Determinants of Corporate Hedging Policies and Derivatives Usage in Risk Management Practices of Non-Financial Firms

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Abstract

Derivatives are the major icon among risk management practices. Firms usually use derivatives to hedge their foreign exchange and interest rate risk. This study aims to examine the determinants' of corporate hedging policies and derivative usage in risk management particularly with respect to Pakistan, as the political and economic conditions in Pakistan are highly volatile which intends the corporations to handle and mitigate their risk through channelizing the derivatives. Secondary data of 75 non financial firms listed in Karachi Stock Exchange was collected over the period 2007-2011 – to regress empirically – for achieving the aim of this study. Mann-Whitney U test was used to distinguish the derivative user and non user. Findings of this test characterize users as large size, higher growth opportunities, cash flow volatility, foreign exchange and interest rate exposure. Moreover this study finds that there is a significant relationship between the use of derivatives and foreign purchase, liquidity, firm growth and size. Our findings suggest that derivative users have competitive edge over the non user, as they get economies of scale and proper risk management through using these kinds of derivative instruments.

Keywords: Corporate Hedging, Derivatives, Risk Management, Foreign Exchange Derivatives, Interest Rate Derivatives, Pakistan.

JEL Classification: F23, F30, G32

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1. Introduction

Due to the globalization and financial reforms many inventors invests globally and across the world which results in international trade and business growth opportunities. In present era of global competition every country wants to compete internationally, so in this regard different policies are implemented to facilitate the investors to invest in portfolios to get the returns which ultimately results in the economic growth and financial competitiveness of that particular country. These implications are loosening the restriction on trade barrier and cash flows, encourage the role of information technology and MFN Status by the countries intends the investors to invest globally. Now the issues arrives for the firms that is identification and risk management for stabilizing there profits due to the exposure of interest rate and foreign exchange. Hedging against various kinds of entrepreneurial risks has become one of the most important and on priority activities within various companies from last two decades. This kind of management is brings under consideration by large multinational corporations (MNCs) as well as by medium and small companies which are active on regional as well as on domestic scale. But according to the classical era researchers like Modigliani and Miller (1958) diversification works for risk management.

The global financial crises thus brewing for a while really started to show its effects in the middle of 2007 and into 2008. Across the world stock markets have become fallen, large financial institutions has collapsed or been bought out and government even in the wealthiest nations have had to come up with rescue packages to bailout their financial systems. Thus it become so difficult for the firms which deal internationally, to manage the affairs as the political and economic conditions affects allot to the firms decision. So this will results in more volatility in respect of interest rate and foreign exchange usage and this will ultimately become a major cause of induction of derivatives devices most specifically in Asian countries.

On the basis of above given scenario it is proved that the deterioration in the financial system have ability to plunge the economy on the whole into the crises irrespective of some macroeconomic base of an economy, for example a great economic recession in Mexico and in South Korea owing to the financial corrosion and at the same time US sub prime mortgage crises which leads the economy towards the credit crunch affecting the worlds economy at large (Carter *et al.* 2006; Barthram 2008; Pramborg 2004).

Despite the financial instruments like derivatives have their usage from many decades before but the usage of three types of financial instruments becomes increased significantly from last decade. Survey report of international SWAPS and derivative association reports that the usage of interest rate derivatives increased from $69.25 trillion in 2001 to $464.70 trillion in 2007, and the credit derivatives and equity derivatives showed an increase of approximately 69.33 and 11.9% respectively from 2001 to June 2008. In 2007, a market survey conducted by ISDA and the International Monetary Fund (IMF), the total world derivatives are accounted up to $516 trillion. Indeed the firm's use these derivative instruments such as foreign currency derivatives and interest rate derivatives more extensively to protect themselves from

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unexpected moments of exchange rate which will results in a need to explore the reasons and to do the cost benefit analysis for the firms which use these types of instruments. A lot of researches are done in this perspective and apart from Berkman and Bradbury (1996) who fail to document such a relationship, all major studies report that high liquidity is significantly related to a lower incidence of derivative usage and cash flow volatility, growth options have significant relationship with derivative usage (Mian 1996; Adam 2002; Ameer 2010).

