

'Does the use of foreign currency derivative affect firm value? – Evidence from firms across the world'

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Abstract- This paper examined the impact of foreign currency derivatives on firm value using several findings from firms across the world with significant exchange rate exposure. The results show that foreign currency derivatives usage affect firm value positively. The study also revealed that foreign currency derivatives can be used for managers' self-interest, for hedging or for speculative purposes. Furthermore, the study found strong evidence that the use of foreign currency derivatives for firms that have strong internal firm-level or external country-level corporate governance is associated with a significant value premium. The paper therefore emphasizes that investors can appeal to a firm's internal (firm-level) and external (country-level) corporate governance to draw inferences on a firm's motive behind the use of derivatives, since well-governed firms are more likely to use derivatives to hedge rather than to speculate or pursue managers' self-interest.

Index Terms- Hedging, Currency Derivatives, Corporate Governance, Exchange Rate Exposure, Firm Value

1. INTRODUCTION

Classic financial theory relies partly on the absolute perfection of capital markets. This assumption states that markets are highly competitive¹ and their participants are not subject to frictions (Carlos, Gomez-Gonzalez, Rodriguez, 2009). Under such assumption, Modigliani and Miller² (MM) develop three propositions, of which this paper deals mostly with the first one: [...] *the market value of any firm is independent of its capital structure and is given by capitalizing its expected return* [...].

The main consequence of this proposition is that no matter what financial transactions the firm contracts, its market value is the sum of the net present value of the cash flows produced by the existing assets and the net present value expected from future investments. Within the term financial transactions there are a broad number of transactions, including derivatives contracts. Then, according to MM, there is no reason why a non-financial firm would enter into a derivative contract, either for hedging or speculative purposes.

Notwithstanding this enduring theoretical proposition, firms including non-financial firms do contract derivatives. The main explanations for such disagreement between theory and reality hover around the existence of frictions such as agency costs³, bankruptcy costs, transactions costs, commissions, contracting and information costs, taxes, among others (Modigliani & Miller, 1958; Damodaran, 2002; Crouhy *et al.*, 2006).

Risk management theories suggest that the use of derivatives for risk management purposes adds value to a firm by reducing expected taxes or financial distress costs, by mitigating underinvestment or by allowing a firm to increase its debt capacity and take advantage of debt tax-shields without an increase in risk (Bessembinder, 1991; Froot, Scharfstein & Stein, 1993; Leland, 1998).

Furthermore, managerial risk aversion motives may lead managers to use derivatives to engage in risk management activities to protect themselves and not necessarily to benefit shareholders (Stulz, 1984; Smith & Stulz, 1985). Also, firms may also use derivatives to speculate rather than hedging, an activity which may again not benefit investors on average (Geczy, Minton & Schrand, 2007).

It is also argued that outside directors who are appointed to act in the shareholders' interests have an incentive to signal that they indeed do act in that way (Fama and Jensen, 1983; Mayers *et al.*, 1997). Firms dominated by independent outside directors⁴ generally are considered to have better corporate governance and risk management attributes. Hence, strongly governed firms tend to use derivatives to hedge currency exposure and overcome costly external financing. On the other hand, weakly governed firms appear to use derivatives mostly for managerial reasons.

1. A highly competitive market implies that there is atomistic competition, where the number of consumers and firms is large enough so that no agent is in a position to influence or manipulate market price (Carlos, Gomez-Gonzalez, Rodriguez, 2009).

2. Modigliani and Miller (1958).

3. An agency cost is an economic concept concerning the cost to a "principal" (an organization, person or group of persons), when the principal chooses or hires an "agent" to act on its behalf (Modigliani and Miller, 1958).

4. Outside directors are Non-Executive Directors.

A noteworthy volume of literature tests the effect and relationship between these variables; however most of the findings are still fairly mixed and inconclusive. It is against these backgrounds that the researcher wants to carry out a research on the topic: **‘Does the use of foreign currency derivative affect firm value? – Evidence from firms across the world’** The research would examine: whether the use of derivatives impact firm value; whether firms use derivatives to hedge rather than to speculate or pursue managers’ self-interest; and whether corporate governance impact on foreign currency derivatives usage. The paper is therefore designed to answer the following research questions:

- Do foreign currency derivatives affect firm value?
- Do firms use derivatives to hedge rather than to speculate or pursue managers’ self-interest?
- Does corporate governance impact foreign currency derivative usage?

The rest of the paper is structured as follow: The next section is dedicated to a review of literature on risk management; financial theory and the rationale against risk management; hedging; currency hedging; and corporate governance. The third section covers findings. The fourth section covers discussion and analysis of findings. The last section concludes.

2.0 LITERATURE REVIEW

2.1. Risk management

Risk management, as defined by Condamin *et al.* (2006), is a continuous process of making and carrying out decisions that will reduce to an acceptable level the impact or uncertainties of the exposures bearing on a firm. In order to reduce the impact or uncertainties of its exposure, the firm may choose to hedge using an on-balance-sheet strategy⁵ or an off-balance-sheet strategy⁶. Given the authors’ purpose, risk management and hedging will be treated indistinctly, meaning the acquisition of off-balance-sheet financial assets with the purpose of reducing the variance of the firm’s payoffs (Smith & Stulz, 1985; Carlos, Gomez-Gonzalez, Rodriguez, 2009).

