



## THE VALUE OF HEDGING THROUGH CORPORATE GOVERNANCE: A LITERATURE REVIEW AND DIRECTIONS FOR FUTURE RESEARCH

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### Abstract

Previous empirical studies concerning corporate hedging have investigated several arguments that have been suggested to explain why corporate hedging is value-enhancing. Another stream of research examined the direct impact of hedging on firm value. Also in line with this, recent studies show that the corporate governance environment could be an important factor in understanding the value of hedging activities. This paper aims to present a comprehensive overview of the theoretical and empirical literature on these issues. We draw three main conclusions. First, it is necessary to identify appropriate measures of hedging activity beyond the use of derivatives. Second, it is essential to get more evidence on the effect of corporate governance in the value of hedging, not disregarding the possibility that these decisions can be undertaken simultaneously. Finally, it is important to expand empirical evidence to non-US firms.

**Key words:** corporate governance, firm value, hedging, financial risks.

## 1. INTRODUCTION

Overall, risk management activities have become standard practice for firms facing financial risks. This seems to be in line with the positive theories that evoke risk management at the firm level as valuable to shareholders in the presence of capital market imperfections. Nevertheless, there are in depth discussions in academic literature concerning the truthful contribution of risk management to firm value. The first step to gaining an understanding of risk management theories is provided by Smith and Stulz (1985), which applied Modigliani and Miller's (1958) irrelevance proposition to the scope of risk management. However, while Modigliani and Miller's assumptions are relaxed, several arguments in support of corporate risk management proliferate: (i) the reduction of expected corporate taxes (e.g., Smith and Stulz, 1985); (ii) the reduction of the probability of financial distress (e.g., Nance *et al.*, 1993); and (iii) the reduction of cash-flow uncertainty and reduction of agency conflicts between bondholders and shareholders, thereby decreasing underinvestment costs (e.g., Froot *et al.*, 1993). The latter arguments rest on the basis of shareholder's value maximization, but, in the meantime, another argument, based on the manager's utility maximization, has been developed. It postulates that firm value is adversely affected by the degree of managerial agency costs (Tufano, 1996). Within this context, a firm's quality of corporate governance mechanisms may influence how the firm uses risk management instruments (Lel, 2009).

Over time, researchers have used two main approaches to empirically examine whether hedging increases firm value. The first has tried to uncover which hedging theory best describes firms' use of derivatives (e.g., Tufano, 1996 and Bartram *et al.*, 2009). Recently, another stream of research stated that the key question for shareholders is whether hedging does, in fact, add value to the firm. Empirical studies under this second approach directly test the impact of risk management activities on firm value (e.g., Allayannis and Weston, 2001 and Jin and Jorion, 2006). Moreover, a firm's high governance level increases the likelihood of the use of derivatives for hedging purposes, thereby leading to more valuable hedging activities (Allayannis *et al.*, 2009).

In this context, our paper aims to present an overview of the theoretical literature on the link between risk management, corporate governance and firm value. In addition, we analyse the related empirical studies, highlighting the major points of consensus and disagreement. From the analysis we point out the limited number of studies using data for non-US firms and conclude that certain areas are unexplored, in particular, the specification of the variables used to represent the implementation of hedging strategies and the investigation of the link between governance mechanisms and hedging premium. It is worth noting that empirical studies on the matters frequently fail to account for the endogeneity of the variables that describe different dimensions of corporate financial policy. So, in order to properly capture these effects, a thorough understanding about the causal structures is required.

Indeed, previous empirical tests on corporate hedging theories have presented evidence that is consistent with some of the theoretical predictions. Among the most

remarkable findings is the avoidance of financial distress as a key objective of derivatives users (e.g., Berkman and Bradbury, 1996). It has also been documented that the size of firms is related to the propensity to use derivatives (Bartram *et al.*, 2009). Nevertheless, the most notable aspect of prior empirical research is the absence of consistent evidence on other reasonable and well regarded hypothesised determinants of the decision to hedge. For example, empirical evidence on the impact of agency conflicts, which arise from ownership structure and from executive compensation policies, on hedging activities is scarce and it frequently runs counter to predictions (Haushalter, 2000). Moreover, empirical evidence concerning the influence of a firm's quality of governance on the way the firm uses hedging instruments is still very scarce.

