1. CORPORATE GOVERNANCE, BOARDS OF DIRECTORS AND COMPANY PERFORMANCE IN THE USA

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1.1. Introduction

On Thursday, July 26, 2018, the market value of Facebook suffered the largest one-day dollar loss for a single company in U.S. stock market history, shedding more than $120 billion in value (18%). This loss in shareholder value came the day after the company reported its second-quarter 2018 earnings and provided forward guidance about earnings and revenue; the company expressed concern about its ability to grow its active users and revenues in the future.[1] This concern was a by-product of months (or years) of speculation about how Facebook was using its users' data; we all knew that Facebook's business model relied on being able to connect users based on their information, but we didn't always know what else they might be doing with our data. It's one thing to connect me to a long-lost friend from high school; it's another thing to sell my content to consulting companies who may use that information for nefarious purposes. In April 2018, Facebook founder Mark Zuckerberg testified before U.S. Congress that Facebook had indirectly sold user information to Cambridge Analytica, which used this data to influence both the 2016 U.S. presidential election and the 2016 Brexit vote in the United Kingdom.[2] Zuckerberg, who controlled nearly 60% of voting power, remained Chairman and Chief Executive Officer through the data scandal and the stock price collapse – when he personally lost more than $15 billion.[3]

How could this happen? Where was the board of directors? What was it doing to protect the shareholders from management making ill-advised decisions that risk investor capital? Isn't corporate governance supposed to prevent such egregious events?

This chapter explores what we know about corporate governance, boards of directors and firm performance in the United States. Events like Facebook's are not new. And, while corporate governance in the U.S. has evolved and advanced over the previous few decades, it is unlikely to ever be able to protect investors against all bad decisions by management. But we can certainly try to improve board effectiveness. This chapter reviews the research from the past few decades to understand the opportunities, challenges and limitations that boards of directors have as they (presumably) tend to their fiduciary duty to serve shareholders. We will also identify best practices and structures that can help investors know how effective an individual firm's board of directors is.

There is a lot that we know, a lot that we are still trying to figure out and a lot that is nuanced, complex and situation specific. Boards are run by people, and companies are

[1] Facebook quarterly earnings report, second quarter (2018). Retrieved from: https://investor.fb.com/investor-news/press-release-details/2018/Facebook-Reports-Second-Quarter-2018-Results/default.aspx
[2] Facebook Company. (2008, April 16). *Hard questions: What data does Facebook collect when I'm not using facebook, and why?* [Press release].
[3] Facebook 2018 proxy statement and author's calculation. (2018, April 13). Retrieved from: https://www.sec.gov/Archives/edgar/data/1326801/000132680118000022/facebook2018definitiveprox.htm

run by people; individual characteristics, incentives and behaviors can complicate our ability to establish best practices. Most companies and boards are trying to do their jobs to maximize value for shareholders while appropriately respecting all other stakeholders, laws and regulations. After all, when Facebook loses more than $120 billion in a single day, we are quick to question its corporate governance practices, yet we probably weren't acknowledging what was working with its corporate governance when it grew to be worth more than $600 billion such that a $120 billion loss would *only* be an 18% loss.

1.2. Legal Overview & Importance of Understanding Boards of Directors

The modern academic study of corporate governance and boards of directors can be traced to Jensen and Meckling's 1976 paper "Theory of the firm: Managerial behavior, agency costs and ownership structure," which outlined the tensions that are present in publicly listed firms. These tensions arise because each firm has many different stakeholders and each stakeholder has different incentives and preferences. Principals, the owners of the firm, hire managers (agents) to run the firm for them; but as long as the managers have different incentives than the owners – which they almost always do – the managers may not run the company with the sole purpose of maximizing value for owners. Shleifer and Vishny (1997) define corporate governance as "the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment." There are many definitions of corporate governance; this one is as good as any because it leaves nebulous "the ways" that governance is enacted, but always with the goal of providing a return to suppliers of capital (investors).[4]

In the United States, the primary "way" that corporate governance is enacted is through the company's board of directors. In the U.S., the regulatory oversight of corporate governance is complex, including a few federal statutes, different state-level standards for all 50 states and specific stock exchange listing requirements. With a few exceptions, the U.S. does not have a formal code defining corporate governance or board standards; however, the major stock exchanges do provide guidelines. The New York Stock Exchange Corporate Governance Guide defines the role of the board as "overseeing the successful, profitable, and sustainable operations of their companies." NASDAQ defines the role of the board "to oversee management and to assure that the long-term interests of stockholders are being served." Both exchanges provide numerous general guidelines and a few specific requirements; but, for the most part, companies are free to determine the corporate governance systems and board of directors structures that are most appropriate for them. And this process truly becomes free enterprise and market-determined:

- More than 50% of publicly listed U.S. companies have chosen to incorporate in the tiny state of Delaware, with a population less than 1 million, despite having

[4] This definition is a little limiting because its focus is on investors and financial capital; but the logic could easily be generalized to address non-financial motivations of other stakeholders. And, in equilibrium, a firm should only be able to maximize its financial return if it is also simultaneously maximizing value – financial or otherwise – for all other stakeholders.

minimal business operations in the state because the state's legal and tax structures are deemed to be very company-friendly. New York has the second highest number of publicly listed companies, at less than 4%. Romano (1996) found no difference in accounting performance or stock market returns between Delaware and non-Delaware firms; however, in a later study, Daines (2001) found that Delaware-listed companies had higher firm value than non-Delaware firms. My own research using a more recent sample shows no difference in value or performance, regardless of the measure of performance. However, firms clearly *think* that it matters, which indicates that the choice of where to incorporate is endogenously determined within each company.

- Both the NYSE and NASDAQ require at least 50% of all listed firm directors to be classified as "independent." Both exchanges provide their own definitions of what it means to be independent; in general, it means that directors do not have any current or recent financial or personal connections with the company beyond their board service. The exchanges enacted these requirements in the early 2000s; yet, all academic research to that point suggested that there was no connection between director independence and firm performance or financial statement quality. Further, most firms don't just stop at 50% independent; in 2016, approximately 80% of large, listed company directors were independent.
- The U.S. Securities and Exchange Commission (SEC) is the federal regulator in the U.S., responsible for ensuring companies comply with federal law. Much of this federal law was established in the *Securities Act of 1934* and subsequently amended and updated. The Sarbanes-Oxley Act of 2002 (SOX) and the Dodd-Frank Act of 2010 (Dodd-Frank) provided some of the most significant amendments to the federal law. Among other requirements, SOX mandated that each company's audit committee be comprised only of independent directors; similarly, Dodd-Frank mandated that each company's compensation committee be comprised only of independent directors. However, prior to both SOX and Dodd-Frank becoming law, most companies already complied with these 'new' mandates. In 2001, more than 97% of publicly listed companies had completely independent audit committees and in 2009, more than 99% of publicly listed companies had completely independent compensation committees. Thus, the 'new' federal mandates were codifying standards that nearly all companies had already adopted independently.

