

The Information Effect of Corporate Risk Management: Are Firms Really Hedging? *

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Abstract

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1 Introduction

Numerous contributions in the literature developed theoretical explanations for corporate hedging.¹ Though, there are still not any widely accepted motives for risk management as a corporate function. In particular finding the determinants of a company hedging strategy and measuring the impact of risk management policies on investors' information and on the firm value are crucial questions that are not fully answered.

In the basic Modigliani and Miller (M&M) world, hedging does not alter firm value. Theoretical research on corporate risk management is founded on the relaxation of one or more of the M&M assumptions: several explanations for optimal hedging are provided that results from different type of capital market imperfections. Firms use derivatives first, to reduce the variation in cash flow or earnings that might otherwise preclude firms from investing in valuable growth opportunities and so to maintain the access to cheap capital, that is, internal funds (Froot et al., 1993). Second, to lower the expected costs of financial distress by reducing the variance of the firm's cash flows (Smith and Stulz, 1985). Third, to increase the expected values of tax benefits by reducing the value of government's implicit call option on the firm's assets (Smith and Stulz, 1985 and for a recent empirical evidence Graham and Rogers, 2002). Fourth, to decrease informational asymmetries (De Marzo and Duffie, 1991) or to disentangle business related profits and losses from profit and losses related to market exposures (De Marzo and Duffie, 1995). Finally, firms use derivatives as this is an incentive for managers because of their wealth invested in the firm or through stock options (May, 1995 and Tufano, 1996 for the gold industry).

Moreover as a general matter, it should be considered that costs associated with maintaining a risk management program and choosing a specific derivative instrument play a crucial role in the firm decision to use derivatives and in its choice among different derivatives

¹Corporate hedging refers to the use of off-balance sheet instruments, such as forwards, futures, swaps and options, in order to reduce the volatility of firm value. Hedging through on-balance-sheet strategies, like for instance relocating abroad production facilities to hedge currency risk exposure, is taken as predetermined in this paper.

strategies.

The lack of publicly available information on corporate hedging activity is the principal limit to the empirical research in this area. This information is limited to off-balance-sheet disclosures in financial statements footnotes.² Given this constraint, previous empirical work on hedging has relied primarily on survey-based data, such as Nance et al. (1993) or the Wharton School survey, Bodnar et al. (1998). Our paper is related to the growing part of the literature which provides evidence about derivatives use and risk management practises by employing periodical report disclosures rather than survey data. For instance Gezcy et al. (1997) examine the use of currency derivatives reported in SEC filings and accounting footnotes to annual reports and find that firms with greater growth opportunities and tighter financial constraints are more likely to hedge. Mian (1996), analyzing the LEXIS/NEXIS database for three years, finds no evidence that hedging is associated with growth options and his data do not provide any support for models of hedging based on financial distress costs. More recently, Allayannis and Weston (2001) find some evidence consistent with the hypothesis that hedging causes an increase in firm value examining the use of foreign currency derivatives reported in the footnotes of the annual reports.

The contribution of our paper to the extant literature is first, to provide a comprehensive empirical evidence on risk management practises, including also interest rate risk. Hedging research has been mainly focused on currency derivatives, in order to isolate a common risk factor among firms. Analyzing other types of derivatives use, namely interest rate derivatives, can be important to identify different reasons that affect the decision to hedge.³

²Only recently a new accounting standard for derivative instruments requires, roughly speaking, all derivatives to be recorded on the balance sheet at fair market value and marked to market each reporting period. FAS 133 (Statement of Financial Accounting Standard No. 133 "Accounting for Derivative Investments and Hedging Activities"), originally released in draft form in June 1996 and issued in June 1998, became effective for all fiscal years beginning after June 15, 2000 after one year deferral.

The International Accounting Standards Board 39 ruling, making derivative reporting a global requirement, is taking effect for annual financial statements covering financial years beginning on or after January 1, 2001; it is expected that all countries will begin to move toward universal compliance.

