

**Bank of Israel**



**Research Department**

**Measuring Corporate Governance Quality  
in Concentrated-Ownership Firms**

**Oded Cohen\***

Discussion Paper 2020.06

May 2020

---

Bank of Israel; <http://www.boi.org.il>

\* Research Department, Bank of Israel, email: [Oded.Cohen@boi.org.il](mailto:Oded.Cohen@boi.org.il)

**Any views expressed in the Discussion Paper Series are those of the authors  
and do not necessarily reflect those of the Bank of Israel**

חטיבת המחקר, בנק ישראל ת"ד 780 ירושלים 91007  
Research Department, Bank of Israel. POB 780, 91007 Jerusalem, Israel

## מדד לבחינת איכות הממשל התאגידי בחברות עם מבנה בעלות ריכוזית

### עודד כהן

#### תקציר

בנייר זה אני מציג מדד לבחינת איכות הממשל התאגידי המותאם לחברות עם מבנה בעלות ריכוזי. המדד כולל 31 רכיבים המודדים שלושה מימדים של איכות הממשל התאגידי: עצמאות הדירקטוריון, מיומנות הדירקטוריון, והפער שבין זכויות השליטה של בעל השליטה בפירמה לבין זכויותיה בהון שלה. למדד המוצע מספר יתרונות על פני מדדי ממשל תאגידי שהוצעו בעבודות קודמות: הוא מבוסס באופן בלעדי על נתונים המדווחים על ידי הפירמות מכוח החוק ואשר מידת המהימנות שלהם גבוהה מנתונים המדווחים באופן וולונטרי בהם נעשה שימוש בחלק מהעבודות הקודמות; הוא לא כולל רכיבים המודדים את מידת האחריות החברתית של הפירמה מאחר ומימד זה לא משקף את מידת ההגנה על המשקיעים בפירמה; הוא לא כולל רכיבים המודדים תוצאות של איכות ממשל תאגידי לרבות רכיבים העוסקים בהיקף הכספי או במספר העסקאות עם בעלי שליטה שמבצעת הפירמה וכן רכיבים המודדים את הצעדים המשמעותיים בהם נוקטת הפירמה כנגד ההנהלה שלה; הוא מודד באופן נרחב את המיומנויות של הדירקטוריון; והרכיבים שלו מוגדרים היטב כך שהם ניתנים לחישוב ללא צורך בהפעלת שיקול דעת סובייקטיבי. בהתבסס על המדד, חישבתי ציוני ממשל תאגידי ל – 120 חברות ציבוריות לא פיננסיות בשנים 2007-2014 והראיתי שהם משתפרים לאורך שנות המדגם הן הודות לתיקוני חקיקה שנכנסו לתוקף בתקופה זו והן עקב צעדים שנקטו הפירמות באופן וולונטרי.

# **Measuring Corporate Governance Quality in Concentrated-Ownership Firms**

**Oded Cohen**

## **Abstract**

In this paper, I present a corporate governance index adjusted to firms with concentrated ownership. The index consists of 31 components that measure three dimensions of corporate governance quality at the firm level: board independence, board qualifications, and control-cash flow wedge. The index has several advantages over indexes constructed in previous papers: it is based exclusively on mandatorily disclosed data, which are more reliable than the voluntarily disclosed data previously used in some studies; it does not contain components that measure the firm's corporate social responsibility since this dimension is not relevant to investor protection; it does not contain components that measure outcomes related to a firm's corporate governance quality, including the number and volume of related-party transactions and disciplinary acts taken against management; it extensively measures board qualifications; and its components are well defined so that the index may be calculated without applying discretion. Based on this index, I calculate corporate governance quality scores for 120 nonfinancial Israeli public firms in the period 2007–2014 and show governance quality to have improved owing to legal reforms that went into effect during those years, as well as to changes voluntarily undertaken by the firms.

## **1. Introduction**

A firm has an agency problem when an agent is incentivized to increase her utility at the expense of the other stakeholders. This situation affects the firm negatively, mainly by increasing its cost of capital since the investors are aware of the agent's incentive and embed the risk of being expropriated into the firm's cost of capital (Berle and Means, 1933; Jensen and Meckling, 1976). Moreover, to the extent that this problem is common among firms, it may also impede financial development in general (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1997). All in all, the agency problem may distort the allocation of capital and slow down economic growth (e.g., La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 2000; La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 2002). In view of its potentially severe consequences, mitigating the agency problem is one of the most important goals of financial regulators around the world.

The literature tends to distinguish between two kinds of agency problems. The first characterizes dispersed-ownership firms, as is common mainly in the US, and arises from conflicts between managers and many small shareholders (Jensen and Meckling 1976). The second, typical of firms with concentrated ownership, is prevalent mainly in markets outside the US, and arises from conflicts between a controlling shareholder (CSH) and minority shareholders (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1998; La Porta, Lopez-de-Silanes, and Shleifer, 1999).

In dispersed-ownership firms, no single shareholder has an incentive to monitor management because the monitoring costs are greater than any shareholder's share in firm's profits, which is negligible. The absence of efficient supervision incentivizes the managers to enhance their utility at the expense of the firm's shareholders. By contrast, in firms with concentrated ownership, the CSH, who holds significant ownership rights, monitors management – yet, herself, is not supervised by any shareholder. As a consequence, a CSH has an incentive to extract private benefits of control from the firm at the expense of the minority shareholders (Barclay and Holderness, 1989; Nenove, 2003; Dyck and Zingales, 2004; Barak and Lauterbach 2011).

Shareholder expropriation is moderated by corporate governance (CG) at the firm level and by investor-protection regulations at the country level. As Shleifer and Vishny (1997) put it, CG is “the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment.” Because of the importance of mitigating agency problems, the subject of CG has drawn the attention of stakeholders, regulators, and academics (Becht, Bolton, and Röell, 2003).

CG systems differ across markets according to the typical agency problems (Enriques and Volpin, 2007; Bebchuk and Hamdani, 2009). For example, in the US, a typical tool that deters managers from expropriating the shareholders is market discipline. The rationale is that shareholder expropriation may result in a decline in the firm’s share price, which in turn may increase the probability of a takeover and management replacement. Thus, in the US, a firm with high-quality CG will not limit the mechanism of market discipline by adopting antitakeover provisions like a staggered board or poison pills (Gompers, Ishii, and Metrick, 2003; Bebchuk and Cohen, 2005; Bebchuk, Cohen, and Ferrell, 2009).<sup>1</sup>

By contrast, a firm with concentrated ownership seldom face the threat of a takeover, as a CSH is the one who decides whether to sell her shares. Accordingly, the severity of the agency problem in this type of firm is reflected by different characteristics than the existence of market discipline such as the efficiency of the audit and control mechanisms, the quality of disclosure, the extent in which the rights of the minority shareholders at the general meeting are ensured, and the incentive of a CSH to tunnel as is evaluated by the control-cash flow wedge (e.g., Black, Jang, and Kim, 2006; Black and Kim, 2012; Ararat, Black, and Yurtoglu, 2014).

A large branch of the CG literature deals with measuring CG quality. To begin with, such measurement enables academics to examine salient finance issues such as the effect of CG quality on firm performance<sup>2</sup> (e.g., Gomerps, Ishii, and Metrick, 2003) and the relation between

---

<sup>1</sup> It is worth noting that mechanisms that limit the market discipline may be beneficial for shareholders as the mechanisms enable managers to make long-term investments without a concern of being replaced, and thus they may have a positive effect on the market value of a company over the long run (Cremers, Litov, and Sepe, 2017).

<sup>2</sup> A firm performance is measured by different measures including Tobin's Q, market-to-book ratio, return on assets, return on equity, and sales growth (e.g., Gompers, Ishii, and Metrick, 2003). The underlying assumption is that the measures of firm performance reflect the portion of the assets that remain within the firm and were not expropriated by the management. The less severe the agency problem, the lower the extent of the expropriation and the higher the firm performance is expected to be.

firm-level and country-level CG (Klapper and Love, 2004; Durnev and Kim, 2005; Dahya, Dimitrov, and McConnell, 2008; Chen, Chen, and Wei, 2009; Bruno and Claessens, 2010; Renders, Gaeremynck, and Sercu, 2010; Fauver, Hung, Li, and Taboada, 2017; Homanen and Liang, 2018). Second, CG quality measurement may be useful for regulators as a basis for recognizing weak CG dimensions and shaping legal reforms to strengthen them. Third, CG quality measurement helps capital suppliers to price more correctly the firm's agency-costs and allocate their capital more efficiently.

The literature adopts two basic approaches to CG quality measurement. The first is to gauge CG quality using a specific component, e.g., evaluating board independence based on the percentage of independent directors (e.g., Bhagat and Black, 2002; Choi, Park, and Yoo, 2007; Chan and Li, 2008; Duchin, Matsusaka, and Ozbas, 2010). The main advantage of this approach is simplicity. However, the low level of a certain CG component may be compensated for by the high level of another. For example, a low percentage of independent directors on the board may be compensated for by their high qualifications. Hence, measuring a firm's CG quality based on a single component may be misleading. The second approach, introduced by Gompers, Ishii and Metrick (2003), uses a comprehensive index to aggregate various CG components into a single CG quality score.

In this paper, I construct a CG index<sup>3</sup> (CGI) consisting of binary, equally weighted components. The CGI is adjusted to firms with concentrated ownership and therefore targets mechanisms whose quality reflect the agency problem between a CSH and minority shareholders. Specifically, its components evaluate three dimensions of CG quality of which two, board independence and board qualifications (henceforth: "board dimensions"), evaluate the extent to which the board is motivated and qualified to monitor a CSH<sup>4</sup>, and the third, the control-cash flow wedge, evaluates the motivation of a CSH to divert assets from the firm.

---

<sup>3</sup> Following earlier studies (e.g., Black, Jang, and Kim, 2006) the index developed in this paper is referred to as a corporate governance index even though it only measures the extent to which the firm's shareholders are protected and does not refer to other stakeholders

<sup>4</sup>In fact, a board of directors has two main roles: monitoring and advising (Adams and Ferreira, 2007). The qualifications dimension of the CGI reflects not only the extent to which a board is capable to monitor the CSH but also the extent to which is qualified to act as a strategic adviser to management.

The CGI's focus on the board's dimensions is motivated by several considerations. First, the literature describing the effect of a specific component evaluating a board dimension on that firm's performance has yielded inconclusive findings (Hermalin and Weisbach, 2001; Adams, Hermalin, and Weisbach, 2010, Adams, 2017). Nonetheless, as I show in the literature review below, the studies that measure the CG quality using a comprehensive index, that also comprises components which target multiple dimensions of the board, attest to a positive effect of CG quality on firm performance. Second, measuring the board dimensions reflects to what extent the board's operational mechanisms – including an Audit Committee, a Financial Statements Committee, and a Compensation Committee – effectively monitor a CSH. However, the board's dimensions may also influence the effectiveness of the monitoring carried out by other CG mechanisms that are not part of the board, such as the internal and external auditing. Hence, evaluating the quality of the board dimensions affords a wider perspective on the firm's CG quality. Third, as in other countries, in Israel, decisions regarding the board dimensions are left, to a large extent, to the discretion of the firm. This generates variation across different firms, as well as over time within a single firm, that may prove useful for examining the effect of CG quality on firm performance (this issue is addressed in Cohen 2020a). Fourth, in an Israeli firm, the board is subject to a broad range of legal disclosure requirements, which result in extensive data that may be useful for measuring that firm's CG quality. Fifth, a vast body of literature deals with the importance of the different board dimensions (see the literature survey in Hermalin and Weisbach, 2001; and in Adams, Hermalin, and Weisbach, 2010). These studies provide not only a basis for identifying the board dimensions that should be included in the CGI but also some guidance as to how they can be measured by indicating specific components that should be included in the CGI to target each board dimension. To enable robustness checks in future analysis using the CGI, I follow earlier studies (e.g., Lauterbach and Shahmoon, 2010) by adding components that measure the quality of a firm's internal auditing and disclosure, and others that ascertain the firm's dividend policy.

Based on the CGI, I calculate CGI scores for an unbalanced panel of 120 non-financial firms listed on the TASE and included in the TA 100 index or the TA MidCap index during at least some of the years 2007 to 2014 (henceforth “the sample period” or “the years sampled”). Based on these calculations, I show that the CGI has a fairly high construct validity. Its Cronbach's

alpha is between 0.670 in 2012 and 0.779 in 2014, which indicates that all its components do indeed measure the same underlying variable which I assume to be investor protection, and are therefore indicative of the CG quality. Moreover, its average inter-component correlation is fairly small, ranging between 0.072 in 2012 and 0.119 in 2014, thus pointing to the importance of each component in measuring a specific dimension, as intended (see a similar analysis of Cronbach's alpha values in Black, de Carvalho, Khanna, Kim, and Yurtoglu, 2017). Moreover, the average correlation between the CGI's dimensions is positive and small, indicating that each dimension represents a different aspect of CG quality.

Cohen (2020a) also adduces findings which suggest that the CGI scores reflect the investor protection across firms at least during the years 2007–2010. In particular, I show that higher CGI scores are correlated with better performance, including greater Tobin's Q, ROA, and sales growth (these results dovetail with previous studies that proposed CG indexes, e.g., Gompers, Ishii, and Metrick, 2003). In addition, Cohen (2020a) shows that higher CGI scores are correlated with a lower number and volume of related-party transactions, which are known in the literature as a mechanism for tunneling.

An analysis of the CGI scores of Israeli firms during the sample period shows a consistent increase, attributable to legal reforms effected during that time, as well as to CG improvements that the firms undertook voluntarily. The changes prompted by the legal reforms include (a) the establishment of financial statements committees and compensation committees; (b) a decrease in the percentage of boards chaired by the CEO; (c) a decrease in the percentage of audit committees with directors who are CSHs<sup>5</sup> or directors who hold positions in a firm that is controlled by a CSH (henceforth "CSH dependents"); (d) and an increase in the percentage of audit committees in which the majority of the directors are independent.

Last but not least, I adduce evidence of voluntary improvements in firms' CG quality during the sample period, reflected in the increased independence and higher qualifications of board members. Regarding the independence dimension, I demonstrate a decrease in the average percentage of CSHs and CSH dependents on the board, an increase in the average percentage of independent directors and outside directors on the board, and a decrease in the percentage of

---

<sup>5</sup> In this paper, relatives of a CSH are considered CSHs.



boards chaired by a CSH. Regarding the improved qualifications of board members, I show an increase in the average percentage of independent and outside directors on the board who are financial experts, industry experts, or MBA degree holders; an increase in the average percentage of independent and outside directors on the audit committee with either financial or industry expertise; and a decrease in the intensity of an average board member's working schedule e.g., as a director on other boards (henceforth: "board's busyness").