MM’s and Sharpe’s (1964) findings, despite being the foundations of modern capital structure theory and of modern pricing theory, rely on some unrealistic and questionable assumptions. As Aretz *et al.* (2007) concludes, in the presence of capital market imperfections, which consist of agency costs, transaction costs -such as bankruptcy and financial distress costs, and taxes, corporate risk management constitutes a means to enhance shareholder’s value. Whether to hedge risk or not has been an issue since the beginning of risk management (Carlos, Gomez-Gonzalez, Rodriguez, 2009). Most of the foundations of financial theory conclude that under some assumptions financial risk management is vain. Not only those theoretical assumptions are clearly unrealistic, but the evidence shows that firms and investors do manage financial risk, and they devote a great amount of resources to do so (Carlos, Gomez-Gonzalez, Rodriguez, 2009).

2.2. Financial theory and the rationale against risk management

Modern capital structure theory began in 1958 with Modigliani and Miller’s paper on the effects of capital structure on firm’s value, which has been recognized as the most influential financial article ever written (Brigham & Houston, 1998). Their main finding relates to the irrelevance of the capital structure, namely the mix of debt and equity, for the firm’s value. MM irrelevance of the capital structure (also known as MM’s Proposition-I) relies on the following assumptions:

- Firms can issue only two types of securities: risk-free debt and equity;
- Financial markets are frictionless (there are no transaction costs);
- There is no corporate or personal taxation;
- Firms cannot go bankrupt;
- Information symmetry (insiders and outsiders have the same information);
- No agency costs (Quiry *et al.*, 2005).

According to MM, because investors can take debt just like any firm, in a perfect market they have no reason to pay a premium for firms doing something they can do at no cost by themselves. As Ross (1977) points out, the simplest proof of MM’s argument is that if the leverage of a firm changes and decreases its value, then by purchasing the firm (or a proportion of it) and reissuing the value maximizing financial package on personal account (or as a reformed corporate structure), individuals could realize an arbitrage profit; since such profits are inconsistent with equilibrium, the value of the firm must be constant across all financial packages⁷.

The main intuition behind MM’s is that the cost of capital of the debt-issuing firm is higher than the only-equity issuing firm because the shareholders of the former bear both operating risk and debt (financial) risk, whereas the shareholders of the latter incur operational risk only. This intuition is then formalized in MM’s Proposition-II, which recognizes that by increasing the leverage,

5. On-balance-sheet strategy relates to changing the exposition of its balance sheet (e.g. relocating production facilities or matching the currency denomination of the assets and liabilities to avoid currency risk, also known as operational hedge) (Nance *et al.* (1993).

6. Off-balance-sheet strategy involves contracting instruments such as derivatives (Nance *et al.* (1993).

7. Nevertheless, due to i) higher interest rates for individual borrowing; ii) limitations on amount on debt that individuals can borrow from the market iii) transaction costs and iv) special tax provisions, individual borrowing is no substitute for corporate borrowing (Stiglitz, 1974).

the shareholder is charged with an increasing financial risk for which he will demand a premium; thus, under the perfect market assumptions, the rise in expected returns related to leverage⁸ is cancelled out by the rise in risk, so shareholders' wealth is unaffected (Quiry *et al.* (2005).

As MM concludes, their findings also lay out the foundations for a theory of the valuation of firms and shares in a world of uncertainty. As a natural inference from MM's first proposition, the firm's market value results solely from the sum of the net present value of the cash flows produced by the existing assets and the net present value expected from future investments; therefore, the value of a firm cannot be changed merely by means of financial transactions (Crouhy *et al.*, 2006; Carlos, Gomez-Gonzalez, Rodriguez, 2009). According to MM and given that the definition of financial transactions⁹ contains the derivatives concept, it can be inferred that the value of a firm cannot be changed by means of contracting such instruments.

2.3 Hedging

Hedging is a risk management strategy used in limiting or offsetting probability of loss from fluctuations in the prices of commodities, currencies, or securities. In effect, hedging is a transfer of risk without buying insurance policies (Allayannis, Lel, & Miller, 2011). Nowadays, almost all firms face various types of financial risk in exercising their daily activities; therefore corporate risk management becomes an important role in a firm's business strategy. According to the Modiglian & Miller (1958), under a perfect world in the absence of taxes, bankruptcy costs, and asymmetric information¹⁰ etc., the value of a firm is unaffected by hedging policy as shareholders can hedge on their own by holding well-diversified portfolios, so firms should not hedge. For corporate hedging to increase firm value, market imperfections must exist. If a firm is exposed to economic risks in an imperfect environment, these exposures, if unhedged, can impose costs on the corporation (Modiglian & Miller, 1958).

Nevertheless, the number of firms using derivatives is increasing at a high speed (Graham & Rogers, 2000). Based on The International Swaps and Derivatives Association (ISDA) report, the notional value of outstanding Over-The Counter (OTC) derivative contracts¹¹ more than quadrupled from 1994 to 1999, increasing from \$11.3 to over \$ 50 trillion (Graham & Rogers, 2000). A series of corporate risk management theory identifies several market imperfections that can be costly. Smith and Stulz (1985) point out the incentives of corporate income tax, costs of financial distress and managerial risk aversion may contribute to the process of market value-maximization.