And that's the point of this: in the U.S., companies are free to independently adopt the corporate governance systems and board of director systems that they think are best for them – given their missions and stakeholders. We know that institutional context plays a large role in determining how companies establish their corporate governance structures and how successful they will be in competitive markets. LaPorta, Lopez, Shleifer and Vishny (1998) compare the legal frameworks in 49 different countries; common law countries, like the U.S., provide investors with the greatest protection while civil law countries provide investors with the least protection. As a result, common law countries have more dispersed ownership while civil law countries have

more concentrated ownership. Bris and Cabolis (2008) show that these country-differences have financial value too. In their study of cross-border mergers, firms in 'better' corporate governance countries pay a higher premium for cross-border mergers than for similar domestic mergers; they are willing to pay this excess premium because they can recoup it when the target firm is 'upgraded' to the acquiring firm's governance standards. LaPorta et al. (1998) conclude by advising that "firms have to adapt to the limitations of the legal systems they operate in."

And that certainly happens in the U.S. – at both the macro and the micro levels. Firms choose where to incorporate, firms choose what type of directors to have, firms choose which directors serve on their audit and compensation committees and firms choose which companies to acquire. From an academic research perspective, this presents both advantages and disadvantages: it allows us to assume that, in equilibrium, firms will choose the people, systems and structures that do maximize firm value, but it also forces us to control for an unlimited number of firm characteristics.

Given the institutional framework that governs firms and boards of directors within the U.S., boards have considerable freedom to pursue their duty to maximize shareholder value. In general, the research focuses on 3 key responsibilities: (1) as stated above, directors have a fiduciary *duty to maximize shareholder value*; (2) directors have a *responsibility to monitor* the firm and its management, and (3) directors have a *responsibility to advise* the firm's management. With the exception of executive directors, directors are rarely engaged in the day-to-day operations and decision-making of their firms. Thus, the tension between ownership and management is present in nearly every listed company. And it is the board of directors' responsibility to manage this tension and ensure that firm value is maximized. As we will see in the following section, they attempt to maximize value through a myriad of structures and choices; some are more effective than others.

1.3. Boards of Directors & Company Performance

The theoretical foundation for research on boards of directors is limited. Jensen and Meckling (1976) discuss the problem that principals and agents have different incentives, which leads to actions that may not generate uniformly desired outcomes. Governance problems exist because of these agency problems. Hart (1995) characterizes these relationships as incomplete contracts; Hart (1995) and Grossman and Hart (1986) explain that when information is incomplete, when the future is unknown, when incentives are disparate, and when decisions about the future must be made, corporate governance – including the board of directors – provides a structure for making these decisions. In listed U.S. companies, where there are very many shareholders who own a very small portion of the company, it is not reasonable for individual shareholders to do their own monitoring and advising. Thus, they hire a board of directors to do the monitoring and advising. As Hart (1995) concludes, "the board has a very important role to play." However, "there are some reasons to doubt its effectiveness in practice." He concludes that the case for statutory rules governing boards and governance structures is weak. Thus, it is difficult to provide normative guidance on best practices for boards.

That's the purpose of empirical research – to evaluate how well boards of directors are performing their duties to monitor management, to advise management and to maximize shareholder value. The empirical research attempts to provide the guidance on best practices for boards that Hart (1995) suggests cannot be prescribed by theory. Of course, there are many ways to do this; there are many ways to interpret governance structures, there are many different characteristics that boards can have and there are many different ways to assess a firm's value or how well it is performing. So, let us begin.

1.3.1. General Board Characteristics

As of mid-2018, there are about 4,000 listed companies in the United States; most academic research on boards of directors is limited to the Standard & Poor's SuperComposite 1,500, a mix of large-cap, mid-cap and small-cap firms, which comprises more than 90% of the market capitalization of all listed U.S. firms. As each company is able to choose the board structure it wants, the variability in board structure across U.S. firms is nearly unlimited. Within the S&P 1,500, the average board of directors has 9 members; 95% of the firms have boards with between 5 and 15 directors. About 80% of these directors are independent; this is up from 60% fifteen years ago. The CEO is also the chair of the board in about 50% of the companies; this is down from 70% fifteen years ago. The CEO serves on the board of 75% of U.S. companies; 95% of U.S. companies have 2 or fewer employees on the board, including the CEO. The median firm has 2 women on the board; 15% of firms do not have any women on the board and 10% of firms have 3 or more women on the board. The median director owns $1.7 million worth of stock; 4.4% of directors do not own any stock at all. The average director serves on 1.83 boards; 10% of directors serve on 3 boards or more and 5% serve on 4 boards or more.

The early academic research focused at general characteristics of boards of directors; lacking much theoretical guidance, the research sought to explore relationships and to address popular conceptions of 'good governance.' Regarding the number of directors, Yermack (1996) was among the first to document a negative relationship between board size and market value, measured by Tobin's Q. This result has persisted – across firm size and time period. It should be noted that variability in board size prevents us from taking this argument too far; it is rare for a board to have fewer than 6 members or to have more than 15 members. Nevertheless, this finding that smaller boards are more efficient and more effective has been one of the long-standing 'truths' in corporate governance research.

My own research using more recent data and econometric methods shows that this relationship persists: smaller boards have better operating performance and higher Tobin's Q (firm value) than firms with larger boards. Further, smaller boards are more likely to replace the CEO following poor performance and are less likely to support value-destroying acquisitions. Smaller boards are able to react more quickly, are more open in difficult conversations and are more aligned and committed to strategic decisions. These findings are industry-specific; some industries – like finance and

energy – only have large boards, but that doesn't necessarily mean it's the best thing for firm value.