This paper contributes to the CG literature by proposing a CG index that improves on existing indexes in several respects. First, the CGI is based on mandatorily disclosed data, which are considerably more reliable than the voluntarily disclosed data used in some of the previous papers. Moreover, since the data are public, the index can be easily calculated by any potential user. Second, in contrast to other CG indexes, the CGI contains only well-defined components, eliminating the need for using discretion in its calculation. Third, the CGI contains only those components that are relevant to improving investor protection at the firm level. It does not contain components that measure outcomes related to firm's CG or social responsibility. Fourth, in contrast to many CG indexes, the CGI includes several components to evaluate the qualifications of board members. Finally, the CGI is calculated from a panel data sample, rather than a cross-sectional sample used by many other CG indexes. A panel data sample makes it possible to mitigate endogeneity concerns when using the index to account for firm performance (Himmelberg, Hubbard, and Palia, 1999).

The paper is organized as follows. Section 2 introduces the CGI; Section 3 describes the sample and the data; Section 4 presents the construct validity of the CGI; Section 5 compares the CGI to existing indexes; Section 6 enumerates the characteristics of the typical board in my sample; Section 7 shows the evolution of CGI scores during the sample period; and Section 8 concludes.

## **2. The Corporate Governance Index**

As already stated, the CGI focuses on three dimensions: board independence, board qualifications, and the control-cash flow wedge. Following previous studies that propose CG

indexes, I hypothesize that shareholder expropriation decreases with an increase in either board independence or board qualifications (or both), and with a decrease of control-cash flow wedge.

Previous studies measured board independence by examining whether the board's composition generates a conflict of interest that prevents the directors from adequately monitoring either the management among firms in the US or the controlling shareholder among firms in other countries. A common measure of independence employed in the literature is the percentage of directors serving on the board and its committees that are independent; another indicator of independence is whether the chairman of the board is also the firm's CEO.

Hitherto, research on the effect of board independence on agency costs, proxied by firm performance, has been inconclusive (Hermalin and Weisbach, 2001; Adams, Hermalin, and Weisbach, 2010, and Adams, 2017). Some studies find a positive correlation between the percentage of independent directors and firm performance (e.g., Choi, Park and Yoo, 2007), while others reveal no such correlation (e.g., Bhagat and Black, 2002; Zhang, 2005); yet others argue that the correlation is contingent on the size of the firm (Chhaochharia and Grinstein, 2007a) or on the independent directors' access to the firm's inside information (e.g., Duchin, Matsusaka, and Ozbas, 2010); some papers show that, under certain circumstances, independence has a negative effect on performance since it impairs the board's role as adviser (e.g., Adams and Ferreira, 2007; Adams, Raganathan, and Tumarkin, 2016). Just as inconclusive is the literature on the effect of separating CEO and chairman positions on firm performance. The correlation between firm performance and board's dual leadership was found by some studies to be negative (e.g. Rechner and Dalton, 1991), while by others – positive (e.g. Brickley, Coles, and Jarrell, 1997; Yang and Zhao, 2014).

A possible reason that findings on the effect of board independence on firm performance are inconclusive is an omitted variable bias when measuring the independence dimension by a single component. Specifically, a low level of a certain component used for measuring the independence dimension in the regression may be compensated for by a high level of another component, which has a positive effect on performance but is excluded from the regression. A body of research try to alleviate the concern of an omitted variable by measuring several aspects of board independence, e.g., using an index that contains several components targeting

independence. In fact, most of the CG indexes used in the earlier papers, include several components that evaluate board independence and show evidence of a positive correlation between the scores calculated based on those indexes and firm performance. (e.g. Klapper and Love, 2004; Agrawal and Chadha, 2005; Durnev and Kim, 2005; Black, Jang, and Kim, 2006; Bruno and Claessens, 2010; Lauterbach and Shahmoon, 2010).

In line with previous studies, the CGI comprises components for measuring board independence. The components I use to this end are as follows: (a) the percentage of directors on the board who are CSHs or CSH dependents; (b) whether CSHs or CSH dependents serve on a board committee; (c) the percentage of members of the board or its committees who are outside directors;<sup>6</sup> and (d) whether the board chairman is also the firm's CEO or CSH. In addition, I use two other components to measure the extent to which a conflict of interests hinders the board in monitoring the firm's management: whether a CSH is a senior executive in the firm; and whether a firm's senior manager serves on the compensation committee.

As already stated, the second dimension targeted by the CGI is board members' qualifications. Previous studies have measured board qualifications as the percentage of directors on the board and its committees with skills to adequately monitor management. These studies show that the board's financial expertise (e.g., DeFond, Hann and Hu, 2005) and industry expertise (e.g., Cohen, Hoitash, Krishnamoorthy, and Wright, 2013; Dass, Kini, Nanda, Onal, and Wang, 2013; Wang, Xie, and Zhu, 2015) have a positive effect on firm performance. In this connection it is noteworthy that, in the wake of a reform that set quotas for women on corporate boards in Norway, Ahern and Dittmar (2012) show that replacing directors with less qualified female directors, as reflected by their CEO experience, resulted in value loss. Another measure of board qualifications is the intensity of the directors' working schedules (i.e., how busy they are), proxied by the number of seats they hold in other firms. Some of the earlier studies found that a busy board is detrimental to the firm's performance (e.g., Fich and Shivdasani, 2006; Cashman, Gillan, and Jun, 2012). This stands to reason: a busy board is

---

<sup>6</sup> The controlling shareholders have a great deal of influence over the appointment of outside directors. However, unlike other directors, the decision of an outside director's dismissal is subject to the majority of the minority rule at the general meeting of the company's shareholders. Therefore outside directors are may be considered more independent than other directors.

simply not available to adequately monitor the management<sup>7</sup>. Following these studies, I measure board qualifications using four components: (a) the percentage of directors with financial and accounting expertise; (b) the percentage of directors with industry expertise; (c) the percentage of directors with MBA degree who are familiar with management methods; and (d) the board members' "busyness."

The third dimension that affects firm performance is the extent to which a CSH is incentivized to expropriate minority shareholders. In line with previous studies, as a proxy for this variable I consider the control-cash flow wedge (e.g., Bebchuk, Kraakman, and Triantis, 2000; Claessens, Djankov, and Lang, 2000). To calculate the wedge, I identify the firm's ultimate owner by mapping its ownership structure chain.<sup>8</sup> Next, I calculate the ultimate owner's cash flow rights by multiplying the cash flow rights along the firm's ownership structure chain. The wedge is calculated as the difference between 100% and the percentage of cash flow rights that the CSH holds in a given firm.<sup>9</sup>

The sample period, especially 2010–2012, was marked by several legal reforms aimed at enhancing CG quality (henceforth "the firm-level reforms"), including a 2010 requirement to establish a financial statements committee (henceforth "financial-statements-committee reform"); the 2011 Amendment 16 to the Israeli Companies Law (henceforth "Amendment 16"), which requires companies to increase the independence of the board and audit committee;

---

<sup>7</sup> Ferris, Jagannathan, and Pritchard (2003) find that a busy board has no effect on firm performance. However, Fich and Shivdasani (2006) argue that this result stems from inadequate methodology and econometric specification, including, among other things, using cross-sectional data without firm fixed-effects. Field, Lowry and Mkrtchyan (2013) also find that a busy board has no effect on firm performance. However, their finding is limited to IPO firms, in which the expertise of busy directors is more valued.

<sup>8</sup> By "ultimate owner" I mean a shareholder who holds at least 25% of a firm's shares. Several shareholders between whom there is a control agreement that their holdings will sum up to 25% are considered a single ultimate owner.

<sup>9</sup> It is worth noting that the level of each of the three CGI dimensions is determined by the firm itself. In particular, the firm may determine the CG quality in equilibrium with performance, or alternatively, the level of both the CG quality and firm performance may be driven by a third underlying omitted variable (Hermalin and Weisbach, 1998). For these reasons, interpreting the correlations between CG quality and performance as causal relations should be done with caution. In this paper, as in very few earlier studies (e.g., Ararat, Black, and Yurtoglu, 2014), the use of panel data, combined with a non-negligible variation in the CGI over time, enables one to use fixed-effects regressions to mitigate endogeneity in examining the effect of the CGI on firm performance. Other studies take advantage of an exogenous firm-level CG legislation and use it as an instrument (Black Jang and Kim, 2006; Ahern and Dittmar, 2012); as a platform for event studies (Chhaochharia and Grinstein, 2007a); as a threshold in a regression discontinuity framework (Black and Kim, 2012); or as a treatment in a difference-in-differences analysis (Fauver, Hung, Li and Taboada, 2017).

and the 2012 Amendment 20 to the Israeli Companies Law (henceforth “Amendment 20”), which requires companies to establish a compensation committee. In Table 1, I present the main provisions of each of these firm-level reforms.

In the aftermath of the firm-level reforms, several components included in the CGI became legally required. The legally required components could be useful for measuring the effect of CG quality on firm outcomes in cross-section regressions prior to the firm-level reforms went into effect. These components could also be useful in a fixed-effect regression for a period that began before the reforms and ended after they went into effect as in Cohen (2020a) and in Cohen (2020b). In such a regression we would be interested in the effect of any change in CG quality over time, be it voluntarily or legally required, on firm outcomes. However, these components would not be useful for explaining firm outcomes in cross-section or fixed-effects regressions after the firm-level reforms went into effect. Thus, in calculating the CGI scores for an analysis focused on the post-reform years the following components under this rubric are excluded: for the years after 2009, the component that examines whether the firm has a financial statements committee is excluded; for the years after 2010, the components that examine whether the chairman of the board is also the firm’s CEO<sup>10</sup> and the component that examines whether a CSH or a CSH dependent serves on the audit committee are excluded; for the years after 2011, the component that gauges whether the firm has a compensation committee is excluded.

All together, the relevant CGI for the years prior to 2010 contains 31 components, the relevant CGI for the years subsequent to 2009 contains 30 components, the relevant CGI for the years subsequent to 2010 contains 28 components, and the relevant CGI for the years subsequent to 2011 contains 27 components.

Binary components in the CGI, e.g., “whether the chairman is a CSH,” take the values of 1 and 0, for negative and affirmative, respectively. The score of continuous components, which are ones whose values could range between 0 and 1 (except for the control-cash flow wedge) is

---

<sup>10</sup> Amendment 16 determines that a CEO duality in a company has to be approved at the general meeting with the support of the majority among the minority shareholders; the approval has to be renewal each three years.

normalized to 1 or 0 based on their respective median values as a threshold.<sup>11</sup> The score of the control-cash flow wedge is the controlling shareholder's ownership rights, which increase with the lowering of the wedge. The firm's CGI score is calculated as the equally weighted average of the CGI components' scores. Table 2, presents the components included in the CGI and the method by which the score of each component was calculated.

Some of the components included in the CGI are qualitative variables and thus require objective and unified criteria in order to compare the CGI scores across different firms and different years. Specifically, a director is defined as a "financial expert" if one of the following criteria is fulfilled: The director has a Ph.D. in finance or economics; the director is an accountant; the director holds or has held a senior financial position; or the director manages or has managed a financial institution. An "industry expert director" is defined as one who has formal education or practical experience relevant to the business of the firm.<sup>12</sup> The "busyness" of a director is measured by the number of positions she holds in other firms.

For robustness purposes, in future empirical research using the CGI, I propose using four CGI versions. The first two are alternative approaches to aggregating CG components. In the first, the aggregation is performed in two stages: calculating a score for each CGI dimension as an equally weighted average of its components, and calculating the CGI score as an equally weighted average of the dimensional scores. In the second of these two CGI versions, aggregation is based on a principal component analysis.

In the third CGI version, I replace the components that are relevant to outside directors with components that are relevant to independent directors. The rationale is that the average percentage of independent directors on the boards of the Israeli firms increased continuously during the sample period, and therefore focusing on outside directors could result in a miscalculation of independence level of a board.<sup>13</sup>

---

<sup>11</sup> For example, the score of the component "percentage of controlling shareholders on the board" is 0 if its value is above the median and 1 otherwise.

<sup>12</sup> A director in a holding company is considered to be an industry expert if she has financial expertise.

<sup>13</sup> The independence level of independent and outside directors is in principle similar. However, unlike outside directors, the dismissal of an independent director is not subject to the majority of the minority rule and therefore I consider the independent directors as less independent than outside directors (see also in Bebchuk and Hamdani, 2016).

In the fourth CGI version, I follow previous papers, especially Lauterbach and Shahmoon (2010), by adding to the CGI five components that do not measure board quality. Three of these measure the independence of the internal auditor, including a dummy variable which takes the value of 1 when the internal auditor does not work in the firm but provides outsourcing services, and 0 otherwise; a dummy variable which takes the value of 1 if the audit committee is the supervisor of the internal auditor, and 0 otherwise; and a dummy variable which takes the value of 1 if the CSH is not the supervisor of the internal auditor, and 0 otherwise. The fourth component is a dummy variable that takes the value of 1 if the firm has published its financial reports earlier than the date required by the law. The fifth component is a dummy variable that takes the value of 1 if the firm has adopted a dividend policy, and 0 otherwise.<sup>14</sup>

### **3. Sample and Data**

The sample analyzed in this paper is a panel of non-financial publicly traded Israeli firms for the years 2007–2014. I start with a group of 248 firms traded on the TA 100 index or the TA MidCap index during at least some of the years in the course of that period.

I exclude the following firms from the sample: 32 financial firms; 65 dual firms listed on U.S. stock exchanges, where the legal requirements on CG are substantially different from those in Israel (45 firms in this group are characterized by a dispersed ownership structure); five firms with a dispersed ownership structure, as the CGI is not designed to measure the CG quality in this type of firms; 15 partnerships; seven firms that went public after 2010 for them I am not able to calculate the CGI scores before the firm-level reforms, and four firms whose CGI scores cannot be calculated due to insufficient information. All together, the initial panel sample consists of 120 firms, of which 35% (41 firms) are in real-estate, 25% (30 firms) in manufacturing, 17% (21 firms) in commerce, 14% (17 firms) in technology, and 9% (11 firms) are in holdings companies. The sample represents the distribution of the total population of the

---

<sup>14</sup> Adopting a dividend policy, as well as publishing financial reports on time, are CG quality outcomes and as such are not included in the CGI. Nonetheless, following Lauterbach and Shahmoon (2010), I include these components in the alternative version of the CGI for robustness purposes.

Israeli public firms across industries of which 31% in real-estate, 15% in manufacturing, 16% in commerce, 26% in technology, and 12% in holding companies.

The sample is not balanced as, during the sample period, six firms became public and 28 firms went private. The process of constructing the yearly samples is detailed in Table 3.

The database used for calculating the CGI scores is hand-collected. Its main source is annual reports, which are publicly available on the MAYA website. Of particular relevance is Chapter 4 of these reports, entitled “Additional Details Regarding the Company,” which contains information on CG, including the directors’ education, employment history, and family ties within the board; board committees and other boards on which the directors serve; whether a director is outside or independent; the names of the directors employed by the firm; and details of the firm’s structural ownership.

