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# The role of corporate governance in forecasting bankruptcy: Pre- and post-SOX enactment<sup>☆,☆☆</sup>

Chia-Ying Chan<sup>a</sup>, De-Wai Chou<sup>b,\*</sup>, Jane-Raung Lin<sup>c</sup>,  
Feng-Ying Liu<sup>d</sup>

<sup>a</sup> College of Management, Innovation Center for Big Data and Digital Convergence, College of Management, Yuan Ze University, Taiwan

<sup>b</sup> Graduate Institute of Management, National Taiwan Normal University, Taiwan

<sup>c</sup> Graduate Institute of Finance, National Chiao Tung University, Taiwan

<sup>d</sup> Department of Finance, Rider University, United States

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### ABSTRACT

This paper contributes to the literature by documenting the improved performance of bankruptcy prediction models after including corporate governance variables. The empirical results demonstrate better predictive power for financial bankruptcy than previous bankruptcy prediction models, particularly in the post-SOX period. Our theoretical argument emphasizes the urgent need for such improvements to the bankruptcy prediction model following the introduction of the SOX Act, with the empirical results providing intuitive economic meaning for all relevant market participants. Policymakers may consider enacting laws to include designs for corporate governance monitoring mechanisms, entrepreneurs may use this model to improve their own governance structures and compensation mechanisms to avoid financial bankruptcy, and investors may refer to it to ensure that 'losers' are excluded from their investment portfolios.

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\* Corresponding author. Present address: Graduate Institute of Management, College of Management, National Taiwan Normal University, 31, Shida Road, Taipei 10610, Taiwan. Tel.: +886 2 7734 3305; fax: +886 2 2364 8372.

E-mail address: [dwchou@ntnu.edu.tw](mailto:dwchou@ntnu.edu.tw) (D.-W. Chou).

## 1. Introduction

A series of high-profile corporate scandals (including the widely publicized cases of bankruptcy at Enron, WorldCom, and Qwest) in recent years has spurred widespread demand for reforms to corporate legislation, with these events ultimately leading to the introduction of the Sarbanes-Oxley Act in 2002. This Act required corporate governance reforms and full disclosure of executive compensation levels. Following the Sarbanes-Oxley (SOX) Act, there has been increasing demand for an appropriate bankruptcy prediction model with enhanced predictive power, since a sufficiently accurate prediction model could help caution investors against problems at firms. Since this is an issue of considerable importance to policymakers and scholars, it is the primary motivation for the present study.

Bebchuk (2002) observes that in firms filing for Chapter 11 bankruptcy, equity holders clearly benefit from the 'automatic stay' and 'absolute priority' provisions, arguing that under the Chapter 11 code, equity holders and managers may have clear incentives, both *ex ante* and *ex post*, for making risky business decisions, with the obvious potential for moral hazard problems. Therefore, in the present study, specific focus is placed upon ability of the bankruptcy models to predict the likelihood of firms filing under Chapter 11. Several studies provide theoretical insights into the entrenched human costs, such as the inverse relationship between the loss aversion of CEOs and leverage, and the positive relationship between wages and leverage (Berk, Stanton, & Zechner, 2010; Chemmanur, Paeglis, & Simonyan, 2008; Harris & Holmstrom, 1982). Berk et al.'s (2010) model suggests that the human cost of entrenched managers may be seen as an indirect bankruptcy cost, with wages found to have explanatory power for firm leverage.

The analysis of the sample set in the present study under the Chapter 11 bankruptcy code has two major purposes. First, we can see from the preceding line of research that when equity holders and management have absolute priority in extracting firm value, despite the fact that debt holders are not repaid in full, corporate governance mechanisms become crucial elements in determining the likelihood of firm bankruptcy. Second, in cases where executives are offered generous compensation packages, there is a strong possibility that they may either align their interests with those of equity holders or induce a certain extent of agency cost. Thus, managers may become more entrenched, subject to the protections provided in the content of Chapter 11. With such a positive relationship between wages and leverage, and the high probability of managers becoming equity holders through executive compensation schemes (such as stock options, stock bonuses and restricted stocks), managers within a firm filing for bankruptcy under Chapter 11 could, *ex ante*, further depreciate the value of the firm by taking debt holders for granted when engaging in their high risk decisions.

Though this phenomenon having already been observed in recent high-profile bankruptcy events, factors such as corporate governance and executive compensation have yet to be incorporated into bankruptcy prediction models. The impact of SOX on the bankruptcy prediction models using corporate governance variables has also been neglected. We therefore argue that it has now become theoretically and economically meaningful for such corporate governance related variables to be included within the predictive model for bankruptcy filing. Although the significant roles played by corporate governance and executive compensation schemes are confirmed by studies examining the likelihood of financial fraud (Burns & Kedia, 2006; Denis, Hanouna, & Sarin, 2006; Johnson, Ryan, & Tian, 2009), rather surprisingly, these two factors, which clearly have severe consequences, particularly in those firms filing *ex ante* for Chapter 11, are taken into consideration in very few studies. Furthermore, it is widely documented that firms with weak corporate governance mechanisms perform worse. Despite this, researchers often fail to engage in robust examination of the size of the compensation committee, the total amount of compensation, and the presence of the governance index when adopting bankruptcy prediction models.

This study can be seen as a first attempt at hypothesizing and subsequently confirming the enhanced predictive power of the model for firms filing for Chapter 11 through the inclusion of the corporate governance index, the size of the compensation committee, and the total amount of compensation. These variables serve as crucial determinants in our prediction model. Data were collected from the SDC on a sample of firms, each of which had filed for Chapter 11 bankruptcy, where some of main reasons for the filing were explicitly listed as compensation (Adelphia) or financial fraud (Worldcom).

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