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Determinants and Outcomes of Financial Derivatives: Empirical Evidence from Pakistani Banks*

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Abstract

The increased risk in financial firms, due to Global Financial Crises and high international trade activities, has encouraged banks to use derivatives for both managing their financial risk and earning non-operating income simultaneously. The present study brings new evidence in the existing literature by determining the drivers behind financial derivative usage in Pakistani banks for 2011 till 2016. Moreover, the paper examines how risk plays a moderating role in determining the relationship between derivative usage and bank value. While assessing the determinants, a two-stage test has conducted, first, the logit regression was used to test the drivers behind the derivative usage in banks. Second, Tobit regression was run to analyze the factors leading to determine the extent of derivative usage. The findings demonstrate that Pakistani banks are using derivatives for both risk management and speculative motive as they are customers and users of derivatives at the same time. Empirical results, regarding moderating role of risk on the value implications of derivative usage, provide mixed findings as derivative usage gives value premium in case of non-systematic risk and foreign exchange risk. Whereas value discounts have been observed for cases where systematic risk is high and managers try to earn non-operating income from speculative activities.

Keywords: Derivative Usage, Firm Value, Firm Risk, Moderation, Pakistani Banks

JEL Classification Code: G1, G15, G21

1. Introduction

Financial derivative usage, over the past few years, owing to its risk management attributes has gained widespread popularity. With the help of derivative usage, banks became less vulnerable to financial risks. The innovation in derivatives usage has contributed significantly to resilience towards financial crises. In this paper, the use of Foreign Currency Derivative (FCDs) and the Interest Rate Derivative (IRDs) will be assessed to know whether Pakistani Banks are using derivatives for risk management or speculation. The use of FCD enables banks to avoid fluctuations in currency changes, while, IRD protects banks against changes in market interest rates. In Pakistan, the derivatives market, although, is immature as compared to the rest of the world due to weak financial markets, few advancements have been made in the derivative market thereby reinforcing its importance in managing risk. The latest statistics by the State Bank of Pakistan revealed the derivative trading of almost Rs 4,022 million in 2018. Increasing country debt and high foreign exchange volatility, especially after the 2007–08 crises, have made Pakistan a financially exposed country, thereby, highlighting the need to study the motive behind derivative usage and value relevance of such usage in Pakistani banks.

Mahmood and Kashif-ur-Rehman, (2010) looked into factors that influence corporate finance managers to use derivatives. They concluded that managerial knowledge of modern finance, development of full-fledged derivatives market, and measuring the risk level of the corporation may enhance the derivative usage thus minimizing the

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financial risk of companies. Derivatives are mostly used by corporations to hedge their foreign exchange or interest rate risk, especially in Asian countries due to their highly volatile political and economic situation. Afza and Alam (2011) aimed to determine the factors affecting firms hedging policies of both foreign currency and interest rate derivative instruments of 105 non-financial firms listed on the Karachi Stock Exchange from 2004 to 2008. The estimated results supported the financial distress hypothesis, tax convexity, underinvestment hypothesis, and managerial risk aversion hypothesis. Though, inconsistent with the theory, the interest coverage ratio demonstrated a positive effect on firms hedging policies that may be attributed to the lag period effect.

Hence, with a more developed derivative market and with the view of an increased growth initiative by the government, the present study brings new evidence by empirically determining the motives behind derivative usage and value implications of such usage in Pakistani Banks. The rest of the paper is defined as follows: section 2 consists of prior literature on the determinants of financial derivatives usage and the effect of such derivative usage on banks. Section 3 discusses sample selection of data and methodology for empirical testing while section 4 reports the results and discusses the empirical findings in light of the literature. Conclusions, policy implications, and future directions are described in section 5.

2. Literature Review

Theoretical literature has widely examined the determinants of derivative usage in developed countries. For instance, Adkins et al. (2007) examined the effect of managerial compensation and ownership on the use of foreign-exchange derivatives by U.S. bank holding companies. They focused on derivatives used for purposes other than trading to investigate derivative use in a hedging framework. They found that the use of derivatives is inversely related to option awards but positively related to managerial ownership. Finally, their results suggested that ownership by large institutional shareholders provides an incentive for managers to hedge.