#### **4. The CGI’s Construct Validity**

Following Black, de Carvalho, Khanna, Kim and Yurtoglu (2017), I verify the construct validity of the CGI by using Cronbach’s alpha measure defined as:

$$\alpha = \frac{n*r}{1+(n-1)*r}$$

where  $n$  is the number of components in the CGI and  $r$  is the average correlation between these components. A Cronbach’s alpha ranges from 0 to 1. A high Cronbach’s alpha obtained implies that the components included in an index measure the same underlying variable, which in the case of a CG index is assumed to be the investor protection. The results presented in Table 4 show that the annual values of the Cronbach’s alpha ranged between 0.670 in 2012 and 0.779 in 2014, and their average is 0.720.

The value of Cronbach’s alpha tends to increase with the number of index components. Hence, I use as a benchmark a CG index built by Black, Jang and Kim (2006) for Korea that contains 27 components, which is close to the number of components included in the CGI. The Cronbach’s alpha calculated for the Korean index is 0.76 (see in Black, de Carvalho, Khanna, Kim, and Yurtoglu, 2017), which is close to the average value that is calculated for the CGI.



An overly high Cronbach's alpha may imply that the components are not sufficiently distinct, and that they measure the same aspect of investor protection. The extent to which different components measure the same aspect of investor protection is examined through the inter-item correlation. A high Cronbach's alpha combined with a low inter-item correlation implies that the components measure the same underlying variable but that they nevertheless contribute to the index, by each measuring a different aspect of this variable. In our case, this correlation is between 0.072 in 2012 and 0.119 in 2014. As with the Chronbach's alpha values, the inter-item correlation between the CGI components is similar to the one in the index constructed by Black, Jang, and Kim (2006), which is 0.100 (see in Black, de Carvalho, Khanna, Kim, and Yurtoglu, 2017).

Tables 5.1–5.8 present the correlation between the scores of each CGI dimensions for each of the years sampled. Positive correlations imply that the CGI dimensions represent the same underlying variable tapping investor protection. Positive and statistically significant correlations emerge between the independence and qualifications dimensions in each of the years sampled. The moderate size of these correlations, between 0.376 in 2011 and 0.171 in 2010, suggests that each dimension reflects a different aspect of CG quality, as intended. In contrast, no significant correlations are observed between the control-cash flow wedge and board qualifications dimension. The results with respect to correlations between the control-cash flow wedge and the independence dimension are mixed: the correlations emerged as positive and significant in 2007–2009, insignificant in 2010–2013, and significant again in 2014. Overall, the significant correlations between the CGI dimensions' scores are mostly positive.

## **5. Comparison between the CGI and Previous CG Indexes**

This section compares the CGI with a group of 12 CG indexes constructed in previous papers (henceforth “the comparison group”). I focus on indexes adjusted to markets outside the US that are intended to measure a similar type of agency problem as the one that is common in Israel.

The indexes from the comparison group are briefly outlined in Table 6, and two salient patterns become apparent. First, the indexes differ in the number of components they contain, for three possible reasons. First, if in a country targeted by a given index a certain component shows little variation across firms, this component is not included in the index. It may, however, be included in an index designed for another country where it shows sufficient variation across firms. Second, countries differ in terms of data availability, giving rise to different CG indexes. Third, the literature contains no model that sets criteria for including the various components in a CG index and, therefore, the decision is left to the researcher's discretion. It is only natural that different researchers should construct different indexes.

The second point of relevance arising from Table 6 is that, in aggregating the index components into the firm's score, nine of the papers in the comparison group use either an equally weighted average approach or a principal-component analysis approach, whereas only three apply a method whereby the weight of each component is subject to the researcher's discretion.<sup>15</sup> The prevalence of the equally weighted average approach can be ascribed to its simplicity, as well as to a lack of theoretical criteria for assigning appropriate weights to each of the CG components.

In Table 7, I analyze the characteristics of the samples used to calculate the governance scores in previous papers. Three points are of particular note.

First, nine of the papers included in the comparison group are based on cross-sectional samples (Column 4). This rules out the use of classic econometric strategies (e.g., firm fixed-effects regressions or difference-in-differences regressions) to mitigate endogeneity issues when using the index to establish the correlation between CG quality and firm performance.

Second, half of the papers in the comparison group rely on voluntarily disclosed data collected from questionnaires distributed to the firms or to relevant analysts (Column 5). I consider voluntarily disclosed data less reliable, first and foremost, because they are not audited by an external auditor. Furthermore, in default of a regulatory sanction against providing

---

<sup>15</sup> Klapper and Love (2004) use an aggregation method assigning a weight of 10% to the social awareness dimension and a weight of 15% to the other dimensions; Kouwenberg (2006) and Cheung, Connelly, Limpaphayom and Zhou (2007) assign a different weight to each dimension according to its importance in defending minority shareholders.

inaccurate data, the firm has no incentive to invest the necessary effort to ensure that such data are accurate. In addition, voluntarily disclosed data may suffer from systematic bias, for example, if a firm with a poor CG reports figures that reflect its CG aspirations rather than its actual CG level. Another possible reason for a systematic bias is that the analysts who produce the data favor a certain kind of firms or dislike those of another kind. Systematic bias may also arise from sample selection when the firms in the sample have an unobserved characteristic that is correlated with their tendency to voluntarily disclose data.

A third noteworthy pattern, observed in Column 6 of Table 7, is that five of the indexes in the comparison group include subjective components, whose percentage relative to all the components in the index ranges between 3% in Black, Jang, and Kim (2006) and 28% in Klapper and Love (2004). Subjective components may compromise the comparison of CG quality across firms as well as longitudinally, because answering subjective questions requires discretion. This circumstance may detract from the consistency of the scores calculated for different firms in the same year, as well as for the same firm in different years.

In Table 8, I analyze the CG dimensions targeted by the different indexes. In fact, a comparison between dimensions of different CG indexes is not trivial. As mentioned above, constructing a CG index involves, to a large extent, the researcher's discretion. The researcher is the one who selects the dimensions to be measured, and therefore, different CG indexes measure different dimensions. The same is true for CG components. Thus, I often find that different indexes use the same component to measure different dimensions.

In order to enable comparisons between the indexes in the comparison group, I define "new" dimensions (i.e., those that are not targeted by the CGI) that are common to all the indexes, and sort the components of each index according to the specific new dimension they measure. To this end, I distinguish between components that are designed to measure investor protection (henceforth "CG components") and the other components ("non-CG components"). I then relegate each of the CG components in a given index to the new dimension it targets, including "audit and control," "disclosure," "minority shareholders' rights," and "ownership structure." In a similar way, I sort each of the non-CG components, according to the new dimension it evaluates, including "outcome" and "corporate social responsibility and ethics". The new

dimension termed “outcome” is evaluated by components that do not pertain to the firm’s investor-protection mechanisms but are rather the outcome related to such mechanisms.<sup>16</sup> The new dimension called “corporate social responsibility and ethics” is evaluated by components that measure environmental consciousness, donations, and other related items. These components have no effect on the protection of minority shareholders.

In Column 2 of Table 8, I present the percentage of non-CG components in each of the indexes<sup>17</sup>. Notably, each of the indexes in the comparison group contains non-CG components, their percentages ranging from 40% in Klapper and Love’s (2004) index and 3% in Black, Jang and Kim’s (2006) and Beiner, Drobetz, Schmid and Zimmermann’s (2006) indexes.

In Columns 3–4 of Table 8, I present the percentage of components in each of the indexes that measure each of the new non-CG dimensions. Half of the indexes in the comparison group include components that measure both the “outcome” and “corporate social responsibility and ethics” dimensions.

In Columns 6–9 of Table 8, I present the percentage of components that measure each of the new CG dimensions in each of the indexes. I show that the “audit and control” dimension is measured by the highest number of components in nine indexes, while the “disclosure” dimension is measured by the highest number of components in three indexes.

I then subdivide the “audit and control” dimension into three sub-dimensions. The first, “independence,” is targeted by components that measure the extent to which the “audit and control” mechanisms, e.g., the board and its committees, are independent of the CSH. The second, “qualifications,” is targeted by components that measure the extent to which the persons on the “audit and control” mechanisms, e.g. directors, have the appropriate qualifications to monitor the CSH. The third dimension, “general procedures,” is targeted by components that

---

<sup>16</sup> A typical example of components targeting the “outcome” dimension is those that measure the number and volume of related-party transactions. I expect an increase in CG quality to be correlated with a decrease in minority-shareholder expropriation. To the extent that related-party transactions are a major mechanism for tunneling (e.g., Bebchuk, Kraakman, and Trianis, 2000; Johnson, La Porta, Lopez-de-Silanes, and Shleifer, 2000; Djankov, La Porta, Lopez-de-Silanes, and Shleifer, 2008; Black, Kim, Jang, and Park 2015; Fried, Kamar, and Yafeh, 2019), I expect an increase in CG quality to be correlated with a decrease in related-party transactions. Hence, the components that measure related-party transactions are an outcome of CG quality and should not be included in the index. Other examples include components that measure a firm’s capital price, a firm’s investment decision-making, disciplinary acts that a firm takes against management, etc.

<sup>17</sup> The non-CG components are discussed only for the case of comparison with previous studies.

examine the extent to which the “audit and control” mechanisms are active (e.g., the number of time the board was convened in any given quarter). In Table 9, I present the percentage of components in each of the indexes that measure each of the three sub-dimensions mentioned above. I first show that, within “audit and control,” the “independence” sub-dimension is measured by the highest number of components in each of the indexes. I then observe that the majority of indexes contain a negligible percentage of components that measure the “qualifications” sub-dimension. This finding is at odds with empirical evidence attesting to the importance of directors’ qualifications as a determinant of a firm’s CG quality (e.g., DeFond, Hann, and Hu, 2005; Ahern and Dittmar, 2012; Dass, Kini, Nanda, Onal, and Wang, 2013; Wang, Xie, and Zhu, 2015).

Overall, the comparison of the CGI with the indexes in the comparison group shows that the CGI has several advantages. First, it is calculated based on mandatorily disclosed data and hence it is more reliable. Second, all the components included in the CGI are well defined, and therefore its scores are comparable across firms and over time. Third, the CGI contains only those components that measure investor protection. Fourth, in contrast to other indexes, the CGI contains a significant percentage of components (43%) that measure board members’ qualifications. Finally, the CGI is calculated from a panel data sample, which allows to mitigate endogeneity issues.

## **6. The Characteristics of the Typical Board**

Table 10 presents the characteristics of a typical board in my sample during the years 2007–2014. The typical board appears to consist of eight directors with an average age of 57. A director in the typical board holds, on average (median) 9 (10) directorships and management positions in other companies; however, the outside and the independent directors are less busy, each with an average (median) of 6 (5) positions.

Table 10 presents some characteristics of the typical board’s independence. First, the chairman in 70% of the firms is a CSH. However, only in 7% of the firms the chairman is also the CEO. As expected in firms with concentrated ownership, a significant part of the typical board, 48% on average, are CSHs or CSH dependents; more specifically, of the 48%, 31% are CSHs and 17% are CSH dependents. In spite of the dominance of CSHs on the board, a non-

negligible percentage of directors, 18%, are shareholders that are not CSHs. In addition, a non-negligible part of the typical board, 12% on average, are executive directors; of these, 9% are CSHs and 3% are non-CSHs. However, the value of the executive directors on the median board is 0%, which implies that the distribution of this variable is skewed to the left. Finally, the average proportion of outside (independent) directors on the typical board is 28%<sup>18</sup> (35%).

The characteristics in Table 10 may also indicate the extent to which the typical board is qualified to monitor the CSHs. Specifically, on average, almost half of the typical board are financial experts, two-thirds have industry expertise, and almost one-third have managerial skills, as per an MBA degree. Yet, only part of the expert directors are outside (independent) directors, so that the average proportions of the outside (independent) directors with financial expertise, industry expertise, or an MBA degree are 17%<sup>19</sup>, 11%, and 9% (21%, 15%, and 13%) respectively.

The literature regards the audit committee as a major monitoring mechanism and emphasizes the importance of its independence and qualifications, as also does the regulation (e.g., Chan, and Li, 2008). According to data, on average, almost two-thirds (78%) of the audit committee on the typical board are outside (independent) directors. In addition, the average proportion of the outside (independent) directors with financial or industry expertise on the audit committee are 39% and 27% (47% and 32%), respectively. Nonetheless, it appears that in a non-negligible percentage of the audit committees in my sample, 27%, serve CSHs or CSH dependents.

Finally, most of the firms in my sample, 79%, have a financial statement committee, but only 41% have a compensation committee.

The values for the different variables for the typical board, presented in Table 10, are calculated as the averages (medians) in the panel data sample. The table does not reflect changes in the characteristics of the typical board over time. This point is discussed in the next section.

---

<sup>18</sup> The finding indicates that the number of outside directors on a typical board is two (~28% of the eight directors on the average-sized board) which is the exact number of outside directors that is required by the Israeli Companies Law.

<sup>19</sup> The finding indicates that the number of outside directors with financial expertise on the average board is larger than the minimal number (one) that is required by the Israeli Companies Law.

## 7. The Evolution of the CGI Scores during the Sample Period

As noted above, a panel data sample enables the use of firm fixed-effects regressions and thus has a substantial econometric advantage over a cross-sectional sample. One of the reasons scholars have not extensively used panel-data samples with firm fixed-effects in analyzing the effect of governance quality on firm performance, is a very slight longitudinal within-firm variation in the governance scores. Yet, such a variation is imperative for a panel data sample to be econometrically useful. In this section, I show that the CGI scores vary over time.

First, in Figure 1.1, I describe the gradual increase of the average CGI scores during the years sampled, from 38 in 2007 to 67 in 2014.

Moreover, the detailed descriptive statistics presented in Table 11 show no evidence of a decrease in the standard deviations of the yearly CGI scores over time. This indicates that the upward trend of the average CGI scores does not derive from greater CG quality improvements among the poorly governed companies during the sample period and a resulting convergence of their CGI scores with those of the well-governed companies. Rather, this trend seems to reflect a shift of the entire CGI score distribution over time.

The increase in CGI scores stems from two factors. First, during the sample period significant changes occurred in the Israeli law requirements regarding firms' CG standards, affecting certain CGI components and causing longitudinal variation in the scores. The second reason is firms' voluntary implementation of measures for improving their CG. In what follows, I analyze in detail the effect of each of these factors on CGI scores.

### *The effect of mandatory improvements on CGI scores*

Figure 1.1 displays the yearly average CGI scores. Significant annual changes in these scores occurred only in the years 2010–2013, in the wake of the firm-level reforms. That is, the CGI scores appear to be highly sensitive to this kind of reforms.