1.3.2. Board Independence

Perhaps the board characteristic that has been studied the most and is most impacted by regulatory standards is board independence. An independent director is generally defined as one who is not currently employed by the company, is not currently being compensated for services or is not a former employee.[5] Bhagat and Black (2001) were among the first to perform a large-scale study of the relationship between board independence and firm performance; they calculated independence as the percentage of independent directors minus the percentage of inside directors. They find that firms with more independent boards do not perform better than other firms, using both stock market and accounting performance. Hermalin and Weisbach (1991, 1998 and 2003) find a similar result using a variety of samples and approaches.

Up to the early 2000s, the negative or non-relationship between director independence and firm performance was well established. Common sense suggested that independent directors could better serve as monitors without conflicts and as advisors with broader perspective; however, the research did not support this reasoning. And then Enron happened. During the summer of 2000, Enron was the sixth largest company, by market capitalization, in the U.S. It was the darling of Wall Street – and possibly even of society. During the next 18 months, the truth about the company's fraudulent practices, assets, investments and financial reporting came to light. Senior executives led the fraud and profited from the fraud. By the end of 2001, Enron had declared bankruptcy and the Chairman, the Chief Executive Officer and the Chief Financial Officer would soon be found guilty of securities fraud (among other crimes).[6]

This was a shocking event – for employees, investors, customers and everyone else directly associated with the firm. But it was also stunning for academic researchers. By all objective measures, Enron's corporate governance structure and board of directors met or exceeded best practices. The board was composed almost entirely of directors who were independent of the firm (technically, at least). The CEO and Chair positions were separated. The Chair, CEO and most directors had significant stockholdings – so they had much to lose should the firm lose any value itself. External monitoring appeared to be strong, as large institutions and wealthy individuals owned significant stakes in the company.[7] The board was not classified; it held annual elections. The independent auditor was one of the most respected firms in the world. Based on the extant

[5] The New York Stock Exchange defines independent directors as those who do not have a 'material' relationship with the company, if the director or a family member was employed by the company within the past 3 years, if the director received more than $120,000 in direct compensation beyond director fees or if the director has some other significant professional relationship with the company.

[6] Kenneth Lay, the Chairman of the Board and ostensibly the founder of the firm was convicted on six counts of wire and securities fraud in 2006, but he passed away before he was sentenced. Jeffrey Skilling, the Chief Executive Officer in 2001, was convicted on 9 counts of wire and securities fraud in 2006 and sentenced to 24 years in prison (which was later reduced to 14 years). Andrew Fastow pled guilty to 2 counts (out of more than 70 initial counts), cooperated with the prosecution and served 6 years in prison.

[7] Enron Corporation 2001 proxy statement. (2001, March 27). Retrieved from: https://www.sec.gov/Archives/edgar/data/1024401/000095012901001669/h84664ddef14a.txt

knowledge of the time, each of these constructs should be associated with better firm performance (not, of course, with fraud and bankruptcy). So, what went wrong? What had researchers and regulators missed?

While the directors were technically independent of the firm, they were not functionally independent; many had personal, social or indirect professional relationships with the Chair, CEO and other directors. The external auditor and audit partner had grown too entrenched and too comfortable with the senior leaders at Enron to challenge them. Kenneth Lay was the chair; he was also the founder, former CEO and largest individual shareholder. He was an extremely powerful and influential man. And the directors and auditors did not want to challenge him. Thus, while most of the directors were 'independent' on paper, they were not independent in practice; this created conflicts of interest that compromised their ability to effectively monitor and advise the firm's senior leadership.

Because so many stakeholders were devastated by the sixth largest company in the U.S. declaring bankruptcy, the U.S. Congress decided it needed to act; and it decided it knew what corporate governance changes needed to be made. Thus, the Sarbanes-Oxley Act (SOX) was introduced in 2002. While in practice it had broader implications, the focus of SOX was on the independent audit function and the firm's financial statements. From a governance perspective, SOX had two key provisions. First, SOX mandated that all board-level audit committees must be comprised of only independent directors. Second, SOX mandated that all audit committees contain at least one member who is classified as a "finance expert."[8] Commensurately, the two largest stock exchanges in the U.S. required all listed companies to have a majority of their directors be independent.

Duchin, Matsusaka and Ozbas (2010) study the effect of such mandates. They focus on firms that had to add independent directors to comply with SOX. They find that director effectiveness depends on the cost of acquiring information about the firm: firm performance weakens when it is costly for outside directors to acquire information about the firm, and it gets stronger when it is easier for directors to acquire information. Their sample of firms includes 1996-2005, which provides a nice before and after SOX perspective. Bhagat and Bolton (2013) also compare the director independence and firm performance relationship before and after SOX. They confirm earlier findings that there is no relationship between director independence and firm performance using a 1998-2001 sample; however, using a sample from 2003-2007, they find a positive relationship. After SOX, director independence is associated with better firm performance. They further find that more independent boards make fewer value-decreasing acquisitions and are more likely to replace an underperforming CEO. At least post-SOX, greater board independence seemed to be associated with both general and specific aspects of superior firm performance.

Bhagat and Bolton (2013) also find that this impact is anticipated by the stock market: firms enjoy a positive and significant cumulative abnormal return (CAR) upon

[8] While SOX's focus is on audit committee independence, other aspects likely affected corporate governance and board behavior, including requiring the CEO and CFO to personally certify the financial statements.

appointing a new director that will take the firm from non-compliant to compliant. Chhaochharia and Grinstein (2007) measure the degrees of compliance and impact; they find that firms that were less compliant with the rules imposed by SOX and the exchanges earned more positive abnormal returns on the announcement of the rules. Thus, we see a general positive relationship between board independence and firm performance, in both specific situations and from a general perspective; this relationship is unique to the post-SOX period of the past 15 years.

1.3.3. CEO-Chair Duality

Brickley, Coles and Jarrell (1997) analyze CEO-chair duality, where the same individual serves as both the Chief Executive Officer and the Board Chair. Conventional wisdom – and regulators, activists and academics (Fama and Jensen (1983)) – suggested that the roles should be separated to provide better monitoring of management. Brickley, Coles and Jarrell (1997) challenge this. In their study using a sample from 1990, 80% of large U.S. firms had a dual leadership structure, and the other 20% of firms had a board chair who was a former CEO or otherwise heavily invested in the firm. They find that the costs of separating the roles – in terms of information costs, agency costs associated with monitoring the CEO and overall efficiency – are greater than the associated benefits of separating the positions. Dey, Engel and Liu (2011) show that firms which separate the CEO and chair positions due to investor pressure suffer lower announcement returns and worse subsequent performance. In general, using a more recent sample, they do not find any evidence that separating the roles adds firm value.