International Accounting Standards (IAS) 32 and 39 are deals with the measurement and presentation of financial instruments which an organization used during their financial year, so it is mandatory for the firms to declare either the use of derivatives in their firm is for hedging the risks or for the purpose of trading. According to Judge (2003), developments in accounting standards regulation has resulted in an increase in the quantity of risk management data and an improvement in the quality of data disclosed in financial statements. Sapra (2002) elaborates that excessive speculation in the derivatives market is possible for mandatory disclosures of the derivative instruments usage.

This study however fills the gap by examining the determinants of corporate hedging policies by using the data of Pakistani non financial firms listed in Karachi Stock Exchange. Moreover, this study will help the decision makers in identifying hedging policies along with the risk management practices. Hence, this study high lights the determinants and motivators of corporate hedging polices and their derivative usage in risk management practices specifically foreign exchange and interest rate derivative usage.

2. Literature Review

Despite of the fact that Pakistan is facing political and economic barriers in the way of trade but still there is a great potential and recourses which can be utilized and managed respectively to get returns and economies of scale. In this regard with the collaboration of government and investor community a lot of initiatives are taken for enhancement of trade and to facilitate the investor to invest globally which shows a positive aspect on hand and on the other hand it results in a lot of risks arises due to the trade in international market or across the world. Here a need arises to stable and boost up there profits along with managing their risks.

There are several theories of hedging and most of them came with optimal hedging policies with some precedence of classical era researcher Modigliani and Miller (1958) Model. As Smith and Stulz (1985) describe two circumstances in their study related to the corporate risk management or implementation of hedging policies and techniques. The first one is financial distress cost and the managerial risk aversion though which the firms hedge itself against haphazard risks. Secondly, hedging is appropriate in cases of the risk-averse managers whose wealth and compensation is linked to the value of the firm. By taking 500 firms Block *et al.* (1986), conducts a survey study which shows that the larger firms shows more tendency towards the usage of hedging devices. These results are also proved by Nance (2003), Judge (2003), Ameer (2010). This study highlights the reasons behind the lack of usage of derivatives

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which is managerial resistance to use this because most of the managers have less knowledge regarding the derivatives and hedging devices.

According to Bessembinder (1991), underinvestment reduces through the usage of derivatives as the derivatives usage decrease the volatility of risk and made value addition in incremental investment. Hedging reduce opportunistic behavior which ultimately results in the increase in firms' value. According to Gay (1999), the underinvestment problem is a determinant of corporate hedging policy and there is an evidence of a positive relationship between a firm's derivatives use and its growth opportunities, as proxies by several alternative measures. The findings of this study support the argument that firms' derivatives use may helps to mitigate potential underinvestment problems. According to Fok *et al.* (1997), the larger firms have more tendencies to hedge as compared to the firms which are small in size. Hence this study concludes that the firms can reduce their risk by using on balance sheets instead of using off balance sheet's instruments.

Nance *et al.* (1993) provide evidence of the firms' usage of derivatives instruments like forwards future, swaps and options. By taking the sample of 104 firms this study concludes that the firm applies hedging to reduce their tax liability, controlling the agency issues and to lower the expected transactional cost. According to Slutz (1996), if firm become able to control the financial distress then this will enable a firm to mitigate risk and can achieve its optimal capital structure and optimal ownership structure as well. Mian (1996) conduct an empirical examination on a very large sample of 771 firms to check the evidence of corporate hedging decisions. This study concludes that the hedging activities are resulted in the economies of scale. Haushalter (2000) determine the hedging policies of oil and gas firms for the period 1992-94 and concludes that the hedging works more likely where there is a correlation prevails among the prices and the trading is done regionally to gaining the economies of scale and mitigating the risk.