In order to gauge more precisely the effect of the firm-level reforms on the CGI scores, I calculate for each firm-year observation the scores of the financial statements committee, audit committee, and compensation committee as the equally weighted average of the CGI

components that respectively target the quality of financial statements committee, audit committee, and compensation committee. In addition, I calculate the equally weighted average of the remaining CGI components, the ones that pertain to the board as a whole rather than to a specific committee (henceforth “full board”). Since the firm-level reforms focused mainly on board committees, I expect them to affect primarily the scores of these committees.

In Figures 1.2–1.5, I present the evolution of the average scores for the financial statements committee, the audit committee, the compensation committee, and the full board during the years sampled. Overall, I show that the scores of each of the board committees significantly increased in the year after the relevant reform went into effect. Specifically, a statistically significant increase occurred in the committees’ average scores as follows: financial statements committee, from 29 in 2009 to 81 in 2010, at a statistically significant rate of 1%; audit committee, from 69 in 2010 to 76 in 2011, at a rate of 10%; and compensation committee, from 9 in 2011 to 70 in 2012, at a rate of 1%. The full board score also increased from 56 in 2010 to 58 in 2011, but this increase is statistically insignificant.

The economic effect of any firm-level reform on the CGI scores depends on the percentage of firms that adopt it before it goes into effect (henceforth “early adopters”). In the case in point, only a small percentage of firms adopted early the provisions included in the financial-statements-committee reform (effective as of 2010) and in the Amendment 20 (effective as of 2012): a mere 51% of the firms had an active financial statements committee in 2009; and only 17% of the firms had an active compensation committee in 2011. For this reason, the effect of these reforms on the scores of the financial statements committee and compensation committee, and thus on the CGI scores, is economically significant.<sup>20</sup>

---

<sup>20</sup>Moreover, the method used for calculating the CGI score renders even stronger the economic effect on the CGI scores of the firms that adopted late the CG reforms requiring companies to establish a financial statements committee and a compensation committee. For example, a firm without a compensation committee takes the value of 0 not only by virtue of the component that checks whether it has a compensation committee, but also on account of the components that measure such a committee’s independence and qualifications. Thus, before 2012, many firms are assigned the value of 0 for the components that measure a compensation committee’s independence and qualifications simply because they did not have such a committee. However, from 2012 onward, the establishment of a compensation committee became a legal requirement and, as a result, the average score of the CGI components that measure the compensation committee’s independence and qualifications increased sharply.



By contrast, the provisions in Amendment 16 that are aimed at improving board independence were adopted early by a higher percentage of firms. Hence, the effect of this reform on the scores of both the audit committee and the “full board” is economically less significant.

By way of illustrating this dynamic, Figures 2.1–2.3 show the percentage of firms in the sample that adopted three specific provisions of Amendment 16 in each of the years sampled. Of these, Figure 2.1 shows the percentage of firms in which the chairman is not the CEO. In relation to audit committee independence, Figures 2.2–2.3 show, respectively, the percentage of audit committees in which the majority of the directors are independent; and the percentage of audit committees that do not include a CSH or a CSH dependent.

Clearly apparent is an upward trend in the percentage of firms that adopted the three provisions before Amendment 16 went into effect (see Figures 2.1–2.3) as is expected in a case of early adoption.

Also noteworthy is the finding that the percentage of firms that adopted the first two provisions in 2009, before Amendment 16 went into effect, is fairly high. Among these, the percentage of boards in which the chairman is not the CEO is 90%, and the percentage of audit committees in which the majority of directors are independent is 84%; the percentage of audit committees that do not include a CSH or a CSH dependent is not negligible at 60%.

The fact that the firm-level reforms were adopted early by some of the firms may be useful in examining the effect of CG legislation on firm performance in future research (see Choi, Fisch, Kahan, and Rock, 2016).

Overall, the year-to-year comparison I have performed shows that the legal reforms examined had an impact on CGI scores. For all that, the effects of the financial-statements-committee reform and of Amendment 20 were greater than the effect of Amendment 16, which was adopted early by larger percentage of firms.

### *The effect of voluntary improvements on CGI scores*

Each of the firm-level reforms discussed above affected all firms concomitantly. Hence, I would expect a significant change in the average CGI scores in the year after each reform went into effect. By contrast, at any given time, voluntary CG improvements are usually undertaken by only a small proportion of firms, and hence, the effect of these changes on yearly average CGI scores is expected to be weaker. Thus, based on a year-to-year comparison, the difference between average CGI scores that stems from voluntary CG improvements, is expected to be statistically insignificant. However, insofar as the trend of voluntary CG improvements undertaken by firms is sustained over the years, I expect it to yield a significant difference in the average CGI scores between the beginning and the end of the sample period (henceforth “beginning-to-end comparison”). In this section, I examine whether and to what extent the CGI components outside the scope of the firm-level reforms changed during the sample period.

In Figures 1.6–1.10, I show that, based on a beginning-to-end comparison, the average scores of all the board committees, as well as that of the “full board,” underwent a statistically significant increase. The “full-board” score was not directly affected by the firm-level reforms<sup>21</sup>, yet underwent a statistically significant increase from 52 in 2007 to 57 in 2014 (Figure 1.10). This finding implies that the longitudinal increase in CGI scores is driven not only by mandatory legal reforms but also by voluntary CG improvements implemented by the firms.

Next, I analyze the effect of voluntary CG improvements on the components that measure board independence and board qualifications that were not targeted by the firm-level reforms. The average value of CG components that measure board independence based on a year-to-year comparison are presented in Figures 3.1–3.5, and on a beginning-to-end comparison – in Figures 3.6–3.10. More specifically, the percentages displayed in Figures 3.1 and 3.6 pertain to outside directors on the board; Figures 3.2 and 3.7 – independent directors on the board; Figures 3.3 and 3.8 – the boards in which the chairman is not a CSH; Figures 3.4 and 3.9 – CSHs or

---

<sup>21</sup> The provision of Amendment 16 that limits the chairman to also serve as CEO is relevant to the full board score. However, as mentioned above, 90% of the firms complied with this provision already in 2009, two years before it went into effect. Hence, I do not consider the enactment of this provision as a factor that impacted the “full board” score.

CSH dependents on the board; and Figures 3.5 and 3.10 – CSH directors who are employed by the firm on whose board they serve.

The improvement in the above components is not statistically significant when measured from one year to the next. Nonetheless, I demonstrate that, based on the beginning-to-end comparison, all of the above components underwent a statistically significant improvement over the years. Specifically, the beginning-to-end comparison shows that the proportion of outside directors on the board increased by 4 percentage points; the percentage of independent directors increased by 13 percentage points; the percentage of boards in which the CSH is not the chairman increased by 16 percentage points<sup>22</sup>; the percentage of directors that are CSHs or CSH dependents decreased by 6 percentage points. The decline in the percentage of CSHs on the board was driven mainly by a decrease of 5 percentage points of directors who are CSHs employed by the firm on whose board they serve. Overall, during the sample period, voluntary CG improvements led to a rise in board independence.

Next, I present the change in the components that measure board qualifications. I examine these values separately for three groups: outside directors, independent directors, and all the directors on the board. For each of these groups I calculate the average percentage of board directors who are financial experts, industry experts, or MBA degree holders.

The results presented in Figures 4.1–4.9 are based on a year-to-year comparison; here, no significant improvement is observable in the values of components that measure board qualifications. However, as displayed in Figure 4.10, a beginning-to-end comparison shows a significant increase in the percentage of outside directors with relevant expertise on the board: the percentage of financial experts, industry experts, and MBA degree holders rose each by 4 percentage points. The percentage of independent board directors with the same expertise rose even more sharply: by 11, 9, and 10 percentage points, respectively (Figure 4.11). As shown in Figure 4.12, the above figures are reflected in a significant overall increase in the percentage of directors who are financial experts and MBA degree holders: by 4 and 7 percentage points, respectively. However, no change is evident in the percentage of directors with industry

---

<sup>22</sup> Fried, Kamar and Yafeh (2019) show that the tendency of CSHs to quit executive positions increased after Amendment 16 went into effect. Accordingly, the post-2011 increase in the percentage of boards in which the CSH is not the chairman could also have been driven by Amendment 16.

expertise – suggesting that industry-expert dependent directors were replaced by equally qualified independent directors.

The change in the components targeting the qualifications of directors on audit committees based on a year-to-year comparison is presented in Figures 5.1–5.4, and on a beginning-to-end comparison – in Figures 5.5–5.6. The beginning-to-end comparison shows that the percentage of outside directors with financial and industry expertise serving on audit committees underwent a significant increase of 5 and 6 percentage points, respectively (Figure 5.5); the parallel figures independent directors are 16 and 13 percentage points, respectively (Figure 5.6).

Finally, I examine whether a change occurred in the intensity of the directors’ working schedules (their “busyness”). Figures 6.1–6.4 present the average number of positions the directors hold in other firms. Based on the beginning-to-end comparison, this measure significantly decreased from 11 in 2007 to 9 in 2014 (Figure 6.4). At the same time, no change is observable in the “busyness” level of either outside or independent directors.

## **8. Conclusions**

In this paper, I present a CG index adjusted to firms with concentrated ownership. Based on this index, I demonstrate that, during the sample years, the CG quality of Israeli firms improved with respect to both board independence and board qualifications. I also show that the changes underlying this improvement are driven by CG legal reforms enacted during the period examined, as well as by voluntary measures implemented by the firms. My findings dovetail with those of Chhaochharia and Grinstein (2007b), who examine the developments in firm-level CG quality among U.S. firms.

The index proposed in this paper is a useful tool for measuring the CG quality in firms with concentrated ownership in Israel and abroad. Accordingly, the CGI and legal reforms that went into effect in Israel in recent years can be used in future research to advance our understanding of the following two questions.

The first is, whether CG quality affects firm performance. Many previous papers have shown a positive correlation between these two variables. However, the analyses presented in most of

such studies are compromised by the endogeneity of CG quality and firm performance, and therefore, they do not show a causal relation between these variables. To address the endogeneity concern, future research can capitalize on the Israeli firm-level reforms as a quasi-natural experiment in order to learn whether high-quality CG improves firm performance. In this regard, it would be fruitful to use the early adopter firms as a control group in a difference-in-differences methodological framework.

The second question that can be probed using the CGI is the relation between firm-level and country-level CG. Are these two substitutes or complements? Several previous papers, exploring the relation between firm-level CG and country-level investor-protection, present inconclusive findings (Klapper and Love, 2004; Durnev and Kim, 2005; Dahya, Dimitrov, and McConnell, 2008; Chen, Chen, and Wei, 2009; Bruno and Claessens, 2010; Renders, Gaeremynck, and Sercu, 2010; Fauver, Hung, Li, and Taboada, 2017; Homanen and Liang, 2018). These studies compare the effect of firm-level CG on firm performance in different countries and examine whether this effect is more pronounced in countries characterized by weak country-level investor protection. However, the quality of firm-level CG in countries with strong investor protection tends to be higher (e.g., Doidge, Karoly, and Stulz, 2007). If the marginal effect of firm-level CG on firm performance is non-linear, such that it decreases with the increase in the quality of firm-level CG, we would expect the effect of firm-level CG on performance to be lower in countries with strong investor protection even if the firm-level and country-level CG are not substitutes. Furthermore, most of these papers that examine the relation between firm-level and country-level CG do not use firm fixed-effects; only part of them use country fixed-effects; and to the best of my knowledge, not a single one uses both firm and country fixed-effects. In other words, these papers fail to control for unobserved firm and country heterogeneity.

Cohen (2020a) takes advantage of investor-protection reforms at the country level in Israel in order to examine the interaction between firm-level and country-level CG over time. Specifically, I test whether the effect of firm-level CG on firm performance in Israel decreased after country-level reforms went into effect. The analysis is performed in a within-country framework, which allows me to rule out alternative explanations for the lower effect of firm-level corporate governance quality on performance, in an environment of high-quality investor-

protection at the country-level. Additionally, the within-country analysis is useful to mitigate endogeneity issues arising from unobserved country heterogeneity. Moreover, the significant longitudinal variation in the CGI scores of Israeli firms have made it possible to use firm fixed-effect regressions to mitigate endogeneity issues arising from unobserved firm heterogeneity.

## References

Agrawal, Anup, and Sahiba Chadha (2005), “Corporate governance and accounting scandals,” *The Journal of Law and Economics* 48(2): 371–406.

Adams, Renée B. (2017), “Boards and the directors who sit on them,” Chapter 6 of *Handbook of the Economics of Corporate Governance*,” edited by B. E. Hermalin and M. S. Weisbach, Elsevier.

Adams, Renée B., Benjamin E. Hermalin, and Michael S. Weisbach (2010), “The role of boards of directors in corporate governance: A conceptual framework and survey,” *Journal of Economic Literature* 48(1): 58–107.

Adams, Renée B., and Daniel Ferreira (2007), “A theory of friendly boards,” *The Journal of Finance* 62(1): 217–250.

Adams, Renée B., Vanitha Rangunathan, and Robert Tumarkin (2016), “Death by committees: An analysis of delegation in corporate boards,” Available at SSRN: [http://ssrn.com/abstract\\_id=2736027](http://ssrn.com/abstract_id=2736027).

Ahern, Kenneth R., and Amy K. Dittmar (2012), “The changing of the boards: The impact on firm valuation of mandated female board representation,” *The Quarterly Journal of Economics* 127(1): 137–197.

Ammann, Manuel, David Oesch, and Markus M. Schmid (2011), “Corporate governance and firm value: International evidence,” *Journal of Empirical Finance* 18(1): 36–55.

Ararat, Melsa, Bernard S. Black, and B. Burcin Yurtoglu (2014), “Corporate governance, business groups, and market value: Time-series evidence from Turkey,” *Northwestern Law & Econ Research Paper* 13-19.

Balasubramanian, Bala, Bernard S. Black, and Vikramaditya Khanna (2010), “The relation between firm-level corporate governance and market value: A case study of India,” *Emerging Markets Review* 11(4): 319–340.

- Bauer, Rob, Nadja Guenster, and Rogér Otten (2004), “Empirical evidence on corporate governance in Europe: The effect on stock returns, firm value and performance,” *Journal of Asset Management* 5(2): 91–104.
- Barak, Ronen and Beni Lauterbach, (2011), “Estimating the private benefits of control from partial control transfers: Methodology and evidence,” *International Journal of Corporate Governance* 2(3–4): 183–200.
- Barclay, Michael J. and Clifford G. Holderness (1989), “Private benefits from control of public corporations,” *Journal of Financial Economics* 25(2): 371–395.
- Bebchuk, Lucian A. and Alma Cohen (2005), “The costs of entrenched boards,” *Journal of Financial Economics*, 78(2): 409–433.
- Bebchuk, Lucian A., Alma Cohen, and Allen Ferrell (2009), “What matters in corporate governance?” *Review of Financial Studies* 22(2): 783–827.
- Bebchuk, Lucian A., and Assaf Hamdani (2009), “The elusive quest for global governance standards,” *University of Pennsylvania Law Review* 165: 1263–1317.
- Bebchuk, Lucian A., and Assaf Hamdani (2016), “Independent directors and controlling shareholders,” *University of Pennsylvania Law Review* 157: 1271–1315.
- Bebchuk, Lucian A., Reinier Kraakman, and George Triantis (2000), “Stock pyramids, cross-ownership, and dual class equity: The mechanisms and agency costs of separating control from cash flow rights.” In Randall K. Morck (ed.), *Concentrated Corporate Ownership*. Chicago: University of Chicago Press, pp. 295–318.
- Becht, Marco, Patrick Bolton, and Ailsa Röell (2003), “Corporate governance and control.” In George M. Constantinides, Milton Harris, and René M. Stulz (eds.), *Handbook of the Economics of Finance*, Volume 1, Part A. Amsterdam: Elsevier, pp. 1–109.
- Beiner, Stefan, Wolfgang Drobetz, Markus M. Schmid, and Heinz Zimmermann (2006), “An integrated framework of corporate governance and firm valuation,” *European Financial Management* 12(2): 249–283.