³For example, Visvanathan (1998) finds that the use of interest rate derivatives could be related to strategies meant to increase value. Tufano (1996) shows that the use of commodity derivatives in the gold-mining sector is motivated by managers' risk aversion and may not add value of a firm.

In this situation, the ex-ante risk exposure is founded on the sensitivity of operating income to interest rates; as a robustness control for the risk factor we employ the financial leverage. Two caveats must be kept in mind: the fact that numerous firms use interest rates swaps in conjunction with short term debt, rather than long term debt, for speculative reasons and regardless of any hedging purpose. Another caveat is the effect of tight monetary policies periods on liquidity constraints (Froot et al., 1993).

Our paper adds to the corporate risk management literature also by testing if hedging can actually help analysts in making more informed assessment about future earnings and earnings volatility. The information effect of financial risk management, explored theoretically in DeMarzo and Duffie (1995), is about improving informativeness of corporate results as a signal of management ability and project quality by eliminating extraneous noise. Hedge positions have real effects to the extent that they act as a signal and reveal private information known to the manager. In some sense testing analysts' information quality can also help us to clarify if observed risk management, which is derivatives usage, is meant for volatility reduction, as theory would say, or for increased profits, as 40 per cent of managers declared in the Wharton School survey, Bodnar et al. (1998).

If we adopt the general classification of hedging research proposed by Schrand (1998), we should place our contribution in one of the two broad categories that she suggests: research investigating market imperfections that make volatility costly, which implies corporate hedging, or research about why one method is cheaper than another. Our paper is related mainly to the first category, but innovates in analyzing if observed corporate hedging is actually implied by volatility costs, or if derivatives usage is motivated by other reasons.

In order to verify if corporate risk management allows a more informed assessment about future earnings, we test if firms that hedge show less surprises in announced vs expected earnings. A better earnings' predictability for hedgers could be the consequence of less variability in costs and revenues induced by hedging practises. This is true only if observing derivatives' usage is actually equivalent to observing risk management practises which means

that our variables measure hedging rather than speculation. As a robustness test, we employ proxy variables such as some firm characteristics which are related just to speculation motives, as in Geczy et al. (1997). In particular a firm is rationally speculating if it has an informative advantage about the assets underlying the derivatives or if it has economy of scale in transaction costs for derivatives usage; this suggest that potential proxy variables are the variety of derivatives used or the size of the firm.

We obtain data about the use of derivatives by reading the accounting footnotes to the annual report and the 10-K filings for fiscal year-end 2000, regarding 1,000 US non-financial firms. A lot of empirical studies in the literature employed a dichotomous variable to distinguish between derivatives users and non-users. As the intensity of derivatives usage could be an important explanatory variable, we consider also the magnitude of hedging activities. In order to avoid the frequent noise in the figures, we develop classes of derivatives usage with respect to assets, as in Opler et al. (1999).

We estimate logit regressions in order to relate the probability of hedging to the determinants of hedging. The explanatory variables describe the investment opportunity set, liquid assets, tax variables, firm's size and firm's financial structure; some variables are related to the stock market, like analysts coverage and stock price performance. The main part of the data describing these explanatory variables is obtained through the COMPUSTAT database. The variable illustrating the choice among different types of derivatives will be used to proxy for the pervasiveness of the risk management activity and to distinguish between hedging and speculative derivative activity.

In order to evaluate the possible informative advantage for investors looking at firms which hedge, we regress the earnings' surprise to the intensity of risk management activity. We employ suitable control variables, such as analysts coverage and firms' size.

The reminder of the article is organized as follows. In Section 2, we review existing theories, identify economic incentives for a firm to hedge and summarize testable

implications. We describe our data in Section 3 and in Section 4 we present the empirical results of a logistic regression to analyze the determinants of hedging activities and to verify if there is a decrease in earnings forecast errors for firms that hedge. Section 5 presents conclusions along with a comparison of our findings with those from previous work.

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