Allayannis *et al.* (2000) determine either the firms use derivatives for hedging or for the purpose of speculation. For the accomplishment of this purpose 500 non financial firms brings under consideration and the findings of this study reveal that the level of derivatives usage is depend upon the firms' exposure to use the derivatives as it is through foreign sale and trade. Bartram (2000) states that the unexpected changes in foreign exchange rates, interest rates and commodity prices can influence the firm's value and there is a need to mitigate or resolve that issue for organizational growth and its value. These results are same like the results of Solomon *et al*. (2002) which highlights that the institutional investors have less holdings of share in the firms having higher level of risk disclosure. This study concludes that the disclosure of increased risk will help them in managing their portfolio investment decision.

Adam (2002), explore that up to what extent the financing strategies are effected by the use of derivatives and this study concludes that there is positive relationship among investment expenditure and minimum revenue guaranteed by the hedging policies. Alkeback *et al.* (2002) compare the derivative usage in Sweden, USA and New Zealand and the results reveal that

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52%, 53% and 39% of derivative usage in these countries respectively and their purpose of using derivatives is to hedge their risks and these kinds of instruments are used in larger firms as compared to the smaller one. Elliott *et al.* (2003), examines the relationship between foreign denominated debt (FDD), foreign currency exposure and foreign currency derivatives (FCD). Findings of this study show that debt may be used as a hedge of risk; moreover FDD is negatively related to the use of FCD. Carter *et al.* (2006) investigate the hypothesis that either the hedging is value enhancing or not. By following the footings of Froot (1993) and Mian (1996), this study reveals that there is a positive relation between hedging and value increases in capital investment. However, this will results in hedging the under investment cost.

Pramborg (2004) determine the effect of derivatives usage on hedging policies for the period 1997-2001 particularly by taking the Swedish firms. The findings of this study reveal that there is a positive impact of transitional exposure but the transitional exposure didn't become the cause of value addition. According to Nguyen *et al.* (2007) interest rate derivatives are negatively related to the firm's value as the aggregate and individual relationship between derivative usage and risk management is negative related with each other. This study concludes that there is a positive impact of derivative usage on value enhancement.

Bali *et al.* (2007) examines foreign exchange and interest rate derivatives used in nonfinancial firms by using data from the period 1995 to 2001. Findings of this study states that hedging with derivatives is not always important to a firm's rate of return and is also attached to many other non-financial and economic factors. According to Sprcic *et al.* (2008) commodity risk, foreign exchange and price risk have great influence on the corporate performance and has less effect on a firm's performance. As this study reveals that the there is no proper footings in the firms to use the derivatives as the firms have no documented risk management practices.

Singh and Upneja (2008) investigate the determinants of the decision to hedge in a sample of lodging firms for the period 2000-2004. This study shows that underinvestment costs, financial distress costs, cash-flow volatility, foreign sales ratio, and firm size are significant determinants of the decision to hedge. Ameer (2010) point out the determinants of firms hedging particularly in Malaysia. The finding of this study shows that there foreign sale, liquidity, managerial ownership and firm's growth respectively are the major determinants which have significant relationship with hedging.

Afza and Alam (2011) explore about the usage of derivatives to hedge foreign exchange and interest rate risk in by taking 105 non financial firms listed in Karachi stock exchange as a sample. The bottom line of this study reveals that the firms having higher exposure of foreign exchange are more convergent towards hedging. Naito and Judy (2011) investigate the derivative usage is value enhancing or value destroying. The study concludes that the derivatives usage is value enhancing at the bottom line. Chernenko and Faulkender (2011) conduct a research on non financial firms which use derivatives and hedging instruments. This study uses panel data to distinguish between derivatives practices and hedging implementation.

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Findings of this study indicate that hedging of interest rate risk is concentrated with high investment firms, and presence of costly external finance.

Different researchers are different in their view point and use different methodologies to justify their research contributions as Nguyen and Robert (2007), Singh and Upneja (2009) shows significant relationship between decisions to hedge through derivative instruments. Mian (1996), Allayannis and Ofex (2000), Sprcic *et al.* (2008) and Block *et al.* (1986) consider large firms in their researches and shows significant results regarding derivative usage, where as Ameer (2010) narrate that the growth options and liquidity and cash flow volatility have greater impact on derivative usage.