Sinkey and Carter (2000) investigated the financial characteristics of banks that use derivatives and those that do not. They found that user banks, compared to nonusers, are associated with riskier capital structures (more notes and debentures and less equity capital), larger maturity mismatches between assets and liabilities, greater net loan charge-offs, and lower net interest margins. They also found that banks, especially smaller ones, benefit from being associated with bank-holding companies. Finally, their evidence does not support a regulatory hypothesis in which banks must have stronger capital positions to engage in derivative activities.

Ashraf et al. (2007) stated that credit derivatives enable banks to transfer selected credit risks to third parties. An empirical model was developed for the motivation for

bank participation in credit derivative markets and, conditional on participation, the factors that determined the volume of business transacted. Participation appears to be closely related to bank size, but there is only limited evidence that entry barriers related to franchise value or past experience in dealing in derivatives are important. There is evidence that banks use credit derivatives as part of their overall risk management strategy. However, the use of credit derivatives does not appear to be influenced by the extent of managerial share ownership.

Reichert and Shyu (2003) empirically tested the determinants of derivative usage. The results of a comparison of international banks using a three-factor multi-index model and a modified value-at-risk (VaR) analysis indicate that the use of options increases the interest rate beta for all banks, while both interest rate and currency swaps generally reduce risk. The results are the strongest and the most consistent for U.S. dealer banks, followed by European banks, and then Japanese banks. Furthermore, the evidence suggested that the VaR approach to risk management can effectively be used by both domestic as well as international banks, although the results appear to be somewhat sensitive to the regulatory environment in which the bank operates.

Yong et al. (2007) presented an analysis of the determinants of Asia-Pacific banks' extent of derivative activities. Their findings suggested that the probability of financial distress and economies of scale arguments are important in this regard. Further analyses revealed that Asia-Pacific dealer banks tend to use more foreign currency derivatives while interest rate derivatives are generally used for hedging purposes. Their findings also indicated that banks located in countries with an explicit deposit insurance scheme engage in greater derivative activities. Such behavior may reflect either hedging or speculation.

Rivas et al. (2006) investigated whether the use of derivatives by banks in Latin America affects their efficiency. Overall, and in line with theory, the results indicated that the use of derivatives increases the efficiency of Latin American banks. Additionally, they found that as Latin American banks get larger their efficiency level increases. Lastly, the results show that regulatory and institutional constraints negatively affect the efficiency of Latin American banks.

Literature has also shown strong evidence regarding the use of derivative instruments as risk-taking and speculative activities, which undermines the ability of financial derivatives to hedge risk. Li and Marinč (2014) examined the impact of financial derivatives on the systematic risk of publicly listed U.S. bank holding companies (BHCs) from 1997 to 2012. They found that the use of financial derivatives is positively and significantly related to BHCs' systematic risk exposures. Higher use of interest rate derivatives, exchange rate derivatives, and credit derivatives corresponds to greater systematic interest rate risk, exchange rate risk, and credit risk. The positive relationship between derivatives and risks persists for derivatives for trading as well as for derivatives

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for hedging. They also analyzed the role of BHCs' size and capital and the impact of the global financial crisis on the relationship between derivatives and risks.

Khan et al. (2018) addressed three questions regarding the extent of the use of derivatives; the difference between the users and non-users and; factors that influence the usage of derivatives for the Pakistani banking industry for the period 2004–2016. Banks are dynamic users of derivative instruments and a wide range of derivative instruments are persuasively used for risk management, speculation, and trading purposes. The results of the probit model revealed that risky assets and the ratio for non-performing loans were not found significant whereas net loans to total assets was significant with a negative sign which showed that banks were using derivatives infrequently while banks capital proxy by EQTA was found significant at 5 percent level with a positive sign which means that capitalized banks are more likely to use derivatives. The trade and hedge variables were found significant. Banks use derivatives for risk mitigation (hedging). Regulatory authorities need to devise new regulations regarding the derivative instruments usage to cope with the changing economic dynamics of Pakistan.

