

Bank Risk Management: Critical Review of Journal Article

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## Introduction

Risk taking and risk management are important aspects of banking firms. This paper critically reviews a journal article by Ellul and Yerramilli (2013) that examined the strength and independence of risk management in US banks over the period 1994 to 2009. The focus of Ellul and Yerramilli's (2013) study was on examining whether the firms risk management functions explained differences in risk-taking behavior, and the impact this had on the firm's stock return and operating performance. This article is related to other works that have particularly focused on examining strong risk management in a firm and the resulting level of risks taken by the firm. For instance, Kashyap, Rajan and Stein (2008) noted that strong internal risk control measures curtailed enterprise wide tail risk, while poor risk control does not curtail excessive risk taking, particularly where executives have high level compensations linked to returns made by the firm. Notably, the firm executives with high compensations tended to take excessive risks in their activities. However, the power risk managers had in the firms also influenced the level of risk the executives took (Stulz, 2008; Kashyap, Rajan, & Stein, 2008). Thus, in this background, Ellul and Yerramilli's study focused on whether if there were stronger risk controls as influenced by the risk management functions of the firms, then what difference it would make on the risk taking behavior of the firms, the level of risk, and also operation and stock return performance in the banks

### Risk Measurement and Management Techniques used in the Article

An examination of the journal article reveals that the main risk measurement employed in the article in order to investigate whether the firms risk management functions explained differences in risk-taking behavior was the tail risk of the banks. Tail risks are those risks at the left end of the normal distribution curve that describe the most severe outcomes, which although has less probability of occurring, when it does occur, it tends to have high consequential impact (Hoflich, 2011). Within the articles, the tail risk was viewed in terms of risk of large losses for the bank. The measure of the tail risk within the article was based on the expected shortfall (ES) measure which is an already established risk measurement within the financial industry that reflected the expected loss of the firm based on the condition of the loss being larger than the value at risk (VaR – maximum value loss of the firm with a confidence of  $1-\alpha$ ) (Acharya, et al., 2012). Within

Ellul and Yerramilli's study the ES measure was measured as expected loss of the banks based on the condition of the returns within the firms was less than some  $\alpha$  quintile, and therefore the tail risk for the banks within the study was viewed as the negative of average returns of each bank's share over the 5% days with worst returns for the stocks.

On the other hand, the risk management function and technique is largely examined using a measure constructed by the researchers that they called the Risk Management Index (RMI). The RMI measures the internal control within the firms with regard to risk management and hence reflects the "strength and independence of the risk management function" within the banks (Ellul & Yerramilli, 2013, p.1764). In order to develop RMI, the authors focused on six variables that measured a wide range of factors in the firm that influence risk management, including presence of chief risk officer (CRO), whether the CRO was an executive officer, whether they were among the five highest paid persons in the firm, and the ratio of CRO compensation against Chief Executive officer (CEO) compensation. The RMI measure also included the experience and independence of the risk committee in finance and banking, and whether the risk committee was active based on the frequency of meetings. Other variables examined within the study included the level of non performing loans, which increases credit risk within a bank, and the sensitivity of the CEO compensation to stock price changes.

The key strength of the measures used in the article is that they were comprehensive and took into account the key roles and function of the banks within the financial industry. Stulz (2014) argued that since banks tended to conduct risky business, the key goal of risk management in a bank is not completely getting rid of the risk, but rather ensuring that bad risks are eliminated while the good risks are exploited for the firm's profitability. In measuring risk within the banks, the article focused on tail risk, which reflects risk of large losses to the banks, which is therefore bad risk. This means that a focus within the article was comparison of how strength of risk control within the firm impacted the bad risks, or excessive risk within the firm, where if the bad risks were lowered as a result of strong internal risk control measures, then that was a good thing. Furthermore, the RMI measure used in the study was a comprehensive measure of the level of risk management within the banks as it focused on key aspects of risk management within a firm that could possibly impact how independent and strong the risk management function is within the firm. As noted from the discussion of the measure above, the measure comprise of a number

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### Relevant Econometric Methodologies in the Article

