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Boards: Independent and Committed Directors?*

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Abstract

Regulators and shareholders are calling for independent directors. Independent directors, however, have numerous external professional commitments. Using Tobin's Q as an approximation of market valuation and controlling for endogeneity, our empirical analysis reveals that neither external commitments are negatively related to firm performance nor is independence positively related to it. However, more precise analyses show that executive directors and family representatives have a positive relationship with Tobin's Q. In contrast, external executives are negatively correlated with firm valuation. Moreover, the study indicates that the frequency and duration of meetings are negatively affected by the fraction of executive directors on the board. Insiders potentially reduce the need for meetings because of their specialist competence. The results invalidate rules advocating independent directors and oppose the engagement of directors with external commitments.

JEL-Classification: G30; G34; K22

Keywords: Corporate governance; Board of directors; Board independence; Board busyness; External commitments

1

Most economists agree that a board of directors' essential duty is to ensure that a company is led in the shareholders' best interests. The board of directors is positioned between a company's top management and its shareholders who have typically insufficient ownership to influence firm policies. Two important responsibilities of the board of directors are monitoring and advising top management. The first task, which is rooted in agency theory, stresses the importance of the director's role in solving the principal-agent conflict between managers and shareholders (see Jensen and Meckling, 1976; Fama and Jensen, 1983). In this context, the board's "independence" from management is crucial. The second task emphasizes the importance of the director's role providing ties with the external business environment and professional specialist skills (e.g., strategic planning). This latter responsibility is associated with external commitments of directors and is based on resource dependence theory (Pfeffer and Salancik, 1978). These two roles are subject to trade-offs.

The first trade-off relates to the position (or independence) of the board vis-à-vis the top management. Board directors need sufficient information about the daily business of the company to do a proper job. The information asymmetry between the management and the board directors can be reduced by continuing communication of the two parties. Executive directors (insiders) can close this gap. However, a close relationship, friendship or even dependence on the chief executive officer (CEO) and his executive board can impair the board's independence and lead to collusion and conflicts of interest.

For instance, compromised board decisions may involve executives being replaced too late or paid too much, counter to shareholder interests (Adams and Ferreira, 2007). This is particularly difficult where the CEO has a lot of decision-making power as in the nomination of new directors (see Shivdasani and Yermack, 1999). In addition, insiders virtually supervise themselves. As a consequence of these potential imbalances, the influential Sarbanes-Oxley Act (SOX) of 2002 requires that a company's audit committee be composed of independent directors.[1] Also the Swiss Code of Best Practice for Corporate Governance proposes that boards consist of a majority of non-executive directors (Economiesuisse, 2008).

Academics as well as regulators apply specific principles defining board independence. The economic literature traditionally classifies board members as insiders and outsiders (see Hermalin and Weisbach, 2003). Executive directors are commonly defined as being insiders, while non-executive directors are denominated as being outsiders.

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[1]See SOX Section 301(m)(3)(A): "In general — Each member of the audit committee of the issuer shall be a member of the board of directors of the issuer, and shall otherwise be independent." This direct and exogenous impact led to a reduction of insiders on U.S. boards of unregulated firms from 2001 to 2004 (see Linck et al., 2008). Especially small firms with traditionally higher proportions of insiders lowered their rate. Few firms had insider-dominated boards by 2004. Also, board sizes increased due to a higher complexity and requirements of the board.

Nevertheless, not all of these outsiders are independent. Such directors are often referred to as "gray" or "affiliated" directors. As a common rule, directors are considered independent if they are not currently employed by the firm or if a gap of three years has elapsed since previous employment there, and if they have neither financial nor business ties to the corporation (see Economiesuisse, 2008).[2]

The second trade-off is characterized by time constraints imposed by competing allegiances and conflicts of interest imposed by competing commitments, which, however, may provide benefits of business experience and external linkages. The call for independent directors launched in the United States has led to the appointment of directors who have neither financial nor personnel relations to the firm. As a matter of fact, the fraction of such independent directors has risen from 22 percent to 73 percent in the period from 1950 until 2005 in the United States (Gordon, 2007). Accordingly, the fraction of inside directors or gray directors has decreased to 16 and 11 percent, respectively. In consequence, independent "professional" directors may accumulate a significant number of other external mandates, assuming that a directorship is generally not a full-time job. On the one hand, these external engagements may reduce the time allocated to any single directorship. This, in turn, reduces their monitoring capacity and potentially exacerbates the agency problem, raising the agency costs that they were employed to reduce in the first place. On the other hand, experienced directors with multiple mandates provide important linkages to the external environment. In addition, with multiple directorships, directors are not uniquely financially dependent on one single seat for remuneration, thus allowing them more scope to voice their views independently in discussions in the board room (see Schiltknecht, 2009). Such factors may facilitate business in uncertain economic environments. All the same, increasingly governance codes recommend restricting the number of external directorships, as is the case in France or the Netherlands (AFG (2010) and CGCMC (2008)).

In light of regulations and shareholders calling for board independence and a limitation to the number external mandates adopted, the question arises whether such rules improve the effectiveness of the board and as a result, the value of all firms on average. Hence, the examination of these questions has policy implications. A legislation amendment that only improves the governance of specific firms (e.g., large and international banks) may adversely affect and seriously burden other firms. Inappropriate rules restrict the freedom of firms to organize their board structure according to their needs in

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[2]In addition, non-independence can also apply to directors with relations to significant shareholders or directors with a long tenure (see AFEP-MEDEF, 2008). Firms may also employ additional independence criteria. For instance, the Swiss UBS has 13 independence criteria based on the Corporate Governance Listing Standards of the New York Stock Exchange for board members and 16 for members of the audit committee (http://www.ubs.com/1/g/investors/corporategovernance/independencecritteria.html, access on 21/02/2011).

a value-maximizing manner. In short, corporate governance reforms are only beneficial and welfare-improving if the net-effect over all firms is positive.

Therefore, a problem in modern boards lies in the trade-off between the independence and the commitment of external directors. Current research on the topic fails to explicitly connect independence with external commitments. Some do so implicitly by investigating the impact of heavily committed outsiders on firm performance (Ferris et al., 2003; Fich and Shivdasani, 2006). Furthermore, studies use broad proxies for either independence or outside commitment. And finally, most academic papers focus on the U.S. market where ownership is dispersed, requirements for independent directors exigent, and a large pool of directors available.