Despite the logic and findings of these studies, the activists and conventional wisdom generally won the argument; Bhagat and Bolton (2008) showed that the frequency of CEO-chair duality had declined to 67% by 2002. And, unlike prior studies, they did find a consistent negative relationship between CEO-chair duality and firm performance. Today, the frequency of dual leadership structures is closer to 50%, showing that firms, boards and investors have responded to this perspective by separating the roles. Thus, even if the evidence in the academic literature is mixed, it's clear how firms are behaving.

One alternative to separating the roles of CEO and chair has been to appoint a lead independent director. Larcker, Richardson and Tuna (2007) find that appointing a lead independent director is associated with positive abnormal stock returns and superior operating performance. Krause, Withers and Semadeni (2016) find that appointing a lead independent director leads to higher median analyst forecasts and better operating performance when the CEO has a low-to-medium level of power. Thus, for firms that do not want to separate the positions, adding a lead independent director can produce the desired value-increasing effects, at least in the eyes of investors.

1.3.4. Board Busyness

Fich and Shivdasani (2006) were among the first to look at board members' capacity to do their jobs. Specifically, they looked at how busy directors were, measured by the number of other boards they served on. Busyness could work either way: it could provide valuable insight about successful strategies and practices that other companies use, or it could overwork and distract directors from adequately performing their duties. Fich and Shivdasani (2006) found the latter: busy boards – those where a majority of directors have 3 or more other board positions – are associated with lower firm value and worse firm performance. When busy directors leave a board, the firm enjoys positive abnormal returns; when directors add a directorship and become busy, firms suffer negative abnormal returns.

While business is consistently associated with worse firm performance, serving on other company boards – in moderation – can have some benefits. Masulis and Mobbs (2011) study inside directors who serve on other company boards; these firms enjoy superior operating performance, make better acquisitions and overstate accounting earnings less frequently. These firms enjoy positive abnormal returns when these insiders are appointed to other firms' boards. They suggest that these benefits come from the knowledge sharing they acquire from other firms and from the incentives associated with these directors having greater career opportunities associated with outside directorships.

There seems to be a fine line between directors gaining from serving on other boards and directors becoming overworked due to busyness. Fich and Shivdasani (2006) set this fine line at 3 board positions. Masulis and Mobbs (2011) provide one case where knowledge sharing across boards is especially beneficial when executives serve on other boards, suggesting that network effects can add value. A significant amount of recent research has looked at these network benefits by specifically studying interlocked boards. An interlocking board relationship is one where an executive of company A serves on the board of company B and an executive of company B serves on the board of company A. Fracassi and Tate (2012) found that companies with interlocking boards shared similar investment policies and enjoyed better operating performance. Cai and Sevillir (2012) found that interlocked boards create more value in acquisitions. And, Bolton and Zhao (2018) found that interlocked boards are associated with more firm-level innovation, as measured by patents and patent citations. Thus, there is a tension in board design: too many busy directors is likely to destroy firm value but having a small number of directors with valuable network relationships through their executive and board service can create firm value.

1.3.5. Board Diversity

Research on whether gender or ethnic diversity on boards in U.S. companies is relatively sparse. In part, this is because the number of women and non-Caucasian men serving on boards in U.S. companies is relatively sparse. Approximately 15% of U.S. directors are women; approximately 15% are non-Caucasian. Given that the average

board has 9 members, this equates to 1-2 female or non-Caucasian directors on each board. Nevertheless, many plausible arguments have been made calling for greater diversity. Demographic diversity, in theory, could lead to more diverse perspectives. This could lead to more innovative ideas, less myopic groupthink and better monitoring and advising in general.

The recent research, however, does not fully support these plausible arguments. Carter, D'Souza, Simkins and Simpson (2010) did not find any significant relationship between diversity – on the board as a whole or within board committees – and firm performance. Similarly, Adams and Ferreira (2009) did not find any relationship between performance, value and female directors; they did find that female directors have better meeting attendance than men, generally award a greater proportion of equity incentive compensation to executives and are more likely to fire the CEO following poor performance.

Thus, based on the research, while gender diversity on the board may be associated with what we believe to be better corporate governance, there does not appear to be a direct connection with superior performance or value. However, there's no evidence that diversity is associated with worse firm performance, either. As other countries introduce gender quotas for boards, U.S. companies – especially multinational companies – are likely to face increased pressure to increase the number of women (and minorities) serving as directors, both to conform to other countries' standards and to have boards better represent the demographic diverseness of firms' stakeholders. As this happens, the research on what this means for firm performance and firm value should become more robust and more important.[9]

1.3.6. Executive & Director Compensation

In the Jensen and Meckling (1976) world, it is critical to align the incentives of executives with those of individual owners so that the executives will act like actual owners. Some of the most famous work in corporate governance research relates to executive compensation. Jensen and Murphy (1990) suggest that executives are paid like bureaucrats as they find that executives only earn an additional $3.25 for each additional $1000 of firm value that they create. Hall and Liebman (1998) clarify this relationship and show that CEO compensation really is highly sensitive to firm performance due to their stock and option holdings. This debate about executive and board compensation has yet to be resolved and it was one of the most contentious elements of the U.S. financial crisis some 25 years later (e.g. "did excessive executive compensation lead to excessive risk-taking, thus igniting the financial crisis?").

We are also still working to understand how director compensation affects firm performance. For most listed companies, directors receive an annual cash retainer, plus cash payments for serving in key roles or on key committees, plus stock awards (either just as unrestricted gifts or based on performing certain duties or achieving certain

[9] In the U.S., there has not been any significant research on what happens to company performance when the CEO or the Chair is female; only 4.6% of S&P 1500 CEOs are female and 3.9% of S&P 1500 Chairs are female. These numbers are virtually unchanged from 2000; they've been as low as 3% (CEOs) and 2% (Chairs) in the past 18 years in the U.S.

milestones). Brick, Palmon and Wald (2006) show that there is an unusually high correlation between CEO compensation and director remuneration, possibly indicative of cronyism. Further, this excessive director compensation is associated with worse firm performance. But directors are still human; when they are incentivized appropriately, firms and stockholders can all benefit. Adams and Ferreira (2008) show that directors can be motivated by compensation as small as a $1,000 board meeting fee. When you consider that the median director receives over $100,000 total compensation and has nearly $2,000,000 in stock ownership, this truly shows the power of any kind of incentive alignment.