3. Data and Methodology

Sample data was collected from 20 Pakistani banks listed on the Pakistani Stock Exchange (PSX) from 2011 to 2016. Analysis of sample data comprised three stages. At, first, a logit regression is run to find out the motives behind the financial derivative usage. Geczy et al. (1997) and Howton and Perfect (1998) used the same methodology where the dependent variable is either '0' or '1'. The study, hence, defines derivative participation as a dummy variable where '1' is assigned to Pakistani banks that report their usage of derivative instruments and '0' otherwise. The econometric equation is described as below:

$$
\begin{aligned}
\text{Logit(DERP)} = \log\left(\frac{\text{DERP}(y=1)}{1-(\text{DERP}=1)}\right) &= \beta_0 + \beta_1 \text{GO}_{it} \\
&+ \beta_2 \text{MO}_{it} + \beta_3 \text{CG}_{it} + \beta_4 \text{IRSA}_{it} \\
&+ \beta_5 \text{IRSL}_{it} + \beta_6 \text{CR}_{it} + \beta_7 \text{FERISK}_{it} \\
&+ \beta_8 \text{CRERISK}_{it} + \beta_9 \text{LIQ}_{it} \\
&+ \beta_{10} \text{DP}_{it} + \beta_{11} \text{DIBUS}_{it} \\
&+ \beta_{12} \text{DIREV}_{it} + \beta_{13} \text{DICOST}_{it} \\
&+ \beta_{14} \text{DILOSS}_{it} + \beta_{15} \text{DIINV}_{it} \\
&+ \beta_{16} \text{DILTL}_{it} + \beta_{17} \text{FINLEV}_{it} \\
&+ \beta_{18} \text{MVE}_{it} + \beta_{19} \text{BKME}_{it} \\
&+ \beta_{20} \text{SIZE}_{it} + \beta_{21} \text{HOLD}_{it} \\
&+ \beta_{22} \text{PROFIT}_{it} + \beta_{23} \text{LEV}_{it} + e_{it}
\end{aligned} \tag{1}
$$

In the second stage, Tobit regression is used to empirically test the determinants of intensity of derivative usage. Similar techniques have been used by Sinkey and Carter (2000), Goldberg et al. (1998), and Abidin et al. (2021). The model formulated by Tobin (1958) is used for data that is censored in either direction (left or right). In this study, the data for derivative volume (DERV) is right-censored, where financial derivatives have value either zero or greater than zero. The model has been described in equation 2.

$$
\begin{aligned}
\text{DERV}_{it} &= \beta_0 + \beta_1 \text{GO}_{it} + \beta_2 \text{MO}_{it} + \beta_3 \text{CG}_{it} + \beta_4 \text{IRSA}_{it} \\
&+ \beta_5 \text{IRSL}_{it} + \beta_6 \text{CR}_{it} + \beta_7 \text{FERISK}_{it} \\
&+ \beta_8 \text{CRERISK}_{it} + \beta_9 \text{LIQ}_{it} + \beta_{10} \text{DP}_{it} \\
&+ \beta_{11} \text{DIBUS}_{it} + \beta_{12} \text{DIREV}_{it} + \beta_{13} \text{DICOST}_{it} \\
&+ \beta_{14} \text{DILOSS}_{it} + \beta_{15} \text{DIINV}_{it} + \beta_{16} \text{DILTL}_{it} \\
&+ \beta_{17} \text{FINLEV}_{it} + \beta_{18} \text{MVE}_{it} + \beta_{19} \text{BKME}_{it} \\
&+ \beta_{20} \text{SIZE}_{it} + \beta_{21} \text{HOLD}_{it} + \beta_{22} \text{PROFIT}_{it} \\
&+ \beta_{23} \text{LEV}_{it} + e_{it}
\end{aligned} \tag{2}
$$

In the third stage, the study analyzed the effect of derivative usage on bank value. In addition to this, the study tested the moderating role of firm risk on the relationship between derivative usage and firm value by using Preacher and Hayes (2004, 2008). The estimated equation has been described as below:

$$
\begin{aligned}
\text{VALUE}_{it} &= C_0 + C_1 - \text{DERV}_{it} + C_2 \text{RISK}_{it} \\
&+ C_3 (\text{RISK} * \text{DERV}_{it}) + e_{it}
\end{aligned} \tag{3}
$$

4. Results and Discussion

Figure 1 shows that on average, in Pakistan, FCDs (Foreign Currency Derivative) are used more widely as compared to IRDs (Interest Rate Derivatives). FCD usage has increased over the years although slight fluctuations have been observed in the intensity of their usage. Peak values are noticed in the year 2013 and 2015, and this is aligned with the political instability of Pakistan as the rupee fluctuates more rapidly against the dollar and, to hedge exchange rate volatility, banks tend to use more FCDs for managing their risk. Figure 1 depicts that the usage of IRDs decreases over time, which implies that banks use interest rate ceilings or caps for minimizing the adverse effects of IR volatility, and hence banks are less likely to use IRDs. This indicates that despite the relatively underdeveloped derivative market of Pakistan, banks are more involved in FCD usage in contrast to IRDs.