We address the two issues (independence and external commitment) and examine their effect on firm performance in Switzerland. Swiss firms are an interesting research object for two reasons. Firstly, the legislature allows executives to occupy positions on the board of directors, as is the case in market-oriented governance systems, which are elected by the general assembly ("one-tier board structure"). Thus, a board can consist of executive directors (insiders), as well as outsiders, and the leadership structure can also be combined (where the CEO is also chairman).[3] The Swiss one-tier board structure contrasts the two-tiered board system stipulated in Germany (and other continental European countries) which strictly separates the supervisory board (*"Aufsichtsrat"*) from the management board (*"Vorstand"*). Furthermore, the supervisory board in the German case consists, depending on firm size, partly of representatives of the employees. In a dualistic system, no variance in board composition relating to executive directors can be observed, and consequently, empirical investigations are not possible. In Switzerland such examinations are feasible.

Secondly, the narrow or illiquid market for directors generates low supply of directors. Supply meets demand for the high-profile directorships of many large corporations headquartered in Switzerland. This can lead to close networks of business leaders who meet on several occasions and form a *"culture de l'entre-soi"*. The so-called "old boys network" is and has been an issue in Switzerland (further information on Swiss particularities can be found in the Appendix, Section .1 and Section .2).

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[3]One-tier boards are prevalent in economies that are meant to have an active takeover market and diffuse ownership (particularly the United States). In Anglo-Saxon countries, the board may play a role that is different to non-Anglo-Saxon countries due to differences in the relationship between the top management and shareholders (Gillan et al., 2007; Franks et al., 2001). Nevertheless, please note that most European countries (e.g., France and Italy) have flexible rules regarding the structure of boards. In our case, Switzerland has a strong financial market; however, the market for corporate control is not important and the ownership is rather concentrated. Hence, classical board independence may not be a critical factor in this situation where fewer conflicts of interest exist between the management and the shareholders in general.

Our study uses a host of refined variables to measure independence (12 variables) and external commitments (12 variables). The definitions go beyond the usual classification of independent or externally committed directors made by regulators and academic researchers. In this way, we aim to explain the inconclusive results of past studies that may have been driven by deficits in variable specifications. Furthermore, this breakdown allows us also to examine which factors really drive board structure-performance relationships. In addition, the study explicitly deals with the simultaneity problem: firm performance may affect the independence and the commitment of the board. The paper considers endogeneity issues using Durbin-Wu-Hausman-tests and applying the two-stage least squares method (2SLS). After all, our research findings establish whether investors trust specific types of directors categorized by the extent to which they act in the shareholders' best interests.

1   Literature Review

This section reviews the literature on board independence and commitment. Board independence is associated with the issue of CEO duality[4], and the proportion of outsiders or independent directors on the board. The advantages of board independence are based on agency theory which stresses the need for monitoring. External board commitment is justified by resource dependence theory which underlines the need for external links and the advisory function of the board. The passage on external board commitments includes studies on board members who concurrently exercise directorships, executive positions or political posts.

1.1   Board Independence

The effect of board composition (and independence) on firm performance or company policy (e.g., CEO dismissal) is a researched topic in legal, business, and finance literature. One-tier boards as in the United States or in Switzerland can consist of executives. However, so-called insiders have conflicts of interest because their job includes supervising themselves among other things. Thereby, the proportion of insiders or the extent of CEO duality is expected to negatively influence firm performance. For this reason, shareholders, namely institutional investors, favor independent boards: TIAA-CREF, a large U.S. mutual fund, invests only in firms which have a majority of outside directors, and CalPERS, a large U.S. pension fund, suggests that the CEO should be the only insider on a board (see Bhagat and Black, 1999; Coles et al., 2008). Furthermore, some U.S. stock exchanges such as the NYSE and NASDAQ also require a majority of outside directors;

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[4]Definition: which is the situation when the same person holds both the job of CEO and chairman of the board of a firm.

and last but not least, SOX requires independent audit committees.

The most obvious problem associated with board independence concerns the *leadership structure* of a firm. CEO duality is fervently debated. Dual mandates are widely argued to have a negative impact on firm performance. Accordingly, Bhagat and Bolton (2008) demonstrate in an empirical paper that a separation is beneficial for performance. In contrast, Brickley et al. (1997) find evidence that a separation is detrimental to performance, as it is value-decreasing, and both Baliga et al. (1996) and Schmid and Zimmermann (2008) show that neither the stock price nor performance is affected by a change in the leadership structure. Faleye (2007) explains these results by arguing that the benefits of a separation depend on CEO and firm characteristics.

More generally, research on *board independence* concerns the composition of the board with outside or independent directors. These types of directors are either non-executive directors or independent directors who have no links at all to the firm except for their seat on the board. Outsiders are expected to be more likely to protect the shareholders' interests than insiders would. As evidence of this theory, Weisbach (1988) finds that CEOs of poorly performing firms are more frequently removed by outsider-dominated boards than by insider-dominated boards. In an event-study approach, Rosenstein and Wyatt (1990) find that the announcement of the appointment of outsiders onto the board is met with a positive market response from 1981 to 1985. However, in a subsequent paper, they find a positive market reaction to the appointment of insiders if they own between 5 and 25 percent of the company stock (Rosenstein and Wyatt, 1997). Furthermore, Yermack (1996) finds a negative relationship between outsiders and Tobin's Q in OLS regressions and fixed effects models. Also Agrawal and Knoeber (1996) show that outsiders are negatively related to Tobin's Q in a simultaneous equations framework.

Anderson and Reeb (2004) underline the perception that independent directors represent minority shareholders' interests. In balancing family and minority interests, independent directors add value to family firms and limit the family's opportunity to extract private benefits of control. However, Bhagat and Black (1999) find a negative relationship with firm performance ignoring such issues (i.e., firm characteristics). Both Bhagat and Black (2002) and Bhagat and Bolton (2008) find no correlation with long-term performance, neither does Hermalin and Weisbach (1991) nor Klein (1998) using Tobin's Q nor Dalton et al. (1998) in conducting a meta-analysis using 54 empirical studies.

All these studies investigate U.S. data. However, it is important to remember that empirical results are prone to be influenced by sample firms (e.g., location, industry affiliation, firm size, etc.) and the period of the study (e.g., before or after the introduction of SOX). In addition, in the rest of the world, the ownership structure is usually more concentrated. For instance, Lefort and Urzúa (2008), Choi et al. (2007), and Prevost et al. (2002) all find a positive relationship between outsiders and firm performance in Chile, Korea, and New Zealand, respectively. And both Erickson et al. (2005) and Beiner et al.

(2006) find no relationship using a Canadian and Swiss sample, respectively.