Berle, Adolf A. and Gardiner C. Means (1933), *The Modern Corporation and Private Property*. New York: Macmillan, pp. 782–785.

Bhagat, Sanjai and Bernard S. Black (2002), “The non-correlation between board independence and long-term firm performance,” *Journal of Corporation Law* 27, 231–274.

Black, Bernard S., Antonio Gledson de Carvalho, and Erica Gorga (2010), “Corporate governance in Brazil,” *Emerging Markets Review* 11(1): 21–38.

Black, Bernard S., Antonio Gledson de Carvalho, Vikramaditya Khanna, Woochan Kim, and Burcin Yurtoglu (2017), “Corporate governance indexes and construct validity,” *Corporate Governance: An International Review* 25(6): 397–410.

Black, Bernard S., Hasung Jang, and Woochan Kim (2006), “Does corporate governance predict firms’ market values? Evidence from Korea,” *Journal of Law Economics and Organization* 22(2): 366–413.

Black, Bernard S. and Woochan Kim (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.

Black, Bernard S., Woochan Kim, Hausang Jang, and Kyung-Suh Park (2015), “How corporate governance affects firm value: Evidence on a self-dealing channel from a natural experiment in Korea,” *Journal of Banking and Finance* 51: 131–150.

Brickley, James A., Jeffrey L. Coles, and Gregg Jarrell (1997), “Leadership structure: Separating the CEO and chairman of the board,” *Journal of Corporate Finance* 3(3): 189–220.

Bruno, Valentina and Stijn Claessens (2010), “Corporate governance and regulation: Can there be too much of a good thing?,” *Journal of Financial Intermediation* 19(4): 461–482.

Carvalho da Silva, André Luiz, and Ricardo Pereira Câmara Leal (2005), “Corporate governance index, firm valuation and performance in Brazil,” *Revista Brasileira de Finanças* 3(1): 1–18.

Cashman, George D., Stuart L. Gillan, and Chulhee Jun (2012), “Going overboard? On busy directors and firm value,” *Journal of Banking & Finance* 36(12): 3248–3259.

Chan, Kam C. and Joanne Li (2008), “Audit committee and firm value: Evidence on outside top executives as expert independent directors,” *Corporate Governance: An International Review* 16(1): 16–31.

Chen, Kevin C. W., Zhihong Chen, and K. C. John Wei (2009), “Legal protection of investors, corporate governance, and the cost of equity capital,” *Journal of Corporate Finance* 15(3): 273–289.

Cheung, Yan Leung, J. Thomas Connelly, Piman Limpaphayom, and Lynda Zhou (2007), “Do investors really value corporate governance? Evidence from the Hong Kong market,” *Journal of International Financial Management & Accounting* 18(2): 86–122.

Chhaochharia, Vidhi and Yaniv Grinstein (2007a), “Corporate governance and firm value: The impact of the 2002 governance rules,” *The Journal of Finance* 62(4): 1789–1825.

Chhaochharia, Vidhi and Yaniv Grinstein (2007b), “The changing structure of US corporate boards: 1997–2003,” *Corporate Governance: An International Review* 15(6): 1215–1223.

Choi, Jongmoo Jay. Sae Woon Park, and Sean Sehyun Yoo (2007), “The value of outside directors: Evidence from corporate governance reform in Korea,” *Journal of Financial and Quantitative Analysis* 42(4): 941–962.

Choi, Stephen J. Jill Fisch, Marcel Kahan, and Edward b. Rock (2016), “Does majority voting improve board accountability,” *The University of Chicago Law review* 83(3): 1119–1180.

Claessens, Stijn, Simeon Djankov, and Larry H. P. Lang (2000), “The separation of ownership and control in East Asian corporations,” *Journal of Financial Economics* 58(1): 81–112.

Cohen, Oded (2020a), “Firm-level and country-level corporate governance: Does one substitute or complement the other?,” *Bank of Israel Discussion Paper*.

Cohen, Oded (2020b), “Does investor protection regulation induce poorly governed firms to go private?,” *Bank of Israel Discussion Paper*.

- Cohen, Jeffrey R., Hoitash Udi, Krishnamoorthy Ganesh, and Wright Arnold M. (2013), “The effect of audit committee industry expertise on monitoring the financial reporting process,” *The Accounting Review* 89(1): 243–273.
- Cremers, KJ Martijn, Lubomir P. Litov, and Simone M. Sepe (2017), “Staggered boards and long-term firm value, revisited,” *Journal of Financial Economics* 126(2): 422–444.
- Dahya, Jay, Orlin Dimitrov, and John J. McConnell (2008), “Dominant shareholders, corporate boards, and corporate value: A cross-country analysis,” *Journal of Financial Economics* 87(1): 73–100.
- Dass, Nishant, Omesh Kini, Vikram Nanda, Bunyamin Onal, Jun Wang (2013), “Board Expertise: Do Directors from Related Industries Help Bridge the Information Gap,” *The Review of Financial Studies* 27(5): 1533-1592.
- DeFond, L. Mark, Rebecca N. Hann, and Xuesong Hu (2005), “Does the market value financial expertise on audit committees of boards of directors,” *Journal of Accounting Research* 43(2): 153–193.
- Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes and Andrei Shleifer (2008), “The law and economics of self-dealing,” *Journal of Financial Economics* 88(3): 430–465.
- Doidge, Craig, G. Andrew Karolyi, and René M. Stulz (2007), “Why do countries matter so much for corporate governance?,” *Journal of Financial Economics* 86(1): 1–39.
- Duchin, Ran, John G. Matsusaka, and Oguzhan Ozbas (2010), “When are outside directors effective,” *Journal of Financial Economics* 96(2): 195–214.
- Durnev, Art and E. Han Kim (2005), “To steal or not to steal: Firm attributes, legal environment, and valuation,” *The Journal of Finance* 60(3): 1461–1493.
- Dyck, Alexander and Luigi Zingales (2004), “Private benefits of control: An international comparison,” *The Journal of Finance* 59(2): 537–600.
- Enriques, Luca, and Paolo Volpin (2007), “Corporate governance reforms in continental Europe,” *Journal of Economic Perspectives* 21(1): 117–140.

Fauver, Larry, Mingyi Hung, Xi Li and Alvaro G. Taboada (2017), “Board reforms and firm value: Worldwide evidence,” *Journal of Financial Economics* 125(1): 120–142.

Ferris, Stephen P., Murali Jagannathan, and Adam C. Pritchard (2003), “Too busy to mind the business? Monitoring by directors with multiple board appointments,” *The Journal of Finance* 58(3): 1087–1111.

Fich, Eliezer M., and Anil Shivdasani (2006), “Are busy boards effective monitors?,” *The Journal of Finance* 61(2): 689–724.

Field Laura, Michelle Lowry, and Anahit Mkrтчyan (2013), “Are busy boards detrimental,” *Journal of Financial Economics* 109(1): 63–82.

Fried, Jesse M., Ehud Kamar, and Yishay Yafeh (2019), “The effect of minority veto rights on controller tunneling.” Forthcoming in the *Journal of Financial Economics*.

Garay, Urbi and Maximiliano González (2008), “Corporate governance and firm value: The case of Venezuela,” *Corporate Governance: An International Review* 16(3): 194–209.

Gompers, Paul A., Joy L. Ishii, and Andrew Metrick (2003), “Corporate governance and equity prices,” *The Quarterly Journal of Economics* 118(1): 107–156.

Hermalin, Benjamin E., and Michael S. Weisbach (2001), “Boards of directors as an endogenously determined institution: A survey of the economic literature,” National Bureau of Economic Research Research Paper 8161.

Himmelberg, Charles P., R. Glenn Hubbard, and Darius Palia (1999), “Understanding the determinants of managerial ownership and the link between ownership and performance,” *Journal of Financial Economics* 53(3): 353–384.

Homanen Mikael and Hao Liang (2018), “Universal corporate governance,” Available at SSRN: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3302216](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3302216).

Jensen, Michael C. and William H. Meckling (1976), “Theory of the firm: Managerial behavior, agency costs and ownership structure,” *Journal of Financial Economics* 3(4): 305–360.

Johnson, Simon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer (2000), “Tunneling,” *American Economic Review* 90(2): 22–27.

Klapper, Leora F. and Inessa Love (2004), “Corporate governance, investor protection, and performance in emerging markets,” *Journal of Corporate Finance* 10(5): 703–728.

Kouwenberg, Roy (2006), “Does voluntary corporate governance code adoption increase firm value in emerging markets? Evidence from Thailand.” DOI: 10.2139/ssrn.958580.

Kuznecovs, Mihails and Sarmistha Pal (2012), “Does corporate governance reform necessarily boost firm performance? Recent evidence from Russia,” IZA Working Paper 11-06.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny (1997), “Legal determinants of external finance,” *The Journal of Finance* 52(3): 1131–1150.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny (1998), “Law and finance,” *Journal of Political Economy* 106(6): 1113–1155.

La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer (1999), “Corporate ownership around the world,” *The Journal of Finance* 54(2): 471–517.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny (2000), “Investor protection and corporate governance,” *Journal of Financial Economics* 58(1): 3–27.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny (2002), “Investor protection and corporate valuation,” *Journal of Finance* 57(3): 1147–1170.

Lauterbach, Beni and Menashe Shahmoon (2010), “How does the quality of corporate governance affect the market value of business firms in Israel?,” *Israel Economic Review* 8(2): 35–65.

Nenove, Tatiana (2003), “The value of corporate voting rights and control: A cross-country analysis,” *Journal of Financial Economics* 68(3): 325–351.

Rechner, Paula L., and Dan R. Dalton (1991), “CEO duality and organizational performance: A longitudinal analysis,” *Strategic Management Journal* 12(2): 155–160.

Renders, Annelies, Ann Gaeremynck, and Piet Sercu (2010), “Corporate-governance ratings and company performance: A cross-European study,” *Corporate Governance: An International Review* 18(2): 87–106.

Shleifer, Andrey and Robert W. Vishny (1997), “A survey of corporate governance,” *The Journal of Finance* 52(2): 737–783.

Wang, Cong, Fei Xie, and Min Zhu (2015), “Industry expertise of independent directors and board monitoring,” *Journal of Financial and Quantitative Analysis* 50(5): 929–962.

Yang, Tina, and Shan Zhao (2014), “CEO duality and firm performance: Evidence from an exogenous shock to the competitive environment,” *Journal of Banking & Finance* 49: 534–552.

Zhang, Ivy Xiyang (2005), “Economic consequences of the Sarbanes-Oxley Act of 2002,” *Journal of Accounting and Economics* 44(1–2): 74–115.

**Table 1. Israeli Corporate Governance Reforms in 2007–2014**

<b>Reform</b>	<b>Year</b>	<b>Provisions</b>
Financial Statements Committee Reform	2010	The reform requires public firms to establish a financial statements committee. The financial statements committee is responsible for advising the board on critical issues that arise in the course of preparing financial statements, including the accounting policy adopted by the firm; completeness of disclosure; assessments used in preparing financial statements; the reasonability of the assumptions underlying asset or debt valuations; and internal auditing activities relevant to preparing financial statements.
Amendment 16	2011	The reform intends to improve board and audit committee independence by restricting the chairman from serving as the firm's CEO; requiring the audit committee's chairman to be an outside director; requiring all outside directors to serve on the audit committee; requiring the majority of directors on the audit committee to be independent; and prohibiting dependent directors from serving on the audit committee. <sup>23</sup>
Amendment 20	2012	The reform requires the firm to establish a compensation committee. The compensation committee is responsible for recommending a compensation policy to the board and supervising its implementation. <sup>24</sup>

---

<sup>23</sup> Besides firm-level CG, the reform includes other provisions to prevent tunneling, e.g., it requires the support of the majority of the minority shareholders for approving related-party transactions at the general meeting.

<sup>24</sup> Similar to Amendment 16, this reform also requires the majority of minority support for approving the compensation of non-CSH senior managers in the firm at the general meeting.

**Table 2. The Corporate Governance Index**

<b>Dimension</b>	<b>Component</b>	<b>Score Calculation</b>
<b>Board</b>	Percentage of controlling shareholders on the board <sup>25</sup>	“0” if higher than the median value, “1” otherwise
<b>Independence</b>	Percentage of outside directors on the board	“1” if higher than the median value, “0” otherwise
	The chairman is not a controlling shareholder	“1” if true, “0” otherwise
	The chairman is not the CEO	“1” if true, “0” otherwise
	The controlling shareholder is not a senior executive in the firm	“1” if true, “0” otherwise
	Percentage of outside directors on the audit committee	“1” if higher than the median value, “0” otherwise
	Controlling shareholder does not serve on the audit committee <sup>25</sup>	“1” if true, “0” otherwise
	Financial statements committee exists	“1” if true, “0” otherwise
	Percentage of outside directors on the financial statements committee	“1” if higher than the median value, “0” otherwise
	Controlling shareholder does not serve on the financial statements committee <sup>25</sup>	“1” if true, “0” otherwise
	Compensation committee exists	“1” if true, “0” otherwise
	Percentage of outside directors on the compensation committee	“1” if higher than the median value, “0” otherwise
	Controlling shareholder does not serve on the compensation committee <sup>25</sup>	“1” if true, “0” otherwise
	No senior manager on the compensation committee	“1” if true, “0” otherwise
	Nomination committee exists	“1” if true, “0” otherwise
Corporate governance committee exists	“1” if true, “0” otherwise	
<b>Board</b>	Percentage of financial expert directors on the board	“1” if higher than the median value, “0” otherwise
<b>Qualifications</b>	Percentage of industry expert directors on the board	“1” if higher than the median value, “0” otherwise
	Percentage of MBA directors on the board	“1” if higher than the median value, “0” otherwise
	Directors’ busyness level	“0” if higher than the median value, “1” otherwise
	Percentage of financial expert outside directors on the board	“1” if higher than the median value, “0” otherwise
	Percentage of industry expert outside directors on the board	“1” if higher than the median value, “0” otherwise
	Percentage of MBA outside directors on the board	“1” if higher than the median value, “0” otherwise
	Outside directors’ busyness level	“0” if higher than the median value, “1” otherwise
	Percentage of financial expert outside directors on the audit committee	“1” if higher than the median value, “0” otherwise
	Percentage of industry expert outside directors on the audit committee	“1” if higher than the median value, “0” otherwise
	Percentage of financial expert outside directors on the financial statements committee	“1” if higher than the median value, “0” otherwise
	Percentage of industry expert outside directors on the financial statements committee	“1” if higher than the median value, “0” otherwise
	Percentage of financial expert outside directors on the compensation committee	“1” if higher than the median value, “0” otherwise
	Percentage of industry expert outside directors on the compensation committee	“1” if higher than the median value, “0” otherwise
	<b>Structural</b>	Control-cash flow wedge
<b>Ownership</b>		

The table describes the components of the CGI. The index contains 31 components that measure three dimensions of CG quality: board independence, board qualifications, and control-cash flow wedge. All the components, excluding control-cash flow wedge, are assigned a value of 0 or 1. The control-cash flow wedge is calculated as the difference between 100% and the percentage of multiplied ownership rights along the ownership chain until the ultimate owner. The score of the control-cash flow wedge is the controlling shareholder’s ownership rights. The CGI score for a specific firm, is calculated as an equally weighted average of the components’ scores. A director with financial expertise is defined as one of the following: a director who has a Ph.D. in finance, an accountant, a director who holds or has held a senior financial position, or a director who manages or has managed a financial institution. An industry expert director is defined as a director who has a formal education or practical experience relevant to a firm’s business. A director’s busyness level is measured as the sum of the positions she holds in other firms. Controlling shareholder is a shareholder who holds at least 25% of a firm’s shares. Several shareholders between whom there is a control agreement that their holdings will sum up to 25% are considered a single controlling shareholder.