1.3.7. Executive & Director Ownership

Just as relatively small amounts of director remuneration can lead to incentive alignment and effective corporate governance, longer-term director ownership should serve the same purpose. In theory, having directors who are owners – as principals – encourages them to make decisions that are in the best interest of the diverse stockholders and not of the managers of the firm – the agents. Morck, Shleifer and Vishny (1988) studied the relationship between board ownership and firm performance; they found that greater director ownership leads to higher Tobin's Q, but in a non-monotonic manner. Tobin's Q increases when board ownership ranges from 0-5%, slightly declines when board ownership is 5-25%, and then increases again with ownership greater than 25%. This finding, that director ownership is non-monotonically related to firm value, remained the foundation for how we think about analyzing principal-agent relationships for much of the next two decades.

In their meta-analysis of the relationship between 8 different board dynamics and firm performance, Bhagat and Bolton (2008) found that the strongest and most robust measure of corporate governance was director stock ownership or the dollar value of stock owned by the directors. This measure of director ownership was novel. Previous work, including Morck, Shleifer and Vishny (1988), had considered the *percentage* of ownership rather than the *dollar value* of ownership. But this has problems. Would you rather own $1,000,000 of a company's stock or 1% of a company's stock? Without knowing the size of the firm, you cannot answer that. But if I were to ask you if you would rather own $1,000,000 or $10,000,000 of a company's stock, you can easily answer that. The dollar value of director stock ownership is a simple and direct measure of incentive alignment and director behavior. Today, over 10 years later, most large companies in the U.S. have stock ownership requirements for directors. And all of these requirements are in dollar terms.[10]

[10] For example, Papa John's Pizza has a requirement that is very common: all non-executive directors must own stock equal to at least 5 times their annual retainer within 5 years of joining the board. In 2017, Papa John's directors received a cash retainer of $50,000, so directors would be expected to own $250,000 of stock. Companies can keep that policy but lower the cash retainer and increase the stock awards that directors receive. In 2017, each Papa John's director was gifted $125,000 of equity awards in 2017, which would go a long way towards meeting the $250,000 stock ownership requirement.

1.3.8. Committee Structure

In 2001, the U.S. Congress responded to the collapse of Enron by passing The Sarbanes-Oxley Act (SOX), which imposed new requirements for financial reporting independence, most notably with the audit committee. Following the financial crisis of 2008, the U.S. Congress again feel obliged to introduce legislation that would (hopefully) prevent another similar crisis from ever happening again. The result was the 2010 Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank). Dodd-Frank addressed executive compensation in much the same way that SOX addressed financial reporting.[11] Dodd-Frank introduced two regulations that, in theory, would significantly affect how board governs firms. First, Dodd-Frank mandated that all board-level compensation committees must be comprised of only independent directors; second, Dodd-Frank required firms to periodically hold an advisory shareholder vote on executive compensation.[12]

Even though most firms were already compliant before the regulatory mandates of SOX and Dodd-Frank, there has been considerable research looking at the effect of these mandates and committee composition on firm value. Klein (1998) began this line of research – even before SOX – and found robust results that inside director participation on finance and investment committees led to superior accounting performance and higher stock returns, suggesting that inside directors can provide valuable advising perspective to management.

She continued this work following SOX with greater application to the new regulations. Klein (2002) finds that abnormal accruals are lower when the audit committee is more independent. Abbott, Parker and Peters (2004) find that the probability of a firm restating earnings decreases when the audit committee is more independent. Reeb and Zhao (2009) find that audit committee human and social capital is positively related to the quality of corporate disclosure; the more that directors and audit committee members have invested in the firm, the better off the external shareholders will be. Section 407 of SOX mandates all firms have a "finance expert" on the audit committee. Carcello, Hollingsworth, Klein and Neal (2006), Agrawal and Chadha (2005), DeFond, Hann and Hu (2005) and others have generally found that this requirement also leads to better financial reporting quality and higher abnormal stock returns. Cohen, Dey and Lys (2007) find that earnings management decreased following enactment of SOX. And, Carcello, Hollingsworth, Klein and Neal (2006) find that audit committee expertise can be substituted with other governance features and conclude that corporate governance regulations are not in the best interest of shareholders. In general, this research suggests that audit committee independence is a beneficial

[11] We refer to the Act as "Dodd-Frank" in reference to the two senators responsible for the Act; the official name is "The Dodd-Frank Wall Street Reform and Consumer Protection Act." The Act itself is over 800 pages long, and only a few of these are related to executive compensation and compensation committees.

[12] Referred to as 'Say on Pay,' firms would include a vote in their proxy statement asking shareholders to vote for or against their proposed executive compensation. Technically, the vote would be non-binding and the board could choose to ignore its results, practically, it's reasonable to expect boards to face severe shareholder backlash if they did ignore the vote. A discussion on the 'Say on Pay' research is beyond the scope of this chapter but suffice it to say that this has had minimal effect on boards of directors and company performance.

characteristic of a firm's corporate governance environment. Thus, even though nearly all firms were compliant with SOX before audit committee independence became a mandate, it is clear that increasing audit committee independence is associated with better firm performance, better financial reporting and an overall healthier corporate governance environment.

1.3.9. Staggered Boards

In the United States, companies have considerable flexibility regarding the bylaws, provisions and legal structures that they choose. In theory, these choices should be endogenously determined to maximize firm value given the unique stakeholders, personalities and strategies of the firm. In practice, different structures can be used to entrench and benefit certain stakeholders to the detriment of other stakeholders.

One choice that companies make is whether to have a staggered – or classified – board. Individual directors are elected by the shareholders; the company gets to decide how often each individual is up for election. Today, about 50% of the firms in the U.S. choose to hold annual elections of directors; thus, if a board has 9 members, each of the 9 director positions will be up for election every year. In theory, this can be beneficial to shareholders or activist investors; if a group of investors has concerns about the company's actions or about specific investors, it is possible to vote against the election of certain directors and enough shareholder discontent could lead to a massive turnover on the board.

The other 50% of U.S. firms have chosen to have a staggered board. With a staggered board, directors serve for multi-year terms; thus, only a fraction of directors are up for election each year. These terms typically range from 2-4 years. If a board of 9 directors has staggered 3-year terms, 3 of the directors will be up for election each year. In theory, this makes it much more difficult for shareholder activism to change the structure of the board. Even if investors are successful in turning over one-third of the board in one year that new faction would still be a minority on the board; the old guard would still be in control for at least another year.