1.2   Directors with External Commitments

The external commitments of directors are the mandates that directors hold outside the board. Expressed in terms of market economics, there is a growth in directors' external commitments or mandates where there is a seller's market for directorships. Fama (1980) and Fama and Jensen (1983) argue that reliable — "good" — supervisors and managerial talent may be rewarded with directorships. However, directors with numerous external mandates may have insufficient time for their board duties owing to over-commitment.

Fich and Shivdasani (2007) find supporting evidence for this view. They reveal that the number of additional directorships that a director has declines if the firm faces shareholder class action lawsuits following financial fraud. Cai et al. (2009) show that shareholders punish lazy directors. Their results indicate that directors are elected by large majorities with voting rights in excess of 90 percent in general. In contrast, incumbent directors who attend fewer meetings receive fewer votes (- 14 percent) at general meetings.

Most empirical studies on *multiple directorships* find that there is a negative relationship with firm performance. Fich and Shivdasani (2006) define so-called "busy boards" as being composed of a majority of outside directors holding three or more directorships. Their results indicate that such boards are negatively related to profitability and market-to-book ratios; additionally, CEO turnover sensitivity to firm performance is lower, as well. Also, Jiraporn et al. (2008) find that directors holding multiple board seats negatively affect firm value. In contrast, Ferris et al. (2003) find no evidence that externally committed directors serve less responsibly and therefore reject policies limiting the number of externally held directorships.

Again, the prevalence of multiple directorships and interlocking directorships is a consequence of the structure of an economy.[5] Studies addressing the issue outside the United States have been conducted in Australia (Kiel and Nicholson, 2006), Chile (Silva et al., 2006), Italy (Di Pietra et al., 2008), the Netherlands (Non and Franses, 2007), and Switzerland (Loderer and Peyer, 2002; Ammann et al., 2005). In these studies, the relationship between externally committed directors and firm performance is positive

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[5]Some countries depict a high intensity of cross-shareholdings. Interlocking generally occurs when two or more directors share board memberships; i.e., a director of firm A sits on the board of firm B and a director of firm B sits on the board of firm A. However, this strategy is not prevalent in Switzerland. Nevertheless, there are some exceptions: Walter Kielholz and Thomas Bechtler both sit on the boards of "Credit Suisse" and "Swiss Re". The same is true for André Kudelski and Claude Smadja ("Edipresse" / "Kudelski") and Werner Henrich and André Mueller ("Addex" / "Actelion"). Furthermore, the boards of "Bank Coop" and "Basler Kantonalbank" are quite similar, because "Basler Kantonalbank" partly owns "Bank Coop" (sharing 66.7 percent of voting rights with Coop).

in Chile and Italy, negative in the Netherlands and Switzerland, while no relationship is found in Australia. These studies directly link the number of directorships to firm performance, suggesting, for instance, that time constraints translate into lower firm valuation.

Nevertheless, one important question is how multiple directorships affect firm performance. An external board members' over-commitment may be indirectly correlated with firm performance. As examples, Jiraporn et al. (2008) and Ahn et al. (2010) find higher diversification and empire-building tendencies if board members are overly committed externally. Both strategies are perceived as value-decreasing activities. Yermack (2006) demonstrates that stock price effects due to major events in one company are transmitted to other companies that share the same director.

There are some types of director that are more common in board rooms. *Politicians*, for example, belong to the usual suspects occupying board seats. While the business skills of such directors may often be questionable, they can, nevertheless, open useful channels to the government's funds and legislators. Recurrent findings illustrate that regulated firms have more directors with a background in politics (Agrawal and Knoeber, 2001; Helland and Sykuta, 2004; Hillman, 2005). Hillman (2005) shows that the fraction of politicians on the board positively affects performance in regulated and unregulated firms. Even though, the effect is stronger in regulated firms. Finally, Goldman et al. (2009) find positive announcement effects of the nomination of politically-connected directors if they are linked to the dominant political party.

Executives, especially CEOs, are other candidates for directorships. According to Lorsch and MacIver (1989), managers know best how to optimally monitor managers. However, some corporate governance codes recommend a maximum number of directorships for executives and CEOs are less likely to serve on boards today than 10 years ago (see Spencer Stuart, 2010).[6] One notorious problem again is the constraint on time, because CEO positions are demanding and time-consuming. Conyon and Read (2006) argue that executives will accept a larger number of external appointments than is optimal for their primary employer. Additionally, conflicts can also occur where directors represent interests of both supply and demand.

Nevertheless, Masulis and Mobbs (2011) prove that inside directors with outside directorships are positively related to market-to-book ratios and operating performance. In addition, event-studies show that the market reaction on the appointment of CEOs (Fich, 2005) and executives from sender firms with low agency problems (Perry and Peyer, 2005) is positive. In contrast, Fahlenbrach et al. (2010) do not find any positive effect of CEOs on firm performance. Their results depict a negative effect if it is an interlocking

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[6]In Germany, corporate managers should not have more than three supervisory board seats from listed corporations (RDCGK, 2010). In France, executives should not have more than four outside directorships (AFEP-MEDEF, 2008).

CEO.

In summary, while provisions for independent boards have been launched by investors and regulators, the empirical evidence supporting board-performance effects is mixed, whether it is concerned with CEO duality or the proportion of independent directors on the board (Schmid and Zimmermann, 2008; Bhagat and Bolton, 2008). With respect to directors' external commitments, our literature review shows that most studies find a negative relationship between the number of directorships and firm performance (Fich and Shivdasani, 2006; Jiraporn et al., 2008). In contrast, the presence of politicians and inside directors with external directorships on boards seems to be value-enhancing (Hillman, 2005; Masulis and Mobbs, 2011). This supports the notion that the board can consist of various types of directors. The optimal composition of the board may not be equal for every firm, thus calling for a consideration of individual firm characteristics. Baysinger and Butler (1985) suggest that various types of directors execute distinct functions on boards. They categorize directors' functions into three board categories: insiders carry out executive functions, independent directors act in a monitoring capacity, and other directors are instrumentally engaged in providing legal counsel.

2 Data Description and Definition of Variables

The Directive on Information Relating to Corporate Governance from the SIX Swiss Exchange requires all listed corporations to disclose relevant information about their directors (SIX Exchange, 2008).[7] This information includes a curriculum vitae, an outline of the director's position vis-à-vis the firm, and a list of their external professional activities.[8] The detailed data provides the basis for this study.