Existing literature depicts that major part of empirical studies explore hedging policies and derivative instruments usage in European countries though only few have explored Asian non financial firms like Ameer (2009). Despite of the fact that Pakistan is facing highly volatile economic and political conditions, the empirical investigations on hedging policies of Pakistani non financial firms along with risk management is not yet to be undertaken from last few years. This study however fills this gap and intends to examine the determinants of hedging policies by using the data of 75 non financial firms of Pakistan listed in Karachi Stock Exchange over the period 2007-2011. So at bottom line this study high lights the determinants and motivators of corporate hedging polices and their derivative usage in risk management practices specifically foreign exchange and interest rate derivative usage.

3. Theoretical Frame Work and Hypothesis Development

Derivatives are the vital source of firm's risk management strategies. The major motive behind the derivative usage is to hedge the corporate risk which ultimately results in increasing the firm's value. As Smith and Stulz (1985) elaborate that the derivatives are used for value maximizing of firms and of overall corporate financing polices are elaborated in terms of hedging. However hedging can affect firm value, through managing the risk and liabilities, changes in stakeholder contracting costs and managing the risk in currency. (Allayannis *et al.*, 2000). Moreover hedging can enhance the value of firm by controlling the external claims such as bankruptcy costs, interest rate management. Financial managers narrate diversification approach as an optimal hedging technique as the firms invests in any unrelated field of work or invest outside the geographical boundaries projects where the political and economic conditions from the said country (Pandya and Rao 1998).

Many researches reveal derivatives as the risk managing and value maximizing activity; Bessembinder (1991) narrates that the hedging can reduce underinvestment costs and reduce external claims which results in value maximization of a firm. According to Froot *et al.* (1993) hedging make sure that a firm has enough internal funds to avoid fluctuations in investment spending – external financing – which ultimately results in firms' value maximization.

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Gunther *et al.* (1995) argued that there is no unique linkage between the usage of financial derivatives and the capital structure of the firm which is also stated by Mian (1996) that the financial distress is not consistent with the derivative usage, but the derivatives are purely the risk managers. Sprice *et al.* (2008) empirically relates a healthy capital structure with use of financial derivatives. Elliot *et al.* (2003), Carter, D. et al. (2006), Nguyen (2007) and Clarka *et al.* (2008) explains that hedging increases the debt capacity of the firm by lowering the dead weight costs and managing the cash flow volatility, agency costs, foreign exchange and interest rate exposure.

Nance *et al.* (1993) and Mian (1996) pin points that corporations can mitigate expected costs of financial distress and agency costs by managing liquidity position in terms of lower dividend payout ratio or a higher quick ratio. Here, for estimating the financial distress cost, relationship of long term debt and derivatives and to calculate the growth options; thus this study develop following hypothesis:

H1: *There is a positive relationship between long-term debt ratio and derivatives.*
H2: *There is a positive relationship between the growth options and derivatives.*
H3: *There is a negative relationship between liquidity and derivatives.*

According to Ameer (2010) firms with higher variation in their cash flows have greater potential benefits of foreign currency hedging. The level of which firm's cash flows which were affected by the exchange rate changes depends upon the nature of its activities and these activities may vary from one organization to another. It depends upon the extent of export and import activity or the engagement of firm in cross boarder transactions and the competitive edge of its input and output markets. However, all sizes of the firms can get benefit from derivatives by reducing uncertainties and making it possible to get opportunities that may not be availed if a firm didn't participate in derivative and hedging activities. Derivatives not only hedges against financial risks but also pursue in taking a safe position in anticipating the market movement (Elliot *et al.* 2003).

However the exchange rate uncertainty associated with the value fluctuations of cash flows at a future data is denominated in the foreign currency can be hedged perfectly in the forward market if the foreign currency value of the cash flow is known with certainty as it is widely practiced in hedging and derivative terminologies. Different researches reveal that the firm's growth options and liquidity are more significantly related to the derivative usage (e.g., Ameer 2010; Carter and Roger 2006).