In the same way, in several empirical studies on the value effects of hedging there are references to the mixed, and often contradictory, results. It is likely that part of the inconsistency of previous empirical results is due to methodological aspects. One possible explanation could be related to the hedging definition frequently used (Clark and Judge, 2008). Indeed, hedging activities tend to be associated with the use of derivatives, disregarding the fact that hedging can be pursued by other means. Furthermore, the majority of prior studies focus on small industry-specific samples of firms and, mostly, samples from one country. On this matter, we observe that the use of small samples imposed restrictions on the estimation of effects across several variables simultaneously, which turns out to be a key issue. We uphold that hedging decisions must be considered simultaneous with governance and other firms' financial decisions (Lel, 2009). Undoubtedly, the hedging definition frequently used and endogeneity issues are the main subjects that only few recent studies have tried to address.

The remainder of the paper is organized into five more sections. Section 2 identifies the most accepted variables used to represent corporate hedging. Section 3 provides a description of the different theories of corporate risk management and the related empirical evidence. Section 4 reviews the relevant empirical studies relating to the effect of hedging in firm value. Section 5 focuses on good governance as a means by which hedging improves value. Section 6 concludes the paper and highlights directions for future research.

## 2. MEASURES OF CORPORATE RISK MANAGEMENT

Survey evidence indicates that firms actively handle their financial price exposures, namely exchange rate, interest rate and commodity price exposures, using external and/or internal hedging techniques (e.g., Bodnar *et al.*, 1998). Within this context, Davies *et al.* (2006) classified the use of derivatives as external hedging techniques and all the other hedging techniques as internal hedging techniques. As such, firms that reveal the existence of natural hedge, foreign currency borrowing, domestic currency invoicing, netting agreements and asset/liability management, which is termed as matching/netting, contract interest limitation clauses, pricing agreements and

contract pass-through clauses, are all considered within the scope of internal instrument users.

## 2.1. MEASURES OF EXTERNAL HEDGING

Concerning empirical studies that define hedgers and non-hedgers solely on the basis of usage of external hedging techniques, that is to say, derivatives and non-derivatives usage, it is important to note that, over time, they have been plagued by the unavailability, or even the lack of quality, of data related to corporate derivatives use. So, the construction of meaningful hedging variables is strongly affected. It is worth nothing that the majority of prior work concerning risk management is based on samples of US firms or samples of non-US firms that are cross-listed in US financial markets. Undoubtedly, it is at the Financial Accounting Standard Board (FASB) level that the primary effort for improvement in terms of disclosure of financial instruments has been made. While disclosure of corporate hedging activities in financial statements has been mandatory in the US since December 1994, for example, in the UK this requirement only came into play in March 1999 and in the European Community in January 2005.

Several measures of derivatives use were proposed in the literature, but we will only be presenting the three most popular. The most common variable used to measure corporate hedging is, without a doubt, a dummy variable which represents whether the firm uses derivatives or not. For example, Nance *et al.* (1993), Marsden and Prevost (2005) and Bartram *et al.* (in press) define hedgers as firms that use any type of derivatives.

Another significant group of studies propose the total notional value of derivative contracts as a measure for corporate hedging (e.g., Berkman and Bradbury, 1996; Graham and Rogers, 2002 and Marsden and Prevost, 2005). In fact, it seems that the total notional value has some advantage over the dummy variable. It provides information about the level of risk management, whereas the dummy variable only provides information about the decision to hedge. A few of the reviewed studies also use the fair value of the derivatives contracts held (Berkman and Bradbury, 1996 and Marsden and Prevost, 2005).

## 2.2. MEASURES OF INTERNAL AND EXTERNAL HEDGING

The vast majority of empirical studies define hedgers and non-hedgers based on the use or non-use of derivatives, ignoring the fact that hedging can be pursued by other means. As a result, contemporary studies recognize the importance of internal hedging techniques and put forward the inadequate specification of existing variables used to represent the implementation of hedging strategies, as a source of empirical tests bias (e.g., Judge, 2006; Davies *et al.*, 2006 and Clark and Judge, 2008). Indeed, firms can be wrongly classified as non-hedgers because they do not use derivatives, even if they actively hedge with internal hedging instruments.

The most frequent approach to measure corporate hedging when the firm uses

internal and external methods consists of using a dummy variable that points out the use/non-use of the full range of hedging techniques. In line with this Judge (2006) defines hedgers as firms that use derivative or non-derivative hedging methods. He considers the use of foreign debt, the issuing of fixed rate debt and the use of other internal hedging techniques such as leading and lagging as non-derivative hedging methods.

### 3. ARGUMENTS FOR CORPORATE RISK MANAGEMENT

#### 3.1. SHAREHOLDER VALUE-MAXIMIZING THEORIES

##### A. Taxes

Smith and Stulz (1985) suggest that if pre-tax income is subject to a convex tax function, then the volatility of pre-tax income is costly to the firm. In this case, hedging taxable income by reducing the variability of pre-tax income reduces the firm's expected tax liability and consequently increases the expected post tax value of the firm, as long as hedging costs do not exceed its benefits. Under this theory, firms that are subject to a progressive tax rate and that have larger tax credits are classified as having a convex tax function. Therefore, they would be more likely to hedge.

