distress. Size of firms (Size) has negative coefficient supporting the evidence by (Opler et al., 1999; Ferreira & Vilela, 2004; Anjum & Malik, 2013) and implying that larger firms hold less cash because they have easier and cheaper access to financing, more diversified, have stable cash flows, lower probability of default risk and earn profit from economies of scale. The capital expenditure (CAPEX) and net working capital (NWC) are not found to be significant determinants of corporate liquidity in this study.

From Model 2 to 6, macroeconomic variables are added to study their influence on corporate liquidity of Pakistan economy and to check how they influences the cash holdings in Pakistan economy. Macroeconomic variables are not added simultaneously because of the concern of multicollinearity. The variables i.e. credit spread, economic growth rate,

inflation, deficit, short-term interest rates and private credit have shown statistically and economically significant results at 1% level. Moreover, the increase in the value of R-Square after the inclusion of macroeconomic variables in the model has proved that the impact of these coincidental variables cannot be ignored while calculating the corporate liquidity in any nation.

Credit spread a proxy for credit risk and transaction cost motive has strong positive significant impact on cash holdings that signifies when there is liquidity problem in the market, transaction cost increases. Therefore, firms prefer to hoard more cash that supports trade off theory. This can also be inferred that when debt financing is difficult, firms hold more cash as a cushion due to increase in credit risk that supports precautionary motive (Chen and Mahajan (2010), Chen and Yo (2012), Acharya et al. (2012) and Abushammala and Sulaiman (2014). Economic growth rate (GDP) and corporate liquidity have positive and significant association suggesting that when there is higher economic growth, firms hold more cash to get benefit of profitable investment opportunities (Chen & Mahajan, 2010; Chen & Yo, 2012; Abushammala & Sulaiman; 2014). The negative but significant impact of inflation is observed on corporate liquidity that favors the view of cash holdings should be discouraged when inflation is higher in the economy .It should get rid of non-interest bearing cash because purchasing power decreases. Government budget deficit has negative but significant influence on cash holdings indicating that firms reduce their cash holdings because of expected decrease in investment opportunities as economic growth decreases. (Chen & Mahajan, 2010; Chen & Yo, 2012; Abushammala & Sulaiman, 2014) are observing it. Private credit a proxy for the depth of debt market has positive coefficient sign suggested that when borrowing is deeper, firms increase their cash reserves as debt increases because, it provides safeguard against the risk of financial distress. This result support precautionary motive of cash holdings and are consistent with the findings of (Chen & Yo, 2012). Short-term interest rates have negative association with corporate liquidity that supports the speculative motive of money demand theory and demonstrates that negative impact of interest rate on cash due to high opportunity cost overpowers. The positive impact of interest rates on corporate liquidity are due to high cost of external

financing. These findings are in line with the results of (Chen & Mahajan, 2010; Chen & Yo, 2012). From the estimated results, it has been found that all of the macroeconomic variables used in the study have significant impact on corporate liquidity in Pakistan economy. Hence, the macroeconomic conditions cannot be ignored while studying corporate liquidity.

To study the impact of leading macroeconomic variables on corporate liquidity, leading values of macroeconomic variables are measured by taking a value of corresponding macroeconomic variables for one year ahead. It is hypothesized that cash holdings is not only affected by the contemporaneous value of macroeconomic variables but also by the expected value of these variables in future. For testing this hypothesis, it is assumed that managers make rational decisions regarding cash holding management by keeping view the future expectations on macroeconomic conditions. The future expectations will help managers to decide the level of cash holdings. For instance, if the economy is expected to improve then managers can go for two different decisions like either they should accumulate more cash reserves to take benefit of future profitable opportunities or should invest their cash reserves in available profitable projects because of opportunity cost of not investing. Similarly, if inflation is expected to go up then managers should hold less non-interest bearing cash to avoid decreasing purchasing power and invest more in interest bearing cash to get higher returns. Likewise, if credit spread is expected to increase in future then firms should hold more cash as precautionary motive because of expected increase in credit risk and higher transaction cost would be required to convert non-cash assets into cash. If private credit is expected to increase then either managers will hold less cash because borrowings are expected to be cheaper or they will hold more cash because of high leverage to avoid financial distress. If managers are expecting increase in interest rates then they should hold more interest bearing cash and reduce non-interest bearing cash because of opportunity cost. If government budget deficit is expected to increase in future then cash holdings should be decreased because government budget deficit decreases GDP, and increases interest rates and inflation so firms may not hold more cash because of lack of investment opportunities. However, it is important to consider that expected increase in budget deficit could also make firms to hold more cash as they are

more uncertain about financial conditions so they will pile up cash as a cushion against economic uncertainties.

#### 4.2.2 Empirical Results of Expectations on Macroeconomic Conditions

Table 4 exhibits the relationship between leading macroeconomic variables and corporate cash holdings. The four different models are estimated here. The rationale of these regressions is to examine whether expectations on macroeconomic variables have impact on corporate liquidity. These four different models show that all the modified variables incorporating the impact of future speculation have statistically and economically significant impact on corporate liquidity in Pakistan economy.

From Table 4 it can be observed that expected inflation has positive impact on corporate liquidity contrary to the negative relationship being observed in Table 3. This shows that managers hold more cash if inflation is expected to increase in future. Moreover, the results suggested that if management of the firms predict to increase inflation in future, then firms must have been holding more interest bearing cash in response to expectation of increase in inflation and reducing the non-interest bearing cash.

**Table 4: Impact of Leading Macroeconomic Variables on Corporate Liquidity in Pakistan Economy**

Models	1	2	3	4
CF	1.14***	1.06***	1.04***	1.06***
	(6.50)	(6.10)	(6.03)	(6.20)
LVG	0.93***	0.96***	0.98***	0.96***
	(5.10)	(5.36)	(5.49)	(5.41)
NWC	0.02	0.15	0.16	0.15
	(0.15)	(1.04)	(1.08)	(1.09)
Size	-0.61***	-0.26**	-0.30***	-0.28**
	(-7.27)	(-2.82)	(-3.29)	(-3.05)
CAPEX	0.15	0.03	0.01	-0.01
	(0.99)	(0.17)	(0.05)	(-0.06)
PC <sub>t+1</sub>		6.52***	6.68***	3.87***

		(9.17)	(9.05)	(4.01)
INF <sub>t+1</sub>			1.37*	5.11***
			(1.70)	(4.41)
CS <sub>t+1</sub>		13.85***		
		(2.89)		
GDP <sub>t+1</sub>	-14.65***			
	(-4.42)			
Deficit <sub>t+1</sub>	14.28***	2.31		13.43***
	(6.37)	(1.08)		(4.48)
IR <sub>t+1</sub>	-14.83***		-10.12***	-14.63***
	(-6.94)		(-5.91)	(-7.40)
Constant	7.77***	-2.15	-0.46	0.74
	(6.13)	(-1.47)	(-0.31)	(0.50)
R <sup>2</sup>	0.75	0.76	0.76	0.77
Adjusted R <sup>2</sup>	0.71	0.72	0.72	0.73
N	1848	1848	1848	1848

\*\*\* shows coefficient is significant at 1% level, \*\* shows coefficient is significant at 5% level, and \* shows coefficient is significant at 10% level, respectively.

The expected short-term interest rates measured by leading short-term interest rates have negative impact on corporate liquidity similar to the results found in Table 3. It shows that managers reduce non-interest bearing cash and hold less cash if there is an expected or current increase in interest rates. However, it is understood that decrease in non-interest bearing cash due to expected increase in interest rates overrule the impact of increase in interest bearing cash to take advantage of higher interest rates. The expected economic growth has negative impact on corporate liquidity contrasting to relationship observed in Table 3. It demonstrates that if managers are predicting to increase in economic growth rate in future, then they utilize their cash holdings to take advantage of current profitable investment opportunities because of holdings cash has an opportunity cost of not investing in available profitable projects. In case of expected increase in government deficit, managers hold more cash because of greater economic uncertainty due to predicted increase in government deficit. It also indicates that managers keep more cash

reserves in the light of precautionary motive. Expected increase in credit spread linked to likely rise in credit risk and transaction cost for firms which envisages that if the managers predict to increase in credit spread, then they hold more cash as a cushion to mitigate the expected increase in credit risk and expected illiquidity problems. Expected increase in private credit in future leads managers of the firms to hold more cash as borrowings are predicted to increase in future. It is to be noted here that manager's tendency to hold more cash is linked with the precautionary motive. The expected increase in borrowing also uplift the possible risk of financial distress due to higher level of debt. Hence, firms increase their cash holdings if they are expected to borrow more in future. The overall results provided ample evidence that speculations about macroeconomic variables can also have significant influence on corporate liquidity decisions in Pakistan economy.