Considerable research has studied what effect staggered boards have on firm value. The earlier research generally found that staggered boards did help to entrench management and to destroy value. Bebchuk, Coates and Subramanian (2002) studied a unique sample of hostile takeover bids from 1996-2000. They did not find a single case where the takeover bid gained control of a firm with an effective staggered board. They estimate that having a staggered board reduced shareholder returns from 8-10%. Guo, Kruse and Nohel (2008) study a pre-2004 sample of firms that chose to de-stagger their boards; they find that the announcement to de-stagger led to a 1% abnormal stock price return. Using a later sample of 2003-2010 firms, the same authors find that investor reaction is still positive and significant to firms announcing they are de-staggering their boards; further, these firms are more likely to be taken over in the subsequent 2 years (Guo, Kruse and Nohel, 2014).

However, other research has found contrary or mixed relationships between staggered boards and firm performance. Larcker, Ormazabal and Taylor (2011) looked at regulatory proposals that would ban staggered boards; they found that firms with staggered boards suffered a loss in firm value following the proposals. Cremers, Litov and Sepe (2017) perform a time-series analysis on the effect of staggering and de-staggering boards during 1978-2011. They do not find any evidence that staggered boards are associated with lower firm value. They do, however, find that there is a positive relationship between staggered boards and firm value for firms heavily involved in innovation; they suggest that the protection afforded a staggered board allows the firm to make long-term investments that are not subject to immediate stockholder discipline (and overreaction).

1.3.10. Governance Indices

To this point, we have only considered the individual board of director characteristics and individual firm structures. This is because the majority of work has focused on individual or a few characteristics at a time. But there is a strand of work studying the idea that corporate governance is far too complex to be measured with just one variable (like board independence or CEO duality). Thus, creating a corporate governance index comprised of multiple seemingly important characteristics allows us to consider a potentially more holistic perspective of the firm's corporate governance environment.

The seminal paper in this strand is Gompers, Ishii and Metrick (2003). They focus on the structural foundation of the firm by looking at its bylaws; firms will select (or impose) the bylaws, rights and provisions that it wants. In theory, they should select structures that maximize firm value; but they may not know how to do that (or they may simply revert to structures that maximize individual value). Thus, Gompers, Ishii and Metrick (2003) created an index of 24 anti-takeover provisions to proxy for the firm's corporate governance structure – and for the board's ability to maximize firm value. (One of these provisions is whether the firm has a staggered board, discussed in the previous section as an individual board characteristic.) Gompers, Ishii and Metrick (2003) found that democracy firms – those with relatively few anti-takeover provisions – outperformed dictatorship firms – those with relatively more anti-takeover provisions – by 8.5% per annum. Firms with stronger shareholder rights have higher firm value than those firms with stronger manager protection. Bebchuk, Cohen and Ferrell (2009) found that it wasn't the 24 anti-takeover provisions that created the difference in performance, but it was just 6 of the 24 provisions that mattered: staggered boards, limits to new amendments, supermajority voting requirements for acquisitions, supermajority voting requirements for corporate charter amendments, whether the firm has poison pills and whether the firm has golden parachutes. They found that all of the extra value gained for democracy firms was due to not having these charter provisions; a portfolio of low-entrenchment firms outperformed a portfolio of high-entrenchment firms in every year from 1990-2003. Thus, it appeared that simple indexes of corporate governance constructs could inform us about the relationship between board incentives and firm value.

The argument against using indexes to characterize board behavior or corporate governance relies on the fact that there is no theory guiding which variables to include in the index nor is there a theory guiding how to weight each of the variables. Bhagat, Bolton and Romano (2008) make this case and show that multiple corporate governance indices perform worse than single board characteristics in explaining the relationship between governance and performance. In fact, Bebchuk, Cohen and Ferrell (2009) makes this case about the Gompers, Ishii and Metrick (2003) G-Index, showing that it includes 18 irrelevant characteristics and any relationships they find are likely spurious. As a result, the move to characterize boards of directors using an index with many characteristics was powerful – but brief – within academic research.

1.3.11. Corporate Governance & Corporate Innovation

Recently, research has focused on the relationship between corporate governance, board of director structures and corporate innovation. Innovation is the ultimate long-term investment: the capital that is invested today may not generate returns for many years. But, making this investment has been shown to have significant and substantial impacts on firm value. Kogan, Papanikolaou, Seru and Stoffman (2017) estimate the company-level economic value that is created by patents; importantly, they explain that this economic value may or may not be correlated with the unique scientific value of any patent. They essentially perform an event study looking at market value effects on days when companies receive patent grants. They estimate that the median value of a new patent is $3.2 million. Their results extend to more general measures of economic impact; they find that a one standard deviation increase in their innovation index is associated with a 1.6-6.5% increase in output and a 0.6-3.5% increase in total factor productivity over a 5-year horizon. Hall, Jaffe and Trajtenberg (2005) estimate that each additional citation a patent receives is associated with a 3% increase in market value for the firm.

Given this foundation, an impressive amount of research has begun to study what boards of directors' structures are most amenable to creating firm value through innovation.

Chemmanur and Tian (2017) show that firms subject to more anti-takeover provisions innovate more, while Sapra, Subramanian and Subramanian (2014) find a U-shaped relationship: innovation occurs when there are very few or very many anti-takeover provisions. They attribute this to the long-term nature of innovation; firms – through executives and directors – need the long-term incentives and protection necessary to invest in innovation. Manso (2011) suggests that managers can be motivated to innovate by incentivizing them with long-term options, golden parachutes and other devices that encourage entrenchment. And, Bolton and Zhao (2018) find that more entrenched boards, measured by both anti-takeover provisions and director tenure, are associated with the generation of more patents and lead to more patent citations.

These studies are novel in many ways, most relevantly because the corporate governance mechanisms that they find lead to innovation are the exact opposite of what the literature generally believes are associated with effective corporate governance

structures. This highlights the tension between measuring firm value over the short-term and over the long-term: what might be best in the short-term may not be best in the long-term. This is a tension that boards of directors face in all of their decisions and activities.

1.4. The Relationship between Boards of Directors & Firm Performance

Overall, we see that one size does not fit all and mandating corporate governance structures has limited effectiveness. Corporate governance is a nebulous and idiosyncratic construct: we know it's important and we know what it involves, but we cannot directly observe it and we certainly cannot measure it explicitly. Thus, the biggest challenge with this research is a seemingly simple question: How should we measure corporate governance?