However, recent studies about whether hedging can increase the value of a firm are mixed. Smith and Stulz (1985) find that, by reducing the probability of bankruptcy, hedging can increase firm value and this effect is larger for firms with higher costs of financial distress. Bessembinder (1991) states that hedging by corporations can increase firm value by reducing agency costs and improving contracting terms.

On the other hand, Nguyen and Faff (2007), based on the 428 largest non-financial Australian firms listed on the Australian Stock Exchange over the 1999-2000 period, find that the use of derivatives in general, and the use of interest rate derivatives in particular, are negatively related to firm value, whilst currency and commodities derivatives have no discernable impact on firm value. Guay and Kothari (2003) asserts that the magnitude of the derivatives positions and the cash flows generated by hedging portfolios is economically small in relation to firm's typical risk exposures, thus unlikely to explain large changes in firm value.

2.4 Currency Hedging

Currency Hedging represents all measures taken to achieve protection towards existing exchange rate risks, which include the creation of positions that offset the effects of exchange rate changes on existing or expected exposures, and matching of exposures to minimize the effects, for security and risk avoidance (Shapiro, 2003). Currency risks for companies arise from its activities outside its currency's area. It is as a result of exchange rate fluctuations, exchange rate changes, creating uncertainty and potential losses (Pfennig, 1998; Hagelin, 2003). Currency exposure is the 'exchange rate and currency risk' that arise as a result of the financial activities of the business. The two basic concepts of quantifying exposure are translation exposure¹² and economic exposure¹³ (Adler & Dumas, 1984; Froot, Scharfstein & Stein 1993). Transaction exposure originates from various types of a corporation's transactions requiring settlement in foreign currency during a specified time period.

8. The amount of debt used to finance a firm's assets. A firm with significantly more debt than equity is considered to be highly leveraged (Quiry *et al.*, 2005).

9. Financial transaction refers to the creation, liquidation, or change in ownership of financial assets (Kaliski, 2001).

10. A situation in which one party in a transaction has more or superior information compared to another. This often happens in transactions where the seller knows more than the buyer, although the reverse can happen as well (Modiglian & Miller, 1958).

11. Over-The Counter (OTC) derivative contracts are securities traded in some context other than on a formal exchange such as the NYSE, TSX, AMEX, etc. (Graham & Rogers, 2000).

12. Translation exposure results from the need to convert the financial statements of foreign subsidiaries from the foreign currency to the home currency of the corporation, for the purpose of reporting and consolidation (Shapiro, 2003).

13. Economic or operating exposure represents possible fluctuations of future cash flows in home currency that are caused by changes in the exchange rate, and thus measure risk and competitive edge of firm in the long run (Graham & Rogers, 2000).

Currency hedging with external instruments has become more popular in industrial companies in the last years (Gebhardt & Rub, 1999). Derivatives like forwards, futures, swaps, vanilla and exotic options offer a wide variety of possible strategies to hedge against transaction risks (Rudolph & Schäfer, 2005). Hedging is used to reduce financial distress and avoid underinvestment, to reduce expected tax costs and to alleviate the manager's personal risk exposure.

Dufey and Srinivasulu (1983) suggest that hedging cannot create shareholder value. The Modigliani and Miller (1958, 1961) propositions discussed that with a firm's investment policy, with no taxes and no contracting costs; its financial policy does not affect its current market value. But since corporate risk management can be seen as a financing policy, it cannot contribute to firm value creation according to the M&M proposition (Mayers & Smith, 1982; Culp et al., 1994; Smith, 1995; Stulz, 2000; 1996; Bartram, 2002). Jin and Jorion (2006), based on 119 US oil and gas producers from 1998 to 2001, verify that hedging reduces the firm's stock price sensitivity to oil and gas prices, but finds no evidence of effect on firm's market value.

On the contrary, Smith and Stulz (1985), Smith et al., (1990), Graham and Rogers (2002), and Stulz (2001) discussed the theory of hedging of value maximising firms, that for hedging to affect firm value, it must do so through changes in tax liabilities, stakeholder contracting costs, or through relations between the choice of financial policy and future investment decisions. Mayers and Smith (1982) and Smith and Stulz (1985) showed that hedging reduces deadweight costs of financial distress. Also, when firms face a convex tax¹⁴ function, it helps reduce expected taxes. Bankruptcy risk reduction can reduce expected cost to creditors or enhance the price of services to risk averse stakeholders such as insurance policyholders (Hagelin, 2003). Agency problems between shareholders and creditors that are caused by underinvestment¹⁵ and asset substitution problems can be alleviated by risk reduction (Mayers & Smith (1982). Similarly, Allayannis and Weston (2001) found that the use of foreign currency derivatives by US non-financial firms generate a positive hedging premium of 4.87% increase in firm value. Their study is supported by Graham and Rogers (2002) and Hagelin (2003) who also found that there is a significant positive relationship between the usage of currency derivatives and firm value.

It is therefore apparent that the empirical evidences on whether currency derivatives usage affect firm value or not are mixed. It is in light of these mixed findings that the researcher wants to carry out this research to throw more light on the subject matter.