## **5. Conclusion and Policy Recommendations**

The study examines the influence of these macroeconomic conditions on corporate cash holdings by focusing on how corporate liquidity is related to different macroeconomic variables in addition to firm specific determinants. The results on firm specific determinants are consistent with previous studies. The results on coincident macroeconomic indicators indicate that cash holdings is positively related with economic growth rate, credit spread and private credit. On the other hand, corporate liquidity is negatively related with inflation, government deficit and short term interest rates. All macroeconomic variables that includes private credit, government deficit, short term interest rates, credit spread, inflation and economic growth rate have shown persistent significant results in both Models i.e. model with and without expectations. The positive effect of GDP growth shows that firms hold more cash in order to have enough internal funds to take benefit of greater investment opportunities when economy is expanding. Inflation is negatively associated with cash holdings favors the view that rise in inflation discourages firms to hold non-interest bearing cash and persuades them to keep interest bearing cash. Meanwhile, cash holdings of Pakistani firms are founded to be negatively influenced by government budget deficit signifying that firms hold less cash if government deficit is higher. It supports the view that

government deficit causes GDP to decrease that result in fewer investment opportunities and it discourages firms to hold cash for future investment purpose. It can also be taken as government budget deficit increases, inflation goes up that discourages firms to hold cash because purchasing power erodes. The positive relationship between credit spread and corporate liquidity shows that firms have high level of cash holdings when transaction cost of converting liquid asset into cash and credit risk are high. This is because firms increase their cash reserves when debt financing is difficult due to higher credit risk or when the markets are illiquid according to transaction cost motive. Private credit and cash holdings showed positive relationship signifying that when borrowing is deeper, firms hold more cash to prevent from financial distress that can be arise due to higher debt. It can be implied that Pakistani highly leveraged firms tend to hold more cash as a safeguard against credit risk. Short-term interest rates have negative impact on cash holdings of Pakistani non-financial firms because when interest rates are high, the opportunity cost of keeping cash is also high, so firms keep less cash. The possible impact of expected macroeconomic conditions on corporate liquidity in Pakistan has also been studied along with the contemporaneous impact of macroeconomic conditions on cash holdings. It is assuming that managers are rational decision makers; it is proven through results that there exist statistically significant relationship between speculations and corporate liquidity.

This study provides policy implications for the government of Pakistan that country-level coincident indicators have an overruling impact on firm specific determinants. Based on these findings the study suggests that during higher budget deficit and high inflation, firm managers should switch their corporate liquidity components in more interest bearing assets in order to avoid the decrease in purchasing power. Few affirmative actions are required at governmental level that they should reduce excessive spending that result in consistent budget deficit so that firms should not keep holding cash and forgoing investment opportunities due to prevalence of economic slowdown.

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## **Impact of Trade, Workers Remittances and Quasi Money on Volatility of Exchange Rate**

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**Abstract:** This paper addresses one of the core issues of Pakistan i.e. the volatility of exchange rate in the light of various determinants like the impact of trade, FDI, worker's remittances, money and quasi money (M2). Using a time series from 1976-2015 and by applying Johansen and Juselius (1990) cointegration technique, the results confirmed the presence of long run relationship among these variables. For the short run relationship the study employs Vector Error Correction Model (VECM). The estimation results show that these variables are co-integrated in short run as well. Moreover, VECM coefficient indicated that more than 10% of the disequilibrium in the volatility of exchange rate can be adjusted towards long run equilibrium annually and the time required for this approximately nine years and six months. Findings also show that except Trade, all other variables i.e. FDI, Remittances and Money supply are affecting positively to the exchange rate volatility in Pakistan.

**Keywords:** Investment, Trade, Remittances, Money, Time Series, Exchange rate

**JEL Classification:** E41, P33, C22, E22, F31

### **1. Introduction**

This paper investigates the fluctuations in the exchange rate resulting from the changing in the trade (both exports and imports of the country), foreign direct investment (FDI), worker's remittances and money and quasi money (M2) in Pakistan. This study explains the empirical relationships between the dependent and independent variables of the interest. In the recent empirical literature, the effects of exchange rate volatility on exports, relationships between exchange rate volatility and foreign direct investment (FDI), relationship between exchange rate volatility and worker's remittances and relations of money and quasi money (M2) with exchange rate volatility indicate the ambiguous results. In spite of this ambiguity, some studies give the clear relations between the variables of interest. The high exchange rate volatility may reduce the trade by negatively affecting the exports from the developing countries. Because when the currency of the country appreciated its exports become

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expensive for the importer countries. The literature shows that there is a negative and significant long run relationship between exports and exchange rate volatility. Some literatures suggest that the worker's remittances have significant effect to appreciate the exchange rate and reduce the competitiveness of the tradable sector<sup>1</sup>. The exchange rate refers to the number of units of one currency which can be purchased from one unit of the other currency. The exchange rate gives us the relative worth of the domestic currency in terms of the foreign currency. The exchange rate volatility refers to the relative rate at which there are the up and down moments in prices of the securities. The annual standard deviation of daily price changes represents the volatility of exchange rate. There will be high volatility when there are rapid up and down moments over the short time period in the stock prices and low volatility when fluctuations in the stock prices are small or the stock prices almost never changes. The fluctuations in the exchange rate are considered one of the main issues of the economy of any country. It affects greatly the growth of the economy by influencing the major economic indicators like exports, macroeconomic stability, external demand, level of uncertainty, changes in the domestic credit, openness, external debt, tightness of the monetary policy and foreign direct investment etc. There were energy crisis almost throughout the world in 1990s which caused to increase the uncertainty and volatility of the exchange rate and because of this reason exchange rate volatility acquired a special importance in the most of the economies of the world. There is a high priority for exchange rate regimes and exchange rate fluctuations for the purpose of management and formulation of the macroeconomic policies in the economy of any country. There are different areas which affected by the fluctuations in exchange rate. These areas are the price stability, employment, cost of imported raw material and serving the foreign borrowings, general inflation, services sector (tourism), consumer product, foreign direct investment, BPO and income of the country. So, the economy as a whole bears occasionally but disproportionate effects resulting from the small and frictional changes in the fluctuations of the exchange rate. The economy of the Pakistan experienced the fluctuations in the exchange rate from the independence and largely influenced by the US economy,

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<sup>1</sup> Lopez et al. (2007)

because the economies of the world are now interlinked with the notion of globalization. The economy of the United State affects the economies worldwide. Therefore, the policies of the US economy change the value of the dollar relative to the other currencies i.e. the interest rate throughout of the world would increase when the interest rate in the US economy increases because of the tight monetary policy. The trade of the Pakistan is mostly carried out in terms of dollar and the exchange rate of Pakistan shows volatility in terms of the US dollar because of the economic instability in the Pakistan's economy. Just after the independence in 1947, 1 PKR was traded with one Indian rupee. In 1955, value of dollar in Pakistani rupee was PKR.4.76. In 1971, Pakistan faced war with India, currency was devalued and PKR.25 was necessary to purchase 1 US\$. The depreciation was continued in 1989 and 2000. The exchange rate was 31.64 in 1995, 53.64 in 2000, 59.51 in 2005 and 85.19 in 2010. There was 6.73 percent appreciation of the rupee in 2001 to 2002 and 3.9 percent appreciation in 2002 to 2003. Again the rupee was depreciated against US dollar from the years of 2004-2007<sup>2</sup>. This article deals with the impact of the trade (exports and imports as the constant local currency unit), foreign direct investment (FDI), worker's remittances and money and quasi money (M2) on the fluctuations and the volatility of exchange rate in Pakistan. This analysis is done by taking the exchange rate volatility as dependent variable and trade (exports and imports as the constant local currency unit), foreign direct investment (FDI), worker's remittances and money and quasi money (M2) as independent variables.

## 2. Literature Review

Goldberg and Charles (1994) worked to find the relationships between foreign direct investment and exchange rate variability. This paper also incorporates the effects of the demand uncertainty. In this study there is the case of UK, Japan, US and Canada for foreign direct investment (FDI) flows. This work examines the understanding of the real impact of exchange rates in many dimensions. The results of the paper indicates that the without depressing the economic activity in domestic economy there is the internalization of the production activity because of the volatility of exchange rate. So, the volatility of exchange rate without depressing the

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<sup>2</sup> Sbp.org.pk

economic activity as a whole increases the flows of the international capital which can be put in place of the international trade in goods.

Arize (1996) examined the effects of the exchange rate on the real exports. This work is done for a developing country, Korea. The result shows that both in long run and short run there is a significant and negative impact of the real exchange-rate uncertainty on exports. In this procedure the residuals thus work as explanatory variables in short run export demand function. The regression also shows the stable results. So the results indicate that without taking into account the stability and level of real exchange rate, the trade policies for stabilizing the export market will generate the uncertain results.

Chakrabarti and Barry (2002) examined the effect of the exchange rate expectations and exchange rate volatility on the foreign direct investment (FDI). The data used for this purpose was annual data ranges from 1982-1995. This paper dealt with the flows of FDI from USA to 20 OECD countries. The results of this paper after applying the econometric techniques showed that the skewness of the devaluation of the exchange rates have the positive robust effect on FDI flows and volatility of the exchange rate and its average devaluation do not have the robust positive effect on the FDI flows. This evidence can be viewed as consistent with the hypothesis because for the expectation about the future exchange rate the foreign investors make the adjustments in exchange rates relatively with larger shocks.