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Table 1: Variable Description

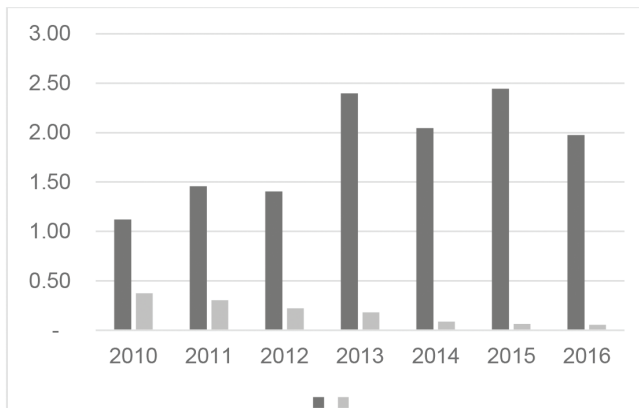| Variable	Explanation	Measurement
DERP	Derivative Participation	Dummy '1' for banks that use derivatives and '0' otherwise
DERV	Derivative Volume	Notional Value of Derivative Usage / Total Assets
IRDP	Interest Rate Derivative Participation	Dummy '1' for banks that use interest rate derivatives and '0' otherwise.
IRDV	Interest Rate Derivative Volume	Notional Value of Interest rate Derivative Usage / Total Assets
FCDV	Foreign Currency Derivative Volume	Notional Value of Foreign Currency derivative volume/ Total assets
GO	Growth Opportunity	Retained Earnings/Total Assets
MO	Managerial Ownership	Percentage of Bank's Ownership
CG	Corporate Governance	Percentage of Independent Owners
IRSA	Interest Rate Sensitive Assets	Interest-rate Sensitive Assets/Total Assets
IRSL	Interest Rate Sensitive Liabilities	Interest-rate Sensitive Liabilities/Total Assets
CR	Currency Risk	Income of Off-shore Companies / Total of Off-shore and Parent Companies
FERISK	Foreign Exchange Risk	Foreign Exchange Currency/Operating Cash Flow
CRERISK	Credit Risk	Non-performing Loans/ Total Assets
LIQ	Liquidity	Total Assets/Total Liabilities
DP	Dividend Pay-out Ratio	Dividend Paid/ Net Income
DIBUS	Diversification of Business	Herfindahl Index of Business
DIREV	Diversification of Revenue	Herfindahl Index of Revenue
DICOST	Diversification of Cost	Herfindahl Index of Costs
DILOSS	Diversification of Loss	Herfindahl Index of Losses
DIINV	Diversification of Investments	Herfindahl Index of Investments
DILTL	Diversification of long-term Liability	Herfindahl Index of Long-term Liability
FINLEV	Financial Leverage	Assets-Equity/Paid-up Capital
MVE	Market Value of Equity	Market Value of Equity/ Total Asset
BKME	Book to Market Ratio	Book value of Equity/Market value of Equity
SIZE	Bank Size	Natural Logarithm of Total Assets
HOLD	Banks with Affiliation to Holding Companies	Dummy variable where banks are associated with holding companies are represented by 1 and 0 otherwise
PROFIT	Profitability	Interest Earnings/Total Earnings
LEV	Leverage	Total Liabilities /Total Assets
TR	Total Risk	Standard Deviation of Bank Return
FX RISK	Foreign Exchange Risk	Change in Exchange Rate
SR	Systematic Risk	Coefficient of the market model regression
USR	Unsystematic Risk	S.D of the error term from the market model
EVA	Economic Value Addition	(Net Income – (Weighted Average Cost of Capital * Invested capital)) /Total Assets
Tobin's Q	Tobin's Q	(Book Value Liabilities + Market Value of Equity) / Book Value of Assets