The existing empirical literature has used different variables to measure tax function convexity and to analyse the tax hypothesis. The most popular variable is, undoubtedly, the amount reported on tax losses to carry forward (e.g., Nance *et al.*, 1993; Géczy *et al.*, 1997 and Lal, 2009) or a dummy variable indicating the instance of tax losses in the firm's balance sheet (e.g., Berkman and Bradbury, 1996 and Marsden and Prevost, 2005). As we can observe in Table 1, Panel A, in general, firms do not seem to hedge in order to reduce expected tax payments.

##### B. Costs of financial distress

Since the future cash flows of the firm are subject to uncertainty, situations can arise where the firm cannot, or is expected not to fully and timely meet its fixed payment obligations. This illiquidity condition gives rise to costs of financial distress. Under this assumption, hedging can contribute to maximizing a firm's value by reducing the volatility of cash flows, and thus lowering the likelihood of financial distress and the expected associated costs (Smith and Stulz, 1985). Alternatively, hedging can allow firms to increase their debt capacity and associated tax advantages by reducing the probability of default associated with higher debt (Graham and Rogers, 2002).

The two most popular measures used to proxy for the costs of financial distress are financial leverage and interest coverage ratio. Indeed, higher leverage leads to higher probabilities of encountering financial distress. In contrast, a lower interest coverage ratio can be interpreted as evidence that the firm might not generate enough

**Table 1**  
**Summary of empirical evidence on corporate risk management theories**

The table lists the theoretical predictions on corporate risk management and corresponding empirical evidence. Those empirical studies whose findings provide significant evidence for the theoretical prediction appear after the word "Yes"; those whose findings provide significant evidence but are contrary to the theoretical prediction appear after the word "No"; those studies that do not support the theoretical prediction appear after the words "No evidence".

Theoretical Prediction	Empirical Evidence
<b>Panel A. Empirical evidence regarding tax argument</b>	
Hedging:	
Increases for firms with higher tax losses to carry forward or higher level of investment tax credits.	<b>Yes:</b> Berkman and Bradbury (1996); Lin and Smith (2008). <b>No evidence:</b> Nance <i>et al.</i> (1993); Tufano (1996); Fok <i>et al.</i> (1997); Géczy <i>et al.</i> (1997); Gay and Nam (1998); Allayannis and Ofek (2001); Marsden and Prevost (2005); Lei (2009).
<b>Panel B. Empirical evidence regarding financial distress argument</b>	
Hedging:	
Increases for firms with higher leverage.	<b>Yes:</b> Berkman and Bradbury (1996); Gay and Nam (1998); Haushalter (2000); Graham and Rogers (2002); Marsden and Prevost (2005); Judge (2006); Bartram <i>et al.</i> (2009); Lei (2009). <b>No:</b> Allayannis and Ofek (2001); Carter <i>et al.</i> (2006); Hagelin <i>et al.</i> (2007). <b>No evidence:</b> Nance <i>et al.</i> (1993); Tufano (1996); Fok <i>et al.</i> (1997); Géczy <i>et al.</i> (1997); Guay and Kothari (2003); Clark and Judge (2008).
Increases for firms with lower interest coverage.	<b>Yes:</b> Berkman and Bradbury (1996); Fok <i>et al.</i> (1997); Judge (2006); Bartram <i>et al.</i> (2009). <b>No evidence:</b> Nance <i>et al.</i> (1993); Gay and Nam (1998); Davies <i>et al.</i> (2006); Clark and Judge (2008).
Increases for firms with lower credit rating.	<b>Yes:</b> Carter <i>et al.</i> (2006); Judge (2006).
Is likely for firms that have recently accumulated losses.	<b>Yes:</b> Judge (2006); Clark and Judge (2008). <b>No:</b> Graham and Rogers (2002).
Decreases for firms with high liquidity.	<b>Yes:</b> Bartram <i>et al.</i> (2009); Clark and Judge (2008). <b>No evidence:</b> Carter <i>et al.</i> (2006); Hagelin <i>et al.</i> (2007).
Decreases for firms with high dividend yield.	<b>Yes:</b> Bartram <i>et al.</i> (2009). <b>No evidence:</b> Hagelin <i>et al.</i> (2007).
Decreases for firms with high profitability.	<b>No:</b> Carter <i>et al.</i> (2006); Bartram <i>et al.</i> (2009). <b>No evidence:</b> Allayannis and Ofek (2001).
<b>Panel C. Empirical evidence regarding agency costs of debt argument</b>	
Hedging:	
Increases for firms with higher expenditures on R&D.	<b>Yes:</b> Nance <i>et al.</i> (1993); Fok <i>et al.</i> (1997); Géczy <i>et al.</i> (1997); Gay and Nam (1998); Allayannis and Ofek (2001); Clark and Judge (2008). <b>No:</b> Graham and Rogers (2002). <b>No evidence:</b> Borokhovich <i>et al.</i> (2004).
Increases for firms with higher market-to-book-ratio.	<b>Yes:</b> Gay and Nam (1998); Davies <i>et al.</i> (2006); Lei (2009). <b>No:</b> Bartram <i>et al.</i> (2009). <b>No evidence:</b> Allayannis and Ofek (2001); Guay and Kothary (2003); Clark and Judge (2008).
Increases for firms with higher needs of internal financing.	<b>No evidence:</b> Berkman and Bradbury (1996).
Increases for firms that pay small or no dividends.	<b>Yes:</b> Haushalter (2000).
Increases for firms with abnormal positive movement in the firms' stock price.	<b>Yes:</b> Gay and Nam (1998).