Laurent *et al.*, (2003) dealt with the debt dynamics and hard currency exchange rate in the emerging economies. In the emerging economies the major factors that affect the external debt dynamics are variations in the exchange rate and the interest rate. The result in this study indicated that the by using three parameters, geographic structure of trade, exchange rate regime and currency compositions the emerging countries can stabilize the domestic value of its external debt. So, this study aimed to make such policies which make the emerging countries to stable the debt dynamics due to the volatility of the hard currency. The emerging countries can make the debt dynamics insensitive to the volatility of the hard currency exchange rate when the geographic pattern of trade, the weights of the

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exchange-rate reference basket and the external debt currency composition are identical.

Lopez *et al.*, (2007) explored the effects of the worker's remittances on the exchange rate for the case of the countries of the Latin America. The study showed that the worker's remittances affect the exchange rate in three ways. First, worker's remittances can have impact on the economy's external equilibrium by raising the country's net foreign asset position. Second, the worker's remittances may also have impact on the economy's internal equilibrium for a situation in which domestic labor and capital are utilized efficiently. Third, the worker's remittances have impact on growth, so affect the exchange rate although in this case the effects are likely ambiguous. The results of the study also show that when the flows are large enough relative to the size of the economy of the country which received flows, these flows may also cause of many undesired problems.

Nasir and Hassan (2011) investigated the impact of the economic freedom, exchange rate stability, investment climate and market size on the foreign direct investment. This relationship was examined for the South Asian countries by taken the panel data which ranged from 1995 to 2008. The FDI has negative relation with the effective real exchange rate when it is depreciated in the host country. It means that the depreciated effective real exchange rate will reduce the foreign direct investment (FDI). The host country should devise her monetary policy to provide the stability in her currencies. The market size (independent variable) is also positively related to the FDI because in the regression LNGDP (used for market size) showed positive and significant relation with FDI. The result showed that large is the market high will be FDI in that market.

Hassan and Holmes (2013) investigated the long run relationship between the real exchange rate and the worker's remittances for selected less developed countries (LDCs). The panel data was used for finding the long run relationship between the real exchange rate and the worker's remittances which ranged from 1960 to 2010. The econometric technique used for this purpose was the panel cointegration approach for long run relationship and quintile regression analysis for the potential asymmetries in the relationship. This study explored that the real exchange rate appreciates as the inflows of the worker's remittances increases. The

worker's remittances also act like the Dutch Disease in which the country's international competitiveness decreases as the exploitation of the natural resources increases. The results of the study showed that there is improvement in the financial sector development by easing the credit constraints for investment when the worker's remittances are increased.

### **3. Methodology**

#### **3.1 Data Sources**

This study gives the estimations to measure the effects of trade, foreign direct investment (FDI), worker's remittances and broad money on the volatility of the exchange rate in Pakistan. This relationship between the variables is found by using the time series data from the year 1976 to 2015. The data are sourced from the website of the World Bank (WB) namely World Development Indicators (WDI), State Bank of Pakistan (SBP) reports and international financial statistics (IFS). The study uses the Johansen and Juselius (1990) cointegration techniques to find the long run relationship and error correction mechanism (ECM) to find the short run relationship between the variables.

The variables used in this paper to find the impact on the volatility of the exchange rate are total trade (T), foreign direct investment (FDI), worker's remittances (WR) and Money and quasi money which is given the name of broad money (M2). The dependent variable is the volatility of the exchange rate which is obtained from standard deviation of the Official exchange rate (LCU per US\$, period average) from world development indicators (WDI).

#### **3.3 Model Specification**

The aim of the study is to investigate the volatility of the exchange rate in Pakistan and the impact of trade, foreign direct investment (FDI), worker's remittances and broad money (money and quasi money) on the volatility of the exchange rate. After reviewing the different studies in the section of the literature review of this paper, it is suggested that the Johansen and Juselius (1990) cointegration technique is used for those



time series having same order of integration. The order of integration and the level of the stationary are checked by applying the unit root tests. But the time series having different order of integration, autoregressive distributed lag (ARDL) model is applied. In this paper Johansen and Juselius (1990) Cointegration Technique has been used to see the existence of long run relationship among these variables. But for the short run relationship between the dependent and independent variables, Vector Error Correction (VEC) is also applied. All this analysis is done by using the Eviews6.

The literature of the previous studies shows that the volatility of the exchange rate (VER) is influenced by several factors like macroeconomic stability, external demand, level of uncertainty, changes in the domestic credit, exports, external debt, tightness of the monetary policy and foreign direct investment etc. But the major variables that affect the volatility of the exchange rate (VER), evident from the literature review, are exports (X), imports (M), foreign direct investment (FDI), worker's remittances (WR) and money supply (money and quasi money) (M2) because these variables have the significant relationship with the volatility of the exchange rate (VER). Therefore, trade (exports and imports), foreign direct investment (FDI), worker's remittances (WR) and money supply (money and quasi money) (M2) are taken as the independent variables and volatility of the exchange rate is taken as the dependent variable.

So, by keeping in account the role of these variables the proposed model in this paper will be of the following:

$$LVER_t = \beta_0 + \beta_1 T_t + \beta_2 FDI_t + \beta_3 WR_t + \beta_4 M2_t + \mu_t \dots \dots \dots (1)$$

t = time period ranges from 1976 to 2015.

$LVER_t$  = logarithm of volatility of real exchange rate

$T_t$  = represents the trade including imports and exports of goods and services in constant local currency unit.

$FDI_t$  = foreign direct investment (FDI) as a percentage of GDP

$WR_t$  = Workers' remittances and compensation of employees as a percentage of the GDP.

$\beta_0$  = constant

$\beta_1, \beta_2, \beta_4, \beta_3$  = elasticities or coefficients of trade (exports and imports of goods and services), foreign direct investment (FDI), worker's remittances and money and quasi money (M2) respectively

$\mu_t$  = white noise error term

### 3.4 Methodology

The unit root test is applied to check the problem of non-stationary of each time series used in the model. If the non-stationary time series are regressed, the results thus obtained will be spurious unless they are co-integrated. So it is necessary to check the stationary status of each time series before regressing the variables to find the long run relationships between them. If it is found that the underlying time series is non-stationary, then it would be made stationary by taking difference.

If mean and variance of time series is not independent of time and they change over the time, this indicates that the time series is non-stationary or it has the problem of unit root. The stationary time series is obtained from non-stationary time series simply by differencing the non-stationary time series. The number of times we take the difference (d) of time series to make it stationary is called the order of the integration simply denoted by I(d). If the time series become stationary by taking first difference its order of integration would be I(1), when difference is taken two times to make a non-stationary time series a stationary time series its order of integration would be I(2). The time series having order of integration I(0), it is a stationary time series at level. There are different tests which are used for the detection of the non-stationary time series or the unit root problem.

Johansen and Juselius (1990) gave the cointegration approach to find the cointegration between the dependent and independent variables. This technique is applicable only for the time series having same order of integration (find through unit root tests). If the order of integration is not same for all the time series involved in analysis the Johansen and Juselius (1990) cointegration technique would not be useful and gives the robust results. This technique gives only the long run relationships between the variables and the short run relationships are carried out by using the

vector error correction model (VECM). In this paper the time series are stationary at first difference, so having same order of integration,  $I(1)$ . Therefore, Johansen and Juselius (1990) cointegration technique is used for long run and vector error correction model (VECM) is used for short run relationship between the variables.

## **4. Empirical Results**

### **4.1 Results of Unit Root Test**

The unit root test presented by Dickey & Fuller (1981) Tests (DF-Test) and Augmented Dickey Fuller Test (ADF-Test) do not follow the  $t$ -distribution. In  $t$ -distribution the given time series is considered as stationary and this distribution does not take into account the problem of the non-stationary. These tests are used to check the stationary status of the time series because the given series can be stationary or non-stationary. Therefore, Dickey and Fuller (1981) gave their own critical values by taking into account the non-stationary aspect of the time series. These values are given the name of the  $\tau$  (tau) values instead of the  $t$ -values. This study employs the Augmented Dickey Fuller Test (ADF-Test) and Phillips-Perron (1988) test to check the stationary status of the time series. This null hypothesis will be rejected when the calculated value of test statistic is less than the critical value ( $p$ -value). The results of the different unit root tests to check the stationary of different time series are given below in the Table 1. The model is selected with intercept when the graph shows random walk with drift and when the graph shows random walk with drift and deterministic trend the model is selected by including intercept and trend. But for more rigorous results the following Table shows the values of the test statistic of all the time series by including intercept and intercept and trend both.