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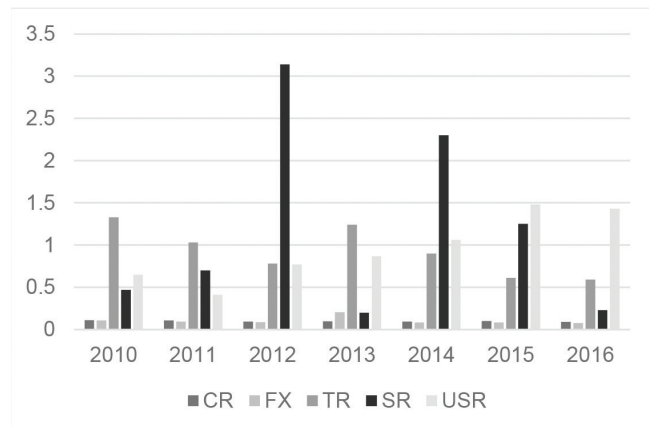
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Figure 1: Derivative Usage over the years
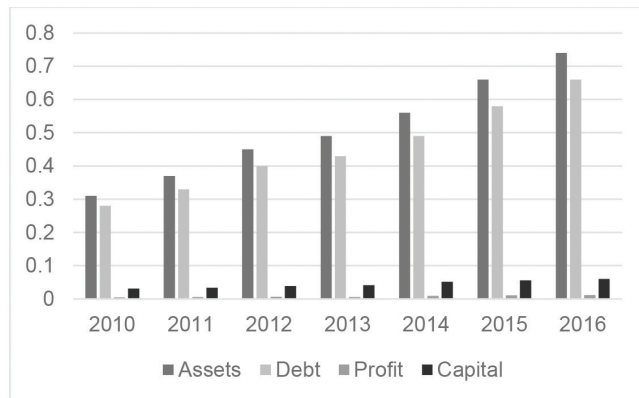(Values in Trillions)

Figure 2: Key Indicators of Bank's Performance
(Values in Trillions)

Figure 2 depicts an overview of the bank's progression indicators, which are the assets value, profits, debts (used as a proxy of financial indicator), and capital position. It shows a growing trend over the study period. From 2011 till 2013, slow financial growth was observed due to political instability in Pakistan. After that, a rapid increase shows a growing economic progression that takes place in banks which is because of the stabilized political situation of the country. Equity is at the highest in value followed by profit and debt. Lower assets value shows that banks issue fewer loans and have concentrate less on their primary source of earning. High values of capital position (represented by stock equity) signal the overall superior efficiency of Pakistani banks and strengthens investor's confidence in them.

Figure 3 shows the trend line of the bank's risk. The movement shows a significant rise in risk from 2011 to 2013 due to the volatile political conditions. Later on, in 2013, conditions became better and the risk diminished which reflects the stable political and economic circumstances of the country.

Figure 3: Key Indicators of Bank's Risk

Afterward, prolong protest of 126 days by the opposition exposed the country to high financial and market risk. In 2014, the risk increased again due to political instability and the prolonged protest of 126 days by the opposition. Following it, the years 2015 and 2016 illustrate comparatively lower financial and market risk.

Statistical results are reported in Table 2 and pictures considerably different findings from other studies based on the determinants of derivative usage in banks. Results illustrate that reduction in financial distress costs is identified as the primary motive behind derivative engagement. Contrary to the findings of Adkins et al. (2007), the results depict a significant negative effect of managerial ownership on IRD participation. This indicates that managers who have an ownership stake in banks are less involved in risk-taking activities. The negative relation of IRDP with CG implies that the independent directors play a monitoring role and discourages the speculative use of IRDs. This is consistent with the results of Reichert and Shyu (2002), who showed that currency risk reflects a significant positive relationship with IRD participation. The existence of a positive effect of CR on IRDP is plausible because banks having foreign subsidiaries are involved in IR swaps while dealing in foreign currency to diminish multiplicity in IR instabilities. For internal diversification, two measures DIBUS and DILOSS have shown a significantly positive relation with IRDP. This insinuates that banks can minimize risk exposure by involving in internal diversification and results in banks' likelihood of employing IRDs for speculative purposes. The positive relation between MVE and IRDP suggests that the banks that are performing better and have a better capital position are more self-reliant to invest in derivatives for speculation purposes to enhance their non-operating income. All other variables depict an insignificant effect on the bank's IRD participation.