(continued)

**Table 1 (Continued)**  
**Summary of empirical evidence on corporate risk management theories**

Theoretical Prediction	Empirical Evidence
<i>Panel D. Empirical evidence regarding managerial-utility maximization argument</i>	
Hedging:	
Is more likely for firms with managers that have greater stock ownership.	Yes: Tufano (1996); Graham and Rogers (2002); Guay and Kothari (2003); Carter <i>et al.</i> (2006); Hagelin <i>et al.</i> (2007). No: Fok <i>et al.</i> (1997). No evidence: Berkman and Bradbury (1996); Géczy <i>et al.</i> (1997); Gay and Nam (1998); Haushalter (2000); Allayannis and Ofek (2001); Marsden and Prevost (2005); Lei (2009).
Is more likely for firms where the CEO receives a higher cash bonus.	No evidence: Guay and Kothari (2003); Lei (2009).
Is unlikely for firms with managers that have greater number of stock-options.	Yes: Tufano (1996); Haushalter (2000). No: Géczy <i>et al.</i> (1997); Gay and Nam (1998); Haushalter (2000). No evidence: Allayannis and Ofek (2001); Graham and Rogers (2002); Bartram <i>et al.</i> (2009); Borokhovich <i>et al.</i> (2004); Hagelin <i>et al.</i> (2007); Lei (2009).
Decreases for firms with a larger analyst following the firm.	No: Géczy <i>et al.</i> (1997).

cash to honour the promised payments on their debt. Table 1, Panel B, exhibits these and other empirical predictions related to the financial distress argument. As can be observed, in many of the studies a positive and statistically significant relationship between hedging and leverage is found. However, the evidence is still mixed for some other studies.

### C. Agency costs of debt

When a firm has high financial leverage and its cash flows are volatile, suboptimal investment behaviour can arise – the so-called problem of underinvestment. This situation leads to overall firm value decline. So, corporate hedging by shifting cash flows from states in which cash flows are sufficient to states where cash flows are insufficient to meet the firm's obligations can create value for shareholders. In addition, hedging allows for negotiating better contract terms, namely by lowering borrowing costs or by reducing the existence of restrictive bond covenants (Smith and Stulz, 1985).

Alternatively, Froot *et al.* (1993) suggest that due to cash flow volatility imposed by financial risks, a shortfall in internal funds causes firms to reject positive NPV projects in order to avoid a very costly visit to the capital market. In this sense, firms with planned investment programs and with more costly external funds would be more likely to benefit from risk management activities. Indeed, agency costs of debt are more evident in firms with more growth options, as these firms could have a high probability of underinvestment. The most popular measure of a firm's growth options is the firm's research and development expenditures (R&D), which are usually scaled by the size of the firm. Almost all studies report a positive and significant coefficient for this variable (see Table 1, Panel C).

Yet, other empirical predictions can be provided (see Table 1, Panel C). Firms with higher needs of internal financing for assets growth, firms that pay low dividends and firms with an abnormal positive movement in the firm's stock price are more likely to engage in hedging activities. Despite the inconclusive results of some predictions, overall the empirical evidence reasonably supports the agency costs of debt argument.