**Table 1: Unit Root Test**

Variables	Tests			
	ADF Tests		Phillips-Perron Tests	
	<i>Intercept</i>	<i>Intercept &amp; trend</i>	<i>Intercept</i>	<i>Intercept &amp; trend</i>
$T_t$	0.0989 (0.9610)	-1.9965 (0.5823)	0.1511 (0.9651)	-1.9965 (0.5823)
$\Delta T_t$	-5.3314* (0.0001)	-4.8804* (0.0031)	-5.3223* (0.0001)	-5.2866* (0.0008)
$FDI_t$	-2.6835 (0.1876)	-4.6797 (0.1044)	-1.9651 (0.3001)	-2.0987 (0.5280)
$\Delta FDI_t$	-4.3343* (0.0023)	-3.8929** (0.0278)	-3.3344** (0.0212)	-3.2184*** (0.0983)
$WR_t$	-1.4857 (0.5286)	-2.1597 (0.4957)	-1.6972 (0.4236)	-2.4963 (0.3278)
$\Delta WR_t$	-5.5376* (0.0001)	-5.4245* (0.0005)	-5.5630I* (0.0001)	-5.4491* (0.0005)
$M2_t$	-3.2367 (0.1266)	-4.4182 (0.2069)	-2.7624 (0.1744)	-1.8613 (0.6522)
$\Delta M2_t$	-5.0153* (0.0003)	-5.0380* (0.0015)	-5.7900* (0.0000)	-6.3934* (0.0000)
$LVER_t$	-1.5506 (0.4927)	-2.2191 (0.4601)	-3.1977 (0.1288)	-3.8950 (0.1233)
$\Delta LVER_t$	-6.9085* (0.0000)	-6.7568* (0.0000)	-7.6888* (0.0000)	-7.9279* (0.0000)

$\Delta$  Represents the first difference of the variable

Values in the parentheses are *P*-values.

\* shows significance at 1%, \*\* shows significance at 5%, \*\*\* shows significance at 10%

The above Table shows that the no variable is stationary at level as verified by Augmented Dickey-Fuller test and Phillips-Perron test as well. The test statistic values are checked against the Table values at 1%, 5% and 10% level of significance. The results of the unit root tests show that variables have the same order of integration which validates the use of Johansen (1988, 1991) cointegration test.

## 4.2 Lag Selection Criteria

For employing Johansen cointegration technique the lags are selected by applying VAR model because before applying Johansen cointegration technique lag selection criteria for selecting the optimal lag length. In VAR model large numbers of lags are taken and the model is estimated again and again by reducing the lag length by one lag each time till zero lag. In this method to select the optimal lags, three lag selection criteria are used, one is Akaike Information Criteria (AIC), second is Schwartz Bayesian Criteria (SBC) and third is Hannan-Quinn (HQ) information criterion. The optimal lag length will be those lags for which Schwartz Bayesian Criteria (SBC), Akaike Information Criteria (AIC) or Hannan-Quinn (HQ) information criterion gets minimum value. This paper chose the Akaike Information Criteria (AIC) and select lag 3 because for lag three Akaike Information Criteria (AIC) gets minimum value.

## 4.3 Johansen Cointegration Test

The Johansen cointegration test is applied to assess the long run relationship of the volatility of the exchange rate and trade, foreign direct investment (FDI), worker's remittances and money and quasi money (M2). Before applying this test stationary status of the time series and optimal lag length are checked. The results for the unit root test shows that the variables are stationary at first difference so order of integration is  $I(1)$ . According to the Akaike Information Criteria (AIC) the lag 3 is selected because for lag 3 Akaike Information Criteria (AIC) gets minimum value. So after assessing the stationary properties of time series and finding optimal lag length, for final estimations Johansen cointegration technique is used for joint hypothesis of both rank order and deterministic components. It involves the estimation of all models and represents the results from the most restrictive hypothesis through the least restrictive hypothesis. The values of the trace statistic and the maximum eigenvalue statistic are captured which are given in the following tables along with the critical values at 5% and the MacKinnon-Haug-Michelis (1999) p-values. The numbers of the cointegrating equations are found by comparing the Trace statistic and Maximum Eigen statistics with critical values at different significance levels.

**Table 2: Long Run Relationship using  $\lambda_{\text{trace}}$  Statistics**

Hypothesized No. of CE(s)	Eigen value	$\lambda_{\text{trace}}$	Critical Value 0.05	Prob.**
$r = 0$ *	0.8314	113.6685	69.8188	0.0000
$r < 1$ *	0.7084	67.3686	47.8561	0.0003
$r < 2$ *	0.5718	35.3249	29.7970	0.0104
$r < 3$	0.2954	13.2670	15.4947	0.1054
$r < 4$ *	0.1478	4.1612	3.8414	0.0414

\* denotes rejection of the hypothesis at the 0.05 level. \*\*MacKinnon-Haug-Michelis (1999) p-values.

**Table 3: Long Run Relationship using  $\lambda_{\text{max}}$  Statistics**

Hypothesized No. of CE(s)	Eigen value	$\lambda_{\text{max}}$	Critical Value 0.05	Prob.**
$r = 0$ *	0.8314	46.2998	33.8768	0.0010
$r < 1$ *	0.7084	32.0436	27.5843	0.0125
$r < 2$ *	0.5718	22.0575	21.1316	0.0370
$r < 3$	0.2954	9.10613	14.2646	0.2774
$r < 4$ *	0.1478	4.16123	3.84146	0.0414

\* denotes rejection of the hypothesis at the 0.05 level. \*\*MacKinnon-Haug-Michelis (1999) p-values.

In above Tables for Trace statistic and Maximum Eigenvalue statistic, the steric sign (\*) shows the rejection of the null hypothesis of “no cointegration” therefore, it indicates the presence of cointegration equations. Under the Trace Statistics criteria, there are 4 cointegration equations and Max Eigen statistic criteria also shows the presence of 4 cointegration equations at 5% level of significance. So the presence of cointegration equations indicates the existence of long run relationship among the variables of the interest.

#### 4.4 Vector Error Correction Model (VECM)

The previous section indicates the long run relationship between volatility of exchange rate and independent variables, used in this study, by employing Johansen and Juselius procedure. In this section the short run relationships between the times series is found by using the Vector Error Correction Model (VECM). The specification for Vector Error Correction Model (VECM) is given as:

$$\Delta LVER = \alpha_0 + \alpha_1 ECT_{t-1} + \Delta \alpha_2 T_{t-1} + \Delta \alpha_3 FDI_{t-1} + \Delta \alpha_4 WR_{t-1} + \Delta \alpha_5 M2_{t-1} + \varepsilon_t \quad (14)$$

In the above equation,  $ECT_{t-1}$  represents the error correction term. This error correction term indicates the speed of adjustment towards long run equilibrium that affects short run movement in volatility of the exchange rate. According to the theory:

- This term must be negative.
- Absolute value of this term must be less than 1.
- It should be significant.

The negative sign explores overall stability of the model and convergence towards the long run. In this paper this value is also negative. This value represents the speed of adjustment and time required for convergence towards the long run equilibrium.

**Table 4: Error Correction Terms**

Error Correction	$\Delta LVER$	$\Delta T$	$\Delta FDI$	$\Delta WR$	$\Delta M2$
	-0.1043 [-2.7547]	0.4810 [ 3.5148]	0.2266 [ 3.6930]	0.1216 [ 0.9734]	0.5226 [ 1.3207]

t-statistics in [ ].

In above Table the value for LVER is negative, shows convergence towards the long run equilibrium. The other variables show the divergence from the long run equilibrium. For error correction the most important is the negative sign of the dependent variable because it is for the overall stability of the model. It is clear from the results of the error correction mechanism (ECM) given in the Table that annually about more than 10% of the disequilibrium in the volatility of exchange rate is adjusted. So the time required for volatility of exchange rate to return its long run equilibrium is less than ten years. It is approximately 9 and half years. The following Table shows the values of the cointegrating coefficients of the independent variables used in the model of this research paper.

**Table 5: Co-integrating coefficients for the other variables**

Variables	Coefficients
Constant	0.51713
T(-1)	0.1770 [ 8.5055]
FDI(-1)	-6.6177 [-7.1504]
WR(-1)	0.5226 [ 5.87326]
M2(-1)	-0.3970 [-3.4509]

t-statistics in [ ].

Specification for the Vector Error Correction Model (VECM) is given as:



$$\Delta LVER = \alpha_0 + \alpha_1 ECT_{t-1} + \Delta \alpha_2 T_{t-1} + \Delta \alpha_3 FDI_{t-1} + \Delta \alpha_4 WR_{t-1} + \Delta \alpha_5 M2_{t-1} + \varepsilon_t \quad (2)$$

By putting the values of co-integrating coefficients of the independent variables in the model of error correction mechanism (ECM), we have:

$$\Delta LVER = -0.5171 - 0.1043 ECT_{t-1} - 0.1770 T_{t-1} + 6.6177 FDI_{t-1} - 0.5226 WR_{t-1} + 0.3970 M2_{t-1} + \varepsilon_t \quad (3)$$

This equation shows the presence of the short run relationship among the variables used in this study. For short run relationship, ECM coefficient should be significantly negative and less than 1. All these conditions are met in the estimation results of this study too. Moreover after knowing that whether both long and short run relationships exist among these variables, the sign of coefficients also helped us in finding the nature and strength of this relationship among variables. Impact of trade and workers remittances is being observed negative with respect to exchange rate volatility while foreign direct investment and money supply is showing positive relation with dependent variable which is also evident from the present experience of the economies. Because when due to more of trade share and remittances, inflow of foreign reserves will increase then to correct disequilibrium from the balance of payments (usually deficit experienced by developing countries like Pakistan) will not be done by devaluing the currency. Hence more of these two factors will help in reducing this exchange rate volatility. On the other side more of money supply results more of this volatility because this increased supply will interrupt the workings of money and capital markets and this will ultimately destabilize the exchange rates due to excess demand of monetary and capital assets.

