

Board size and company performance: Evidence from a natural experiment in Ukraine

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Very preliminary; please, do not cite!

Abstract

This paper uses a natural experiment in Ukraine to study the effect of board size on corporate performance. By 2008, most Ukrainian companies had relatively small (supervisory) boards but suddenly had to enlarge them as a result of a comprehensive reform of corporate law, in which board size became linked to the number of shareholders in the company. Using a panel of publicly traded Ukrainian companies over 2007-2013 and various estimation methods (the fixed-effects, difference-in-difference and regression discontinuity techniques), we find no evidence that expanding corporate boards leads to improved corporate performance. We also document substantial non-compliance with the reform, when a substantial fraction of Ukrainian companies ignored the new regulations. Interestingly, when in 2011 the Ukrainian parliament repealed the legal provision linking board size to the number of shareholders, many companies rushed to reduce their boards, often below the pre-reform level.

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Introduction

Board of directors is a key corporate governance mechanism ensuring that companies are run in the interests of shareholders and stakeholders (Croci 2018). Modern corporate governance literature emphasizes two principal functions of the board: monitoring the managers and providing advice to them (Adams and Ferreira 2007). It suggests that the ability of the board to fulfill these functions and contribute to firm performance crucially depends on its characteristics, which include, but are not limited to, size, the share of independent directors, diversity, in particular in terms of gender and age, board busyness, CEO duality and board committees (Adams et al. 2010). Among these, board size has been identified as a high priority for at least three decades, starting with the seminal contributions of Lipton and Lorsch (1992) and Jensen (1993).

Theory offers various perspectives why board size may be important. For example, the greater human capital that large boards possess may enhance their capacity for monitoring and advising the managers. According to the resource dependence theory, larger boards are better suited to help companies co-opt resources from its environment and therefore instrumental in achieving better corporate performance. However, large boards may suffer from coordination problems, especially when boards are diverse. Large boards are also more likely to suffer from free-riding on the part of its members. As a result, important decisions may be postponed and control over managers weakened. More subtle arguments refer, for example, to social psychology and organizational behavior theories suggesting that greater difficulties of reaching an agreement in large boards may lead to the avoidance of extreme decisions, lower risk taking and lower volatility of firm performance (Wang 2012). Another important issue that has received attention in recent years is whether one size fits all. The optimal board size may depend on firm characteristics, such as complexity (e.g., size, diversification and R&D). In particular, simple firms may not require large boards while complex firms do.

The available empirical evidence on the effect of board size on corporate outcomes is inconclusive. The seminal study by Yermack (1996) finds that the market value of the firm “declines steadily only after board size grows beyond seven”. He concludes that large boards are bad for company performance, primarily due to coordination problems. Similarly, Conyon and Peck (1998) find a negative relationship using data from five European countries, Eisenberg (1998) and Bennedsen (2007) conclude the same using rich data on small and midsize Finnish and Danish firms, respectively. Mak and Kusnadi (2005) report a negative relationship between board size and corporate performance for Singapore and Malaysia while Nguyen et al. (2016) obtains a similar result for Australia.

However, several studies find no robust relationship between board size and performance (Wintoki et al. 2012), report an inverted U-shape relationship (Andres and Vallelado 2008), or present a more nuanced picture. For example, according to Coles et al. (2008), who focus on the advising needs and operational complexity of a firm, Tobin's Q increases in board size for complex firms, but decreases for simple ones.

Finally, positive and statistically significant associations between board size and firm performance are reported by Kiel and Nicholson (2003) and Henry (2008) for Australia, Beiner et al. (2006) for Switzerland and Rubino (2017) for Italy. Among the emerging markets, a negative relationship are found by Jackilng and Joel (2009) for India and Ntim (2015) for South Africa.¹