2.1 Data

All firms of the Swiss Performance Index (SPI) with complete annual reports in 2008 excluding "investment companies" and "financial services" were targeted. Therefore, the selection bias is negligible (except that non-listed firms are excluded). The sample thus consists of 197 firms whose annual reports enabled us to hand-collect data on 1,399 directors. Cross-checking the data of directors who hold directorships in two or more listed companies reveals that not all annual reports disclose the same information. The de-

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[7]http://www.six-exchange-regulation.com/download/admission/being_public/governance/scbp_en.pdf (access on 05/04/2010).

[8]"Other activities and functions; For each member of the board of directors: (a) Activities in governing and supervisory bodies of important Swiss and foreign organizations, institutions and foundations under private and public law; (b) Permanent management and consultancy functions for important Swiss and foreign interest groups; (c) Official functions and political posts." (see SIX Directive 3.2) (SIX Exchange, 2008).

tails disclosed on multiple directorships varied across firms. Some exceptions restrict the disclosure to only *relevant* piece of information; e.g., membership of other listed corporations. In consequence, the data was aligned where possible.

2.2 Firm Performance: Tobin's Q

We use Tobin's Q (Q) as a proxy for firm performance. Our Q is calculated as the ratio of the market value of equity plus book value of total debt to the book value of total assets (see Agrawal and Knoeber, 1996; Loderer and Peyer, 2002; Beiner et al., 2006). The omitted intangible assets in the book value reflect — among other things — the director competence or investor confidence in the board. In this study, all classes of equity including non-listed equity classes are used for the calculation of the market value of equity. Five percent of all firms have two shares listed at the SIX Swiss Exchange and 16 percent of all firms have non-listed equity outstanding. The market value of equity is the average stock price 15 days around the last trading day in 2007, multiplied by the number of outstanding shares.

2.3 Independence Variables

Independence variables describe the board's relation to the firm. As Adams et al. (2010) point out, outsiders are frequently not really independent, stressing the need to account for additional variables of board independence. *INDEP* is the fraction of independent directors on the board. INDEP defines directors who are neither actual executives (insiders) of the firm (*EXEC*), nor affiliated (or gray) directors. Affiliated directors have current business relations with the firm (*BREL*) or were former employees of the firm (*FEXEC*). Additional variables are used to classify the board's independence. *LTEN* is the fraction of directors with a tenure longer than six years, since the normal term of office is usually three years. *BLDIR* is the fraction of directors with significant shareholdings (i.e., more than three percent of voting rights). Finally, *SHR* and *FR* indicate the fraction of directors who represent a shareholder or a family, respectively, and not only themselves identified as "significant shareholders". The leadership structure includes three dummy variables. *CEOC* is 1 if the chairman serves also as CEO of the company (and 0 otherwise), *CEOD* is 1 if the CEO is an ordinary member of the board (and 0 otherwise), and *CEOB* is 1 if one of the two holds (and 0 otherwise).

2.4 External Commitment Variables

External commitment variables describe board-member activities outside the firm. First, the aggregate of all board directors' external commitments divided by the number of board members is labeled *NOS*. *NOLD* denotes all directorships or chairmanships in

companies included in this sample; i.e., all Swiss SPI firms. Second, chairmanships (*NOCOB*) and directorships (*NOD*) measure the number of concurrent board seats someone holds. "Various" or "other" directorships are given a value of three and subsidiaries are not included. Third, management functions outside the board are termed *OCEO* and *OOFF* if the director is also a CEO or an officer of another firm, respectively. Finally, non-corporate appointments are also defined. *MOI* identifies membership of interest groups (e.g., Economiesuisse, chambers of commerce) and *MOP* are actual or former relations to government and political activities. *CHA* is membership of a charity (e.g., foundation, non-government organization), *ADV* signifies advisory services (e.g., scientific research group), and *COMM* are memberships in commissions (e.g., investment commission).

2.5 Control Variables

There are three areas that potentially influence the optimal structure of the board. Firstly, the legal environment sets the boundaries. Legal rules determine the leeway available in structuring the board. This area is covered with the dummy variable *LIUS* and equals 1 if the firm is cross-listed in the United States (and 0 otherwise). For instance, NYSE rules mandate independent directors for certain committees. In addition, industry fixed effects account for industry regulation (*INDUSTRY*). Regulation can substitute internal governance (Kole and Lehn, 1999; Booth et al., 2002). For example, in Switzerland banking regulation requires a dual-board structure (Swiss Banking Implementing Regulation (of 1972) Art. 8 para. 2 B).

Secondly, the corporate governance environment characterizes the agency problems within a firm. The way in which ownership is partitioned influences the purpose of the board. For instance, the directors appointed to a firm which is controlled — as predominant outside Anglo-Saxon countries — by one or a coalition of shareholders have to ensure that minority interests are respected. In this case, the standard stipulations on the independence of directors may be relaxed and the shareholder may hold control over the firm's activities. *HHIBLOCK* measures ownership concentration with the Herfindahl-Hirschman Index.[9]

Lastly, the operational environment defines the skills needed on the board. Empirical evidence suggests that large, diversified and complex firms have more independent boards, while young, fast-growing firms have insider-dominated boards (Boone et al., 2007; Coles et al., 2008; Linck et al., 2008; Lehn et al., 2009). Older firms may have more severe agency problems (e.g., empire building) while more recent firms may benefit from lower information costs because firm-specific information is more important to them (Adams and Ferreira, 2007; Raheja, 2005). As a possible consequence, Lehn et al. (2009)

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[9]If the index is 1, then all votes are combined in only one voting block, and if the index is 0, then there is no voting block at all.

11

do not find any robust correlation between board composition and firm performance if the above determining factors are included as control variables.

The operational environment includes firm growth and is denoted *SGR*. SGR is the growth rate in net annual sales from 2006 to 2007. Diversification is denoted *DIVER* and equals 1 if the company has more than one business segment (and 0 otherwise). The corporate center as a business segment is excluded. According to Anderson et al. (2000), diversified firms have more outside directors. IPO is 1 if the IPO was within the last 10 years (and 0 otherwise). For instance, Baker and Gompers (2003) present evidence that venture-backed IPO firms have outsider-oriented boards. Finally, *INDUSTRY* reflects different growth opportunities and competition that influence Tobin's Q (an alternative variable for growth opportunities such as "R&D expenditure" is not available for a host of firms, especially in the financial sector). Furthermore, the level of corporate governance differs among industries relating also to the internationalization of the corresponding industries (see Beiner et al., 2004).

