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## Board structure and stock price informativeness in terms of moving average rules

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### ABSTRACT

According to the moving average (MA) trading rules, investors are likely to buy stocks after the golden cross occurs and sell stocks when the dead cross appears. Proxies for stock price informativeness, such as the days when the short-term MA is higher than the long-term MA over the total number of trading days in a year (hereafter referred to as DMA), can be affected by board structure. Results reveal that a high DMA tends to occur in firms with well-functioning board structures. Furthermore, DMA can be quickly updated as daily share prices are released. Consequently, the enhanced or weakened function of board structure may be disclosed quickly by DMA unlike other proxies of stock price informativeness/firm performance, such as stock return, ROA, ROE, and Tobin's  $q$ . We argue that DMA serves as a new proxy that may not be inferior to and is even better than other proxies, which might contribute to the existing literature.

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### 1. Introduction

Stock price informativeness is the result of aggregating information among speculators, arbitrageurs, and less-informed investors (Grossman & Stiglitz, 1980; Kyle, 1985); it is primarily concerned with stock returns and stock price volatility. Proxies for stock price informativeness include the idiosyncratic stock price that reflects firm-specific information (Morck, Yeung, & Yu, 2000), the proposed illiquidity ratio (Amihud, 2002), and the range of stock price fluctuation (Huang, Chan, Huang, & Chang, 2011).

According to the moving average (MA) trading rules, investors are likely to buy stocks right after the golden cross<sup>1</sup> because the short-term MA (SMA) is higher than the long-term MA (LMA) during this period (i.e., MA5 in blue color over the MA20 in orange color shown in Fig. 1). Following the same trading rules, investors are likely to sell shares as the dead cross occurs because the SMA is lower than the LMA during this phase. However, we argue that the

proxy for share price performance, that is, the days in which the SMA is higher than the LMA over the total number of trading days in a year (hereafter referred to as DMA), can be affected by board structure. On the basis of this argument, we propose that firms with well-functioning board structures are likely to have high DMAs, as well as strong stock price performances. We then employ DMA, which is different from other proxies of stock price informativeness employed in previous relevant studies.

Relevant studies have explored board structure and share price performance, as well as firm performance issues (An & Zhang, 2013; Black & Kim, 2012; Claessens & Fan, 2002; Drobotz, Schillhofer, & Zimmermann, 2004; Ferreira, Ferreira, & Raposo, 2011; Gul, Cheng, & Leung, 2011; Gul, Srinidhi, & Ng, 2011; Han & Suk, 1998; Lee & Yeh, 2004; Ni & Huang, 2015; Yu, 2011). However, we argue that DMA can serve as another proxy for share price performance, which might be caused by the function of board structure. Moreover, agency problems occurred might be caused by the function of board structure (Bathala, Moon, & Rao, 1994; Kao, Chiou, & Chen, 2004; Li, 1994; Raheja, 2005; Rosenstein & Wyatt, 1990; Wu, 2012). Thus, according to the viewpoints of agency theory, we argue that agency problems result from an ill-functioning board structure, a condition that might result in inferior performance as indicated by the DMA.

In this study, we argue that firms with good share price performance might lead to a condition in which the SMA is higher than

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<sup>1</sup> The golden cross day is characterized by  $SMA_t > LMA_t$  and  $SMA_{t-1} < LMA_{t-1}$ . Similarly, the dead cross day is characterized as  $SMA_t < LMA_t$  and  $SMA_{t-1} > LMA_{t-1}$ .



Fig. 1. MA trading rule employed.

the LMA because of the upward trend in stock price movement. On the basis of this argument, we infer that DMA can be influenced by the function of board structure, particularly because firms with a well-functioning board structure are likely to have good share price performance. In addition, we argue that using the proxy, DMA, would enhance the added value of existing literature, which would be explained as follows.

First, we document that share price informativeness/firm performance, such as stock returns, ROE, ROA, and Tobin's  $q$  (Chhaochharia & Grinstein, 2007; Cremers & Ferrell, 2014; Dutordoir, Strong, & Ziegen, 2014; Ferreira et al., 2011; Lemmon & Lins, 2003; Maury, 2006), has been explored in terms of board structure and financial statements by relevant literature (An & Zhang, 2013; Black & Kim, 2012; Claessens & Fan, 2002; Drobetz et al., 2004; Ferreira et al., 2011; Gul, Cheng, et al., 2011; Gul, Srinidhi, et al., 2011; Han & Suk, 1998; Lee & Yeh, 2004; Ni & Huang, 2015; Yu, 2011). However, the DMA seems unexplored in the existing literature.

