



# Executive stock options, gender diversity in the top management team, and firm risk taking



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## ABSTRACT

Drawing on agency theory and the behavioral agency model (BAM), this study aims to clarify the influence of executive stock options (ESOs) granted to the top management team (TMT) on firm risk taking. In addition, we also consider the effect of gender diversity in the TMT on the relationship between ESOs and risk taking. After controlling for potential endogeneity issues, the results show that there is an inverted U-shaped relationship between the wealth created by ESOs for members of the TMT and risk taking, and that those TMTs in which there is female representation exhibit more conservative behavior compared to that of non-gender diverse TMTs. The evidence confirms that firm risk taking is a combination of the agency and BAM perspectives and their emphasis on prospective and current wealth, respectively.

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## 1. Introduction

Stock options are a fundamental component of US executive compensation packages (Murphy, 2013). However, the evidence on how executive stock options (ESOs) affect firm risk taking is inconclusive. While some studies find that ESOs encourage executives to take more risk (Deutsch, Keil, & Laamanen, 2010; Sanders & Hambrick, 2007; Wright, Kroll, Krug, & Pettús, 2007; Wu & Tu, 2007), which is consistent with the agency theory (Jensen & Meckling, 1976), other research shows that ESOs induce less risk taking (Larraza-Kintana, Wiseman, Gomez-Mejia, & Welbourne, 2007; Sawers, Wright, & Zamora, 2011), which is in accordance with the behavioral agency model (BAM) developed by Wiseman and Gomez-Mejia (1998).

As Martin, Gomez-Mejia, and Wiseman (2013) highlight in their recent research, whereas agency theory focuses on the positive influence of prospective ESO wealth (i.e., the potential increase in intrinsic value), BAM focuses on the negative effect of current ESO wealth (i.e., intrinsic value) on risk taking. Our research attempts to advance understanding by providing a more comprehensive explanation of the influence of ESOs, in particular the joint effect of current and prospective ESO wealth, on the top management team

(TMT) risk taking behavior, and therefore on firm risk taking. The unit of analysis in the present study is, thus, the entire TMT, which is the set of executives responsible for the strategic and organizational decisions that have a direct impact on firm performance. Although the CEO has overall responsibility for the conduct of the firm and performance outcomes, other TMT members also play an important role in meeting the firm's objectives, and exert a direct influence on complex corporate decisions such as investing in R&D (Alessandri & Pattit, 2014) and financial policy (Bertrand & Schoar, 2003; Chava & Purnanandam, 2010). Hence, it is necessary to look beyond the CEO and take into consideration the whole TMT in order to understand decision making at the top of the firm.

In relation to the TMT, it is relevant to consider an important aspect that the literature has not addressed in depth and may influence the relationship between ESOs granted to management and firm risk taking, which is the gender diversity in the TMT. Currently, together with top executive compensation, gender diversity is arguably one of the most debated features of boards of directors (Adams & Ferreira, 2009; Carter, D'Souza, Simkins, & Simpson, 2010) and top management positions (Dezso & Ross, 2012). This study takes TMT gender diversity into account because, although the evidence shows that male and female executives receive a similar amount of ESOs in their compensation packages (Munoz-Bullon, 2010; Vieito & Khan, 2012), there is a widespread view that women are both more risk averse and loss averse than men (Brooks & Zank, 2005; Charness & Gneezy, 2012; Croson & Gneezy, 2009), and thus the ESO effect on firm risk taking may change with different levels of female representation in the TMT.

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The present study has two major goals. The first is to examine the relationship between current and prospective ESO wealth and firm risk taking by combining the arguments of agency theory and BAM. The second goal is to analyze how gender diversity in the TMT moderates the relationship between ESO grants and firm risk taking. Using panel data from six fiscal years (from June 2006 to May 2012) on TMTs of the S&P 1500 firms, our research design takes into account the fact that ESO incentives and firm risk taking are jointly determined. Furthermore, as Huang and Kisgen (2013) indicate, female executives are not randomly assigned to firms. Women's higher risk aversion and the level of firm risk may have an impact on the firm's decisions when hiring new TMT members. In addition, women may self-select themselves into firms that take less risk. Therefore, it is critical to address the endogenous nature of all these relationships in the empirical framework. In particular, we deal with endogeneity problems through a Generalized Method of Moments (GMM) estimation, a two-stage least squares (2SLS) instrumental variable estimation, and a propensity score procedure to form a matched sample of firms with gender diverse TMTs and non-gender diverse TMTs.

Applying different methods to consider potential endogeneity issues makes an important contribution to the literature from the point of view of empirical testing. In addition, in response to those studies which point out the limitations of the classical Black and Scholes (1973) model in the valuation of ESOs and their incentives (Álvarez-Díez, Baixauli-Soler, & Belda-Ruiz, 2014; Devers, Cannella, Reilly, & Yoder, 2007; Goergen & Renneboog, 2011), we use the model developed by Cvitanic, Wiener, and Zapatero (2008) which, through its completely analytical expression, adapts to the features of ESOs. From a more theoretical point of view, this research contributes to the literature in other ways. First, unlike previous studies that focused exclusively on CEOs (Devers, McNamara, Wiseman, & Arrfelt, 2008; Larraza-Kintana et al., 2007; Martin et al., 2013), we use the TMT as our unit of analysis since, in addition to the CEO, other TMT members are also involved in formulating and carrying out firm risk-related policies that will affect performance outcomes (Alessandri & Pattit, 2014; Chava & Purnanandam, 2010). Second, as Eisenhardt (1989) and Boyd, Franco Santos, and Shen (2012) suggest, we consider complementary theoretical perspectives to agency theory, particularly the framework of the BAM, in order to understand the complexity of incentive compensation and come to more meaningful findings. Finally, previous studies have analyzed the gender pay gap for top executives (Bugeja, Matolcsy, & Spiropoulos, 2012; Elkinawy & Stater, 2011; Kulich, Trojanowski, Ryan, Haslam, & Renneboog, 2011), but the literature does not address the question of whether TMT gender diversity has an effect on the risk taking motivated by ESOs.