Governance is about people, relationships and incentives. Researchers cannot observe any of these dynamics. But we have tried to parse out different components of corporate governance systems to use as proxies; in equilibrium, firms should choose corporate governance systems and establish boards of directors that create the most value, given that firm's unique people, relationships and incentives. In looking at one firm, we may not be able to observe – and control for – these people, relationships and incentives well enough to learn anything about the true impact of governance on performance; but, in large sample studies, across multiple years, with the proper controls, we can tease out the most powerful drivers of the board-performance relationship.

In this spirit, this summary has provided some perspective on what we know and don't know about corporate governance, boards of directors and company performance in the United States. The high-level findings are summarized in Table 1.1 and below:

- **Board size** – Smaller boards generally lead to better firm performance.
- **Board independence** – Early studies suggested there was no relationship, but most post-SOX research shows a positive relationship, especially in specific situations.
- **CEO-chair duality** – Despite a drastic decrease in the number of firms with the same individual serving in a combined role, the evidence is mixed on whether it matters. The evidence is clear that appointing a lead independent director does lead to better performance and higher firm value.
- **Board busyness** – By itself, board busyness and busy directors lead to worse firm performance. However, interlocking relationships increase firm value when knowledge sharing and learning is greatest.
- **Board diversity** – While common sense suggests gender and ethnic diversity should lead to value-enhancing diversity of perspective, the evidence does not support this.
- **Director compensation** – Director incentive compensation is associated with better firm performance and higher firm value.
- **Director ownership** – Director stock ownership is associated with better firm performance and higher firm value.

- **Committee structure** – More independent committees are associated with higher firm value; firm value increases when a finance expert is added to audit, finance and investment committees.
- **Staggered board** – Early studies suggested that staggered boards destroyed value; more recent studies show that there are value increasing benefits.
- **Corporate governance indices** – Can be constructed to show relationships with firm value, but there is no guidance on what variables to include nor how to weight them. Using corporate governance and board of directors indices is dangerous at best, irresponsible at worst.
- **Corporate innovation** – Board characteristics associated with entrenchment – longer tenure, CEO-chair duality and more anti-takeover provisions – lead to greater corporate innovation as this structure allows the firm to focus on the long-term and not feel the need to respond to the short-term whims of myopic market discipline.

1.5. The Future of Boards and Firm Performance

Perhaps the most interesting questions related to boards of directors and firm performance revolve around the future. Director responsibilities are only going to increase and become more complicated in the future. Twenty years ago, being a director was a prestigious position with exciting professional opportunities. Enron, the financial crisis and other events changed that significantly. Prior to Enron, directors' duties may have been 80% advising and 20% monitoring; today, that balance has reversed for many directors, who are now engaged in 80% monitoring and 20% advising.

I predict that director responsibilities will become more balanced in the near future. Why? Because as companies have changed and as geopolitical environments have become more complex, directors will be relied on to do more advising. In fact, providing appropriate advice will become a critical part of their monitoring duties. Directors will have the responsibility to help executive teams make strategic decisions that will have both short- and long-term consequences for the firm.

The Facebook example at the beginning of this chapter suggests that a lack of advice by boards can create significant liabilities for firms. Directors must appreciate the connection between their oversight and corporate strategy. Better advising and monitoring by the Facebook board might have enabled the company to better balance the short-term desires to increase revenue with the long-term needs to protect users and manage risks. Here are a few issues that boards are likely to have to deal with in the near future.

1. *Artificial intelligence* creates some fabulous – and potentially dangerous – opportunities for firms. The technology has the potential to revolutionize how companies interact with customers and how consumers interact with their worlds. The technology also has the potential to take advantage of those customers and those worlds. Directors will need to make sure they (a) understand the opportunities and threats, and (b) provide the advice necessary to ensure the company balances the costs and benefits of making certain AI-related investments.

2. *Cryptocurrency and block-chain technology* is another area that boards need to focus on. Block-chain itself can enhance efficiency and quality within a company's supply chain. And in the near future, block-chain related cryptocurrency may provide more efficient payment and collection channels. But, as of 2018, it is still an unproven and developing technology. And it's certainly unclear whether it will become a default or prominent currency anytime soon. But directors should be thinking about it, about what investments their companies should be making in it. Investments have always involved risk and uncertainty; cryptocurrency may be an example of an investment where the costs and benefits are more extreme than most firms are used to.
3. *Geopolitical and macroeconomic risks* will require boards to provide impactful advice. The United States is as divided as it's ever been with respect to political, social and economic issues. Multinational U.S. firms need to be concerned with issues abroad, too – whether those are Brexit, the state of the European Union or volatility in emerging markets. Corporate executives are paid to understand these dynamics, but they may be too narrowly focused on their own products and strategies (and incentives) to fully appreciate how macroeconomic turbulence will affect their company. Directors need to step in to provide the perspective that executives cannot be expected to have.
4. *Environmental, social and governance (ESG)* factors are likely to become more and more important components of corporate strategy. Like geopolitical and macroeconomic risks, firms cannot control these risks – but they can control how they prepare for them and how they respond to them. As global population continues to increase, and scarce resources become more scare, corporate strategy and investment will have to adjust. If companies – and boards – do not adjust to compete more effectively given the ESG constraints that will be imposed on them, they will suffer enormous losses.
5. *Corporate culture* is becoming a more critical issue for boards to manage – yes, manage. Directors are not in the office on a daily basis and they do not have direct influence over a company's culture, but they are responsible for overseeing the policies and structures that determine a firm's culture. What message would it send if the board decided to separate the CEO and Chair positions? What message would it send if the directors did not receive any cash compensation for their service but instead were paid in restricted stock that doesn't vest for 10 years? What message would it send if a board had more female directors than male directors? What message would it send if a board eliminated poison pills, golden parachutes and other management-friendly bylaws? Corporate culture is the composite behavior and attitudes of all corporate stakeholders. All individual employees behave based on how their leadership inspires and incentivizes them to behave. And, it is this individual employee behavior that is the most critical driver of firm performance.

As of August 2018, Facebook has the sixth largest market capitalization in the U.S.; recall that Enron had the sixth largest market capitalization in the U.S. back in 2000. Enron's board of directors failed in its fiduciary duties to monitor management, advise

management and maximize shareholder value; it is up to Facebook's board of directors to ensure that it doesn't have the same fate as Enron did. The academic research has established many ways that boards of directors can help firms create more firm value. Proactive boards can establish policies and incentivize behavior that will lead to a more valuable and successful future; whether they choose to do so remains to be seen.