H4: *There is a positive relationship between the foreign purchase and derivatives.*
H5: *There is a positive relationship between the size and derivatives.*
H6: *There is a positive relationship between cash flow volatility and derivatives*

As the foreign purchase matters in derivatives usage, because firms engage in foreign purchase must have to secure their investment through adopting hedging tools to manage their risk. The

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major reason behind hedging the purchase price is that in developing countries particularly in Pakistan a general trend is of depreciating their local currency due to their highly volatile economic and political situation, so that there is much need to hedge purchase price.

The size of a firm also matters in using derivatives – the larger the size the more will be the derivative use – as it is evident from pervious researches (e.g., Adam 2002; Ameer 2010; Naito and Judy 2011).

4. Methodology

In order to test empirically the factors affecting the firm's decision to use various hedging techniques and derivative usage in risk management practices, a sample data of 75 non financial firms listed in Karachi Stock Exchange (KSE) are taken over the period 2007-2011. The study has used secondary data for the research and audited annual financial reports are used for data collection. According to International Accounting Standards (IAS) 32 and 39, it is mandatory for firm's to disclose their usage of hedging instruments and their respective fair value in the notes of annual reports in a uniform manner. Financial sector has been excluded from the sample data as these kinds of institution used derivative instruments for business activities, related to speculation.

As the precedence of Mian (1996), Ameer (2010), the study intends to identify the impact of firms hedging policies and derivative usage in risk management practices. The impact factor of both these issues; hedging and derivative instrument usage on cash flow volatility, size, growth opportunities, foreign exchange and interest rate exposure is determined and firms hedging policies for both interest rate and foreign exchange derivative instruments is brings under consideration. A semi-log model is constructed and non parametric test – Mann-Whitney U test – is used for identification that either the user of derivative instruments are significantly different from non-users in their characteristics and are coded with binary value '1' for derivative users and '0' for non-users. Moreover, it is assumed that firms use derivatives to hedge their foreign exchange risk and interest rate risk; however, Ordinary Least Square (OLS) was applied to check this hypothesis empirically.

4.1.Model Specification

$$LNADER_{i,t} = \beta_{0+} \beta_1 DPS_{i,t} + \beta_2 QA_{i,t} + \beta_3 DEBT_{i,t} + \beta_4 PE_{i,t} + \beta_5 MTB_{i,t} + \beta_6 LFP_{i,t} + \beta_7 EBDIT_{i,t} + \beta_8 LNMV_{i,t} + \beta_9 SIZE_{i,t} + \varepsilon_{i,t}$$

Where;
LNADER = Log of Notional amount of derivatives used (Amount of total foreign exchange and interest rate derivatives); DPS = Dividend per share; QA = Quick Ratio; DEBT = Ratio of long term debts divided by total assets; PE = Price to earning ratio; MTB = Ratio of market to book value of equity; LFP = Log of foreign purchase; EBDIT = Log of earnings before interest,

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depreciation and tax; LNMV = Log of market value of firm; SIZE = Log of total assets; UNDER = Dummy variable, "0" for non users and "1" for users of derivatives; ε = Error term

5. Results and Interpretation

Data of selected firms was gathered and SPSS (Statistical Package for Social Sciences) software was used to get the statistical results. Table 1 shows the descriptive statistics regarding the derivative users. Table 2 also depicts the same results as the table 1, but it describes the results with respect to the non-user's of the derivatives'. One thing is distinguishing among the table 1 and 2 is LNADER (Notional amount of Derivatives). As the non user of derivatives didn't use derivatives to hedge their risk, so the amount of LNADER is 0 in each column of the table. Table 3 shows the combine result results related the users and non users of the derivative instruments.