The remainder of the study is structured as follows. Section 2 provides the theoretical framework and the research hypotheses. Section 3 describes the data, specifies the variables and presents the methodology used to test the hypotheses. Section 4 reports the empirical results. Finally, Section 5 provides conclusions to this research study.

## 2. Theoretical framework and hypotheses

### 2.1. ESOs and firm risk taking

Two general paradigms can be considered in the area of ESOs and their incentive effects: agency theory (Jensen & Meckling, 1976) and BAM (Wiseman & Gomez-Mejia, 1998). Drawing on agency theory, executives are considered risk averse (Eisenhardt, 1989; Jensen & Meckling, 1976) and ESOs lead them to take more risk in search of increasing the firm's stock price, and therefore the value of their options, as the executives face no downside risk (Sanders, 2001). Thus, agency theory focuses on the role of the prospective ESO wealth in motivating risk taking (Martin et al., 2013). However, the normative stream of agency theory (Harris & Raviv, 1979; Holmstrom, 1979; Shavell, 1979) considers that equity-based compensation creates excessive risk

bearing for top executives, and thus they adopt conservative behavior by becoming even more risk averse. This stream of agency theory places emphasis on the importance of the risk bearing in relation to the ESOs' effect on risk taking behavior, which is also what the BAM considers.

Risk bearing refers to the perceived risk that one is exposed to when there is a threat to executive wealth (Larraza-Kintana et al., 2007; Wiseman & Gomez-Mejia, 1998). According to BAM, executives are loss averse, and therefore they try to protect their own current wealth from possible loss. The greater the risk that is borne, the less attractive risk taking is, since executives have more wealth at stake (Wiseman & Gomez-Mejia, 1998). Drawing on these arguments and focusing on ESOs, BAM supports the view that ESOs are part of the perceived current wealth of their holders, and therefore ESOs can lead to an increase in risk aversion among executives because ESOs may be associated with increasing risk bearing. Specifically, if the intrinsic value of the options is positive, loss averse executives are not willing to take risk because of the possibility of decreasing their perceived current wealth if the value drops. In contrast with this, if the intrinsic value is zero, ESOs do not create risk bearing, which will then not produce executive risk aversion (Larraza-Kintana et al., 2007; Wiseman & Gomez-Mejia, 1998).

Some research has attempted to extend the original ideas of BAM and examine them empirically. Larraza-Kintana et al. (2007) and Sawers et al. (2011) support the predictions of BAM and find that as the intrinsic value of options increases, executive risk taking decreases. In contrast with this, Devers et al. (2008) show that the value of unexercisable stock options has a significant positive impact on risk taking. Recently, Martin et al. (2013) found support for both agency theory and BAM, by showing a positive (negative) relationship between prospective (current) ESO wealth and firm risk. This research indicates that the negative association suggested by BAM is positively moderated by the possibility of increasing the firm's stock price, that is, by the importance of prospective wealth supported by agency theory.

Following Martin et al. (2013), we take into account the possibility that both prospective ESO wealth and current ESO wealth influence the TMT risk taking behavior, and consequently the level of firm risk. Extending this recent research, we suggest (see Fig. 1) that in the situation in which the stock price is below the exercise price (out of the money option) and starts to increase, the current wealth (or intrinsic value) is either zero or low and increases if the stock price continues to rise. However, in this situation the prospective ESO wealth has a higher relative weight with respect to the current ESO wealth, since TMT members will adopt risk-increasing behavior with the aim of increasing the firm's stock price, and therefore their wealth. In this circumstance, the agency theory view (Jensen & Meckling, 1976; Jensen & Murphy, 1990) dominates the impact on risk taking behavior and

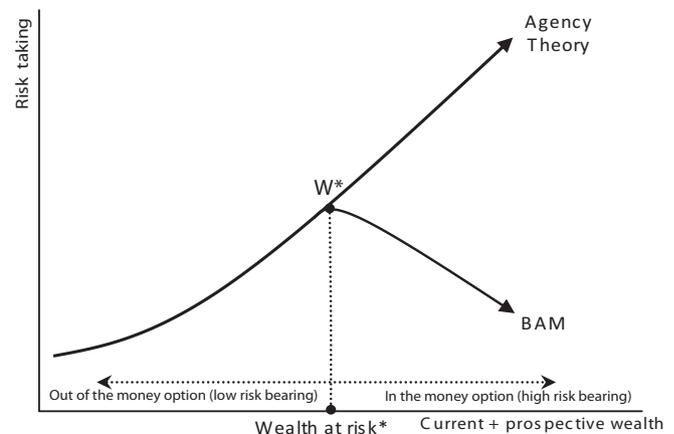


Fig. 1. Effect of ESOs (current and prospective wealth) on risk taking.

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