



Derivative usage and firm value: The influence of agency costs and monitoring problems

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ABSTRACT

Using derivative usage data on over 1746 firms headquartered in the U.S. during the 1991 through 2000 time period, we find that firms with greater agency and monitoring problems (i.e., firms that are less transparent, face greater agency costs, have weaker corporate governance, larger information asymmetry problems, and overall poorer monitoring) exhibit a negative association between Tobin's Q and derivative usage. The negative valuation effect is also economically significant with an impact of -8.4% on Tobin's Q from a one standard deviation change in the firm monitoring index. The results are robust to alternative specifications, time varying estimates, econometric procedures that correct for potential clustering of errors, endogeneity problems, and sample selection biases among other robustness checks discussed in the paper. We conclude that derivative usage has a negative impact on firm value in firms with greater agency and monitoring problems.

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1. Introduction

The influence of derivative usage on firm value has received substantial interest among academic researchers, the financial press, regulators, and other financial market participants. While approximately 50% of U.S. non-financial firms use derivatives and their use continues to grow, the empirical evidence on the influence of derivative usage on firm value is mixed. For instance, [Allayannis and Weston \(2001\)](#), [Adam and Fernando \(2006\)](#), [Carter et al. \(2006\)](#), and [Berrospide et al. \(2008\)](#) among others find a positive relation between derivative usage and firm value. However, [Jin and Jorion \(2006\)](#), [Nain \(2006\)](#), and [Lookman \(2004\)](#) find either no relation or only a conditional positive or negative relation between derivative usage and firm value. While these mixed valuation results are puzzling, they can be explained in part by management's use of derivatives to address market imperfections versus management's selective use of derivatives for speculation and self-interests.

The link between derivative usage and firm value depends on the extent to which their use effectively addresses market imperfections such as bankruptcy costs, financing constraints, information asymmetries, and taxes (e.g., [Mello and Parsons, 2000](#); [Froot et al., 1993](#); [Stulz, 1996](#); [DeMarzo and Duffie, 1991](#); [Bessembinder, 1991](#); [Stulz, 1990](#); [Smith and Stulz, 1985](#); [Myers, 1977](#)),

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resulting in a potential positive effect on a firm's value.² At the same time, there may be agency costs and monitoring problems associated with derivative usage such that firm managers may selectively use derivatives for speculation and self-interests (e.g., Geczy et al., 2007; Faulkender, 2005; Campbell and Kracaw, 1999; Bodnar et al., 1998; Tufano, 1998; Ljungqvist, 1994; Stulz, 1984), resulting in a potential loss in firm value at the expense of shareholders. In a similar spirit, *The Economist* reports that “the worries over derivatives stem not from any inherent evil, but from their power to disguise the intentions of their users” ... “The critics (Warren Buffett, Bill Gross, and other critics) also claim that derivatives enable corporate treasurers to gamble with shareholders' money” (*The Economist*, January 24, 2004 issue pages 3 and 10, Survey of Risk section). The net impact of derivative usage on firm value is, therefore, an empirical issue.

We provide evidence on this issue by testing the hypotheses that agency costs and monitoring problems affect derivative usage and firm value through this derivative usage. While earlier studies investigate the possible channels in which derivative usage adds value, empirical tests of speculation and value loss channels have received little attention. One recent notable exception is Geczy et al. (2007) who document that firms with weak internal governance structures are more likely to indicate in the Wharton derivative usage survey that they take a view with derivatives. Faulkender (2005) also provides some evidence of speculation in firms' interest rate risk management practices. Tufano (1998) further discusses the theoretical implications of hedging strategies and its relation to firm value. His theoretical model produces both costs and benefits associated with derivative usage. According to Tufano, the existence of agency costs between managers and shareholders when using derivatives can reduce firm value. Furthermore, Tufano argues that a lack of manager oversight can magnify the costs associated with derivative usage. At the same time, Tufano's model demonstrates that derivative usage can be beneficial when information asymmetry is low, bankruptcy costly, and agency problems are small.

In our investigation, we gather derivative usage data on 1746 non-financial firms headquartered in the U.S. during 1991–2000. We also collect and create various firm-level financial and control variables that we use in our regression analysis, including firm-level data on agency costs, corporate governance, and information asymmetry variables. Similar to Schmidt (2008), we also create an aggregate firm-level monitoring index based on the various agency costs and monitoring problems the firm faces. We then test for the effects of agency and monitoring problems on derivative usage and the effects of derivative usage on firm value through the agency cost and monitoring problems.

We find that firms with greater agency and monitoring problems (i.e., firms that are less transparent, face greater agency costs, have weaker corporate governance, larger information asymmetry problems, and overall poorer monitoring) exhibit a negative association between Tobin's Q and derivative usage. This effect is also economically significant with an impact of -8.4% on Tobin's Q from a one standard deviation change in the firm monitoring index. Our reported results also are robust to alternative specifications, time varying estimates, econometric procedures that correct for potential clustering of errors, endogeneity problems, and sample selection biases among other robustness checks discussed in the paper. We conclude that derivative usage has a negative impact on firm value in firms with greater agency and monitoring problems.

The balance of the paper is as follows. Section 2 discusses relevant background literature on derivative usage and valuation effects. Section 3 describes the data and summary statistics, while Section 4 provides results on agency and monitoring problems in derivative usage. Section 5 provides results on the influence of agency and monitoring problems on the differential valuation effects associated with derivative usage. Section 6 provides a conclusion.

2. Background

2.1. Derivative usage

The theoretical literature suggests that firms use derivative instruments to address various market imperfections including taxes, bankruptcy costs, cash flow management, asymmetric information, and moral hazard, among others. Smith and Stulz (1985), for example, show that firms may hedge because of convex taxes and the transaction costs of financial distress. Hedging smoothes cash flows according to Froot et al. (1993), which allows firms to invest in projects when most needed. Myers (1977) and Stulz (1990) show that hedging may diminish the investment distortions associated with debt financing. Stulz (1984) also argues that a manager's desire to reduce the volatility of their income may lead to managers hedging on behalf of the firm. Managers may also use derivatives to signal their own ability and expected payoff of a project to the market, as proposed by Demarzo and Duffie (1995) and Breeden and Viswanathan (2006). In the spirit of Froot et al. (1993), Adam et al. (2007) develop a theoretical model showing that in equilibrium only some firms hedge even though all firms are identical, ex ante. Their model further shows that the fraction of firms that hedge depends partially on industry characteristics, with the incentive for an individual firm to hedge decreasing as more firms in the industry hedge and vice versa.

The empirical evidence on derivative usage somewhat supports the theoretical predictions. For instance, Tufano (1996) explores the gold mining industry and finds supporting evidence that managers hedge because of compensation and their risk aversion, which is consistent with Stulz (1984). Haushalter (2000) studies the oil and gas industry and finds support for the conclusions of Smith and Stulz (1985); that is, firms hedge to reduce bankruptcy costs. Geczy et al. (1997) find that currency derivative usage and growth opportunities are positively correlated, which supports the arguments made by Froot et al. (1993). Mayers and Smith (1982, 1987) provide hedging evidence from the insurance industry and show that insurance reduces

² According to Modigliani and Miller (1958), financing decisions are immaterial to the value of the firm ignoring market imperfections such as taxes, transaction costs, and the cost of bankruptcy.

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