2.6   Summary Statistics and Univariate Analysis

Table I provides descriptive statistics of the variables applied in this study. The first set of variables, the *"independence variables"*, depicts that, on average, three quarters of the board members are independent, and 11 percent are executive directors. Both, former executives and directors with business relations make up around 7.5 percent of the directorships. Hence, affiliated (or gray) directors account for 15 percent of all directorships. The second set of variables, the *"external commitment variables"*, presents the average number of mandates per director. In the mean board, each director has 3.366 external appointments (all mandates), but only 0.387 in boards of the sample companies (i.e., SPI firms). Hence, such directorships represent about 18 percent of all directorships ($= NOLD/(NOCOB + NOD)$). Politicians make up around 12 percent of all directorships, external CEOs about 17 percent, and other external executives 22 percent.

Univariate analysis using ordinary least squares (OLS) with Tobin's Q and independence and external commitment variables is displayed on the right-hand side of the summary statistics. Most importantly, the results show that board independence (INDEP) and external commitments (NOS) are significantly negatively correlated with Q. These relationships are also illustrated in Figure 1. The chart indicates that Tobin's Q is higher for firms in the lowest percentile group of both INDEP and NOS than for firms in the highest group.

However, more precise definitions of independence and external commitments reveal that their relations with Tobin's Q may be driven by other factors: CEOs as ordinary directors (CEOB) and executive directors (EXEC) positively affect firm valuation which might cause the negative relationship between INDEP and Q. The NOS-Q relationship

Table I: Descriptive statistics. Summary statistics of the variables in the paper. The basis sample consists of 197 observations. Abbreviations: d. = director, p. d. = per director, rel. = relations, y. = years, rep. = representatives, seg. = segment. The table presents mean, median, minimum (Min), maximum (Max), and standard deviation (SD) for each variable. $Q = \beta(X)$ is estimated using OLS, INDEP $= \beta(X)$ is estimated using fractional logit regressions, and NOS $= \beta(X)$ is estimated using Tobit regression. White (1980) standard errors are reported in parantheses and significance at the 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and *, respectively.

Variable	Definition	Mean	Median	Min	Max	SD		
Performance Variable								
Q	Tobin's Q	1.81	1.34	0.64	8.48	1.18		
Independence Variables							$Q = \beta(X)$	
INDEP	Fraction of independent d.	0.74	0.80	0.00	1.00	0.22	-0.828	**
CEOC	1 if CEO is chairman	0.13	—	—	—	0.33	0.037	
CEOD	1 if CEO is director	0.18	—	—	—	0.39	0.488	*
CEOB	1 if CEO is board member	0.31	—	—	—	0.46	0.360	*
EXEC	Fraction of executive d.	0.11	0.00	0.00	1.00	0.17	1.195	**
FEXEC	Fraction of former executive d.	0.08	0.00	0.00	1.00	0.13	0.452	
BREL	Fraction of d. with business rel.	0.07	0.00	0.00	0.73	0.13	0.028	
LTEN	Fraction of d. with tenure >6 y.	0.44	0.42	0.00	1.00	0.29	-0.109	
BLDIR	Fraction of blockholding d.	0.11	0.00	0.00	1.00	0.17	0.786	
SHR	Fraction of shareholder rep.	0.11	0.00	0.00	1.00	0.20	-0.449	
FR	Fraction of family rep.	0.07	0.00	0.00	1.00	0.15	0.448	
External commitment Variables								
NOS	Number of mandates p. d.	3.37	3.14	0.33	10.89	1.67	-0.112	***
NOLD	Number of sample mandates p.d.	0.39	0.33	0.00	1.60	0.36	-0.142	
NOCOB	Number of chairmanships p. d.	0.54	0.43	0.00	4.00	0.51	-0.196	
NOD	Number of directorships p. d.	1.63	1.43	0.00	5.29	1.03	-0.070	
OCEO	Other CEO employment p. d.	0.17	0.14	0.00	1.25	0.18	-0.960	***
OOFF	Other officer employment p. d.	0.22	0.18	0.00	1.00	0.21	-0.913	***
MOI	Member of interest group p. d.	0.23	0.14	0.00	1.50	0.29	-0.488	*
MOP	Member of political group p. d.	0.12	0.00	0.00	0.92	0.17	-1.004	**
CHA	Member of charity p. d.	0.30	0.17	0.00	2.89	0.42	-0.307	**
ADV	Advisory services p. d.	0.14	0.00	0.00	1.50	0.23	0.499	
COMM	Member of a commission p. d.	0.03	0.00	0.00	1.33	0.12	-1.160	

$Q = \beta(X)$ is estimated using OLS estimates with robust White (1980) standard errors.

		Mean	Median	SD				
Control Variables					INDEP $= \beta(X)$		NOS $= \beta(X)$	
HHIBLOCK	Ownership concentration	0.21	0.12	0.24	0.279		0.936	*
SGR	Growth in net annual sales	0.19	0.10	0.63	-0.195	***	-0.022	
DIVER	1 if more than one business seg.	0.68	–	0.47	0.019		-0.106	
IPO	1 if IPO in the last ten years	0.31	–	0.47	-0.304	*	-0.546	**
LIUS	1 if U.S. exchange listed	0.05	–	0.22	0.254		1.218	***
INDUSTRY	14 Industry fixed effects	–	–	–	–		–	

INDEP $= \beta(X)$ is estimated using fractional logit regression with robust White (1980) standard errors.
NOS $= \beta(X)$ is estimated using Tobit regression with robust White (1980) standard errors.
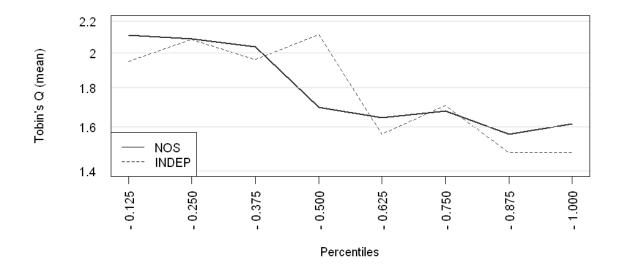
Figure 1: Comparison of Board Independence and External Commitments with Tobin's Q

seems not be significantly driven by directorships (NOCOB and NOD). However, external executives (OCEO and OOFF) are negatively related to Q. The same is true for memberships in interest groups (MOI) and charities (CHA) or political affiliations (MOP). Nevertheless, such comparisons have severe omitted-variables problems that cause severe heterogeneity and endogeneity issues, since they ignore firm characteristics.