This variability in empirical findings is often explained by difficulties in establishing causal links between board size and corporate outcomes. Indeed, estimates of the effect of board size on corporate performance are plagued by endogeneity, in particular, through omitted variables and reverse causation. To illustrate the omitted variable case, board size may be related to (generally unobserved) managers' opportunities to extract private benefits (Harris and Raviv, 2006; Boone et al. 2007), which, in turn, adversely affect firm performance. Similarly, larger boards are more typical of diversified firms, because such firms require more varied expertise or because diversification is driven by acquisitions, after which representatives from the target's board are added to the acquiring firm's board (Boone 2007). But diversified firms also tend to have lower valuations (e.g. Campa and Kedia 2002), which may generate a spurious negative relationship between board size and firm value. As to reversed causation, Guest (2008), for example, finds that CEOs of well-performing companies are able to negotiate smaller boards with a low outsider proportion. Similarly, boards are often enlarged by representatives of lenders in case the firm violates loan covenants (Ferreira et al. 2018). Finally, endogeneity may be of dynamic nature, when current board structure is affected by past performance of the firm, which invalidates many commonly used estimators (Wintoki 2012).

Although traditional remedies to address endogeneity, such as modelling unobserved heterogeneity with the help of panel data, using IV techniques and applying differenced GMM methods, mitigate endogeneity concerns, they do not necessarily restore causal inference. For example, the fixed-effects methods offer only a partial solution to endogeneity:

¹ The cross-country differences in the findings potentially highlight importance of the institutional settings. The optimal board size may be firm-specific, but also country-specific, especially given the differences in the legal and business environment as well as different provisions pertaining to corporate boards across the globe. One tier vs two-tier corporate boards is a notable example.

they are only able to tackle the omitted variable bias and only to the extent that omitted variables can be treated as time-invariant. The IV methods, in turn, require strictly exogenous instrumental variables, which are rarely available in a corporate governance setting (Wintoki 2012). The validity of the instruments attempted, including free cash flow, industry concentration (Guest 2009), a firm's age and status as member of a corporate group (Eisenberg 1998), CEOs' family size (Bennedsen et al. 2007) and geographic density of firms (Knyazeva et al. 2013, Chintrakarn et al. 2020), remains questionable and is not always supported by statistical tests (Guest 2009). Finally, GMM methods are criticized for the lack of theoretical guidance on model building and the great variability of the results with small variations in the assumptions. Therefore, scholars are actively searching for natural experiments that provide exogenous variation in the key independent variable in order to achieve identification (Roberts and Whited 2013; Atanasov and Black, 2016).

Recently, a growing number of studies try to exploit quasi-experimental settings to establish causal effects between board structure and corporate outcomes. For example, Duchin et al. (2010) investigate the role of outside directors using changes to board composition triggered by new exchange listing rules adopted in 2004 in the US. Black et al. (2012) investigate corporate performance effects of board structure taking advantage of the 1999 changes in Korean corporate law that required large firms to have 50% outside directors, an audit committee with an outside chair and at least two-thirds outside members. In a cross-country setting, Fauver et al. (2017) exploit a quasi-experimental setting to study the impact of corporate board reforms, involving, for example, board and audit committee independence, on firm value in 41 jurisdictions.

Few such studies exist for board size, possibly because exogenous variations in board size induced by changes in laws and stock exchange regulations are much less common compared to changes in board independence and board committees – there is stronger emphasis on the quality of the board over the quantity of directors.² A notable exception is the paper by Jenter et al. (2019), which exploits variations in the minimum board size requirements in Germany. In particular, since 1976, the German corporate law requires firms with more than 10,000 domestic employees to have at least 16 directors on the board. Most firms comply with the provision as witnessed by a sharp increase in board sizes at this threshold. Relying on regression discontinuity around the threshold and a difference-in-differences analysis around the law's introduction, Jenter et al. (2019) find evidence that large boards are associated with lower performance and firm value. In particular, the firms affected

² <https://insights.diligent.com/board-diversity/best-practices-board-size-and-corporate-governance/>.

by the legal reform experience a 2-3 percentage points decline in the return on assets and a decline in Tobin's Q by 0.20-0.25.

This paper provides new evidence on the effect of board size on company performance. Are larger boards indeed less effective than small ones, as the bulk of the previous studies suggest? To address this question, we look at the exogenous variation in board size brought about by the reforms of corporate law in Ukraine. By 2008, most Ukrainian companies had relatively small (supervisory) boards but suddenly had to enlarge them as a result of a comprehensive reform of corporate law, in which board size became linked to the number of shareholders in the company. In particular, in companies with more than 10.000 shareholders, corporate boards were supposed to include at least nine directors, in companies with more than 1.000 shareholders – at least seven directors, and in companies with 100 to 1.000 shareholders – at least five directors.³

We exploit this natural experiment using a hand-collected panel dataset of several hundred Ukrainian firms in 2007-2013. The sample includes all non-financial Ukrainian companies whose shares were traded on the two country's main stock exchanges – the PFTS and the Ukrainian Exchange. Most of the data have been collected from the public disclosure web-site, SMIDA (www.smida.gov.ua).