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Table 2: Determinants of Derivatives

Variables	Coefficient		
	IRDP	**IRDV**	**FCDV**
Constant	–4.38	–0.22	0.15
GO	3.2	–0.02	0.17***
MO	–5.16**	–0.14	–0.09
CG	–4.85**	–0.06	0.01
IRSA	1.01	–0.02	0.01
IRSL	–0.23	–0.02	–0.03**
CR	22.97***	0.1	0.06
FERISK	–15.29	–0.86**	0.27
CRERISK	8.11	0.33	0.48**
LIQ	–2.24	0	0
DP	–22.52	–2.8*	0.20
DIBUS	6.02***	0.17**	–0.01
DIREV	–3.96	0.16	–0.34***
DICOST	3.98	0.03	0.15
DILOSS	4.37***	0.05	0.02
DIINV	0.12	–0.07	–0.01
DILTL	–1.48	0.11	–0.07
FINLEV	–26.28	–2.04	–1.22
MVE	1.02***	0.02**	0.02**
BKME	2.51	–0.013	0.2**
SIZE	0.93	–0.01	0.01
HOLD	0.17	0.01	–0.02
PROFIT	–0.07	0.01*	0.01
LEV	0.05	0	0.01
Chi^2	66.84***	34.65***	45.95***
R^2	0.37	1.88	–0.25
Log-likelihood	43.23	8.1	114.64

Note: ***, ** and * indicates significance level of 1%,
5% and 10% based on *t*-statistics respectively.

The results of IRD volume in Table 2 (column 3) have shown a strong negative association between IRDV and FERISK. This infers that with an increase in FE RISK, the bank's involvement level in IRDs decreases since bank managers may want to limit any increase in risk due to the volatile currency movement by using IRDs. This is consistent with the research of Bui and Nguyen (2021). A significant negative effect of a high dividend payout ratio ends up in lower retained earnings and reduce free cash flows. This, in return, decreases the liquidity and flexibility of banks to invest in IRDVs while investing in positive NPV projects. DIBUS has shown a positive effect on IRDV which implies that banks having diversified trade activities are more involved in IRD trading for profit-making purposes. The result for interest margin represented by PROFIT is similar to Shiu and Moles (2007) which implies that banks having wider interest rate margin opt to use IRD extensively to minimize the adverse effect of volatile interest rate movements. This can also be possible that high-interest rate margin encourages managers to use IRDs for speculation purpose as high-interest margin works as a safety buffer in risky times. Hence, this indicates a complementary role between the bank's profitability and IRDV. However, several other studies such as Adkins et al. (2007), Ashraf et al. (2007), and Shyu and Reichert (2002) have shown contrary results.

The empirical findings on determinants of FCDV are reported in column 4 of Table 2. Findings depict that higher retained earnings give a liquidity buffer to Pakistani banks and motivates them to involve in speculative activities through FCD instruments. Banks having diversifiable revenues less tend to use FCDs as they both play a substituting role for each other, finding different from IRDs where revenue diversification plays an insignificant effect on IRDs usage. This controversial result reflects that volatile exchange rates, during the study period, discourage managers to earn profit through FCD usage as an unhedged portion may lead banks to financial losses. A significant positive effect of credit risk on a bank's FCD volume indicates that to deal with international financing activities, bank managers intend to use currency swaps for managing their credit risk. Similar findings were observed by Shyu and Reichert (2002). Results, furthermore, show that Pakistani banks having a strong market position are more confident in opting for risk-taking activities for earning non-operating income. Adkins et al. (2007) have shown opposite results for their study based on American banks. A significant negative link between IRSL and FCD volume indicates that managers, considering the highly volatile economic situation of Pakistan, prefer to invest interest-rate-sensitive liabilities in long-term investments rather than risk financial derivatives.

Panel A of Table 3 reports empirical results on the moderating role of bank's risk on the relationship between derivative usage (both IRD and FCD) and bank value. Tobin's Q and EVA are used for measuring bank value while the risk is quantified by four measures, which are total risk, systematic risk, unsystematic risk, and foreign exchange risk. A significant positive effect of derivative usage on bank value turns to be significant and negative in presence of the bank's total risk. This relationship is aligned with the present financial market development stage of Pakistan as high transaction cost, in risk times, nullifies the positive contribution of derivative usage to the bank's value.