#### *D. Other arguments*

All empirical studies examine the relationship between hedging and firm size. However, there are competing arguments for either a positive or negative relation between firm size and hedging. Nance *et al.* (1993) argue that larger firms that have access to risk management expertise, or that have economies of scale in hedging costs are more likely to hedge than smaller firms. However, smaller firms have a tendency to face greater financial distress costs, so it is also possible that they are more likely to hedge. In general, empirical studies tend to support the economies-of-scale-in-hedging argument (e.g., Nance *et al.*, 1993; Davies *et al.*, 2006 and Bartram *et al.*, 2009). Frequently, the literature proxies firm size with total assets, market value of equity or total sales.

Several empirical studies on the determinants of hedging have also explored other ways than hedging with derivatives to reduce risk exposure, namely risk management through financing activities, risk management through operational activities and, finally, the existence of liquid assets. The risk management through financing activities is frequently represented by the use of preferred stock or convertible debt. These instruments seem to reduce the probability of financial distress and the need for hedging with derivatives. There is little literature to support this prediction (e.g., Lel, 2009). Another possibility is the use of foreign debt, namely in studies that analysed risk management in the scope of foreign currency exposure (e.g., Géczy *et al.*, 1997 and Bartram *et al.*, 2009). Regarding risk management through operational activities, several studies used variables that measure the level of diversification of a firm's activity. The underlying idea is that well diversified firms are less exposed to risk, so they are less likely to hedge. Fok *et al.* (1997) find a significant positive relation between diversification and hedging, while Tufano (1996) finds no significant relation. The presence of liquid assets could also reduce the need for hedging with derivatives. The empirical implication of this argument is that firms with higher cash holdings and lower dividend payouts assure that more internal funds will be available. Thereby, they are less likely to engage in hedging. Several studies support at least one of the liquidity-based arguments, such as Nance *et al.* (1993), Tufano (1996), Géczy *et al.* (1997), and Marsden and Prevost (2005).

Finally, firms with greater variation in cash flows or a greater fraction of their revenues exposed to risk have greater potential benefits from hedging. Mainly, the risk exposure is included as a determinant for hedging activities in studies with a focus on foreign exchange risk. This is an argument that usually provides strong empirical evidence (e.g., Géczy *et al.*, 1997 and Hagelin *et al.*, 2007).



### 3.2. MANAGERIAL UTILITY-MAXIMIZING THEORIES

The three points of view discussed above assume that when firms engage in hedging, it is always in the interest of shareholders. However, decisions on hedging by managers may be affected by their own attitudes towards risk. Smith and Stulz (1985) focus on managerial risk aversion as a justification for risk management. The authors show that the greater the managers' equity and human capital investment in the firm, the greater their incentive to reduce risk. Nevertheless, managers' risk aversion can lead them to hedge, but not necessarily. In line with this, the compensation package of managers with call-option features, such as stock options, can lower managers' risk aversion and thus a firm is not expected to hedge. On the other hand, if the manager is compensated in such a way that his/her income linearly depends on the value of the firm, one may expect the firm to hedge.

Moreover, hedging can reduce the noise associated with performance measures to the extent that it lowers cash flow volatility. As a result, hedging can reduce the level of informational asymmetry between managers, shareholders and the labor market (Demarzo and Duffie, 1995 and Breeden and Viswanathan, 1998). So, the greater the level of information asymmetry, the greater the benefits of hedging should be (e.g., Géczy *et al.*, 1997).

The most popular variables measuring stock-based compensation are: i) the value of common shares held by the firm's directors and officers and ii) the fraction of common shares held by the firm's directors and officers. Regarding the variables used to measure options-based compensation, several studies used the number of options held by insiders. Table 1, Panel D, exhibits empirical evidence concerning these predictions. As may be observed, despite the results of some studies supporting the theoretical prediction, the overall evidence is still inconclusive.

### 4. VALUE CREATION THROUGH CORPORATE RISK MANAGEMENT

The previous empirical research presented has tried to uncover which theory of hedging best describes the firm's use of risk management instruments. More recently, the central question has been whether or not hedging adds value to the firm. It is recognized that corporate hedging might be ineffective if it fails to add value or even counterproductive by destroying value. This is due to the fact that the conception and implementation of a hedging strategy can represent significant costs for the firm, despite the risk management benefits identified in the literature.

The first piece of evidence concerning the direct impact of hedging on firm value is provided by Allayannis and Weston (2001). The authors used a large sample of US firms and documented the existence of a hedging premium that is statistically and economically significant for firms with exposure to exchange rates. The hedging premium represents, on average, 4.87% of firm value. They use Tobin's Q as a proxy for a firm's market value and investigated whether the obtained hedging premium can be explained by other factors that the theory suggests may affect firm value <sup>1</sup>.