2.5 Corporate Governance

The Organisation for Economic Co-operation and Development (OECD) Principles of Corporate Governance states that: "*Corporate governance involves a set of relationships between a company's management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined*" (OECD, 2004). Shareholders hire managers to create value for the firm. In exchange, managers demand compensation. Nevertheless, managers have some incentives of their own, which may not match those of the shareholders (Carlos, Gomez-Gonzalez, Rodriguez, 2009).

Firstly, it should be acknowledged that shareholders have the opportunity to easily mitigate their idiosyncratic risk via portfolio diversification, whilst managers, due to their extensive exposure to the firm's idiosyncratic risk¹⁶ and their competitive disadvantage to diversify, will prefer to reduce their risk exposure at the firm level; thus, some managerial decisions within the firm may be of the interest of the manager, but not of the shareholder. As a result, some managerial decisions –such as the engagement in conglomerate mergers¹⁷, acquisitions or suboptimal debt levels- benefit managers, as they lower the risk exposure of their wealth positions, while they are not value maximizing for the firm and not beneficial for the shareholders. The agency costs resulting from this type of managerial behaviour, which decrease firm value, may be reduced via hedging. As presented by Aretz *et al.* (2007), corporate risk management reduces the variability in the firm value and costs resulting from this type of managerial behaviour, which decrease firm value, may be reduced via hedging. Also, Aretz *et al.* (2007) assert that corporate risk management reduces the variability in the firm value and thus accommodates the risk aversion of undiversified managers who have now fewer incentives to engage in non-value maximizing decisions.

Secondly, manager's compensation schemes may create incentives for incurring in underinvestment problems or taking decisions which are not value maximizing for the firm and shareholders. As pointed out by Smith and Stulz (1985), if managers' compensation is a concave (or not too convex) function of firm value, they will have incentives to reduce variance¹⁸, thus creating incentives for rejecting variance-increasing positive net present value projects.

14. Convex tax function is a progressive tax in which a company's average effective tax rate increases as pre-tax income rises. The function (schedule) indicates that the tax rate will always increase for some types of income, but will never decrease with rising income (Hagelin, 2003).

15. Underinvestment is an agency problem where a company refuses to invest in low-risk assets, in order to maximize their wealth at the cost of the debt holders (Rudolph & Schäfer, 2005).

16. Managers' idiosyncratic risk arises from through the tied relationship between them and the firm, which is manifested in managers' proportion of wealth invested in the firm, years worked for the firm, specific asset expertise, reputation, awards, promotions, etc. (May, 1995; Bartram, 2000)

17. A merger between firms that are involved in totally unrelated business activities. There are two types of conglomerate mergers: pure and mixed. Pure conglomerate mergers involve firms with nothing in common, while mixed conglomerate mergers involve firms that are looking for product extensions or market extensions (Aretz *et al.*, 2007)

18. This is also a consequence of Jensen's inequality (Smith & Stulz, 1985).

To avoid this behaviour from managers, if hedging costs are negligible¹⁹, shareholders may let managers hedge as this increases incentives to take variance-increasing positive net present value projects; in the other hand, if hedging is prohibited, managers will focus more on non-priced risks (Smith &Stulz, 1985).

3.0 FINDINGS

3.1 Do foreign currency derivatives affect firm value?

Graham and Rogers (1999), based on a March-December 1995 survey comprising 3,232 firms, found that hedging conveys a greater debt capacity, which results in higher firm value via a higher tax shield. For the average firm, interest rate hedging results in an increased debt ratio by 2.85%, which increases firm value by 1.4%; currency hedging results in an increased debt ratio by 6.87% and firm value by 2.1%.

Allayannis and Weston (2001) found evidence consistent with the hypothesis that hedging increases firm value. Based on a 720 non-financial US firms sampled from 1990-1995, they found that, on average, firms that face currency risk and use currency derivatives have a 4.87% hedging premium, regardless of the foreign exchange behaviour. Moreover, they found that firms that begin a hedging policy experience an increase in value above those firms that choose to remain unhedged, and that firms that quit hedging experience a decrease in value relative to those firms that choose to remain hedged. Carter *et al.* (2002) based on a sample of 26 US airlines during 1994-2000, found evidence of the existence of a 12-16% hedging premium and of a positive relation between changes in hedging and changes in firm value. They concluded that this premium results from the firm's ability to mitigate the underinvestment problem and the expected costs of financial distress. Particularly, Carter *et al.* found that the premium is due to i) the opportunity to buy underpriced assets from distressed²⁰ airlines during periods of high jet fuel prices; ii) avoiding the possibility of selling assets at below-market values during periods of high jet fuel prices; and iii) from the ability to meet previously contracted purchase commitments during periods of high jet fuel prices.

Lookman (2004), based on a sample of 125 oil and gas exploring and producing firms from 1999-2000, tests whether commodity price hedging creates value or not. The author differentiates between firms which bear commodity risk as their primary risk (undiversified firms²¹) and firms that are diversified and, therefore, bear commodity risk as secondary. The author found a 15% hedging discount for undiversified firms, and a 30% positive hedging premium for diversified firms. Bartram *et al.* (2009), based on a survey comprising 6,888 non-financial firms from 47 different countries, find strong evidence that the use of financial derivatives reduces both total risk and systematic risk. Currency derivative use is associated with a positive value premium, although statistically weak and sensitive to endogeneity and omitted variable concerns. Controlling for firms' likelihood to hedge, the authors find that hedging firms have 10% to 25% lower cash-flow volatility, 3% to 10% lower standard deviation of returns, 6% to 22% lower sensitivity to market returns (i.e. lower market beta), and 1% to 7% value premium.