Table 1. Descriptive Statistics (Derivative Users)

All Derivative User Firms	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
DPS	64.9774	0.0000	64.9774	4.4309	12.4089	153.981
QA	2.3100	0.1800	2.4900	0.8750	0.4381	0.1920
DEBT	0.6803	0.1653	0.8456	0.5162	0.1804	0.0330
PE	43.6700	1.5300	45.2000	1.0320	6.8264	46.600
MTB	17.5000	0.3000	17.8000	5.8008	4.5492	20.696
LFP	5.6329	11.3545	16.9874	13.9187	1.2504	1.5640
EBDIT	6.8174	9.2881	16.1055	13.8241	1.6874	2.8480
LNMV	7.9962	17.9098	25.9060	21.7939	1.8751	3.5160
SIZE	4.3470	13.4591	17.8061	16.1838	1.3715	1.8810
LNADER	5.2946	11.6817	16.9763	14.5111	1.2985	1.6860

Table 2. Descriptive Statistics (Non Derivative Users)

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All Non Derivative User Firms	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
DPS	6.8700	0.0000	6.8700	0.7375	1.5786	2.4920
QA	16.4076	0.3524	16.7600	1.9754	4.0491	16.3960
DEBT	0.6640	0.2240	0.8880	0.6299	0.1302	0.0170
PE	9.4700	4.0500	13.5200	6.9160	2.0079	4.0320
MTB	15.6250	0.3000	15.9250	4.9808	4.9895	24.8960
LFP	6.2091	9.9121	16.1212	12.8031	1.4351	2.0600
EBDIT	30.2376	-14.0005	16.2371	9.3855	9.6113	92.3780
LNMV	5.2961	19.2316	24.5277	21.9146	1.62702	2.6470
SIZE	4.7439	13.6702	18.4141	15.8046	1.35796	1.8440
LNADER	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 3. Combined Descriptive Statistics (Derivative Users & Non Users)

All Firms	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
DPS	64.98	0.0000	64.9800	3.0630	10.0320	100.6420
QA	16.58	0.1800	16.7600	1.2826	2.5298	6.40000
DEBT	0.72	0.1700	0.8900	0.5583	0.1722	0.0300
PE	43.67	1.5300	45.2000	9.0598	5.7801	33.4100
MTB	17.50	0.3000	17.8000	5.4971	4.7154	22.2350
LFP	7.08	9.9100	16.9900	13.5055	1.4233	2.0260
EBDIT	30.24	-14.0000	16.2400	12.1802	6.3398	40.1940
LNMV	8.00	17.9100	25.9100	21.8386	1.7820	3.1760
SIZE	4.96	13.4600	18.4100	16.0433	1.3738	1.8870
LNADER	16.98	0.0000	16.9800	9.1366	7.1082	50.5280

5.1.1. Mann-Whitney U Test

Mann-Whitney U test (MWU) is a non parametric test was used to negate the short comings of two independent sample t-tests as it probably depends on the assumptions of normality. The MWU test is used between the groups designed with two level of independent variable, as the major assumption of this test is that, data of the variables should be independent. However this test is used to determine the difference prevailing in two groups. In our study Mann Whitney u test is used to distinguish between the users and non user of the derivatives. The empirical results of MWU test characterize users as large size, higher growth opportunities, cash flow volatility, foreign exchange and interest rate exposure. Column 2 and 3 of table 4 shows descriptive results regarding ranks and mean ranks of the variables included in the model and

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the variables with higher rank have more influence. The variables included in the model are compared on distinguishing variable, UNDER (Users and Non Users of Derivatives). Dividend per share (DPS), ratio of long term debts to total assets (DEBT), Price to earning ratio (PE), log foreign purchase (LFP), log of earning before depreciation, interest and taxes (EBDIT), SIZE of firm and log of notional amount of derivative (LNADER) shows significant results at 1% and 5% in Mann Whitney U test and the reaming variables, quick ratio (QA), market value of equity and ratio of market value to book value of firm shows insignificant result in the above said test.