Second, we argue that market participants may be familiar with stock return, ROE, ROA, and even Tobin's  $q$ . Firms with better firm performance (e.g., higher ROA and ROE) are likely to have better corporate governance than those with poor firm performance (e.g., lower ROA and ROE). However, although ROA and ROE may be determined through reported financial statements, they are not disclosed frequently but rather quarterly and even yearly. In addition, stock returns and Tobin's  $q$  measured by year may not contain detailed information. In other word, these variables mentioned above might not have the advantage in terms of information updated.

Third, as for this new proxy, DMA, information can be quickly updated as daily share price is released unlike other proxies of share price performance/firm performance (i.e., ROA, ROE, stock returns, and Tobin's  $q$ ). Consequently, the enhanced or weakened function of the board structure may be disclosed quickly by DMA unlike other proxies. Therefore, we infer that this new proxy may not be inferior to and is even better than other proxies. As a result, we argue that using the proxy, DMA, would enhance the added value in terms of existing literature.

Moreover, to the best of our understanding, this study is the first to explore the potential effect of board structure on DMA.<sup>2</sup> Specifically, we survey the relevant literature related to MA trading rules, board structure, and the relationship between the two.

The effectiveness of MA wisdom has been explored by relevant studies (Bessembinder & Chan, 1995; Brock, Lakonishok, & LeBaron, 1992). As for MA trading rules, the golden cross and dead cross initiated by various MA lines are often employed for trading stocks in stock markets, such as those in Japan (Miwa & Kazuhiro, 2002) and the U.S. (Bessembinder & Chan, 1995; Brock et al., 1992).

<sup>2</sup> DMA is defined as the days in which the SMA is higher than the LMA over the total number of trading days in a year. We employ DMA as a new proxy for stock price performance in this study.

Gencay (1998) reveals strong evidence that supports the prediction of stock prices according to the signals emitted by MA trading rules. Shintani, Yabu, and Nagakura (2012) reveal that trading signals, such as the golden cross or dead cross, emitted by MA trading rules are likely to predict future stock prices. Fifield, Power, and Donald Sinclair (2005) also indicate that institutional investors often have superior performance in trading stocks when they follow MA trading rules in emerging stock markets. Heng, Azizan, and Yeap (2012) reveal that investors who use technical trading rules, such as MA trading rules, are likely to produce positive returns. Furthermore, we argue that trading stocks following MA trading rules is closely related to momentum strategies because investors often use momentum strategies to either buy stocks as the golden cross occurs or short sell stocks as the dead cross is signaled by MA trading rules (Bessembinder & Chan, 1995; Brock et al., 1992; Loh, 2007; Ni, Liao, & Huang, 2015).

With regard to board structure variables, Claessens, Djankov, Fan, and Lang (2002) argue that controlling shareholders hold a high percentage of shares that are consistent with corporate interests. However, La Porta, Lopez-de-Silanes, and Shleifer (1999) claim that controlling shareholders likely hurt small shareholders because of the manipulation of corporate resources. Furthermore, Yeh, Shu, Lee, and Su (2009) indicate that firms with weak corporate governance tend to provide high remuneration for their directors. Certain directors of these firms might pledge the majority of their shareholdings for loans. Bauguess, Moeller, Schlingemann, and Zutter (2009) find that firm performance can be enhanced for firms whose directors responsible for business affairs have high shareholding ratio.

As for managers' shareholdings, Jensen and Meckling (1976) indicate that the managers with a high shareholding ratio tend to have a strong motivation to promote firm performance because any loss of the business will hurt their own interests. Demsetz (1983) shows that top managers with few shares might indulge their preference if they are able to control the firm. However, Jensen and Ruback (1983) suggest that managers with high shareholdings might neglect their duties and drive the decline of firm value. Fahlenbrach and Stulz (2009) reveal that the managers of a firm would increase their shareholdings as the firm faces financial dilemma but reduce their shareholdings as the firm exhibits superior firm performance. With regard to institutional shareholdings, Ferreira and Matos (2008) find that institutional investors seem to prefer holding highly weighted stocks because of the concern over liquidity. Dahlquist and Robertsson (2001) also reveal that foreign institutions prefer to invest in large-scale firms with abundant cash. Aggarwal, Erel, Ferreira, and Matos (2011) indicate that firms with high institutional ownership are likely to not only terminate CEOs with poor performance but also improve firm values by emphasizing corporate governance. Under this scenario, institutional investors clearly play important roles in share markets.

Relevant studies indicate that a large number of board members increase the probability of good decision making because of the varied professional backgrounds of such board members (Goodstein,

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