#### 4.5 Diagnostic Tests for Residuals

In diagnostic analysis, certain tests are performed to check whether the model is good in all the aspects or not. These diagnostic analyses are done for residuals. Misspecification test for the residuals and descriptive statistics of the residuals are important to check the acceptability of the model. In this study for the autocorrelation and serial correlation of the

residuals, Serial Correlation LM Tests is performed. The test suggests the acceptance of the null hypothesis, so there is no correlation. To check heteroskedasticity of the residuals, VAR Residual Heteroskedasticity Test is performed which shows that there is no problem of the heteroskedasticity of the residuals. The VAR model for the selection of the optimal lags is performed which discussed three lag selection criteria; one is Akieke Information Criteria (AIC), second is Schwartz Bayesian Criteria (SBC) and third is Hannan-Quinn (HQ) information criterion. This test suggests selecting lag 3 on the basis of Akieke Information Criteria (AIC) because for lag 3, Akieke Information Criteria (AIC) gets minimum value. Then the test for the normality is performed which captures the values of the skewness, kurtosis and Jarque-Berra of the residuals. For this purpose one test Cholesky (Lutkepohl) is used and on the basis of the values of skewness, kurtosis and Jarque-Berra of the residuals, it is determined that the residuals are multivariate normal. Their null hypothesis states that residuals are multivariate normal. The result of the tests also shows the symmetry of the distribution and normally distributed error terms. The results of the normality test and test of heteroskedasticity are given in the following Tables:

**Table 6: Normality Test**

VAR Residual Normality Test	Skewness	d.f	Prob.
	1.3822	5	0.9262
Cholesky (Lutkepohl)	Jarque Berra	d.f	Prob.
	20.75621	10	0.0229

**Table 7: Heteroskedasticity Test**

Chi-square	d.f	Prob.
312.4887	300	0.2980

The results of the vector error correction mechanism (VECM) will be non-satisfactory if there is the problem of the non-normality and Heteroskedasticity in the residuals. But the results show that the estimations of the vector error correction mechanism (VECM) are

satisfactory because joint test indicates that the residuals are normally distributed and there is no heteroskedasticity in the residuals.

## **5. Conclusions**

This study examines the volatility of the exchange rate in Pakistan and tries to assess the impact of the trade (exports and imports of the goods and services, constant local currency unit), foreign direct investment (FDI), worker's remittances (WR) and money and quasi money (M2) on the volatility of the exchange rate. For this purpose data has been used for Pakistan from the time period 1976 to 2015. Johansen and Juselius (1990) cointegration technique has been applied for testing the relationship among desired variables. Results show the existence of long run relationships between the volatility of the exchange rate and all the proposed determinants of this crucial issue i.e. trade (exports and imports of the goods and services, constant local currency unit), foreign direct investment (FDI), worker's remittances (WR) and money and quasi money (M2). VECM has also confirmed the signs of short run relationship among these factors and suggested that more than 10% of the disequilibrium in the volatility of exchange rate is adjusted towards long run equilibrium annually and the time required for adjustment is less than 10 years (approximately 9 and half years). The paper further investigates the diagnostic tests for the residuals. The correlation, heteroskedasticity and normality of the residuals are checked by applying Serial Correlation LM, VAR Residual Heteroskedasticity and VAR model Cholesky (Lutkepohl) Tests respectively. The results of these tests prove that the residuals do not have the problems of non-normality, Heteroskedasticity and correlation; the model is perfect in nature and estimations of the vector error correction mechanism (VECM) are satisfactory.

## **6. Policy Recommendations**

On the basis of these findings this study gives few recommendations for policy making regarding this problem of economy. These are:

- Effective and smooth running of fiscal and monetary policies are required to reduce inflation through controlled money supply for stabilizing the exchange rate.
- The State Bank of Pakistan (SBP) should intervene in the exchange rate to reduce the fluctuations in the exchange rate by selling and purchasing the US\$ in the interbank market.
- Traders should be facilitated by reducing tariff rates and removing quotas so that foreign reserves could be increased to stabilize foreign exchange rate.
- Inflow of FDI should be regulated by commercial banks so that supply of money could not increase which can ultimately lead to increased demand and cause fluctuations in money market.

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## **Assessing the impact of economic performance and political environment on debt intolerance: A case study of highly indebted poor countries**

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**Abstract:** The present study is an attempt to examine the role of economic and political factors in assessing the level of debt intolerance in poor countries. To carry out the investigation, a sample of 29 highly indebted poor countries (HIPC) is taken, covering the time period 2000-2015. Economic performance is measured through GDP, inflation rate and availability of domestic credit to private sector. Political environment is assessed through the voice and accountability index (VA) and political stability and absence of violence (PSAV) index as given by ICRG. Governance (GOV) indicator is used to determine the quality of institutions and is measured through an average of six indicators provided by World Governance Indicators (WGI). Exchange rate, foreign direct investment, and money supply (M2) are included as control variables extracted from World Development Indicators. To examine the relationship, Pooled OLS, fixed effect model along with panel corrected standard error techniques has been employed to account for heteroskedasticity and serial correlation. The results of the study indicate that GDP and domestic credit to private sector has a significant negative impact on debt intolerance. Whereas, inflation rate tends to increase the debt intolerance thereby reducing the debt carrying capacity. Voice and accountability, political stability and absence of violence, and governance play an important role in improving the debt carrying capacity of a country by reducing its debt intolerance level. Therefore, policies should be devised towards enhancing the economic performance of a country through productive use of resources.

**Keywords:** Debt, Inflation, Foreign exchange, Money Supply, Governance  
**JEL Classification:** E51, F31, G30, E31, H63.

### **1. Introduction**

The issue of heavy indebtedness of poor economies is attaining due concentration from policy makers, since 1990. If a country is unable to meet its debt obligations, then it is likely to enter in a debt trap. The debt

becomes unsustainable and the capacity to return back principal payment decreases. Therefore, it is necessary to explore the factors which influence the debt carrying of a country or in other words the debt tolerance. For poor and most of the emerging economies external debt is a major source of financing that is used towards the development of domestic economy and other needs of the country (Siddique et al., 2015)? When government fails to generate enough tax revenue, and the level of their spending is more than the revenue collected, they incur fiscal deficits and to fill this up they tend to rely on borrowing from external as well as internal sources. Usually those countries are more prone to incur external debt, where savings are relatively low and foreign aid is needed for economic development.

Excessive debt accumulated poses serious economic implications and uncertainty about economic future thus generating capital flight so lesser resources are available in the economy which discourages growth. More debt accumulated means excessive debt servicing payments which diverts the amount of resources available for the development of human capital, infrastructure information and technology, towards the payment of debt and interest thereon, leaving the other sectors underdeveloped.

Debt tolerance is a concept which shows the capacity of a country to efficiently sustained debt pressures (Reinhart et al., 2003). It is often argued that excessive debt accumulation becomes an obstacle in achieving a sustained economic growth (Zouhaier and Fatma, 2014; Zafar et al., 2015). If external debt is not utilized properly and is not channeled towards the productive activities, then the ability of an economy to pay back its debt is adversely affected. Excessive reliance on external debt distorts the efficient allocation of resources. The political structure as well as economic performance plays an important role in determining the debt carrying capacity of a country.

The issue of debt tolerance arises when the country becomes unable to successfully pay off its debt liabilities. According to Reinhart and Rogoff (2003), history plays an important role in meeting the debt liabilities of an economy. Usually the countries that have defaulted had so often done so.



A long history of serial default on part of a country, poses challenges and threats to its future concerns. The problem of debt default arises when a country having little savings and low economic growth fails to meet its debt concerns, and again to finance the fiscal imbalances rely on additional borrowing. It increases the burden of debt servicing payments which raises the chances falling into in debt trap. Poor economic performance and political environment accounts for amount of debt accumulation. There are many emerging economies suffering from the problem of debt sustainability. Debt tolerance is a phenomenon that must be seen from both economic as well as political viewpoint (Hileman, 2012).

According to World Bank, there are highly indebted countries that consist if a group of 39 developing countries with high levels of debt and poverty. These countries are also eligible for special assistance by the IMF and World Bank which includes debt restructuring, sustainable debt servicing payments etc. For these countries, with the collaboration of IMF and World Bank, highly indebted poor countries (HIPC) initiative program has been started in 1996 to provide these countries with assistance to achieve sustainable economic growth and reduction in poverty. Despite of receiving special compensation, these countries are unable to eliminate debt burden because these programs does not completely terminate their debt liabilities. Instead favor is given in the form of payment of liabilities at some future time or low debt servicing due to which debt is continuously piled up. Consequently, these countries have to face debt intolerance.