The coefficients of the control variables for the two main explanatory variables INDEP and NOS are estimated using fractional Logit regression for INDEP and Tobit regressions for NOS, left-censored at 0 (see Papke and Wooldridge, 1996; Tobin, 1958).[10] Interestingly, the results do not emphasize the notion that monitoring is stressed by governance (HHIBLOCK) and legal issues (LIUS) or that advising needs are associated with external knowledge (SGR and DIVER), assuming that HHIBLOCK describes the agency structure and LIUS the legal environment. However, the results do suggest that all control variables apart from DIVER influence the variables of interest. However, DIVER is expected to influence Q.

As already discussed, the call for independent directors may have led to directors combining external activities. For this reason, a correlation matrix is set up in order to find patterns between these two sets of variables (see Appendix Table XI). The correlations are based on board averages. The table shows that variables that account for non-independence such as EXEC or BLDIR are mostly negatively correlated with external commitment variables (NOLD, NOD, OCEO, MOI and MOI, MOP, CHA, respectively). In contrast, external commitment variables are mostly positively interrelated (e.g., NO-

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[10]OLS is not applicable if the dependent variable is a fraction like INDEP and consequently lies between 0.0 (= 0 percent) and 1.0 (= 100 percent) ($0 \leq INDEP \leq 1$) and OLS is not applicable if the dependent variable is censored. NOS is censored at 0 because not less than 0 mandates can be observed ($NOS \geq 0$).

14

COB and NOD, OCEO or CHA and MOI, MOP). These findings may suggest that two different board types exist in Switzerland. On the one hand, there are independent boards whose directors are committed externally. On the other hand, there are boards whose directors are internal executives (insiders), but who do not take on any external commitments. Both types may be a reaction to the firm's circumstances. In its simplest case, the principal shareholders, the directors, and the executive board overlap largely.

2.7 One-tier Versus Two-tier Boards

Two examples highlight the scope of governance: 4M Technologies Holding (today branded as Perfect Holding), an optical disc supplier, is in the control of the Grey family, who own 30 percent of the voting rights in 2007. Nicolas and Stephan Grey sit on the three-member board, while Stephan Grey is chairman and CEO. These directors have one outside appointment on average. In contrast to this example, the board of Zurich Financial Services, one of the world's largest insurance groups, comprised 10 members in 2007. No member holds or held an executive position within the corporation, nor have they had business relations with the firm. Furthermore, Zurich has no major shareholder owning more than three percent of the voting rights, but the average number of external mandates per director is 4.7. Described in legal terms, the first type of board can be described as one-tiered, while the second one is structured as a real supervisory board (two-tier).

Hence, one-tier boards and two-tier boards may have varying tasks and objectives. Table II compares all one-tier and two-tier boards in respect to independence, external commitments, and firm characteristics using t-tests for differences in means and Wilcoxon-test for differences in medians. One-tier boards have at least one executive director on the board. Two-tier boards are defined as boards which have no executive directors on the board at all. Hence, as might be expected, the former board type has a lower rate of independence. The latter type has a higher fraction of former executives. In respect to external commitments, directors of two-tiered boards are indeed more heavily engaged. In addition, one-tier boards are smaller, have a longer tenure, and higher board ownership. Surprisingly, firm characteristics are almost equally distributed. However, sales growth and Tobin's Q is significantly higher for one-tier boards.

Also personal characteristics differ between executive directors and non-executive directors. Table III presents statistical evidence that executive directors are younger and more likely to be foreigners than non-executive directors. In contrast, and confirming the results from before, non-executive directors have statistically significantly more engagements in other boards and other functions in general.

Table II: The table presents comparisons between one-tiered and two-tiered boards. The equality of means is tested using a Welch Two Sample t-test and the equality of medians is tested using a Wilcoxon rank sum test with continuity correction. Significance at the 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and *, respectively.

| | Board structure | | |
	one-tier	two-tier	
Obs	91	106	t-test/
%	46.19	53.81	(Wilcoxon-test)
Independence (in %)			
CEO on board (1=yes, 0=no)	67.03	0.00	*** / (***)
Independent	62.50	84.78	*** / (***)
Executives	24.74	0.00	*** / (***)
Former executives	5.25	9.53	** / (***)
Directors with business relations	8.84	6.07	- / (*)
External commitment			
Number of mandates (counts)	3.05	3.64	** / (***)
Number of listed dir. (counts)	0.31	0.46	*** / (***)
Board Characteristics			
Board size (counts)	6.63	7.51	** / (***)
Board tenure (in years)	8.22	7.28	* / (*)
Board ownership (in %)	16.59	7.68	*** / (***)
Number of committees (counts)	2.25	2.73	** / (**)
Firm characteristics			
Ownership (Herfindahl)	19.14	23.49	
Sales growth (in %)	29.35	9.84	** / (***)
Diversified (1=yes, 0=no)	67.03	67.92	
IPO (> 10 years) (1=yes, 0=no)	37.36	26.42	
U.S. listing (1=yes, 0=no)	6.59	3.77	
Tobin' s Q	1.985	1.658	* / (***)

Table III: The table presents comparisons between executive directors and non-executive directors boards. The equality of means is tested using a Welch Two Sample t-test and the equality of medians is tested using a Wilcoxon rank sum test with continuity correction. Significance at the 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and *, respectively.

	All	Executive Directors	Non-executive Directors	
Observations	1399	129	1270	t-test /
in %	100.00%	9.22%	90.78%	(Wilcoxon-test)
Demographic characteristics				
Age (years)	57.32	54.93	57.56	*** / (***)
Gender (1=female, 0=male) (in %)	5.93	3.10	6.22	* / (-)
Nationality (1=foreigner, 0=Swiss) (in %)	25.02	34.11	24.09	** / (**)
- Swiss (counts)	1034	85	949	
- German (counts)	111	11	100	
- Other (counts)	254	33	221	
External commitment				
Number of mandates (counts)	2.847	1.806	2.953	*** / (***)
Number of listed dir. (counts)	2.057	1.271	2.137	*** / (***)

3 Empirical Analysis

Having presented the results of the univariate OLS regressions in the previous chapter, where Q was regressed on only one variable, in this section, all regressions include control variables as defined in Section 2.5.

3.1 Ordinary Least Squares (OLS) Regression Models

Table IV presents the relation between five basic proxies for independence and external commitment and Tobin's Q. In addition to *INDEP*, *INDEP_EXT* is the fraction of directors who do not qualify for any variable defined in Section 2.3.[11] Additionally to *NOS*, *NOLD* counts only directorships in listed companies. This allows comparisons with other studies and circumvents a bias in disclosure practice. Furthermore, *BUSY* is a dummy variable and equals 1 if at least 50 percent of the outside board members have more than three directorships as suggested by Fich and Shivdasani (2007). However, none of these variables is significantly related to Tobin's Q.