<sup>25</sup>In calculating this component for a specific firm, I consider the directors that work in another firm that is controlled by the controlling shareholder as controlling shareholders.



**Table 3. Yearly Samples**

	<b>Initial sample</b>	<b>Number of firms that went public after year t</b>	<b>Number of firms that went private until year t</b>	<b>Final sample</b>
2007	120	6	0	114
2008	120	5	0	115
2009	120	4	1	115
2010	120	0	2	118
2011	120	0	12	108
2012	120	0	18	102
2013	120	0	26	94
2014	120	0	28	92

The table presents the yearly samples used in this study. I started with a group of 248 Israeli firms traded on the TA 100 Index or the TA MidCap Index for at least some of the years from 2007 to 2014. I remove from the sample 32 financial firms, 65 dual firms, five firms characterized by dispersed ownership structures, 15 partnerships, seven firms that went public after 2010 for them I am not able to calculate the CGI scores before the firm-level reforms, and four firms for which there was not sufficient data to calculate their CGI scores. Ultimately, I obtained an initial sample of 120 firms. For each of the sample years, I deducted from the initial sample firms that went public during after the given sample year, and firms that went private before the given sample year.

**Table 4: Cronbach's Alpha for the CGI**

	<b>Cronbach's <math>\alpha</math></b>	<b>Average Correlation</b>
<b>2007</b>	0.716	0.088
<b>2008</b>	0.687	0.078
<b>2009</b>	0.712	0.090
<b>2010</b>	0.728	0.090
<b>2011</b>	0.729	0.094
<b>2012</b>	0.670	0.072
<b>2013</b>	0.745	0.101
<b>2014</b>	0.779	0.119

The table presents the Cronbach's alpha of the CGI and the average correlation between the components of the CGI in each of the sample-years. The Cronbach's alpha measure is defined as  $\alpha = \frac{n*r}{1+(n-1)*r}$  where  $n$  is the number of components in the CGI and  $r$  is the average correlation between these components. The CGI is the corporate governance index I construct in this paper.

**Table 5.1. Correlations between the Scores of the CGI Dimensions in 2007**

	Independence	Qualifications	Structural Ownership
Independence	1.000		
Qualifications	<b>0.335***</b>	1.000	
Structural Ownership	0.162*	0.111	1.000

**Table 5.2. Correlations between the Scores of the CGI Dimensions in 2008**

	Independence	Qualifications	Structural Ownership
Independence	1.000		
Qualifications	0.253*	1.000	
Structural Ownership	<b>0.226**</b>	0.062	1.000

**Table 5.3. Correlations between the Scores of the CGI Dimensions in 2009**

	Independence	Qualifications	Structural Ownership
Independence	1.000		
Qualifications	<b>0.249***</b>	1.000	
Structural Ownership	0.171*	0.049	1.000

**Table 5.4. Correlations between the Scores of the CGI Dimensions in 2010**

	Independence	Qualifications	Structural Ownership
Independence	1.000		
Qualifications	0.171*	1.000	
Structural Ownership	0.110	-0.025	1.000

**Table 5.5. Correlations between the Scores of the CGI Dimensions in 2011**

	Independence	Qualifications	Structural Ownership
Independence	1.000		
Qualifications	<b>0.376***</b>	1.000	
Structural Ownership	0.098	0.013	1.000

**Table 5.6. Correlations between the Scores of the CGI Dimensions in 2012**

	Independence	Qualifications	Structural Ownership
Independence	1.000		
Qualifications	<b>0.322***</b>	1.000	
Structural Ownership	-0.017	-0.037	1.000

**Table 5.7. Correlations between the Scores of the CGI Dimensions in 2013**

	Independence	Qualifications	Structural Ownership
Independence	1.000		
Qualifications	<b>0.375***</b>	1.000	
Structural Ownership	0.080	0.020	1.000

**Table 5.8. Correlations between the Scores of the CGI Dimensions in 2014**

	Independence	Qualifications	Structural Ownership
Independence	1.000		
Qualifications	<b>0.326***</b>	1.000	
Structural Ownership	<b>0.206**</b>	-0.022	1.000

**Table 6. General Description of CG Indexes<sup>26</sup>**

(1) Paper	(2) Country	Index			(6) Abbreviation
		(3) Components	(4) Dimensions	(5) Aggregation	
Klapper and Love (2004) <sup>27</sup>	24 emerging markets	57	7	Discretionarily weighted	K.L.
Carvalho and Leal (2005)	Brazil	24	4	Equally weighted	C.L
Beiner, Drobetz, Schmid, and Zimmerman (2006)	Switzerland	38	5	Equally weighted	B.D.S.Z.
Black, Jang, and Kim (2006)	Korea	39	5	Equally weighted	B.J.K.
Kouwenberg (2006)	Thailand	27	15	Discretionarily weighted	K.O.
Cheung, Connelly, Limpaphayom, and Zhou (2007)	Hong Kong	86	5	Discretionarily weighted	C.C.L.Z.
Garay, Maximiliano, and González (2008)	Venezuela	17	4	Equally weighted	G.M.G.
Balasubramanian, Black, and Khanna (2010)	India	49	9	Equally weighted	B.B.K.
Lauterbach and Shahmon (2010)	Israel	19	4	Equally weighted	L.S.
Black, de Carvalho, and Gorga (2010)	Brazil	41	7	Equally weighted	B.C.G.
Ammann, Oesch, and Schmid (2011)	23 developed countries	64	6	Equally weighted; PCA	A.O.M.S.
Ararat, Black, and Yurtoglu (2014)	Turkey	46	5	Equally weighted; PCA	A.B.Y.
Cohen (2020) (present paper)	Israel	31	3	Equally weighted; PCA	C.G.I.

The table shows general details about the CGI and other CG indexes included in the comparison group. The CGI is the corporate governance index constructed in this paper. The comparison group contains 12 corporate governance indexes proposed in previous papers.

<sup>26</sup> I do not include in the comparison group papers based on the Deminor Rating corporate governance index (e.g., Bauer, Gunster, and Otten, 2004; Renders, Gaeremynck, and Sercu, 2010), because these papers do not describe the composition of the index they use. Similarly, I do not include papers that measure only one dimension of firm-level CG quality or papers that rely solely on S&P disclosure and a transparency index (e.g., Kuznecovs and Pal, 2012).

<sup>27</sup> The index is based on data collected by Credit Lyonnais Securities Asia (CLSA). Other papers using indexes based on CLSA data are Durnev and Kim (2005), Doidge, Karolyi, and Stulz (2007), and Chen, Chen, and Wei (2009).

**Table 7. Sample Characteristics of CG Indexes**

(1)	(2)	(3)	(4)	(5)	(6)
Paper	Period	Observations	Panel Sample	Voluntarily Disclosed Data	Subjective Components
K.L.	1999	374 firms	No	Yes	28%
C.L.	1998, 2000, 2002	240 firms	Yes	No	0%
B.D.S.Z.	2002	120 firms	No	Yes	13%
B.J.K.	2001	515 firms	No	Yes	3%
K.O.	2002	320 firms	No	No	26%
C.C.L.Z.	2002	168 firms	No	No	22%
G.M.G.	2004	33 firms	No	No	0%
B.B.K.	2005	296 firms	No	Yes	0%
L.S.	2005	173 firms	No	No	0%
B.C.G.	2004	66 firms	No	Yes	0%
A.O.M.S.	2003–2007	6,663 firm-years	Yes	Yes	0%
A.B.Y.	2006–2012	196 firms; 1,126 firm-years	Yes	No	0%
C.G.I.	2007–2014	810 firm-years	Yes	No	0%

The table describes the sample characteristics used for calculating governance scores in the present paper and in previous papers included in the comparison group. Columns 2–4 show the sample period in each of the papers, the number of observations, and the type of sample (panel or cross-sectional), respectively. Column 5 shows whether the data used to calculate the governance scores is voluntarily disclosed. I define voluntarily disclosed data as data collected from surveys distributed to firms or data the authors obtained from analysts. Column 6 shows the percentage of subjective components in each of the indexes. The CGI is the corporate governance index I construct in this paper. The comparison group contains 12 corporate governance indexes proposed in previous papers.

**Table 8. Dimensions Measured by CG Indexes**

(1) Paper	CG Dimensions							
	(2) Total Non-CG	(3) Outcome	(4) CSR and Ethics	(5) Total CG	(6) Audit & Control	(7) Disclosure	(8) Minority Shareholders' Rights	(9) Ownership Structural
K.L.	40%	28%	12%	60%	32%	19%	5%	4%
C.L.	8%	8%	0%	92%	33%	21%	13%	25%
B.D.S.Z.	3%	3%	0%	97%	32%	44%	18%	3%
B.J.K.	3%	3%	0%	97%	77%	8%	9%	3%
K.O.	7%	0%	7%	93%	45%	26%	22%	0%
C.C.L.Z.	13%	7%	6%	87%	30%	35%	15%	7%
G.M.G.	6%	6%	0%	94%	35%	23%	12%	24%
B.B.K.	16%	14%	2%	84%	64%	18%	2%	0%
L.S.	25%	15%	10%	75%	60%	10%	5%	0%
B.C.G.	5%	3%	2%	95%	51%	27%	2%	15%
A.O.M.S.	39%	30%	9%	61%	33%	3%	9%	16%
A.B.Y.	4%	0%	4%	96%	29%	54%	4%	9%
C.G.I.	0%	0%	0%	100%	96%	0%	0%	4%

In this table, I analyze the components of the CGI and of the other indexes included in the comparison group in terms of the dimensions they measure. Columns 2–4 show the percentage of the components that do not measure investor-protection quality in each of the indexes and Columns 5–9 present the percentage of the components that measure investor-protection quality. Specifically, Column 2 shows the total percentage of the components that do not measure investor-protection quality; Column 3 shows the percentage of components that measure outcomes related to corporate governance quality; Column 4 shows the percentage of components that measure Corporate Social Responsibility and ethics; Column 5 shows the total percentage of the components that measure investor-protection quality in each of the indexes; Column 6 reports the percentage of components that measure the quality of audit and control; Column 7 shows the percentage of components that measure the quality of disclosure; Column 8 shows the percentage of components that measure the minority shareholders' rights; and Column 9 shows the percentage of component that are relevant to ownership structure. The CGI is the corporate governance index I construct in this paper. The comparison group contains 12 corporate governance indexes proposed in previous papers.

**Table 9. Audit & Control Dimensions**

(1)	(2)	(3)	(4)
Paper	Independence	Qualifications	General Procedures
K.L.	25%	0%	7%
C.L.	25%	0%	8%
B.D.S.Z.	20%	0%	13%
B.J.K.	62%	3%	13%
K.O.	33%	0%	11%
C.C.L.Z.	24%	1%	5%
G.M.G.	30%	0%	6%
B.B.K.	45%	0%	18%
L.S.	40%	10%	10%
B.C.G.	37%	0%	15%
A.O.M.S.	27%	0%	6%
A.B.Y.	27%	0%	2%
C.G.I.	57%	43%	0%

In this table, I analyze the components that measure the quality of the audit & control mechanisms in the CGI and in the other indexes included in the comparison group. Column 2 shows the percentage of components that measure the independence of the persons who serve on the audit & control mechanisms; Column 3 shows the percentage of components that measure the qualifications of the persons who serve on the audit & control mechanisms; and Column 4 shows the percentage of components that measure general procedures of the audit & control mechanisms. The CGI is the corporate governance index I construct in this paper. The comparison group contains 12 corporate governance indexes proposed in previous papers.