Carlos, Gomez-Gonzalez and Rodriguez (2009) focused on non-financial firms and the local's most liquid derivatives market, and find that for a panel of eight large Colombian corporations the growth rate of Tobin's Q depends significantly on firm's size and hedging. Their results suggest that, after controlling for relevant financial variables such as firm's profitability and leverage, and other variables such as firm's age, an increase in foreign currency derivatives leads to a higher growth in the firm's value. Finally, Allayannis, Lel, & Miller (2011) gathered a sample of 1,546 firms - a year observations, from thirty-nine countries, an unbalanced panel set of 372 foreign firms that are cross-listed on a major U.S. exchange (e.g. level II and level III ADRs²²) between 1990 and 1999 and found a positive and significant association between a firm's use of currency derivatives and value for the sample of firms with exposure. They avow that on average, the use of foreign currency derivatives for foreign firms with exchange-rate exposure adds value. "The magnitude of the premium is 10.7% in the baseline OLS²³ specification though it can be higher in some of the other specifications that we employ" (Allayannis, Lel, & Miller, 2011).

3.2 Do firms use derivatives to hedge rather than to speculate or pursue managers' self-interest?

Muller and Verschoor (2005) determined why individual firms use foreign currency derivative. The sample period covers the period January 2002 to October 2004. By a thorough analysis of 471 European non-financial firms, they found strong evidence in favour of the existence of economies of scale in hedging and show that European firms engage in currency derivative for hedging purposes. Their finding is consistent with previous studies (Allayanis *et al.* 2007; Allayannis, Lel, & Miller, 2011).

19 If hedging is costly, shareholders may also design compensations schemes that reduce the concavity of manager's wealth as a function of firm value. This can be accomplished by including firm's stock options to the remuneration; the more option-like features in a firm's compensation plan, the less the firm is expected to hedge (Smith and Stulz, 1985).

20. A condition where a company cannot meet or has difficulty paying off its financial obligations to its creditors (Carter *et al.*, 2002).

21. Firms that derive at least 80% of their revenues from exploration and production (Lookman, 2004).

22. American Depository Receipts (ADRs) are certificates which represent the stocks of a foreign company, but are listed on American stock exchanges or over-the-counter, and all transactions are in U.S. dollars, and all communications are in English.

23. Ordinary least squares (OLS) is a method for estimating the unknown parameters in a linear regression mode.

Kapitsinas (2008) presents evidence on the use of derivative contracts in the risk management process of Greek non-financial firms and its potential impact on firm value. A sample of 81 Greek non-financial firms with exposure to financial risks that are listed in the Athens Stock Exchange revealed that the firms engaged in foreign currency derivatives for hedging purposes. Not only foreign currency derivatives, but also the use of interest rate derivatives in particular for hedging. Chernenko and Faulkender (2011) used a sample of 1,854 firms for up to ten years from non-financial firms in Compustat's ExecuComp data set from 1993-2003; found that firms hedged to reduce their need to access external capital markets to fund investment opportunities. This is consistent with Froot, Scharfstein and Stein (1993). Chernenko and Faulkender's (2011) cross-sectional results also showed that firms with more high-powered compensation structures engage in more speculation, consistent with the survey evidence documented in Geczy, Minton, and Schrand (2007).

According to of Global Derivatives Study Group (1993), out of a group of thirty companies 69% use derivatives to hedge foreign exchange rate transaction exposures; 33% foreign exchange translation exposures; 87% interest rate exposure; and 11% commodity price exposure. Bodnar and Gebhardt (1999) also found out that 95.9% German firms use derivatives primarily to manage foreign exchange rate risk and 88.8% interest rate risk, while only about 40% use these instruments to manage commodity price risk. DeMarzo & Duffie (1995) study the determinants of corporate hedging practices in the REIT²⁴ industry between 1999 and 2001. They found a positive significant relation between hedging and financial leverage, indicating the financial distress costs motive for using derivatives in the REIT industry. Using estimates of the Black-Scholes sensitivity of CEO's stock option portfolios to stock return volatility and the sensitivity of CEO's stock and stock option portfolios to stock price, they found evidence to support managerial risk aversion motive for corporate hedging in the REIT industry. Their results indicate that CEO's cash compensation and the CEO's wealth sensitivity to stock return volatility are significant determinants of derivative use in REITs.

Bartram, (2000) study revealed that 44% of non-financial firms under study still concentrate on accounting exposure, and 43% use derivatives for taking a view, i.e. speculating, in order to reduce funding costs. On the other hand, the most important objective of the hedging strategy consists of 67% of minimizing fluctuations in cash flow, while reducing the volatility of accounting earnings or protecting the appearance of the balance sheet are predominant only for 28% and 5%, respectively. Bartram (2000) in furtherance found that good managers that are interested in protecting their reputation had a strong incentive to communicate their skills by hedging effectively; on the contrary, less qualified managers did not tempt to make a correct assessment of their performance difficult. Using a sample of firms from 34 countries over the period 1990 to 1999, Lel (2006) found that firms with strong governance use currency derivatives for value-maximizing reasons as established by theory. On the other hand, firms with weak governance use such derivatives mostly for managerial self-interests and selective hedging (speculation).