As discussed before, independent boards are likely to be externally committed boards. In consequence, we now estimate the effects of independence and external commitments on Tobin's Q simultaneously. Table IV, Column VI, displays an OLS regression model where both INDEP and NOS are included. So, in this case the omitted variables prob-

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[11]Specifically, this means that insiders (EXEC), former executives (FEXEC), directors with business relations (BREL), directors with a long tenure (LTEN) and with significant ownership (BLDIR) are not independent.

Table IV: The table presents OLS regression coefficient estimates for independence and external commitment variables. The sample consists of 197 SPI firm observations in 2008. The dependent variable Q denotes Tobin's Q (market value of equity and book value of debt over total assets); INDEP is the fraction of independent directors using the three common criteria (executive, former executive, and business relations); INDEP_EXT is an extended definition of independent directors using all seven independence criteria; NOS is the number of external mandates per director; NOLD is the number of mandates in sample firms per director; BUSY is 1 if at least 50 percent of outside directors hold more than three directorships. HHIBLOCK is a Herfindahl-Index and measures the concentration of shareholder voting rights; SGR is the growth rate in net annual sales; DIVER is 1 if the firm reports more than one business segment; IPO is 1 if the IPO was within the past 10 years; LIUS is 1 if the firm is cross-listed in the U.S.; INDUSTRY are two-digit ICB industry dummy variables. White (1980) standard errors are reported in parantheses and significance at the 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and *, respectively.

Independent Variables	(I)		(II)		(III)		(IV)		(V)		(VI)	
(Intercept)	1.48898	(**)	1.36602	(**)	1.32539	(**)	1.22233	(**)	1.18522	(**)	1.56041	
	(0.603)		(0.546)		(0.539)		(0.505)		(0.515)		(0.620)	
INDEP	-0.33878										-0.28466	
	(0.373)										(0.376)	
INDEP_EXT			-0.30055									
			(0.316)									
NOS					-0.04933						-0.04313	
					(0.045)						(0.046)	
NOLD							-0.09780					
							(0.208)					
BUSY									0.05207			
									(0.166)			
HHIBLOCK	-0.49329	(*)	-0.51453	(*)	-0.41887		-0.47010	(*)	-0.44959	(*)	-0.45926	(*)
	(0.253)		(0.264)		(0.264)		(0.254)		(0.253)		(0.264)	
SGR	0.42733		0.42503		0.44092		0.43320		0.43548		0.43300	
	(0.420)		(0.414)		(0.413)		(0.417)		(0.423)		(0.416)	
DIVER	-0.32882	(*)	-0.34032	(*)	-0.34659	(*)	-0.34015	(*)	-0.35103	(*)	-0.32968	(*)
	(0.193)		(0.194)		(0.187)		(0.193)		(0.189)		(0.192)	
IPO	0.33422	(*)	0.36352	(*)	0.35002	(*)	0.35310	(*)	0.36630	(*)	0.32859	(*)
	(0.199)		(0.195)		(0.193)		(0.200)		(0.199)		(0.197)	
LIUS	0.50023		0.53883		0.57155		0.50975		0.51963		0.55251	
	(0.406)		(0.409)		(0.418)		(0.406)		(0.405)		(0.421)	
INDUSTRY	included		included		included		included		included		included	
Multiple R^2	0.42250		0.42310		0.42330		0.41990		0.41960		0.4256	
Adjusted R^2	0.35690		0.35750		0.35770		0.35400		0.35360		0.3566	
F-test	6.43900	(***)	6.45300	(***)	6.45900	(***)	6.37000	(***)	6.36100	(***)	6.17300	(***)

Dependent Variable: Tobin's Q

lem can be reduced. The results show that neither INDEP nor NOS are significantly related to firm performance. However, estimating both effects in one regression still does not allow for an interrelation between the two effects — it only controls for each individually. Furthermore, independence and external commitments are still seen as exogenously determined. It ignores the endogeneity problem and the fact that all three variables may be a function of each other, as well.

3.2 Instrumental Variables

There are a number of justifications for investigating board structure-firm performance relations using ordinary least squares (OLS) regression models. Technically speaking, OLS requires exogenous right-hand variables. In this instance, the explanatory variables (X_i) are determined outside the model and are not correlated with unobserved characteristics ($cov(X_{k,i}, u_i) = 0$). In other words, OLS assumes that the regressors' distribution is uncorrelated (independent) with the distribution of the error term. In contrast, in the case where one or more regressors are endogenous, the OLS estimator is biased and inconsistent. Endogeneity occurs in the presence of selection bias, omitted variables bias[12], misspecified or erroneous variables, measurement errors, and joint simultaneity. The last problem arises if the dependent variable affects one or more regressors ("reverse causation") (see Verbeek, 2008).[13]

Regressions can be made robust to endogeneity using instruments. The instruments predict each endogenous variable and extract the part that is associated with the error term. Even though any exogenous variable is an instrument, instruments refer typically to the excluded exogenous variables. However, the selection of valid instruments is not trivial. Firstly, the instrument has to be exogenous (independent); i.e., it must not be correlated with the error term ($cov(Z_i, u_i) = 0$). Secondly, the instrument has to be relevant; i.e., it must be (partially) correlated with the endogenous variable conditional on the other variables ($cov(Z_i, X_i) \neq 0$).[14]

Most commonly, such problems are solved using a system of equations that includes

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[12]Missing and unobserved characteristics (heterogeneity) can lead to spurious correlations. For instance, firms with independent boards may have totally different features from firms with non-independent boards, which influences Tobin's Q. However, in some cases it is difficult to find reasonable proxy variables.

[13]As an example of reverse causation, think of a highly valued firm. Such a firm may be attractive to independent directors, and in addition, this firm may also have privileged resources not need to seek directors who directly help in dealing with day-to-day business. As a result, a firm with a high Tobin's Q may choose a higher level of board independence, and not vice versa. Similar examples can easily be found for external board commitments where casual links cannot be established.

[14]So-called "weak instruments" have a low correlation with the endogenous variable; i.e., they explain only a low variation in the endogenous variable that is not already described by the other exogenous variables. If the correlation between the instrument and the regressors is low, the standard errors of instrumental variables' estimators are high (Wooldridge, 2010). Hence, an instrument must be significantly related to the endogenous variable in the reduced form.

equations for every endogenous variable (first-stage regression or reduced-form equation), in addition to the "original" equation (second-stage regression) and is estimated using two-stage least squares (2SLS) or three-stage least squares (3SLS) (see Agrawal and Knoeber, 1996; Beiner et al., 2006; Bhagat and Bolton, 2008).