Over the past years, highly indebted poor countries (HIPC) have failed to meet its debt obligations mainly due to low economic growth, less foreign exchange earnings, little investment, poor economic policies, political instability, high debt servicing payments, fiscal deficits, little or nearly no finance for the development of human capital, infrastructure and other development projects. So, these countries are characterized by low capital formation and high levels of poverty which has put them in vulnerable debt trap. These countries are striving to get rid of this debt dependency through better economic policies targeted towards growth but still they are lagging behind in achieving the goals.

The debt burden of highly indebted poor countries has increased drastically over the past few decades and is now beyond the threshold level, which has poses serious implications on its economy. Economic indicators i.e. GDP, inflation, FDI, credit to private sector, money supply plays a significant role in assessing and promoting the debt tolerance of an economy. Moreover, political environment also plays an important role in determining the debt tolerance of these countries. So this study is designed to examine the impact of economic performance and political environment on debt tolerance of selected HIPC. Does economic performance have an impact on debt tolerance? How political environment affects the debt tolerance? Given the economic and political performance will these countries be able to achieve debt tolerance? It will help the government and other relevant institutions in designing the policies which are most suitable according to the needs and circumstances of HIPC to achieve a sustained level of debt tolerance.

## **2. Literature Review**

Alesina and Tabellini (1989) established the link between the political risk, external debt and capital flight for developing countries and came to conclusion that political uncertainty generates huge capital flights. Moreover, this uncertainty urges current governments to accumulate more debt and keeping in view this political risk lenders tend to charge high risk premium.

Fosu (1996) studied the impact of external debt on economic growth in LDCs of Africa for the period 1970 to 1986. The results showed that external debt is deleterious for the economy, whether its debt servicing or outstanding debt, it reduces the productivity of investment. Similarly,

Clements et al., (2003) tried to assess ways through which external debt impacts growth in low income countries using data for 55 countries covering the time period 1970-99. The results indicated that per capita income growth rate will increase with a fall in debt burden. Moreover reduction in debt servicing will also promote growth indirectly.

Guscina (2008) analyzed the impact of macroeconomic, institutional and political factors in assessing the government's debt structure of 19 emerging market economies for a period of 25 years. The results showed that unstable economic environment, poor institutional quality and political instability are obstacles in the way of development of domestic debt market. Mahmood, Rauf and Ahmad (2009) attempted to assess the public and external debt sustainability using theoretical models in case of Pakistan for the period 1970-2007. The results indicate that level of both public and external debt persistently remained high throughout the time period except the first half of 2000s. The main factors that can be held responsible are fiscal and current account deficits. El-Mahdy and Torayeh (2009) studied the impact of rising domestic public debt of Egypt on its economic growth. The results depict that domestic debt of Egypt has a negative impact on growth. Recent path adopted by Egypt for debt is sustainable and for debt to be sustained, fiscal reforms are required.

Adesola (2009) studied the impact of external debt service payments on economic growth in case of Nigeria and found that debt servicing payments to Paris club creditors and promissory note holder were positively related to GDP and gross fixed capital formation (GFCF) while payments to London club creditor and other creditors are negatively related to GDP and GFCF. Reinhart and Rogoff (2010) studied the relation between growth, inflation and debt by using a newly developed historical dataset for 44 countries (20 advanced economies and 24 emerging economies) over a time span of 200 years. For emerging economies inflation level also rises as debt increases but in case of developed countries no remarkable link was found between inflation and debt.

Awan et al., (2011) found a long run relationship between external debt, exchange rate and terms of trade. But no relation was found among these variables during the short run. On the other hand, Akram (2011) concluded that public external debt has a negative impact on growth and investment of Pakistan both in short and long run. In short run, debt servicing has a negative relation to GDP. Domestic debt has negative and significant relation with investment; however it does not seem to have significant relation with GDP.

Qayyum and Haider (2012) investigated the impact of foreign aid, external debt and governance on economic growth for sixty developing countries covering time span from 1984 to 2008. The results indicated that good governance and foreign aid have a significant positive impact on the economic growth whereas external debt affects the growth negatively.

Umaru et al., (2013) concluded that external debt has a negative impact on the economic growth of Nigeria while domestic debt is positively related to economic growth. Benedict, Imoughele and Okhuese (2014) tried to assess the sustainability and determinants of external debt for the period 1986-2010 in case of Nigeria. The results show that main determinants of external debt are GDP, debt service and exchange rate.

Ostadi and Ashja (2014) argued that foreign direct investment is more likely to be in countries where there is a strong structure and infrastructure and attempts to find the relation between external debt and foreign direct investment in D8 countries for the period 1995 to 2011. The results indicated that foreign debt and government size have a negative impact on FDI; GDP has positive effect on FDI. Zouhaier and Fatma (2014) studied the impact of debt on economic growth for the nineteen developing countries and concluded that it affects negatively the economic growth.

Siddique et al. (2015) studied the impact of external debt on economic growth in case of HIPC. The empirical results showed that reduction in debt stocks of highly indebted economies would significantly lead towards the increase in economic growth of these nations. Ramakrishna (2015) attempted to look into relation of external debt and growth in Ethiopia. The study concluded that growth in services sector as well as in agricultural sector contributes positively towards the economic growth of Ethiopia while external debt does not have any significant relation with economic growth.

Jilenga et al. (2016) studied the impact of external debt and foreign direct investment in Tanzania. The results indicate that in long run the debt tends to boost economic growth and FDI seem to have negative relation to economic growth in Tanzania, whereas in short run no directional

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causality is found between external debt and economic growth or FDI and economic growth.

### **3. Theoretical Framework**

Debt intolerance is a concept which shows the incapability of the emerging economies to carry such level of debts that would be efficiently sustained by the advanced economies (Reinhart et al., 2003). According to Reinhart and Rogoff (2010), history matters a lot in meeting a country's debt obligations. Usually countries that have defaulted have done it too frequently. Debt intolerant countries tend to have weak economic structure, making these countries prone to default. Because in these countries resources that can enhance economic efficiency are less, so to fill up deficits these economies rely on financing from external sources. External financing does not come free of cost; they bear some losses on the part of indebted country. It usually requires high interest payments.

As the country's economic performance is already weak, there is no investment for the development projects so reliance on external borrowing increases which results in further piling up of debt and debt service payments. Due to which country remains in a vicious circle and chances of debt default increases. Countries with high debt levels tend to over borrow due to which they tend to enter in a debt trap. Usually debt intolerant countries does not seem to be overwhelmed by a sustained growth, they often need debt restructuring. Debt restructuring is a special assistance provided to debtor countries by the creditors. A creditor allows this favor because of inability of debtor to easily return back the debt easily mainly due to financial constraints. Restructuring involves modification in the terms of loan repayment. So that debtor can easily pay off debt liabilities.

The main patrons to high debt of heavily indebted countries are global happenings of 1970's and 1980's followed by oil price shock, high interest payments, economic downturns in industrial economies and weak commodity prices. Moreover domestic factors i.e. poor governance, lack of accountability on part of government institutions, frequent changes in policies, rent seeking, poor policies regarding the development of

domestic credit, misuse of resources, use of foreign aid for unproductive purposes also played crucial role in debt proliferation. Due to all these reasons, economy of these countries becomes even weak so to overcome this they borrowed from external sources. As external borrowing is a major source of financing for these economies for the development of economy. But financing from other sources requires some high interest payments in addition to principal amount.

As economic output was already low to meet this additional burden so these countries again and again relied on borrowing which create excessive debt accumulation. Many countries were already living below their means. In these countries resources that can enhance economic development are scarce so they tend to rely on borrowing from domestic and foreign sources. Weak economic management, little savings, high budget deficits, poor public sector management, civil wars and frightful governance all accounts for debt hike. Many countries were borrowing just to pay off debt servicing payments. Funds for new investment were scarce, economic performance eventually slow down and debt become unmanageable. Such unmanageable high debt levels are deleterious to the economy of a country which pushes them in debt trap. Advanced economies also borrow debt from domestic and external sources. In rich economies, government borrowing stimulates private sector, create jobs, raises income and enhances standard of living, nevertheless, in case of poor economies the same does not hold to be true. The debt must be utilized for productive purposes otherwise if used unproductively it poses serious threats to a country's economic conditions. Additive debt can be harmful because it shifts the resources from social, infrastructure development towards the interests payments made. Therefore, political environment along with economic policies plays an important role in taking up the debt burden.

Economic condition of a country has a direct impact on its debt liabilities. If there is a sound economic environment, a regulated economy, stable taxation policies then it affects the debt levels in a positive way. When there is a well-organized economy it can easily pay its debt liabilities due to enough earnings from tax revenues and don't relying much on

borrowing from external channels. However, poor economic planning, uncertain political environment, weak terms of trade, poor implementation of foreign aid programs, non-development expenditure and high interest rate are the main ingredients that may be held responsible for the indebtedness of a country. Moreover, external debt of developing economies is usually denominated in foreign currency, which means they have to pay back their debts in foreign currency which increases interest payments and budget deficits and reduces public savings, resulting increasing interest rate and crowding out of credit for private sector and suppress economic growth. Higher debt service payments can also have adverse effects on the composition of public spending by squeezing the amount of resources available for infrastructure and human capital with negative effects on growth (Clements et al., 2003).