A number of econometric models have been employed in the study, where regressions of a number of independent variables against a dependent variable are done in order to determine link in relationships between these variables. The first econometric model is the model reflecting the determinants of RMI. In this model, RMI is a function of  $X_{j,t-1}$ , which is a variable indicating financial and governance characteristics of the firms, and also a function of size of the firm as noted by the book value of total assets. Within the financial and governance characteristics, balance sheet compositions such as short term borrowing over assets, non performing loans, derivatives hedging, and quality of governance among others were included in the model. These were used to examine how they impacted the RMI measure. Another variable included in the model was the Year FE variable, which reflected the dummy variable post 1999 variable to identify the years 2000 to 2009 (Ellul & Yerramilli, 2013, p.17-3). However, a key weakness in this model is that the variable Year FE within the RMI model was not effectively defined both within the article and in the appendix. Therefore, its role within the model is only partly understood. The second econometric model measured tail risk ( $Y_{j,t}$ ) as a function of the pre-crisis RMI, the financial and governance characteristics in 2006 just before the crisis, and the variable Year FE, that is not clearly defined in the article. The focus of this model is linking tail risk to the pre-crisis RMI, controlling for the firm's financial and governance characteristics. Notably, firms with stronger pre-crisis RMI had lower tail risk from the findings of the model.

A third model also linked tail risk with RMI, but rather than focus on pre-crisis and crisis period, the model's focus was on the period under study, and more variables were added to the model. Thus, in this econometric model, tail risk is a function of RMI,  $X_{j,t-1}$ , Size of the firm, and the variable Year FE. Other econometric models not algebraically expressed in the article included the model linking RMI with the firm performance in terms of stock returns, and in terms of return on assets (ROA), and Abnormal returns (Ellul & Yerramilli, 2013), with these performance measures being dependent variables, therefore meaning three more econometric models. The key strength of these models is that they fit well with the topic and objectives of the study in linking risk management function and risk level in firms as well as performance of the firms. However, a weakness is that some variables within the models were not in-depthly and clearly discussed or described, and therefore gave only a shallow understanding of how these

models operated or worked. Of particular concern was the variable Year FE included in most of the models, yet not discussed or described in the study, therefore making it difficult to know exactly how results from this particular variable would be interpreted in light of the whole model.

### **Critical Discussion and Analysis Major Findings of the Article and Bank Risk-Taking Behavior**

The major findings from the article highlighted the risk-taking behavior of banks given their risk management function, and further linked the risk management function to the performance of the firm. From the article, it can be noted that the authors found that a higher RMI in the banks was related to banks with low capital ratios, larger trades in derivatives, and a bigger part of the firm's income coming from nonbanking activities. Coval, Jurek and Stafford (2009) notes the increased securitization that has enabled banks to be able to manage their credit risk. With the findings from the article, it is thus noted that the more banks move away from traditional banking services and expand their trading activities in derivatives, then they tended to have higher risk management practices as noted by the high RMI in order to mitigate the high risk that are faced with in derivatives markets. Furthermore, the findings indicate that better corporate governance and CEO compensation contracts that favored greater risk taking tended to have high RMI. In addition, although there was a crisis of RMI after 1999, banks that had high tail risks in 1998, tended to have lower RMI in the following years (1999-2009) as compared to the banks that had higher RMI, and increases in RMI for these firms was smaller than the firms that already had high RMI. The findings of the paper also indicated that banks that had stronger RMI before the crisis did well during the crisis in 2007 and 2008 as they had lower tail risk, better operating performance, results higher stock returns, and lower nonperforming loans, as compared to firms that had low or weak RMI index before the crisis. Furthermore, examining the link between RMI and tail risk indicated that banks with higher RMI in a previous year, had lower tail risk in the next year, and further there was a strong positive relation between ROA and a lagged RMI.

In essence therefore, the findings indicated that stronger risk management control within a firm impacted the firms favorably, as it not only helped the firms get through the recent 2008/2009 financial crisis unscathed, but also improves the financial performance of the firm, and lowers

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