Also, in line with this, Allayannis *et al.* (2001) investigate both the financial and operational exchange-rate hedging strategies of US multinational firms. They find that operational hedges alone are not significantly related to value. However, when used in conjunction with financial hedges, operational hedges are significantly and positively related to value. Also Kim *et al.* (2006) have compared and contrasted the value effect of financial hedging versus operational hedging. Their results reveal that financial hedging improves, on average, 5.4% of firm value and operational hedging increases firm value as a range of 4.8%-17.9%, which could represent up to five times more than financial hedging.

Also, Carter *et al.* (2006), Mackay and Moeller (2007), Clark and Mefteh (2010) and Bartram *et al.* (in press) confirm the existence of a hedging premium. Carter *et al.* (2006) look into the relation between hedging and firm value in the US airline industry. They find evidence that the hedging premium ranges between 5% and 10%. Mackay and Moeller (2007) control for the potential endogeneity of hedging with respect to firm value and show that a discriminating risk management program can enhance firm value by 2% to 3% on average, namely hedging concave revenues, leaving concave costs unhedged. Bartram *et al.* (in press) using a broad sample of non-financial firms from 47 countries, only find a weak statistical significance for hedging premium. Finally, Clark and Mefteh (2010), using a sample of 176 of the largest French non-financial firms, provide evidence that foreign currency derivatives use is a significant determinant of firm value and that this effect is more intense in the larger and highly exposed firms.

Recently, Clark and Judge (2009) using a sample of UK firms with foreign operations draw a distinction between short- and long-term foreign currency derivatives and examine whether the use of these derivatives increases firm value. Unlike the previous studies presented above, they also consider the value effect of foreign debt hedging. Their results indicate that foreign currency derivatives use increases firm value but there is no hedging premium associated with foreign debt hedging, except when combined with foreign currency derivatives. In addition, they find that long-term derivatives generate more value than short term derivatives. The hedging premium found in this study is similar in magnitude and range to that found by Allayannis *et al.* (2009). Yet, these authors find that the hedging premium is only statistically significant for firms that have strong country-level external governance (see section 5). Introducing changes to the "standard" methodological approach, Nelson *et al.* (2005) look directly at the stock performance of a sample of US non-financial firms. They found evidence that on average firms that hedge outperform other firms by 4.3%. However, when they augmented the Fama and French three factor model with an additional risk factor related to intangible assets, they found no statistically abnormal returns to hedgers.

By contrast, Guay and Kothari (2003) estimate the cash flow implications from hedging programs for 234 large US non-financial firms and found that the economic significance of the cash flows, and as a consequence the potential increase in market value, is small. Also, Lookman (2004) and Jin and Jorion (2006) find no significant relation between hedging and firm value. Lookman (2004), using a sample of US oil and gas firms, shows that hedging "big" risk is associated with a significant discount of about 17%, while hedging "small" risk is associated with a premium of about 27%. They

suggest that hedging per se does not increase firm value; instead, hedging big (small) risk is a noisy proxy for high (low) agency problems and/or low (high) management skills. Jin and Jorion (2006) also examine the US oil and gas industry and find that the effect of hedging on market value is not statistically significant, suggesting that the hedging premium depends on the types of risks to which the firm is exposed.

Finally, under a different approach, Hagelin *et al.* (2007) investigate the impact on firm value for a specific factor – managerial stock option plans – that encourages hedging, namely “bad” hedging, in a sample of Swedish firms. They confirm that foreign exchange hedging that satisfies managerial self interest reduces firm value.

Summing up, in light of the exposed evidence, we verify that the existence of a value premium associated with hedging is still unclear. It is likely that part of the inconsistency in previous empirical results is due to methodological aspects, namely endogeneity problems which often plagued the empirical tests in corporate finance. While some papers deal with this issue by applying simultaneous equations models (e.g., Bartram *et al.*, 2009) or sample selection (Jin and Jorion, 2006), most of the empirical studies outlined above do not account for the endogeneity implicit in the value/hedging relationship; that is to say, firm value determines the hedging choice, rather than hedging determining the value. Unquestionably, this important question of hedging premium must be subject to further empirical research.

## **5. CORPORATE GOVERNANCE AND THE VALUE OF RISK MANAGEMENT**

Theories developed on the basis of shareholders value maximization suppose that risk management activities pursued by the firm align the interests of managers and shareholders. However, if there is no proper control over managers' actions, they may be tempted to pursue risk management activities looking to maximize their own objectives and not necessarily to benefit their shareholders. In line with this a number of corporate governance mechanisms have been proposed to control managers' actions so as to minimize these conflicts. This matter builds on the recent body of literature that acknowledges the role of governance structure on hedging policies.