The empirical analysis starts with standard panel data regressions linking firm performance to board size that treat board size as exogenous (indeed, there is a large exogenous component due to the new law). While such models allow controlling for unobserved time-invariant heterogeneity across companies, they fall short of addressing all concerns related to endogeneity, reverse causation in particular. Therefore, to obtain causal effects, we switch to policy-evaluation methods such as difference-in-difference and regression discontinuity designs (in its fuzzy version). They are possible thanks to the availability of the forcing variable – the number of shareholders in the firm – to which the size of the board is related. We believe that exploiting the exogenous shocks associated with the enactment and repeal of the Ukrainian law allows us to identify the causal effect of board size on firm performance.

In terms of findings, we first document the prevalence of very small boards in the absence of regulatory interventions. Next, the data indicate substantial non-compliance with legal rules: most companies disregard the regulations on board size introduced by the 2008 reform of corporate law. Interestingly, companies do not see any positive effects of larger

³ To some extent, the Ukrainian law mimics Russia's regulations from 1995, which also link the number of directors to the number of shareholders. The thresholds in Ukrainian law are exactly the same as in Russia's.

boards: once the legal regulations for larger boards are retracted in 2011, most companies return to small boards, which are small by international standards and even smaller than what was prevalent in Ukraine in the pre-reform period.

In terms of establishing causal effects of board size on performance, we (tentatively) find that the 2008 reform of corporate law in Ukraine provides some, albeit weak evidence, that increasing the size of the board leads to declines in corporate performance. The effect is observed for very large boards – those consisting of at least 9 directors – and is not visible for smaller boards (e.g., increasing the board size from 5 to 7 directors does not have any visible negative effect). This is largely consistent with a huge body of the international literature on corporate finance/governance starting from Yermack (1996).

References

- Adams, R. B., & Ferreira, D. (2007). A theory of friendly boards. *The journal of finance*, 62(1), 217-250.
- Adams, R. B., Hermalin, B. E., & Weisbach, M. S. (2010). The role of boards of directors in corporate governance: A conceptual framework and survey. *Journal of economic literature*, 48(1), 58-107.
- Atanasov, V. A., & Black, B. S. (2016). Shock-based causal inference in corporate finance and accounting research. *Critical Finance Review*, 5, 207-304.
- Beiner, S., Drobetz, W., Schmid, M. M., & Zimmermann, H. (2006). An integrated framework of corporate governance and firm valuation. *European financial Management*, 12(2), 249-283.
- Bennedsen, M., Kongsted, H.C. and Nielsen, K.M. (2008), “The causal effect of board size in the performance of small and medium-sized firms”, *Journal of Banking and Finance*, Vol. 32, pp. 1098-1109.
- Black, B., & Kim, W. (2012). The effect of board structure on firm value: A multiple identification strategies approach using Korean data. *Journal of financial economics*, 104(1), 203-226.c.
- Boone, A. L., Field, L. C., Karpoff, J. M., & Raheja, C. G. (2007). The determinants of corporate board size and composition: An empirical analysis. *Journal of Financial Economics*, 85(1), 66–101.
- Campa, J. M., & Kedia, S. (2002). Explaining the diversification discount. *The journal of finance*, 57(4), 1731-1762.