**Table 10. The Characteristics of the Typical Board**

	Mean	Median	Lowest	Highest	S.D.
Size	8.1	8.0	4.0	16.0	2.3
Age	57.0	57.3	41.3	69.8	5.1
Board's busyness	8.6	10	1.4	28.1	5.1
Outside directors' busyness	5.7	5.3	0	23.5	3.2
Independent directors' busyness	5.8	5.3	0	23.5	3.2
Percentage of firms in which the chairman is not a controlling shareholder	30.7	0	#	#	#
Percentage of firms in which the chairman is not the CEO	93.2	0	#	#	#
Percentage of controlling shareholders and controlling shareholder-dependents on the board	47.5	50	10	90.0	15.1
Percentage of controlling shareholders on the board	31.0	28.6	0.0	90.0	18.2
Percentage of controlling shareholder-dependents on the board	16.5	14.3	0.0	71.4	15.2
Percentage of firms in which a shareholder, that is not a controlling shareholder, serves on the board	17.5	0	#	#	#
Percentage of executive directors on the board	12.0	0.0	0.0	71.4	15.4
Percentage of executive directors that are controlling shareholders on the board	8.7	0.0	0.0	66.7	13.9
Percentage of executive directors that are non-controlling shareholder on the board	3.3	0.0	0.0	40.0	7.0
Percentage of outside directors on the board	27.5	25.0	7.1	50.0	8.2
Percentage of independent directors on the board	35.4	33.3	12.5	83.3	12.5
Percentage of financial experts on the board	45.3	42.9	0.0	100	19.6
Percentage of industry experts on the board	69.8	71.4	0.0	100	17.9
Percentage of directors with MBA degree on the board	30.4	28.6	0.0	80.0	17.6
Percentage of outside directors with financial expertise on the board	16.6	14.3	0.0	60.0	10.3
Percentage of outside directors with industry expertise on the board	11.3	11.1	0.0	75.0	11.0
Percentage of outside directors with MBA degree on the board	9.4	9.1	0.0	60.0	10.5
Percentage of independent directors with financial expertise on the board	21.2	20.0	0.0	75.0	13.2
Percentage of independent directors with industry expertise on the board	14.9	14.3	0.0	75.0	13.8
Percentage of independent directors with MBA degree on the board	12.6	12.5	0.0	60.0	12.3
Percentage of outside directors on the audit committee	64.6	66.7	33.3	100	10.3
Percentage of independent directors on the audit committee	78.3	66.7	33.3	100	17.8
Percentage of outside directors with financial expertise on the audit committee	38.9	33.3	0.0	100	21.1
Percentage of outside directors with industry expertise on the audit committee	26.6	33.3	0.0	100	25.0
Percentage of independent directors with financial expertise on the audit committee	47.1	33.3	0.0	100	24.7
Percentage of independent directors with industry expertise on the audit committee	32.4	33.3	0.0	100	29.0
Percentage of firms in which controlling shareholders or controlling shareholder-dependents serve on the audit committee	26.9	0.0	#	#	#
Percentage of firms in which a financial statements committee exists	79.0	100	0.0	100	40.7
Percentage of firms in which a compensation committee exists	40.5	0.0	0.0	100	49.1

The table presents the average values of the characteristics of the typical board of directors in my sample during the years 2007–2014. *Size* is the number of directors on a firm-year board. *Age* is the age of the directors on a firm-year board. A director's busyness level is measured as the sum of the positions she holds in other firms. A director with financial expertise is defined as one of the following: a director who has a Ph.D. in finance, an accountant, a director who holds or has held a senior financial position, or a director who manages or has managed a financial institution. A director with industry expertise is defined as a director who has a formal education or practical experience relevant to a firm's business. Controlling shareholder is a shareholder who holds at least 25% of a firm's shares. Several shareholders between whom there is a control agreement that their holdings will sum up to 25% are considered a single controlling shareholder. Controlling shareholder-dependents are directors that hold positions in other firms that are controlled by the controlling shareholder.

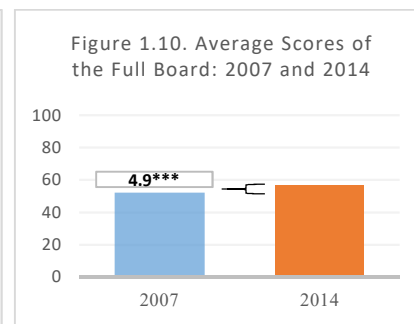
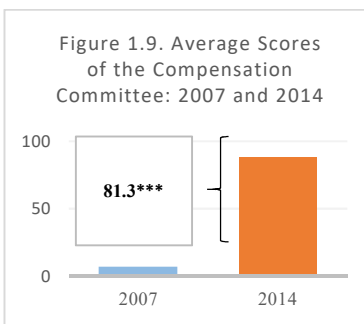
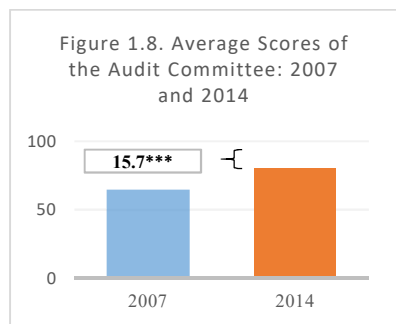
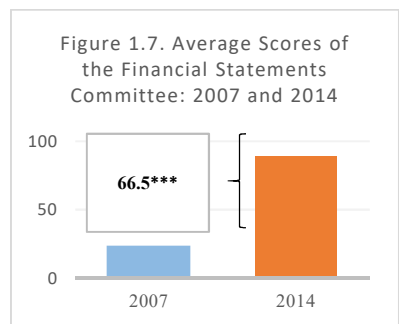
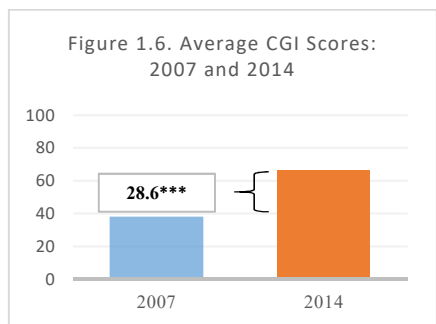
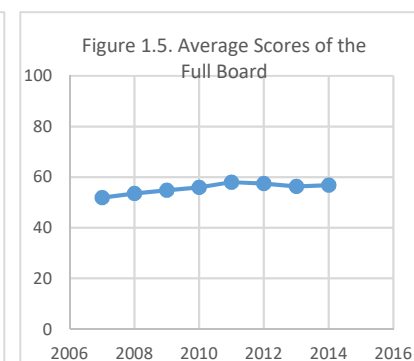
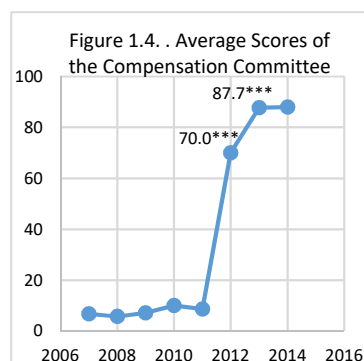
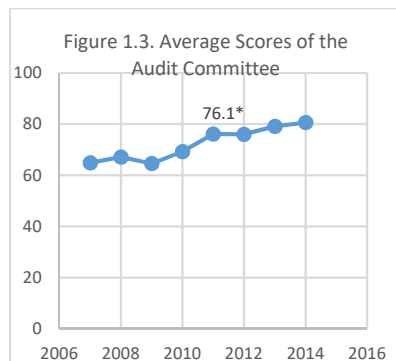
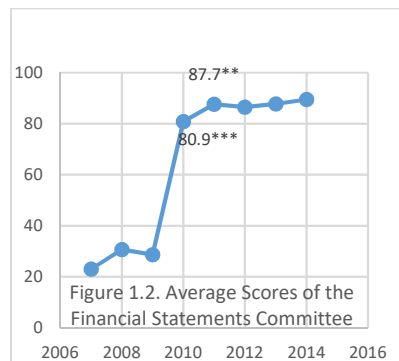
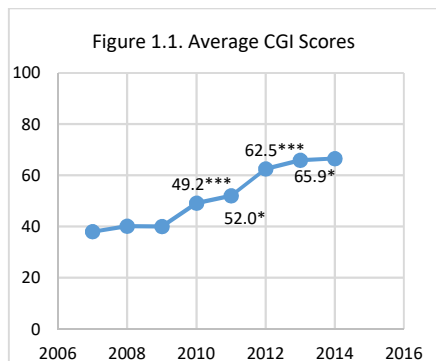


**Table 11. Descriptive Statistics of CGI Scores**

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	N	Mean	Median	Standard Deviation	Min	Max
2007	114	38.0	38.0	12.1	13.0	70.1
2008	115	40.2	38.5	11.3	13.3	69.9
2009	115	40.1	40.6	11.9	16.3	69.6
2010	118	<b>49.2***</b>	50.4	11.1	15.4	73.4
2011	108	52.0*	55.0	11.1	18.9	72.4
2012	102	<b>62.5***</b>	63.2	13.1	19.8	88.6
2013	94	65.9*	68.0	11.8	26.9	84.8
2014	92	66.6	69.7	11.8	26.9	84.8

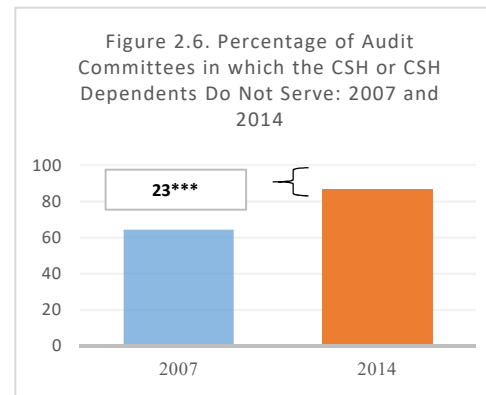
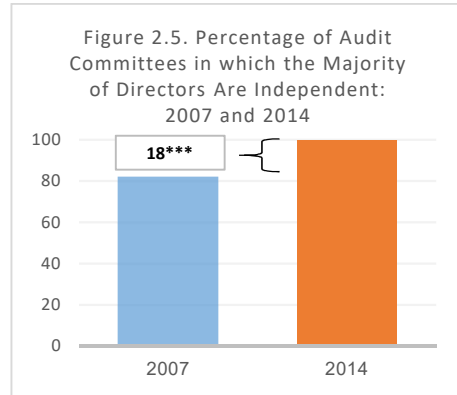
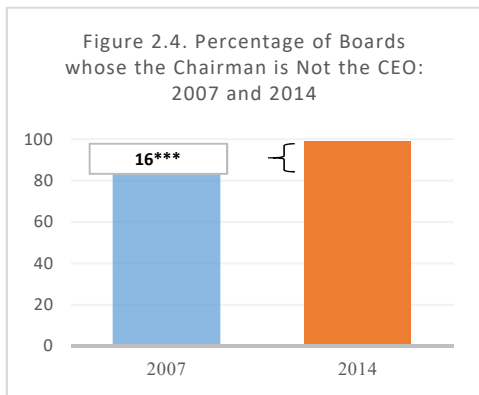
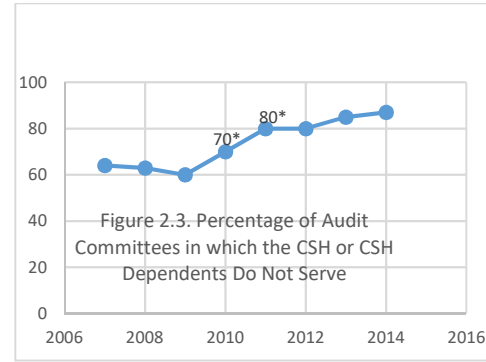
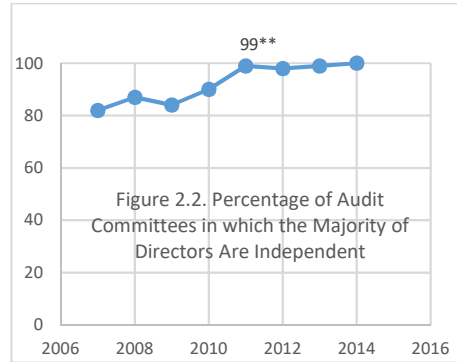
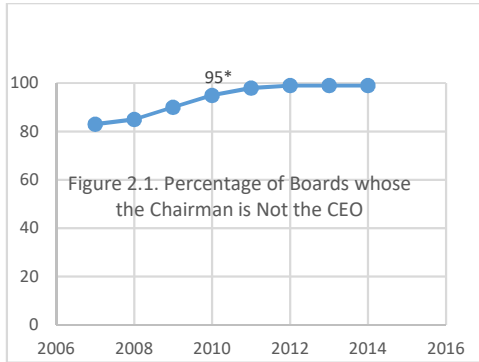
The table presents descriptive statistics of the CGI scores for each of the sample years. A mean CGI score in year  $t$  that is significantly different from the score in  $t-1$  of 1%, 5%, and 10% is indicated by \*\*\*, \*\*, \*, respectively. A significantly different mean CGI score of 5% and 1% is shown in bold. The CGI is the corporate governance index I construct in this paper.

## Figures 1.1–1.10. The Evolution of the Average CGI Scores



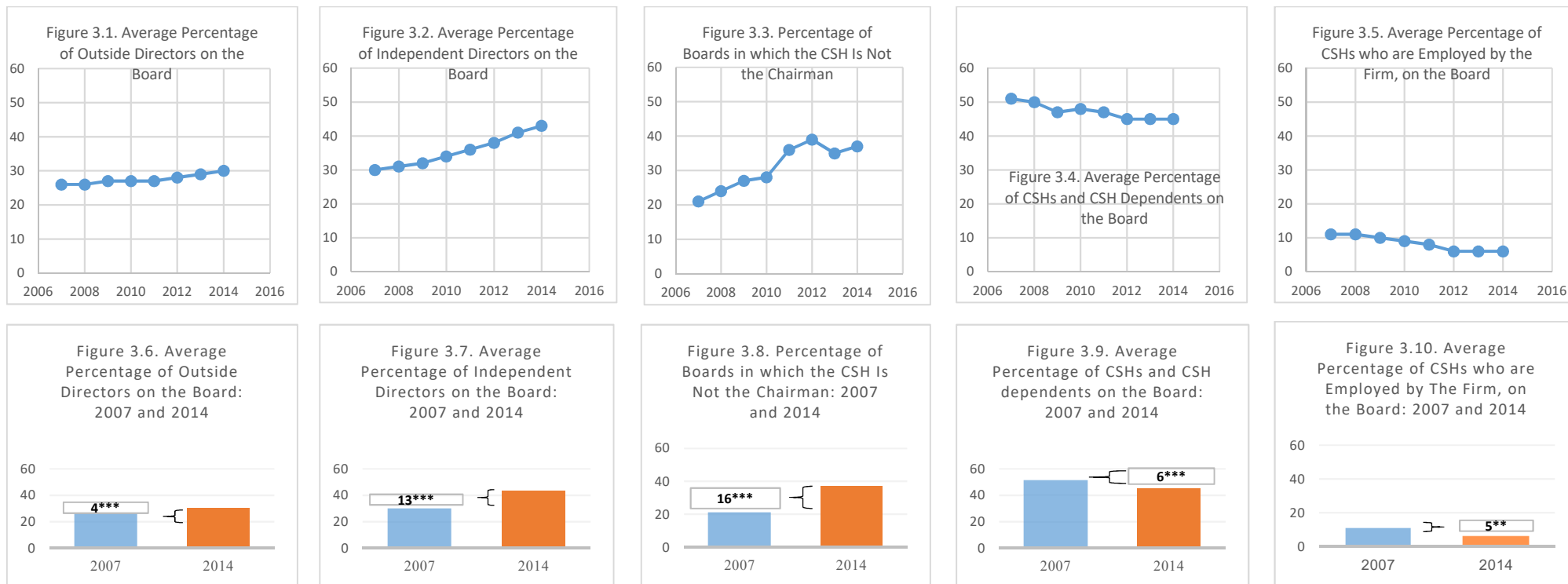
Figures 1.1–1.5 show the yearly average scores of the CGI and a few mechanisms. Figure 1.1 presents the average CGI scores; Figures 1.2–1.4 present the average scores of the financial statements committee, audit committee, and compensation committee, calculated, respectively, as the equally weighted average of the CGI components that measure the quality of the financial statements committee, the audit committee, and the compensation committee; Figure 1.5 presents the Full Board score calculated as the equally weighted average of the CGI components that pertain to the board as a whole rather than to a specific committee; Figures 1.6–1.10 present the differences between the average scores in 2014 and the average scores in 2007. Significance levels of 1%, 5%, and 10% are indicated by \*\*\*, \*\*, \*, respectively. The CGI is the corporate governance index I construct in this paper.