3.3 Does corporate governance impact foreign currency derivative usage?

Allayanis *et al.* (2007), using a 39 countries database between 1990 and 1999²⁵, find that the foreign exchange hedging premium is statistically significant and economically large for firms with strong corporate governance, and positive but insignificant for firms with weak governance. The authors find that on average there is a 14.5% hedging premium for firms with foreign currency exposure. Using a sample of firms from 34 countries over the period 1990 to 1999, Lel (2006) found that firms with strong governance use currency derivatives for value-maximizing reasons as established by theory. On the other hand, firms with weak governance use such derivatives mostly for managerial self-interests and selective hedging. These results are robust to using a sample of U.S. firms, the use of foreign denominated debt as an alternative strategy to hedge currency risk, selection bias, and a possible endogeneity²⁶ between hedging policies, corporate governance, and other financial policies. Generally, the results serve as the primarily comprehensive evidence on the impact of corporate governance on why firms use derivatives and consequently why they hedge.

Allayannis, Lel, & Miller(2011) gathered a sample of 1,546 firms - a year observations, from thirty-nine countries, an unbalanced panel set of 372 foreign firms that are cross-listed on a major U.S. exchange (e.g. level II and level III ADRs) between 1990 and 1999 and examined the value implications of their use of derivatives conditional on corporate governance. They found that firms with strong corporate governance (both at the firm- and country-level) are rewarded with a premium for the use of foreign currency derivatives. The use of derivatives by firms with weak corporate governance does not carry a significant premium but they did not find this activity to be value-destroying either. Lel (2009) examines the impact of the strength of corporate governance on firms' use of currency derivatives. Using a sample of firms from 30 countries over the period 1990 to 1999, the author found that strongly governed firms tend to use derivatives to hedge currency exposure and overcome costly external financing. On the other hand, weakly governed firms appear to use derivatives mostly for managerial reasons. Overall, the results serve as a comprehensive evidence of the impact of firm- and country-level corporate governance on firms' use of derivatives.

24. A Real Estate Investment Trust (REIT) is a company that owns, and in most cases, operates income-producing real estate. REITs own many types of commercial real estate, ranging from office and apartment buildings to warehouses, hospitals, shopping centres, hotels and even timberlands.

25. The authors measure value based on exchange-traded ADRs, which provides advantages such as their local liquidity and homogeneous accounting and reporting standards.

26. Endogeneity - correlation between the hedging policies, corporate governance, and other financial policies.

Allayannis, Lel, & Miller (2011) examined how the interaction of firm-specific internal corporate governance and country-specific external governance impacts the value of currency derivatives usage. They found that the relation between the use of foreign currency derivatives and firm value is more pronounced when both the internal firm level governance and the external country level governance are strong. This evidence is consistent with earlier evidence by Doidge, Karolyi, and Stulz (2007) and Bergman and Nicolaievsky (2007) who document a complementary relationship between firm-level and country-level investor protections.

4.0 DISCUSSION AND ANALYSIS OF FINDINGS

To assess the effect of the use of currency derivatives on firm value, many of the authors (Allayannis, Lel, & Miller 2011; Carlos, Gomez-Gonzalez & Rodriguez, 2009; Graham & Rogers, 1999; Allayannis & Weston, 2001; Bartram et al., 2009; Lookman, 2004; Carter *et al.*, 2002, among others) found statistically significant evidence that foreign currency derivatives positively affect firm value. Varied statistical formulae were employed by these authors, including: maximum likelihood estimation²⁷, pooled time-series cross-section regression, correlation, Tobin's q ²⁸ among others in arriving at this conclusion. This finding is consistent with earlier theories that suggest that hedging activities could be value-increasing (Stulz, 1984; Smith & Stulz, 1985; DeMarzo & Duffie, 1995; Froot *et al.*, 1993; Nance *et al.*, 1993; Mian, 1996; Tufano, 1996; Geczy *et al.*, 1997; among others). The result is a major shift from the classical Modigliani and Miller (1958) paradigm that postulates that the financial risk management activities of a company are irrelevant to shareholder wealth since shareholders have access to the same risk management tools as corporate managers.

The recent finding that foreign currency derivative increases firm value has provide useful information on numerous valid reasons why companies should consider hedging to maximize shareholder wealth. As firms didn't reveal their position in derivatives until the 1990s, the empirical validation of these theories has, however, been confronted with the long-lasting unavailability of reliable data on hedging activities (Allayannis, Lel, & Miller 2011). Since then, widespread corporate use of derivatives has been documented. More recent studies (e.g., Geczy *et al.*, 1997; Marshall, 2000; Judge, 2004) have even differentiated between different types of risks (e.g. interest rate, currency, commodity) suggesting that factors determining derivatives usage may differ for each type. By stabilizing the value of the firm and ensuring that asset value falls below the liabilities in fewer states of nature, hedging increases the value of the firm (Smith & Stulz, 1985). By reducing cash flow volatility²⁹, firms face a lower probability of default and thus have to bear lower expected costs of bankruptcy and financial distress; a lower probability of default enables firms at the same time to diminish financial distress costs, increase their leverage, and therefore to benefit from greater tax shields³⁰; thus, hedging enables the firm to exploit the disciplinary role of debt (Gomez-Gonzalez & Rodriguez, 2009).