- Chintrakarn, P., Tong, S., Jiraporn, P., & Kim, Y. S. (2020). Using geographic density of firms to identify the effect of board size on firm value and corporate policies. *Asia-Pacific Journal of Financial Studies*, 49(1), 36-66.
- Coles, J. L., Daniel, N. D., and Naveen, L. (2008) Boards: Does One Size Fit All, *Journal of Financial Economics*, 87(2): 329-356.
- Conyon, M. J., & Peck, S. I. (1998). Board size and corporate performance: evidence from European countries. *The European journal of finance*, 4(3), 291-304.
- Croci, E. (2018). The Board of Directors. In *The Board of Directors* (pp. 1-39). Palgrave Pivot, Cham.
- Duchin, R., Matsusaka, J. G., & Ozbas, O. (2010). When are outside directors effective?. *Journal of financial economics*, 96(2), 195-214..
- Eisenberg, T., Sundgren, S., & Wells, M. T. (1998). Larger board size and decreasing firm value in small firms I. *Journal of financial economics*, 48(1), 35-54.
- Fauver, L., Hung, M., Li, X., & Taboada, A. G. (2017). Board reforms and firm value: Worldwide evidence. *Journal of Financial Economics*, 125(1), 120-142.
- Ferreira, D., Ferreira, M. A., & Mariano, B. (2018). Creditor control rights and board independence. *The Journal of Finance*, 73(5), 2385-2423.
- Guest, P. M. (2008). The determinants of board size and composition: Evidence from the UK. *Journal of Corporate Finance*, 14(1), 51-72.
- Guest, P. M. (2009). The impact of board size on firm performance: evidence from the UK. *The European Journal of Finance*, 15(4), 385-404.
- Harris, M., & Raviv, A. (2008). A theory of board control and size. *The Review of Financial Studies*, 21(4), 1797–1832.
- Henry, D. (2008). Corporate governance structure and the valuation of Australian firms: Is there value in ticking the boxes? *Journal of Business Finance and Accounting*, 35, 912–942.
- Huang, Y. S., & Wang, C. J. (2015). Corporate governance and risk-taking of Chinese firms: The role of board size. *International Review of Economics & Finance*, 37, 96-113.
- Jackling, B., & Johl, S. (2009). Board structure and firm performance: Evidence from India's top companies. *Corporate Governance: An International Review*, 17(4), 492–509.
- Jensen, M. C. (1993). The modern industrial revolution, exit, and the failure of internal control systems. *the Journal of Finance*, 48(3), 831-880.
- Jenter, D., Schmid, T., & Urban, D. (2019). Does board size matter. In *AFA2019, 2018 SFS Cavalcade North America, 2018 CEPR Symposium*.

- Kiel, G.C. and Nicholson, G.J. (2003), “Board composition and corporate performance: how the Australian experience informs contrasting theories of corporate governance”, *Corporate Governance: An International Review*, Vol. 3, pp. 189-205.
- Knyazeva, A., Knyazeva, D., & Masulis, R. W. (2013). The supply of corporate directors and board independence. *The Review of Financial Studies*, 26(6), 1561-1605.
- Lipton, M., & Lorsch, J. W. (1992). A modest proposal for improved corporate governance. *The business lawyer*, 59-77.
- Mak, Y. T., & Kusnadi, Y. (2005). Size really matters: Further evidence on the negative relationship between board size and firm value. *Pacific-Basin finance journal*, 13(3), 301-318.
- Nguyen, P., Rahman, N., Tong, A., & Zhao, R. (2016). Board size and firm value: evidence from Australia. *Journal of Management & Governance*, 20(4), 851-873.
- Ntim, C. G., Opong, K. K., & Danbolt, J. (2015). Board size, corporate regulations and firm valuation in an emerging market: a simultaneous equation approach. *International Review of Applied Economics*, 29(2), 194-220.
- Roberts, M. R., & Whited, T. M. (2013). Endogeneity in empirical corporate finance. In *Handbook of the Economics of Finance* (Vol. 2, pp. 493-572). Elsevier.
- Rubino, F. E., Tenuta, P., & Cambrea, D. R. (2017). Board characteristics effects on performance in family and non-family business: a multi-theoretical approach. *Journal of Management & Governance*, 21(3), 623-658.
- Upadhyay, A. (2015). Board size, firm risk, and equity discount. *Journal of Risk and Insurance*, 82(3), 571-599.
- Wang, C. J. (2012). Board size and firm risk-taking. *Review of Quantitative Finance and Accounting*, 38(4), 519-542.
- Wintoki, M. B., Linck, J. S., and Netter, J. M. (2012) Endogeneity and the dynamics of internal corporate governance. *Journal of Financial Economics*, 105(3): 581-606.
- Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of financial economics*, 40(2), 185-211.