## Figures 2.1 – 2.6. The Evolution of CG Components that Targeted by the Firm-level Reforms



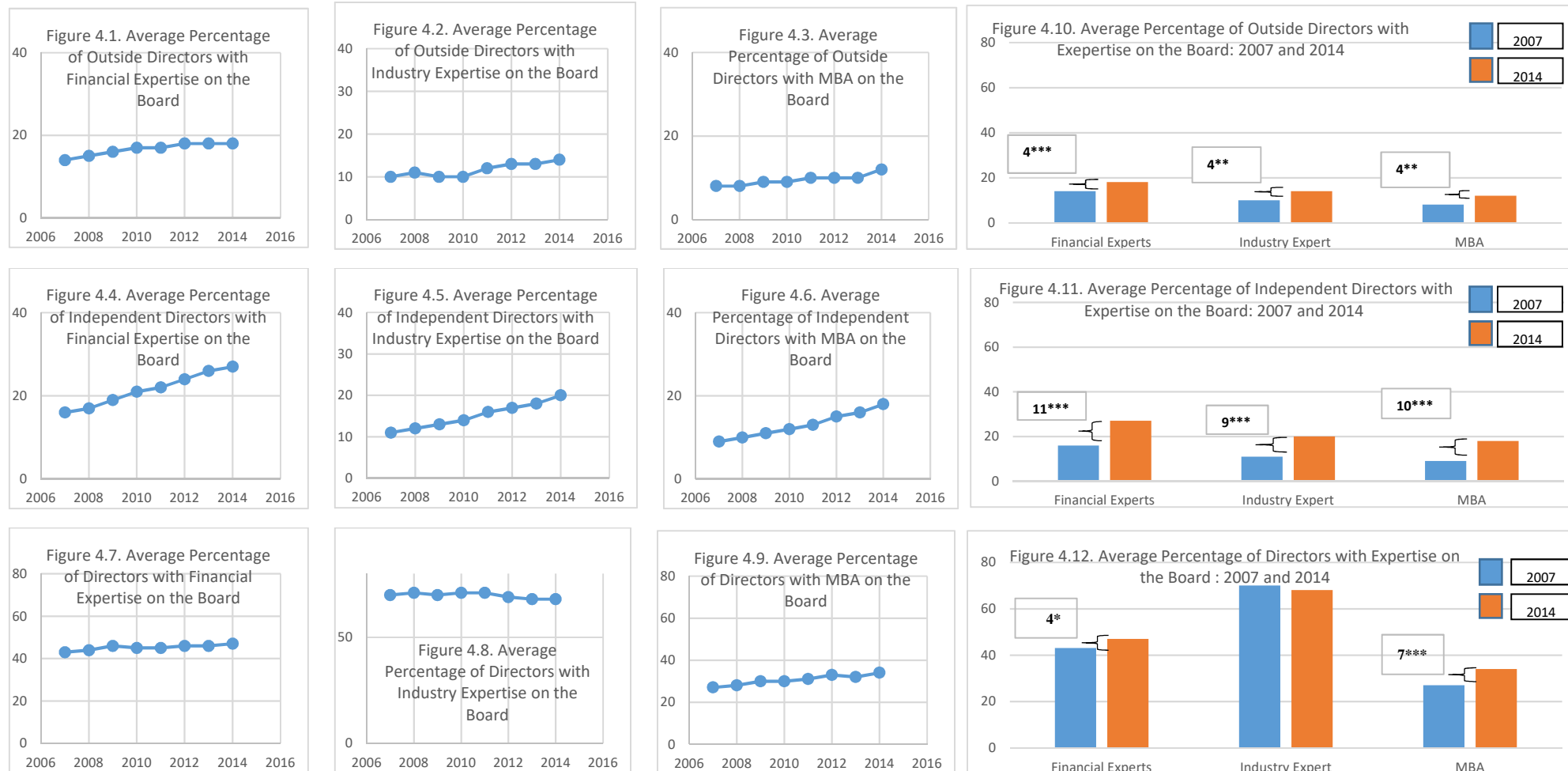
Figures 2.1–2.3 show the percentage of the firms that implemented specific provisions of the firm-level reform (Amendment 16) that went into effect in 2011. Figure 2.1 shows the percentage of firms whose chairman is not the CEO. Figure 2.2 shows the percentage of firms in which the majority of the directors on the audit committee are independent. Figure 2.3 shows the percentage of firms whose controlling shareholder or directors that are dependent on the controlling shareholder, do not serve on their audit committee. Figures 2.4–2.6 show the difference between the values in 2014 and the values in 2007. I consider a director as dependent on the controlling shareholder, if she works in another firm that is controlled by the controlling shareholder. Significance levels of 1%, 5%, and 10% are indicated by \*\*\*, \*\*, \*, respectively. The CGI is the corporate governance index I construct in this paper.

## Figures 3.1–3.10. The Evolution of CG Components that Measure Board Independence



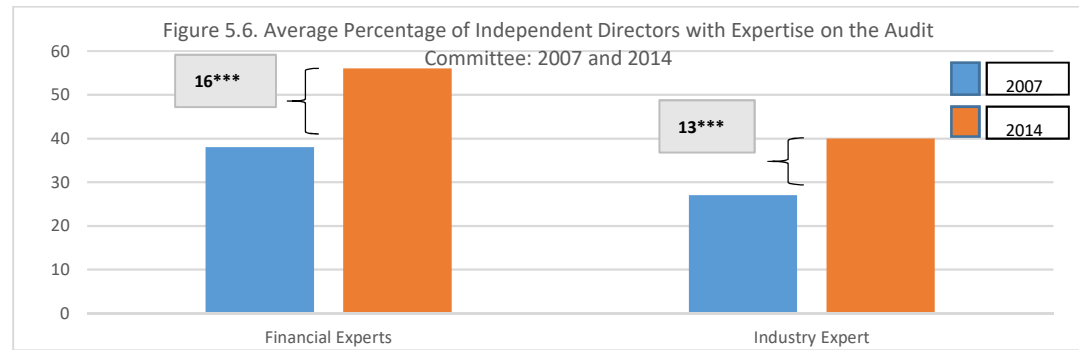
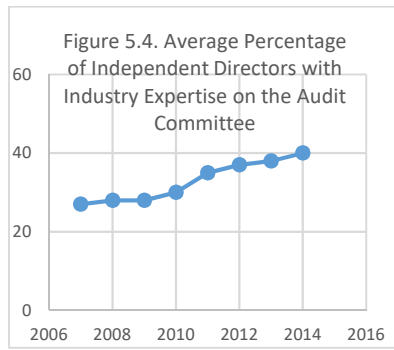
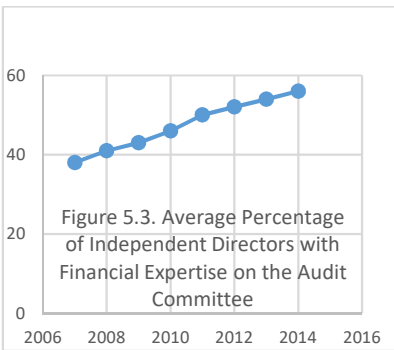
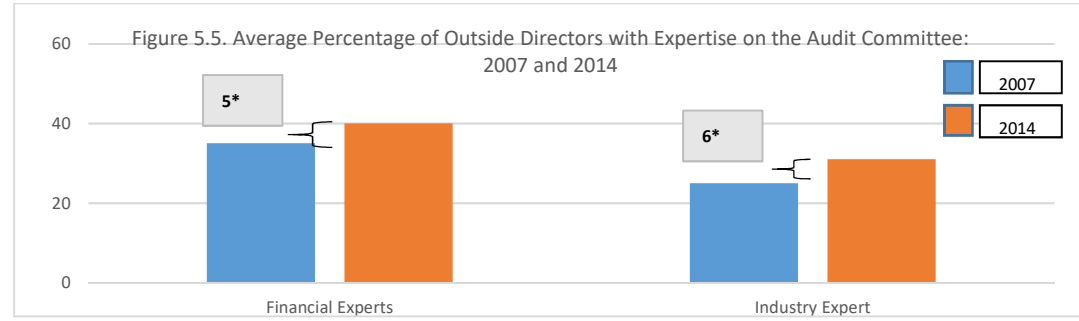
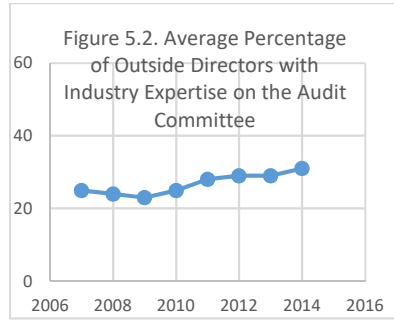
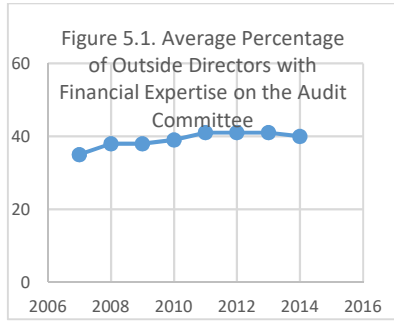
Figures 3.1–3.10 present components, unaffected by the firm-level reforms enacted during the sample years, that measure board independence. Figures 3.1–3.5 show the yearly values of the components. Figure 3.1 shows the average percentage of outside directors on the board; Figure 3.2 shows the average percentage of independent directors on the board; Figure 3.3 shows the percentage of firms in which the chairman is not the controlling shareholder; Figure 3.4 shows the average percentage of controlling shareholders and directors who are dependent on the controlling shareholder on the board; Figure 3.5 shows the average percentage of controlling shareholders on the board who are employed by the firm. Figures 3.6–3.10 show the difference between the values in 2014 and the values in 2007. I consider a director as dependent on the controlling shareholder, if she works in another firm that is controlled by the controlling shareholder. Significance levels of 1%, 5%, and 10% are indicated by \*\*\*, \*\*, \*, respectively. The CGI is the corporate governance index I construct in this paper.

## Figures 4.1–4.12. The Evolution of CG Components that Measure Board Qualifications



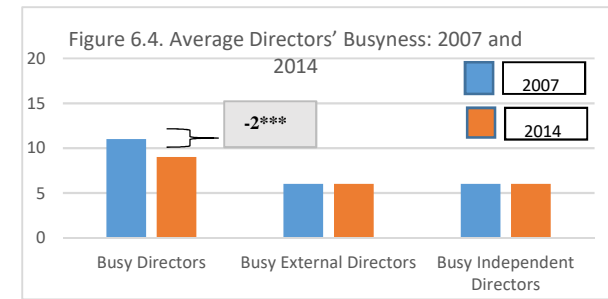
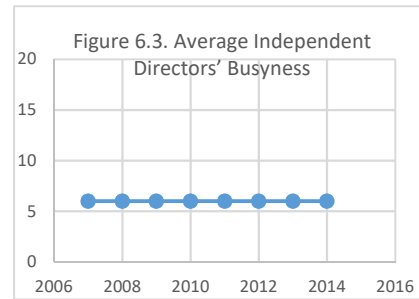
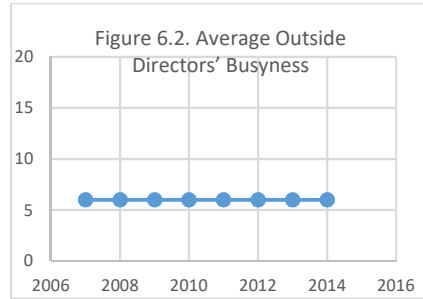
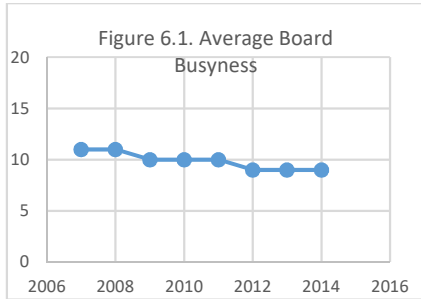
Figures 4.1–4.12 present the components that measure board qualifications. Figures 4.1–4.9 show the yearly value of the components. Figures 4.1–4.3 show the average percentage of outside directors with financial expertise, industry expertise, or MBA degree holders, respectively, on the board. Figures 4.4–4.6 show the average percentage of independent directors with financial expertise, industry expertise, or who are MBA degree holders, respectively, on the board. Figures 4.7–4.9 show the average percentage of directors with financial expertise, industry expertise, or who are MBA degree holders, respectively, on the board. Figures 4.10–4.12 show the difference between the values in 2014 and the values in 2007. A director with financial expertise is defined as one of the following: a director who has a Ph.D. in finance, an accountant, a director who holds or has held a senior financial position, or a director who manages or has managed a financial institution. An industry expert director is defined as a director who has a formal education or practical experience relevant to a firm’s business. Significance levels of 1%, 5%, and 10% are indicated by \*\*\*, \*\*, \*, respectively. The CGI is the corporate governance index I construct in this paper.

## Figures 5.1–5.6. The Evolution of Components that Measure Audit Committee Qualifications



Figures 5.1–5.6 present components that measure the audit committee’s qualifications. Figures 5.1–5.4 show the yearly value of the components. Figures 5.1–5.2 show the average percentage of outside directors with financial expertise and outside directors with industry expertise, respectively, on the audit committee. Figures 5.3–5.4 show the average percentage of independent directors with financial expertise and independent directors with industry expertise, respectively, on the audit committee. Figures 5.5–5.6 show the difference between the values in 2014 and the values in 2007. A director with financial expertise is defined as one of the following: a director who has a Ph.D. in finance, an accountant, a director who holds or has held a senior financial position, or a director who manages or has managed a financial institution. An industry expert director is defined as a director who has a formal education or practical experience relevant to a firm’s business. Significance levels of 1%, 5%, and 10% are indicated by \*\*\*, \*\*, \*, respectively. The CGI is the corporate governance index I construct in this paper.

## Figures 6.1–6.4. The Evolution of Components that Measure Directors’ Busyness Level



Figures 6.1–6.4 present components that measure the directors’ busyness level. Figures 6.1–6.3 show the yearly value of the components. Figure 6.1 shows the average busyness level of the directors on the board, Figure 6.2 shows the average busyness level of the outside directors on the board, and Figure 6.3 shows the average busyness level of the independent directors on the board. Figure 6.4 shows the difference between the values in 2014 and the values in 2007. The busyness level is defined as the sum of the positions the director holds in other firms. Significance levels of 1%, 5%, and 10% are indicated by \*\*\*, \*\*, \*, respectively. The CGI is the corporate governance index I construct in this paper.