It is also apparent from the findings in the previous section that firms use derivatives to hedge, to speculate and to pursue managers' self-interest. High-powered executive compensation contracts motivate more hedging, because managers internalize part of the surplus created through hedging or more speculation, because given their highly convex compensation contracts managers capture some of the benefits but not the costs of speculation (Chava & Purnanandam, 2007). Assuming perfect capital markets, the classical Modigliani and Miller paradigm implies that firms have no reasons to engage in hedging activities since shareholders of the company who wish to mitigate their risk exposures always have the possibility to perform the necessary hedging transactions on their own. In reality however, capital markets are imperfect and characterized by: (i) financial distress; (ii) taxes; (iii) information asymmetries; and (iv) agency problems; which are costly to firms. Smith and Stulz (1985), Bessembinder (1991), Nance *et al.* (1993) and Froot *et al.* (1993), among others, show why these market imperfections may lead to an increase in firm value through hedging activities.

Due to the fact that hedging reduces the amount of "noise" and increases the informational content of the firm's profits (DeMarzo & Duffie, 1995), managers will try to take advantage of their informational position³¹ in order to change market's perception of the perceived stream of returns for the firm and to maximize their own wealth. Concerning manager's and shareholder's interest in changing market's perception of the perceived stream of returns, Rebonato (2007) found that the senior management of a good firm in general has an interest in dampening the wildest earnings fluctuations, so that the good underlying trend can be more readily revealed by investors, even at the cost of giving up some expected return, because the ability to spot with ease the good underlying trend may more than compensate for some loss in expected returns. Similarly, good managers (or those with good news) will prefer to hedge so as to preserve the likelihood of a good outcome, while incompetent managers (or those with bad news) might prefer to increase risk and hope for a lucky draw (DeMarzo & Duffie, 1995).

27. Maximum-Likelihood Estimation (MLE) is a method of estimating the parameters of a statistical model. When applied to a data set and given a statistical model, maximum-likelihood estimation provides estimates for the model's parameters (Stulz, 1984).

28. Tobin's q is the ratio between the market value and replacement value of the same physical asset (Tobin, 1969).

29. Cash flow volatility - Measure of cash flow variation over time.

30. A tax shield is the reduction in income taxes that results from taking an allowable deduction from taxable income. For example, because interest on debt is a tax-deductible expense, taking on debt creates a tax shield (Deen & Doron, 2002).

31. Managers informational advantageous position arises from them being better informed about the sources and magnitude of the risks the firm faces. They have better and more current information regarding firm-specific events and foreign exchange, interest rate or commodity exposure of the firm (DeMarzo & Duffie, 1995).

Regarding manager's interests, the information revealed by the firm's financial results affects their reputation and wealth. As DeMarzo and Duffie (1995) assert, in absence of disclosure requisites, because hedging reduces the risk of the firm's profits and the variance of their wage, risk-averse managers³² will try to attain full hedging. Likewise, Bartram (2000) finds that good managers; interested in protecting their reputation have a strong incentive to communicate their skills by hedging effectively; on the contrary, less qualified managers will be tempted to make a correct assessment of their performance difficult. As to shareholder's interests, hedging may reduce the impact of unrelated financial risks (e.g. exchange rate risk, interest rate risk) on firm value and thus strengthen the relationship between stock price and management performance, making it easier to distinguish between efficient and inefficient managers (Aretz *et al.*, 2007).

Managers hedge in a manner that does not maximize the value of the firm (Smith & Stulz, 1985). Smith and Stulz posit that managers become more risk averse as their equity stake in the firm increases. This is due to the fact that as managerial ownership increases, managers are less likely to hold well diversified portfolios³³ and will have incentives to hedge to reduce the firm's risk.

Finally, corporate governance plays an important role when investors assess the reason behind the use of foreign currency derivatives and its potential value for the firm (Doidge, Karolyi, & Stulz, 2007). As to whether corporate governance impacts foreign currency derivative usage, the findings in the prior section show that the use of foreign currency derivative is positively associated with firm value when corporate governance is strong. Firms with high internal governance index (strong governance) have a positive and significant association between foreign currency derivative use and firm value (example: coefficient of 0.130), whereas firms' use of foreign currency derivatives with low internal governance index³⁴ (weak governance) is not significantly associated with firm value (Allayannis, Lel, & Miller, 2011). The Chow test of Allayannis, Lel, and Miller (2011) shows that the difference between the two coefficients, 0.130 and 0.045 is statistically significant. Firms which have both strong internal corporate governance and strong external governance have a positive association between foreign currency derivatives use and firm value. Therefore, the evidence suggests that the value implication of foreign currency derivative use is the strongest when investors are protected at both the firm and country level.