Table 4. Mann-Whitney U Test

** &* shows significance at 1% & 5% respectively

Variables	Users Mean Rank	Users Sum of Ranks	Non Users Mean Ranks	Non Users Sum of Ranks	Mann-Whitney U Test
DPS	78.24	6650.50	50.59	2529.50	-3.998 (0.000)**
QA	72.29	6144.50	60.71	3035.50	-1.661 (0.097)
DEBT	58.99	5014.50	83.31	4165.50	-3.488 (0.000)**
PE	77.52	6589.50	51.81	2590.50	-3.689 (0.000)**
MTB	71.22	6053.50	62.53	3126.50	-1.246 (0.213)
LFP	79.09	6723.00	49.14	2457.00	-4.297 (0.000)**
EBDIT	76.12	6470.00	54.20	2710.00	-3.144 (0.002)**
LNMV	67.53	5740.00	68.80	3440.00	-0.182 (0.855)
SIZE	71.86	6108.00	61.44	3027.00	-3.495 (0.035)*
LNADER	93.00	7905.00	25.50	1275.00	-9.938 (0.000)**

5.1.2. Correlation Results – Spearman Correlation

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The correlation coefficients are reported in table 5. As the data include in this model qualifies the pre assumptions of spearman correlation test, which are: the relationship between the two variables should be monotonically non linear, the data on both the variables should be at least scale and data on variables should be independent. The correlation coefficients suggest that the total amount of derivatives used by the firms have significant positive correlation with firms' cash flow volatility, growth options, foreign purchase, size and price to earning ratio, where as there is a significant negative relationship between derivative use of a firm and liquidity. The study does not find any significant correlation between derivatives and dividend per share, market to book value of equity and to the market value of firm. There is significant positive correlation between the variables used as proxy with respect to the growth options. Correlation coefficients of the firm shows positive significant relationship with growth options, which means that the more likely finance the opportunities and get economies of scale as well as risk management against interest rate and foreign exchange risk. Moreover, corporations with higher usage of foreign exchange exposure were most likely the foreign exchange derivative instrument users.

Table 5. Spearman Correlation Results

	LNADER	DPS	QA	DEBT	PE	MTB	LFP	EBDIT	LNMV	SIZE
LNADER	1.000									
DPS	0.159	1.000								
QA	-0.205*	-0.061	1.000							
DEBT	-0.265**	0.136	-0.003	1.000						
PE	0.291**	0.515**	-0.093	0.124	1.000					
MTB	0.016	0.347**	-0.200*	-0.240**	0.116	1.000				
LFP	0.366**	0.339**	-0.200*	-0.301**	0.308**	0.194*	1.000			
EBDIT	0.345**	0.147	0.051	-0.214*	0.132	0.304**	0.005	1.000		
LNMV	0.014	0.118	-0.214*	0.105	0.212*	0.222**	0.357**	-0.115	1.000	
SIZE	0.197*	0.098	-0.137	0.166	0.227**	-0.105	0.370**	-0.064	0.549**	1.000

** & * shows significance at 1% & 5% respectively

5.1.3. Regression Results

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Empirical findings regarding the decision making of firm to use or not to use the derivative instruments – interest rate and foreign exchange – are presented in table 6. This study estimate equation of the model by using ordinary least square estimation method through pooling all data in SPSS 16. The value of R^2 is 0.617 which indicates that 61% of the change in dependent variable is due to the explained variables. These results are very much similar to the studies of Nguyen *et al.* (2007), Ameer (2010) which checks the effect of derivatives and hedging policies on the same kind of footings. Theoretical frame work of this study develops some hypothesis related to the variables included in the equation and interpretation of these hypothesis reveal that there is a positive relationship of derivative usage with DPS, PE, LFP, growth options EBDIT and SIZE and these signs are correct sign on the regression coefficients as evidence in favor of the hypothesized relationship between the variables. The estimated regression coefficients show that most variables have expected signs except DEBT as shown in the table 6. Consistent with the previous studies, firm's foreign purchase, growth options, liquidity and size shown greater relatedness with the firm's level of hedging. The bottom line of our study suggests that firms with higher level of foreign purchase and growth options are active users of the derivatives. Whereas firms with higher quick assets ratio are not extensive users of derivative but the liquidity of these firms is used to mitigate fluctuative changes in the interest rate and foreign currency risks.