GDP seems to have positive effect on the levels of debt tolerance, which create more employment opportunities, economy will have more resources, and it will be able to finance fiscal imbalances through taxation without additional borrowing. Level of inflation prevailing in an economy is negatively related to the degree of debt tolerance. As the level of inflation rises, real value of money is lost and this indicates that the country will have to pay more debt which means more allocation of resources towards payment of debts and little resources left to invest in development projects, as the pace of development in HIPC is already low so this will further hurt the economy and debt tolerance will be reduced.

FDI is very important for the development of emerging economies particularly HIPC, as it carries investment, more jobs, expertise and skills in the host economy. So it is obvious FDI decreases the level of external debts through its positive effects on host country and thus increases its debt tolerance. But, if the free market does not work properly, foreign direct investment is not always bringing the desired outcomes. Similarly, financial markets play a major role in boosting economic growth by channelizing savings into useful investment (Were et al., 2012), which lead to an increase in economic activity; generating enough resources to tolerate the outstanding debt liabilities. Exchange rate fluctuations also pose market risks in paying back the debt liabilities and it could be an important determinant of debt tolerance. As the currency

devaluation makes more resources allocation towards debt payments. Even though currency devaluation can have deleterious impact on foreign debt, some study reveals that due to devaluation exports becomes cheaper making it more attractive in international market. The demand for exports increases, increasing the foreign exchange earnings, moreover the export boost also leads to an increase in employment opportunities in the domestic economy. Consequently, economy growth occurs. Thus, indirectly such exchange rate fluctuation can help debt servicing, making the country debt tolerant. Money supply helps out an economy in the payment of debt. With the increase in money supply interest rate goes down which increase investment. Increase in investment give boost to aggregate demand, economy grows, when the economy become stronger, it will attract foreign investment there will be more growth and enough resources to meet debt obligations.

Political environment includes the political culture which incorporate the beliefs and perception related to what the government should do and participation by the people in electoral process. Stable political environment affects the business activities both in local market and the international level which has a direct impact on the deb carrying capacity. If there is stable political environment and no frequent changes in the policies of government, it attracts the investment, enhances domestic capital formation, generate enough revenue through taxation to finance the deficits. As a result the capacity to pay back debts rises without heavily relying on the additional borrowing.

Institutional quality also plays a vital role in determining the debt tolerance level. Poor policies on part of economic performance, taxation and fiscal concerns causes increasing propensity of debt accumulation. Heavy reliance of government on external debt to finance the fiscal deficits lowers the savings in an economy. Political instability causes frequent changes in policies, more resources allocation has to be done towards debt servicing and reducing investment to other productive programs. A disruption in the economic policies is created and the business environment is adversely affected. The excessive reliance on external debt slows down the economic activity by reducing savings and



investment. The high debt accumulation creates fiscal imbalances causing a vicious circle of debt reliance.

**4. Data and Methodology**

The panel data consisting of 29 HIPC (highly indebted poor countries) is collected covering the time period from 2000-2015. The countries included are Burkina Faso, Bolivia, Cote d’Ivoire, Cameroon, Ethiopia, Ghana, Guinea, Gambia, The, Guinea Bissau, Guyana, Honduras, Haiti, Liberia, Madagascar, Mali, Mozambique, Malawi, Niger, Nicaragua, Sudan, Senegal, Sierra Leone, Sao Tome Principe, Chad, Togo, Tanzania, Uganda, Congo, Dem Rep and Zambia. There was a limitation of data availability for remaining HIPC including Afghanistan, Benin, Burundi, Central African Republic, Comoros, Congo, Rep., Eritrea, Mauritania, Rwanda and Somalia. So these are not a part of the study. The data on GDP, inflation, official exchange rate, FDI, private sector credit to GDP ratio and Money Supply (M2) is extracted from World Development Indicators (WDI). Data for voice and accountability index (VA), and political stability and absence of violence (PSAV) index has been taken from International Country Risk Guide (ICRG). Data for governance (GOV) is obtained from World Governance Indicators (WGI).

The present study tries to explore the impact of economic performance and political environment on debt intolerance. Economic performance is measured through GDP, inflation, FDI, M2, private credit to GDP ratio. To measure political environment, voice and accountability, political stability and violence and governance indicators are used. Debt intolerance is measured as log of external debt to GDP ratio (LDEBT). The higher value indicates debt intolerance whereas the smaller value reflects greater debt carrying capacity or debt tolerance. The first equation estimated is given below:

$$LDEBT_{i,t} = \beta_0 + \beta_1 LGDP_{i,t} + \beta_2 INF_{i,t} + \beta_3 GOV_{i,t} + \beta_4 OEX_{i,t} + \beta_5 PVC_{i,t} + \epsilon_{i,t} \dots \dots \dots (1)$$

Where, LDEBT is the log of external debt to GDP ratio.  $\beta_0$  is the intercept term. LGDP is the log of GDP. INF is the inflation. GOV is the average of

the six governance indicators taken from World Governance Indicators. OEX is the official exchange rate. PVC is the private sector credit to GDP ratio.  $\epsilon$  is the error term.  $\beta_1, \beta_2, \beta_3, \beta_4$  and  $\beta_5$  are the slope coefficients. The second equation estimates the impact of voice and accountability and the equation is given as below:

$$LDEBT_{i,t} = \alpha + \alpha_1 VA_{i,t} + \alpha_2 LGDP_{i,t} + \alpha_3 FDI_{i,t} + \alpha_4 LOEX_{i,t} + \epsilon_{i,t} \dots \dots \dots (2)$$

VA is the voice and accountability index. It shows the extent of involvement of military in the political process. As the military become more involved in political concerns, frequent policy changes are depicted, government become more prone to be corrupt. It also exhibits the democratic accountability in an economy. LGDP is the log of GDP. FDI is the foreign direct investment. LOEX is the log of official exchange rate.  $\epsilon$  is the error term.  $\alpha_1, \alpha_2, \alpha_3$  and  $\alpha_4$  are the slope coefficients.

The third equation estimates the impact of political stability on debt intolerance. The equation to be estimated is given below:

$$LDEBT_{i,t} = \phi_1 + \phi_1 PSAV_{i,t} + \phi_2 LGDP_{i,t} + \phi_3 FDI_{i,t} + \phi_4 M2_{i,t} + \epsilon_{i,t} \dots \dots \dots (3)$$

PSAV is the political stability and absence of violence index. It measures the stability of government, possible conflicts within the domestic government, possible external foreign pressure, possibility of terrorism and the likelihood of ethnic wars and government’s ability to handle all these issues. LGDP is the log of gross domestic product. FDI is the foreign direct investment. M2 is the money supply.  $\epsilon$  is the error term.  $\phi_1, \phi_2, \phi_3$  and  $\phi_4$  are the coefficients of the independent variables. The subscript i indicates the cross sections i.e.  $i=1,2,3,\dots,\dots,29$  and t is shows the time period from 2000 to 2015.

The first step is the estimation through pool OLS regression. An important assumption of OLS is that all the error terms  $\epsilon_i$  should have constant variance i.e. there should not be heteroskedasticity. Similarly, if member

of series are highly correlated then problems are generated in regression. If such problems exist in the pool OLS then panel data estimation tools are required. The Breusch Pagan test and VIF test were applied which indicated the presence of heteroskedasticity and multicollinearity. Fixed effect model assumes that country specific effects are correlated with the regressors. Another assumption of FE model is that country specific effects must not be correlated with each other. Afterwards F-test was applied to choose between Pooled OLS and Fixed Effect, based on the result fixed effect model was chosen. To choose between fixed and random effect model, Hausman test was applied and fixed effect model was chosen. Modified Wald Test and Wooldridge Test showed the presence of heteroskedasticity and auto correlation. To overcome the problem Panel Corrected Standard Error model was applied. Panel Corrected Standard Errors (PCSE) is widely used when working with time series cross sectional (TSCS) data. When serial correlation and observation specific effects are present, it is fairly robust to use this method. PCSE allows accommodating data for panel heteroskedasticity and cross correlation of errors and auto correlation (Beck and Katz, 1995). It accounts for contemporaneous correlation across units and heteroskedasticity's deviation from spherical errors and allow for improved and better results. PCSE covariance shows some similarity with hetero consistent estimator but estimation other than PCSE does not incorporate the known structure of data.

## **5. Results and Interpretation**

Table 1 show that the coefficient of GDP is negative and statistically significant at level 1%. It shows 1% increase in GDP will decrease in debt intolerance level by 0.647%. This indicates that debt tolerance increases as GDP increases, because when GDP increases economic activities generate income which generates savings and investment. Inflation has a positive coefficient and is statistically significant at 10% level. It indicates that 1% increase in inflation is going to make a country debt intolerant by 0.014%. It depicts that as the level of inflation raises, economy become debt intolerant as the real value of money falls, and a country will have to pay more debt than it has taken. Coefficient of governance is negative and statistically significant at level of 10%. If governance improves by one

point then debt intolerance will decrease by 0.09%, indicating that good governance plays a role in increasing debt tolerance.