Overall, the study finds both a statistically and economically significant premium for firms with strong internal corporate governance suggesting that firms with strong governance are likely to use derivatives for hedging and that the market infers such use and rewards these firms with a higher value. These results add to the current literature on how financial policies improve value in the presence of strong corporate governance (e.g., Kalcheva & Lins, 2007). It is argued that outside directors who are appointed to act in the shareholders' interests have an incentive to signal that they indeed do act in that way (Fama and Jensen, 1983; Mayers *et al.*, 1997). Firms dominated by independent outside directors generally are considered to have better corporate governance and risk management attributes. The strength of corporate governance can influence the use of derivatives in at least three ways:

Firstly, corporate governance can affect firms' decisions to use derivatives for hedging or speculation. Foreign exchange rates vary unpredictably and speculating on currency movements can result in significant transactions costs and trading losses for corporations (Leland, 1998; Stulz, 1996). For example, Volkswagen lost about \$1.5 billion in 2003 due to unhedged currency swings³⁵ (Lel, 2009). Exposing the firm to such risky positions is less likely to take place in firms with higher transparency and better monitoring of managerial activities. Managers in firms with a weak monitoring environment have more discretion over their firms' activities and are less likely to be disciplined for any improper use (or non-use) of derivatives such as incorporating their personal subjective views into firms' hedging policies (Lel, 2009). Consistent with this argument, using survey data on the derivatives usage of U.S. firms, Geczy *et al.* (2007) find that weakly governed firms are more likely to report in the survey that they take a view with derivatives.

Secondly, shareholders use ex-ante governance mechanisms (e.g., executive compensation) and ex-post governance mechanisms (e.g., monitoring managerial activities) as substitutes in maximizing firm value. Firms with weak monitoring mechanisms can use derivatives to accommodate managerial risk preferences in designing executive compensation policies (Lel, 2009). For example, a manager's stock holdings and compensation in the firm and his human capital linked to the firm can incentivize him to avoid investing in long-term risky positive NPV³⁶ projects (Almazan & Suarez, 2003). Shareholders can overcome this agency conflict by either allowing risk-averse managers to reduce the firm-specific risk or monitoring their actions. Further, hedging can reduce the level of

32. Managers who are reluctant to accept a bargain with an uncertain higher payoff rather than another bargain with a more certain, but possibly lower, expected payoff (DeMarzo & Duffie, 1995).

33. To distribute investments among different companies or securities in order to limit losses in the event of a fall in a particular market or industry (Smith & Stulz, 1985).

34. Measure of change in corporate governance indicators to provide a minimum amount of information for a reasonable assessment of firm performance vis-à-vis development targets. Being minimally but critically informative, the index is intended to serve not as detailed or comprehensive statistics concerning firm, but as a catalyst for action among local stakeholders (OECD, 2004).

35. A fluctuation in the value of an asset, liability or account. This term is most commonly used when referring to a situation in which the price of an asset experiences a significant change over a short period (Lel, 2009).

36. Net Present Value (NPV) - The difference between the present value of cash inflows and the present value of cash outflows. NPV is used in capital budgeting to analyze the profitability of an investment or project (Almazan & Suarez, 2003).

managerial compensation associated with bearing the additional firm-specific risk that can be hedged away, and increase the board of directors' ability to measure managerial performance by reducing the noise related to performance measures (DeMarzo & Duffie, 1995; Smith & Stulz, 1985; Stulz, 1984). As a result, managers may have a greater incentive to hedge to reduce such noise in the firm's fundamentals, especially in opaque firms³⁷ and where monitoring is more costly (Dadalt *et al.*, 2002; DeMarzo & Duffie, 1995).

Thirdly, hedging theories related to firms' financial policies³⁸ (Froot *et al.*, 1993) assume no managerial agency conflicts. However, managers do not always act in the best interest of shareholders. Empirical literature shows that a greater monitoring of managerial activities can reduce managerial agency conflicts (La Porta *et al.*, 2002; Mitton, 2002). Thus, firms with a greater monitoring of managerial activities can use derivatives to a greater extent as part of their financial policies, for example to overcome market frictions as in the model of Froot *et al.* (1993) for costly external financing and to eliminate currency risk.

5.0 CONCLUSION

In this paper, the researcher examines the impact of foreign currency derivative usage on value of firms across the world. The study finds that on average foreign currency derivatives usage by firms with foreign currency exposure is valuable across countries. In addition, the paper confirms that firms use foreign currency derivatives to hedge, speculate and to pursue managers' self-interest. Finally, the study finds a significant premium for foreign currency derivatives use only for firms with strong internal or strong external corporate governance, while find no premium for firms with weak corporate governance. The study shows that the relation between the use of foreign currency derivatives and firm value is most pronounced when both the internal firm level governance and external country level governance environment are strong. Strongly governed firms tend to use currency derivatives to reduce their currency exposure and to overcome market frictions associated with costly external financing, and weakly governed firms appear to use derivatives for managerial reasons.

Overall, the paper has important implications on how investors assess foreign currency derivatives usage around the world and suggests that quality corporate governance helps them infer that foreign currency derivatives use is done for sound economic hedging reasons thereby yielding a valuation premium. The results have strong implications for managers, investors and regulators. Because firms use foreign currency derivative to hedge, speculate, and to pursue managers' self-interest, regulators need to make sure that any regulatory changes continue to enable firms to use derivatives to the best interest of shareholders. The results may be interpreted as further affirmation that foreign currency derivative usage affects firm value; firms use it to hedge, speculate and to pursue managers' self-interest; and that strong corporate governance practices impact foreign currency derivative usage.

ACKNOWLEDGMENT

I wish to register my profound gratitude to the Almighty God for making this possible. I also hereby wish to acknowledge the supports from my wife and children.

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