Table 1.1. Summary of select empirical results on board-performance relationships

Paper	***Key findings & results***
Yermack (1996, *Journal of Financial Economics*)	Board size is negatively correlated with firm value and performance.
Hermalin & Weisbach (2003, *Federal Reserve Board of New York, Economic Policy Review*)	Board size is negatively correlated with firm performance; smaller boards are more effective. Other board characteristics are not associated with firm performance. However, firm performance, ownership structure and CEO changes do lead to changes in board structure.
Romano (1996, *Industrial and Corporate Change*)	Firms incorporated in Delaware do not enjoy higher stock returns or better accounting performance than firms not incorporated in Delaware.
Daines (2001, *Journal of Financial Economics*)	Firms incorporated in Delaware have higher firm value (measured by Tobin's Q) than non-Delaware firms. Delaware firms also receive more takeover bids than non-Delaware firms.
Bhagat & Black (2002, *Journal of Corporate Law*)	Low-profitability firms increase the independence of their boards of directors, but there is no evidence that this strategy works. Firms with more independent boards do not perform better than other firms.
Chhaochharia & Grinstein (2007, *Journal of Finance*)	Firms that were less compliant with the requirements of Sarbanes-Oxley before it was enacted earned positive abnormal stock returns compared to already compliant firms; this effect only exists for large firms, indicating that smaller firms might be hurt by the new regulatory requirements.
Duchin, Matsuaka & Ozbas (2010, *Journal of Financial Economics*)	The effectiveness of outside directors depends on the cost of the acquiring information: when the cost is low, firm performance improves when outsiders are added to the board.
Bhagat & Bolton (2013, *Journal of Financial & Quantitative Analysis*)	Board independence is positively related to firm performance after SOX, driven by firms that needed to add independent directors to comply with SOX. More independent boards also make fewer value-destroying acquisitions. CEO-chair duality is negatively related to firm performance. Director stock ownership is positively related to firm performance.
Brickley, Coles & Jarrell (1997, *Journal of Corporate Finance*)	Separating CEO and chair positions leads to agency costs of controlling the chair, succession costs and information costs that are greater than the benefits associated with independence and mitigating conflicts of interest.
Dey, Engel & Liu (2011, *Journal of Corporate Finance*)	When firms split the CEO and chair positions, they suffer lower announcement and post-announcement stock returns. This effect is pronounced for firms that split due to activist pressure.
Larcker, Richardson & Tuna (2007, *The Accounting Review*)	Firms that appoint a lead independent director have better operating performance and higher stock returns than firms that do not have a lead independent director.
Krause, Withers & Semadeni (2016, *Academy of Management Journal*)	Firms that appoint a lead independent director have better performance than other firms. This decision reflects a balance of power on the board and this structure becomes institutionalized for companies that do it.
Fich & Shivdasani (2006, *Journal of Finance*)	Firms in which a majority of directors have 3 or more additional board positions perform worse than others. When busy outside directors depart, the firm enjoys positive abnormal stock returns.
Masulis & Mobbs (2011, *Journal of Finance*)	Firms that have inside (employee) directors who are on the boards of other companies enjoy superior operating performance and higher market-to-book ratios than other firms and make better acquisition decisions.
Fracassi & Tate (2012, *Journal of Finance*)	Firms where outside directors have a network relationship with the CEO have lower firm value & engage in more value-destroying acquisitions.
Falato, Kadyrzhanova & Lel (2014, *Journal of Financial Economics*)	Using sudden deaths of directors and CEOs as a natural experiment, firms with busy outside directors experience negative abnormal stock returns, but firms without busy outside directors do not. Independent directors' busyness destroys firm value.

Paper	*Key findings & results*
Carter, D'Souza, Simkins & Simpson (2010, *Corporate Governance: An International Review*)	Firms that have greater gender and/or ethnic diversity on the board do not have better financial performance than firms with less diversity (there is neither a positive nor a negative relationship).
Adams & Ferreira (2009, *Journal of Financial Economics*)	The average effect of gender diversity on firm performance is negative; this effect is driven by firms with fewer takeover defenses. Thus, gender diversity can reduce firm value for well-governed firms. Firms with greater gender diversity do appear to invest more effort in monitoring.
Morck, Shleifer & Vishny (1988, *Journal of Financial Economics*)	Firm value increases for low levels of director ownership, is flat for the middle range of ownership, increases again at higher levels of ownership.
Bhagat & Bolton (2008, *Journal of Corporate Finance*)	Greater director ownership is associated with better firm performance. Board independence and CEO-chair duality (before Sarbanes-Oxley) are associated with worse firm performance. Governance indices, such as the Gompers et al. *G-Index* and the Bebchuk et al. *E-Index* are weakly associated with better firm performance; other indices are not.
Klein (1998, *Journal of Law and Economics*)	Firms with a high number of inside directors on finance committees have higher stock returns and better accounting performance; this is pronounced when firms increase the proportion of inside directors on these committees.
DeFond, Hann & Hu (2005, *Journal of Accounting Research*)	Firms that add independent, outside finance experts to the audit committee enjoy significantly positive abnormal stock returns; when firms add a non-finance expert to the audit committee, abnormal stock returns are zero.
Gompers, Ishii & Metrick (2003, *Quarterly Journal of Economics*)	Using a Governance Index (*G-Index*) comprised of 24 anti-takeover provisions finds that firms with more shareholder friendly structures ("democracy" firms) generate abnormal stock returns of 8.5% relative to firms with management friendly structures ("dictatorship" firms).
Bebchuk, Cohen & Ferrell (2009, *Review of Financial Studies*)	Using an Entrenchment Index (*E-Index*) comprised of only 6 of the 24 GIM anti-takeover provisions (finds that the abnormal stock returns in GIM are driven by these provisions only.
Coles, Daniel & Naveen (2009, *Journal of Financial Economics*)	The relationship between board size and firm value is U-shaped: very large or very small boards are optimal. Inside directors are beneficial in R&D intensive firms where firm- and industry-specific knowledge is essential.
Wintoki (2007, *Journal of Corporate Finance*)	Boards of directors are endogenously determined to meet the unique requirements of their people, stakeholders, industry, and business. One-size-fits-all governance regulation is likely to be detrimental to many firms, especially small growth firms in uncertain environments.

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