**Table 1: Debt Intolerance, Governance and Economic Performance**

Variables	Pooled OLS	Fixed Effect	PCSE (heteroskedastic and panel- specific AR(1))
LGDP	-0.4340* (0.000)	-1.0740* (0.000)	-0.6470* (0.000)
INF	0.0280** (0.035)	0.0330** (0.024)	0.0140*** (0.067)
GOV	-0.1680** (0.037)	-0.1990** (0.025)	-0.0900*** (0.064)
LOEX	-0.0800* (0.000)	0.0006 (0.993)	-0.1159* (0.000)
PVC	-0.0040*** (0.07)	0.0080*** (0.051)	-0.0040 (0.161)
Intercept	14.0670* (0.000)	28.0710* (0.000)	19.2120* (0.000)
R-Square	0.387	0.70	0.858
Diagnostics	Presence of heteroskedasticity and Multicollinearity	Presence of heteroskedasticity and serial correlation	
F-Test	0.000 Fixed Effect Model		
Hausman Test		0.000 Fixed Effect Model	
*, **, *** shows statistically significant at 1%, 5% and 10% level of confidence. The values in the ( ) are the probability values.			

Improved governance means that there will be less rent seeking behavior of government officials, the functioning of government improves by carrying out its declared programs timely and efficiently. According to Lahouij (2016) the lesser the involvement of political pressure on institutions, the lesser the level of corruption, the lesser the rent seeking, the more the economy will foster and suitable policies are formulated for the payment of debts. Official exchange rate has a negative coefficient and is statistically significant at 1% level. If exchange rate increases debt intolerance will decrease by 0.11%, indicating an increase in debt carrying capacity. Though, literature examines the positive relation between official exchange rate (LOEX) and debt intolerance. As the exchange rate increase, domestic currency devaluates and foreign currency becomes expensive, it further increases the debt payments and makes the country debt intolerant. But the results of present study differ substantially from the literature for the HIPC. The results show negative relation between exchange rate and debt intolerance. The reason could be as the currency devaluates, exports in international market become cheaper, this will lead to an increase in demand of exports (Shahzad & Afzal, 2016), which will boost the aggregate demand. Moreover it will earn foreign currency which will help in paying off the foreign debt.

The coefficient of private capital is negative and statistically insignificant. The negative intercept shows that in the absence of all the explanatory variables, debt intolerance will increase by 19.2%. The negative intercept might be due to the countries under examination. The sample of the countries included in the study is HIPC.

HIPC countries are characterized by high poverty levels and high debt ratios. Since the HIPC do not have enough resource mobilization from within the domestic economy. They need external resources in the form of foreign aid to generate “Big Push” in the economy. Hence they remain highly indebted.  $R^2$  represents that 85% of the variation in debt to GDP ratio (proxy for debt tolerance) is explained by the model.

**Table 2: Debt Intolerance and Voice and Accountability**

Variables	Pooled OLS	Fixed Effect	PCSE (heteroskedastic and panel- specific AR(1))
VA	-0.2870*** (0.096)	-0.7110* (0.005)	-0.4610** (0.048)
LGDP	-0.4380* (0.000)	-1.1180* (0.000)	-0.7000* (0.000)
FDI	-0.0020 (0.948)	-0.0030 (0.211)	-0.0015 (0.583)
LOEX	-0.0690* (0.000)	0.1620 (0.823)	-0.1000* (0.000)
Intercept	14.2630* (0.000)	29.4360* (0.000)	20.6470* (0.000)
R-Square	0.396	0.671	0.900
Diagnostics	Presence of heteroskedasticity but no multicollinearity	Presence of heteroskedasticity and serial correlation	
F-Test	0.000 Fixed Effect Model		
Hausman Test		0.000 Fixed Effect Model	
*, **, *** shows statistically significant at 1%, 5% and 10% level of confidence. The values in the ( ) are the probability values.			

In Table 2, coefficient of voice and accountability is negative and statistically significant at level of 5%. It indicates an increase in the index of voice and accountability (VA) will decrease the debt intolerance by 0.461%. According to the ICRG indicator of voice and accountability, the higher coefficient value implies less involvement of military in political activities and more democratic accountability of government. Thus the

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negative relationship indicates reduced debt intolerance level with higher democratic accountability. The less involvement of military indicates stable policies of government regarding economic activities which will positively affect the debt carrying capacity. On the other hand, greater democratic accountability would mean lesser rent seeking behavior of the government officials and more efficient use of government resources. Hence, raising the debt carrying capacity. The coefficient value of GDP, LOEX and the intercept term are robust to the estimated values in equation 1. The coefficient of FDI is negative and statistically insignificant. Intercept has a positive coefficient and is statistically significant at 1% level.  $R^2$  shows that 90% of variation in debt intolerance is explained by the explanatory variables.

In Table 3, the coefficient of political stability and absence of violence index is negative and statistically significant at 10%. It indicates that an increase in political stability and absence of violence will bring 0.612% decrease in debt intolerance. In other words, an increase in political stability increases debt tolerance. As the political stability increases, it minimizes the chances of government collapse, internal conflicts. In addition, the proper functioning of institutions and the accountability is ensured; this helps in promoting economic growth (Alesina et al., 1992) and resource mobilization within the country for paying the external debt thereof.

**Table 3: Debt Intolerance and Political Stability**

Variables	Pooled OLS	Fixed Effect	PCSE (heteroskedastic and panel-specific AR(1))
PSAV	-1.4120* (0.000)	-1.2060* (0.006)	-0.6120*** (0.088)
LGDP	-0.4380* (0.000)	-1.1410* (0.000)	-0.5840* (0.000)
FDI	0.0010 (0.753)	-0.0030 (0.202)	-0.0010 (0.638)
M2	-0.0060* (0.006)	-0.0090* (0.006)	-0.0040*** (0.071)
Intercept	14.9220* (0.000)	30.7780* (0.000)	17.8910* (0.000)
R-Square	0.401	0.699	0.890
Diagnostics	Breusch-Pagan Test (0.000) Presence of Heteroskedasticity VIF (1.04)	Modified Wald Test 0.000 Presence of Heteroskedasticity Wooldridge Test (0.000) Presence of serial correlation	
F-Test	0.000 Fixed Effect Model		
Hausman Test		0.000 Fixed Effect Model	
*Shows statistically significant at 1% level of confidence. ** Shows statistically significant at 5% level of confidence. *** Shows statistically significant at 10% level of confidence. The values in the ( ) are the probability values.			



The coefficient value of GDP and FDI is robust to the value presented for equation 1 and 2. M2 has a negative coefficient and is statistically significant at 10%. It shows increase in money supply will bring 0.004% decrease in debt intolerance. Babatunde and Shuaibu (2011) indicated an increase in money supply is associated with high economic growth. As money supply increase, people hold more money, consumption and investment increases, which in turn boost aggregate demand in an economy, economy grows and there are more chances of paying back the debt obligations.  $R^2$  indicates 89% of the variation in external debt to GDP ratio is explained by the model.

## **6. Conclusion and Policy Recommendations**

The results show a positive and significant relation between GDP and debt intolerance. Because as the GDP rises, it ensures that country have enough resources to pay off its debt. When country have enough resources it will not have to depend heavily on debts from external sources. As a result economy become strong and it will attract the foreign investors which will help in more sustainable external debt. Political environment also plays major role in determining the debt tolerance or the debt carrying capacity of a country. Since, it is related to the formulation of policies and allocation of resources. If the policies formulated by government are stable and resources are efficiently allocated, it enhances economic productivity. This in turn makes country debt tolerant.

Inflation is negatively related to debt tolerance. It makes a country more debt intolerant. Governance, official exchange rate and private credit are positively related to debt tolerance. If the institutions of a country work properly, there is less corruption it enhances the productivity of the economy. This in turn makes the country debt tolerant. The voice and accountability (VA) index is negatively related to debt intolerance level. If the policies formulated by the government are stable, it ensures economy is doing well. Frequent variations in policies affect the economic activities negatively. Moreover, if there is any interruption in the affairs of government by military authorities. It reduces the efficient working of government.

Political stability and absence of violence index is also negatively related to debt intolerance. As political stability increase, there are low chances of government collapse and possible conflicts between the regulatory authorities. Absence of all these events, make the country more prone to achieve sustained growth and thus debt carrying capacity. Thus, it is concluded that stable economic and political environment, proper functioning of institutions, less corruption and accountability on the part of government officials fosters debt tolerance.

The study suggests that the quality of institutions working in these economies should be improved. There must be appropriate means for democratic accountability on the part of institutions, lesser internal conflict and stable government policies. Government must encourage the growth of private sector credit. Authorities must try to create an environment that attracts foreign investment and policies need to be devised in a manner to promote better economic performance. All these measures will help substantially to lower the debt intolerance.

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