### **5.1. CORPORATE RISK MANAGEMENT AND THE QUALITY OF GOVERNANCE STRUCTURES**

To ensure the proper risk-taking behavior of management, which results in value-maximizing decisions, shareholders use ex-ante governance mechanisms (e.g., executive compensation) and ex-post governance mechanisms (e.g., monitoring managers). In this section we focus largely on ex-post governance mechanisms.

As supported by theory, firms characterized by a high ownership concentration are less likely to experience agency conflicts and, as a consequence, would hedge mainly in order to maximize shareholders' value. Indeed, large shareholders have the

resources and motivations to monitor (via the governance process) managers more intensively than small shareholders.

Several empirical works control for the firm's ownership structure either with variables representing blockholder ownership (Borokhovich *et al.*, 2004; Marsden and Prevost, 2005; Hagelin *et al.*, 2007; Bartram *et al.*, 2009 and Lel, 2009) or specific types of blockholders, such as institutional investors (Fok *et al.*, 1997; Whidbee and Wohar, 1999; Borokhovich *et al.*, 2004; Allayannis *et al.*, 2009 and Lel, 2009), family investors (Hagelin *et al.*, 2007; Allayannis *et al.*, 2009 and Lel, 2009), and the state (Allayannis *et al.*, 2009 and Lel, 2009).

Despite the theoretical argumentation presented, only Bartram *et al.* (2009) find support for the relation between blockholder ownership and corporate risk management. They predict that multiple classes of shares often have a controlling group with superior voting rights, which is consistent with a greater use of derivatives. In the case of institutional shareholding, Fok *et al.* (1997) find significant evidence that firms with an institutional investor as an outside blockholder engage in valuable risk management activities. These results suggest that an institutional investor has a stronger financial incentive to monitor management. In contrast, a family investor as an undiversified shareholder could undertake investment decisions that pursue objectives that are diverse to the ones of the other shareholders. Consistent with that view, Hagelin *et al.* (2007) find some evidence that family ownership is associated with shareholder wealth expropriation. In the same spirit, risk management of firms that are not state-owned should be rewarded with a premium, suggesting that state-owned firms have effectively dispersed ownership amongst taxpayers in the country.

Another aspect of ownership structure that should be mentioned is insider blockholder. Allayannis *et al.* (2009) and Lel (2009) argue that the severity of agency costs is greater when managerial blockholders exist. So, they do not expect that hedging is value-adding in the presence of an insider blockholder. In line with this, Hagelin *et al.* (2007) analyse the impact of CEO shareholdings on hedging decisions, namely when the CEO is the largest shareholder or when he/she comes from the family which is the largest shareholder in the firm. They find that hedging activities are not driven by management entrenchment.

It should be noted that the existence of an insider blockholder is frequently evoked as a proxy for managerial risk aversion (e.g., Tufano, 1996; Fok *et al.*, 1997 and Marsden and Prevost, 2005).

As discussed earlier, the agency theory attributes a particularly important monitoring role to outside disinterested members of the board, who are probably less aligned to management. For that reason, outsiders on the board should have a significant role in monitoring and controlling the use of derivatives. Borokhovich *et al.* (2004), analysing a sample of 284 firms in the S&P 500 in 1995, argue that in boards dominated by outsiders that make greater use of interest rate derivatives, the evidence would be consistent with a derivative policy that benefits shareholders. Whidbee and Wohar (1999) and Marsden and Prevost (2005) also examined this issue. While Whidbee and Wohar (1999) find that when insiders own a small percentage of firm equity, monitoring by outside directors may lead to greater derivatives use,

Marsden and Prevost (2005) do not support the hypothesis that board composition plays a significant role in the use of derivatives.

Up until now, in terms of the relationship between corporate governance and hedging activities, only the relationship between several specific governance mechanisms and hedging activities has been examined. Instead, LeI (2009) addresses the impact of corporate governance on the determinants of a firm's use of derivatives through the use of two variables that provide an aggregate measure of the quality of governance. He follows the methodology of Gompers *et al.* (2003) and constructs a firm-specific governance index that proxies for firm-level quality of governance. The index comprises seven alternative governance rules related to ownership and board structures that are hand-collected from firms' annual reports. From the view of corporate governance literature, the degree of monitoring of managerial activities is expected to increase (which means that the agency costs of equity are expected to decrease) with higher values of this governance index. As a result, the likelihood of derivatives use for hedging purposes is expected to increase. In addition, LeI (2009) uses a proxy for the country-level quality of governance obtained from La Porta *et al.* (1998) – the English legal origin. His evidence suggests that strongly governed firms use derivatives in a way that is consistent with shareholder value-maximization. By contrast, weakly governed firms use derivatives for reasons related to managerial utility-maximization.