Table 3: Derivative Usage, Firm Risk and Firm Value

Panel A

Model	Coefficient			Interaction Coefficient	F stat
	Constant	DER	FR		
DER–TR–Tobin's Q Adj R^2 = 0.3342	0.31	4.66***	2.21	−15.56***	22.75***
DER–TR–EVA Adj R^2 = 0.2166	0.00	0.36***	0.21	−1.52***	12.53***
DER–SR–Tobin's Q Adj R^2 = 0.3268	0.52***	3.20***	0.11	−0.83	22.00***
DER–SR–EVA Adj R^2 = 0.1909	0.03***	0.19***	0.01	−0.06	10.70***
DER–UNSR–Tobin's Q Adj R^2 = 0.7593	0.86***	1.01***	−0.04***	0.42***	143.03***
DER–UNSR–EVA Adj R^2 = 0.5137	0.06***	0.05***	−0.001***	0.03***	48.58***
DER–FX–Tobin's Q Adj R^2 = 0.7490	0.95***	0.39	4.49***	−43.06***	135.26***
DER–FX–EVA Adj R^2 = 0.5017	0.05***	0.01	0.17***	−2.70***	45.65***

Panel B

	Total Risk			Systematic Risk			Unsystematic Risk			FX Risk		
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
Tobin's Q	0.6***	0.9***	0.9***	3.0***	2.51***	1.82***	0.7***	1.1***	3.1***	2.9***	0.6**	−1.1***
EVA	0.3***	0.2***	0.1***	–	–	–	0.1***	0.1***	0.2***	−0.1***	−0.0	0.04***

Note: This table shows the moderation results for Risk to check the effect of risk on how it affected the impact of derivatives on firm value. ***,** and * indicates significant at 1%, 5% and 10% level of significance based on *t*-statistics.

In the same way, the presence of systematic risk decreases the net effect of derivative usage on bank value. Higher systematic risk makes cash flows more volatile and restricts the value-maximizing benefits of derivative instruments. The effect of unsystematic risk has shown a different trend, as the interaction effect of unsystematic risk and derivative usage ends up in a value benefit of 42%. This implies that managers can diversify their unsystematic risk by using derivatives, though the transaction cost of an underdeveloped derivative market decreases the magnitude of value relevance of derivatives trading from 86% to 42%. Consistent with the results of total risk and systematic risk, foreign exchange risk also plays a significantly negative role in defining derivative-value links. This implies that variations in foreign exchange rates limit the value effectiveness of derivatives for both speculation and risk management purposes as partial hedging may expose firms towards more financial risk. Moderation results highlight that the value addition benefits of derivative usage can only be achieved in presence of unsystematic risk.

Panel B of Table 3 shows the intensity of the derivative-value relationship varies at different levels of risk. Results provide robustness to earlier findings of Panel A and conclude that value addition benefits of derivative usage in presence of risk decreases, except unsystematic risk. This is plausible because investors perceive derivatives as a tool for hedging an internal risk and thus, they may positively affect the bank value. Derivative trading, in times of high exchange rate volatility, contributes positively to the economy and shows that banks are using derivatives for risk management purposes by hedging their foreign payments. Meanwhile, investors negatively perceive banks that opt to use derivatives in times of high exchange rate volatility and signal it as a speculative activity. The results for systematic risk, foreign exchange risk, and total risk are in line with research in America (Li & Marinč, 2014).

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5. Conclusion

The present study contributes to the current literature by empirically testing the role of derivative usage in Pakistani banks by determining the motives behind derivative usage and the valuation effects of such usage. This study, based on empirical evidence, suggests that derivatives are used in Pakistani banks largely for earning non-interest income through speculation. Moreover, the study has indicated that diversification of business, investment, revenue, liability, or long-term loans are primary determinants of derivative usage. Furthermore, the finding implies that managers can earn non-operating income through their involvement in derivative instruments but they should keep in mind to restrict the applications of such instruments in times of high total risk and systematic risk. Meanwhile, managers can contribute positively to the economy by using derivatives in conditions of high unsystematic risk and exchange rate volatility.

The study has provided evidence of the effect of derivative usage on the bank's value and the influence of risk on such effect. The results indicated bank's derivative usage positively influences value but this effect is smaller, in terms of magnitude, when they are used in times of high risk (Park & Park, 2020). This association has correspondingly signified a likely risk that may bubble to the surface once derivative becomes substantially a part of the financial system. At the same time, managers should use derivatives for profit-making purposes to diversify the bank's unsystematic risk. Findings infer regulatory bodies to develop policies that motivate banks to use derivatives in their best interest. Meanwhile, restrictions should be applied on the employment of derivative instruments when economic conditions are getting worse. Academicians can extend the present research by testing how strong governance changes the bank's motives to use derivatives. Moreover, empirical testing can be done on how board structure influences the value addition benefits of derivative usage.

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