Table 6. Regression Results

** &* shows significance at 1% & 5% respectively

Variables	BETA Coefficient	Hypothesized Sign	P Value
(Constant)	-2.341	-	0.449
DPS	0.029	Positive	0.762
QA	-0.208	Negative	0.006*
DEBT	-0.216	Positive	0.015*
PE	0.189	Positive	0.030*
MTB	-0.214	Negative	0.020*
LFP	0.222	Positive	0.021*
EBDIT	0.339	Positive	0.000**
LNMV	-0.122	Negative	0.197
SIZE	0.143	Positive	0.029*

$R^2 = 0.617$

Adjusted $R^2 = 0.381$

N= 75

6. Findings and Conclusion

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It is a general phenomenon that a company primarily faces three kinds of risks; risk prevailing in a particular country, risk of particular sector and risk of particular firm. These kinds of risks exhibit with political and economic conditions of a country which results in increasing risk level and ultimately this will increase the level of interest rate and foreign exchange derivative usage. This study aims to analyze the factors and motivators of hedging policies that influence the demand for foreign exchange and interest rate derivatives and their usage in risk management practices specifically with respect to Pakistan. This study uses 75 non financial Pakistani firms listed in Karachi Stock Exchange over the period of 2007-2011.

This study included a new variable which is foreign purchase for estimation of title of the study, as it was not used in any related study. The major reason behind the induction of – the variable – foreign purchase is that the Pakistan is one of the Asian countries which faces a volatile political and economic conditions and faces a depreciating trend in its own denominations, so there is a need arises for these kind of countries to hedge their investment in shape of foreign purchase rather than foreign sale – as the earlier studies uses foreign sale in their model (e.g., Allayannis and Ofek 2000; Adam 2002; Alkeback and Hagelin 2002; Ameer 2010). The main findings of this study suggest that there is a strong relationship between the derivatives usage and firm's foreign purchase, growth options, liquidity and size in Pakistan. The study fiber gates the data into two groups as users of the derivative and the non users. However the Mann-Whitney U test was used to determine the difference prevailing in two groups. The empirical results of Mann-Whitney U test characterize users as large size, higher growth opportunities, cash flow volatility, foreign exchange and interest rate exposure.

Findings suggest that firms with higher foreign purchase volume and growth opportunities are active users of the derivatives. The variables included in the model are compared on distinguishing variable UNDER (Users and Non Users of Derivatives) and findings shows that dividend per share (DPS), log foreign purchase (LFP), ratio of long term debts to total assets (DEBT), SIZE of firm, Price to earning ratio (PE), log of earning before depreciation, interest and taxes (EBDIT), and log of notional amount of derivative (LNADER) shows significant results at 1% and 5% in MWU test and the rest of the variables, quick ratio (QA), market value of equity and ratio of market value to book value of firm shows insignificant result in the above said test.

Spearman correlation is used to get empirical resulted related to model as it qualifies all the necessary condition required for its implementation. Correlation coefficients of the firm shows positive significant relationship with growth options, which means that more the finance opportunities the more will be the economies of scale as well as risk management against interest rate and foreign exchange risk. Hence, the study does not find any correlation between derivatives and dividend per share, market to book value of equity and to the market value of firm. Moreover, corporations with higher usage of foreign exchange exposure were most likely the foreign exchange derivative instrument users. The study also estimates the regression coefficients which show that most variables have expected signs except DEBT, as related to

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the previous studies, firms' growth options, foreign purchase, liquidity and size are related to greater level of hedging.

Our findings also confirm the factors that significantly affect hedging practice of Malaysian firms as reported by Ameer (2010). The firm specific factor such as, growth options, cash flow volatility and size of the firm seem to have stronger influence on derivatives use. This study has several important implications for firms and financial regulators. At present most of the firms listed in Karachi Stock Exchange are non derivative users and didn't get benefit from the derivative usage. This study gave a bottom line regarding derivative usage that it helps in mitigating the risk, as the size of the firm and growth options are the dominating factors in this regard. This study seeks to help the managers and professional to ascertain the risk of their organization before taking the position in the derivatives market and gat economies of scale through its implementation. Hence the study proposes that future research should seek to consider factors other than firm size, growth options and cash flow volatility, as this study circle around these core issues. At the same time, there is a need for research on the strategy and implementation of these kinds of derivative instruments.

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