## 5.2. THE VALUE OF CORPORATE RISK MANAGEMENT AND THE QUALITY OF GOVERNANCE

To the best of our knowledge, Allayannis *et al.* (2009) is the only one that investigates the impact of quality of governance on the value of risk management activities. As before in LeI (2009), they follow the methodology of Gompers *et al.* (2003) and construct a firm-specific governance index which proxies for internal corporate governance structures. The index comprises seven alternative governance rules and ranges from 0 (weak governance) to 7 (strong governance).<sup>2</sup> In fact, this index is very similar to those of LeI (2009).

In addition, Allayannis *et al.* (2009) use several proxies for external country-level governance mechanisms: i) an aggregate index representing the strength of shareholders' rights that is obtained from La Porta *et al.* (1998) and that provides a measure of the level of shareholders' protection under law; ii) the strength of creditors' rights that is represented by an aggregate index, also obtained from La Porta *et al.* (1998) and that measures the level of creditors' rights under bankruptcy and reorganization laws; iii) English legal origin; iv) the efficiency of the judicial system as it affects business, which is scaled from 0 to 10 and is produced by Business International Corporation; v) the extent to which private or public enforcement exists; vi) the merger activity within the country; and vii) the legality measure constructed by Berkowitz *et al.* (2003).<sup>3</sup> Both the public enforcement index and private enforcement index are obtained from La Porta *et al.* (2006). With regard to merger activity within the country, it is expected that the threat of a takeover disciplines managers and leads

them to focus on value maximization. Finally, it is expected that firms that reside in countries with strong legality pursue more valuable risk management activities in comparison to firms residing in countries with weak legality.

The authors document that hedging is a value increasing strategy for firms around the world. They also suggest that stronger internal and external corporate governance structures lead to increases in the value of firms that hedge. Moreover, they find that firms characterized by weak internal governance but residing in countries with strong external governance structures also engage in valuable risk management activities.

## 6. CONCLUSIONS AND FURTHER DIRECTIONS

The research reviewed above provides great insights into the link between risk management, corporate governance and firm value. First, we documented that hedging activities tend to be systematically associated with the use of derivatives, disregarding the fact that hedging can be pursued by other means. Second, we provide a review about the theoretical foundation for corporate risk management. In essence, we identify four principal arguments, classified under two main groups of theories. The first one predicts that hedging can increase firm value by reducing the expected tax costs, the probability of financial distress and the agency costs of debt. The second group is based on managerial utility maximization. While there is some evidence in support of these theoretical predictions, in general the results are fairly mixed.

Furthermore, the recent body of literature recognizes that the central question is whether hedging does, in fact, add value to the firm. In line with this several studies test the value implications of corporate risk management, namely if firms that hedge have a higher value when compared to their non-hedging counterparts. Again, the empirical results are misleading. In the face of the inconclusive evidence on the value premium associated with hedging, Allayannis *et al.* (2009) suggest that if there is no proper control over managers' actions, they may be tempted to pursue risk management activities looking to maximize their own objectives, thereby hurting risk management value. This idea highlights that value through risk management could be conditional to corporate governance structures. Despite the straightforwardness of this prediction, the issue is rarely addressed in the literature. So, it is clear that further research on the corporate governance effect on hedging premium is needed.

In summary, the review showed that according to the risk management literature an impressive amount of work has been done. Nevertheless, it seems obvious that certain issues remain controversial and without a clear bottom line. Several studies identified endogeneity issues and the problem of hedgers' misclassification as potential sources for the accounted mixed results. So, it could be challenging to address properly simultaneous equation bias in empirical analyses. Furthermore, it is essential to identify appropriate proxies for corporate hedging beyond the use of financial derivatives. Finally, it is important to expand empirical evidence to non-US firms.

<sup>1</sup> The other factors that have commonly been used to explain firm value are: size, profitability, leverage, growth opportunities, ability to access financial markets, geographic and industrial diversification, credit quality, industry classification, and time effects.

<sup>2</sup> A firm earns one additional point for each of the following: (1) the absence of an inside blockholder, (2) the presence of an outside blockholder, (3) the presence of an institutional investor as a blockholder, (4) if the role of the CEO and chairman are separated, (5) if cash flow rights of the largest managerial blockholder are greater than their median value, (6) if voting rights of the largest managerial blockholder are lower than their median value, and (7) if there is no discrepancy between the cash flow rights and voting rights of the largest blockholder.

<sup>3</sup> Legality is an aggregate index of the strength of the legal system and institutional environment.

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