The necessary identification condition for a system of simultaneous equations requires that the number of instruments (exogenous variables) excluded in any equation must be at least as great as the number of endogenous variables included in the equation minus one ("exclusion restriction"). These exclusions permit the identification of the system of equations. In other words, every equation needs some individual exogenous variables.

The relevance of the instrument(s) can be examined by the Wald-test on the significance of the additional instrument(s) explaining the endogenous variable that does or do not appear in the set of control variables.[15] For testing endogeneity, we use the regression-based Durbin-Wu-Hausman auxiliary approach described in Wooldridge (2010) because it can be made robust to heteroskedasticity in a straightforward way. The residuals (v_2) from the first-stage regression in which the possibly endogenous variable is regressed on all instruments (including exogenous control variables) is included in the "original" equation. If the residual-term v_2 is statistically significant, then the variable is not exogenous. Similarly, if a set of variables is expected to be endogenous, a Wald-test on the set of residuals for joint exogeneity can be used.

In order to allow interrelations and to control for endogeneity, we develop a joint test for three equations. Our system has 14 explanatory variables of which three are endogenous (Q, INDEP, NOS) and 11 are exogenous (five act as "real" instruments and the others are the common exogenous control variables). The necessary condition states that the number of instruments (Z_i) excluded in the array of the exogenous variables (X_i) must be at least as large as the number of endogenous variables in X. So, the identification of the system of equations requires that at least two exogenous variables must be excluded from any single equation. We identify five variables as instruments for Q, INDEP, and NOS.

Equation 1   Q = f_1(INDEP, NOS, *STMV*, control variables, e_1)
           — incl. endogenous variables: INDEP and NOS
           — excl. exogenous variables (or instruments): LAW, ITA, BSIZE, and MUCL

Equation 2   INDEP = f_2(Q, NOS, *BSIZE*, *MUCL*, control variables, e_2)
           — incl. endogenous variables: Q and NOS
           — excl. exogenous variables (or instruments): LAW, ITA, and STMV

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[15]The Wald-test is a heteroskedasticity-consistent version of the F-test.

Equation 3   NOS = f_3(Q, INDEP, *ITA*, *LAW*, control variables, e_3)
                     — incl. endogenous variables: Q and INDEP
                     — excl. exogenous variables (or instruments): BSIZE, MUCL, and STMV

Two variables are used as instruments for board independence (INDEP): board size (*BSIZE*) and multiple classes of equity (*MUCL*). BSIZE is calculated as the natural logarithm of the number of board members. Larger boards offer more seats to be staffed by independent directors. MUCL is set as 1 if there is more than one equity class outstanding (and 0 otherwise). Two types of shares are issued in order to consolidate the voting power into one group of shareholder. Thus, the independence of the board may be less crucial.

Two instruments are also used to determine external commitments (NOS): lawyers (*LAW*) and location in the Italian part (*ITA*). LAW is the fraction of law graduates on a board. Lawyers usually occupy a support and not strategic function within a board and are often linked to political groups or other organizations. Therefore, LAW should positively affect NOS, as they are expected to be active in a number of organizations. ITA is a spatial dummy variable and equals 1 if the corporation is headquartered in the Italian part of Switzerland (i.e., canton of Ticino) (and 0 otherwise). This location may be less attractive for externally committed directors because of its relatively long distance from the economic centers (e.g., Basel, Geneva or Zurich) and the language (Italian). As a result, this location may decrease the average number of mandates per director.

Finally, *STMV* is defined as annual net revenue over firm value. Firm value is defined as the market value of equity adjusted to free float; i.e., the fraction of equity that is not owned by blockholders. A high ratio implies that sales are backed by a low equity base which might involve more risk and therefore negatively influence Tobin's Q. Please note that a univariate regression of Tobin's Q on STMV indicates no significant relationship.

Table V presents two important tests for instruments using Wald-statistics. In Panel A the relevance of the instruments is examined and the irrelevance of both sets of excluded instruments is rejected. Durbin-Wu-Hausman-test in Panel B examines the joint significance of the residuals from the first-stage regressions in the original equation and the null-hypothesis of joint exogeneity is not rejected.

The results from the estimation of the system of equation using the instrument variables described before are presented in Table VI. The Sargan test of the overidentifying restrictions confirms that the instruments chosen are appropriate, i.e., the joint hypothesis that the instruments are uncorrelated with the error cannot be rejected.[16] Columns

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[16]Sargan test (χ^2) uses the residuals of the 2SLS estimation and regresses them on the instruments. The generated R^2 are then multiplied with the number of observations (*N*).

Table V: Instrument Relevance and Test for Endogeneity

Panel A: Relevance of Instruments			
	Wald-test		R^2
STMV	8.3589	(***)	0.4329
ln(BSIZE) / MUCL	5.9998	(***)	0.2740
LAW / ITA	3.8443	(**)	0.1970

Wald-test for relevance of the instruments excluded from the (exogeneous) control variables.
R^2 of the first-stage regression.

Panel B: Durbin-Wu-Hausman-test	
	Wald-test
INDEP / NOS	0.1496

Wald-test for joint exogeneity of the critical variables

I-III show that the results do not change if both INDEP and NOS are estimated in a system of equation using OLS. Furthermore, the results remain qualitatively the same if the system is estimated using 2SLS (see Columns IV-VI). Hence, both INDEP and NOS are not significantly related to Tobin's Q whether they are estimated using OLS or 2SLS.

3.3 Independence and External Commitment Re-Examined

In the next step, both independence (INDEP) and external commitment (NOS) are partitioned into sub-variables separately (Table VII and Table VIII). In addition, each model has been examined to establish whether the functional form is correct using the Wald-test (§). The tests always compare a restricted (linear) model to a unrestricted (non-linear) model. Throughout, the more appropriate fit is presented in the tables.

Furthermore, similarly to Table V, on the right-hand side of the tables, Wald-statistics are presented for the relevance of the excluded instrument, its impact on the seemingly endogenous variable, and its significance (†) (choice of instruments is not discussed). Below, we present the Durbin-Wu-Hausman-test results for endogeneity of the regressors (††). Once a variable is identified as not being endogenous, it is included in the set of instruments in the following test for exogeneity (e.g., EXEC, FEXEC, and BREL in Column IV of Table VII). Durbin-Wu-Hausman-test uses (robust) t-statistics for single endogenous variables or Wald-statistics for joint significance of the residuals from the first-stage regressions. Using this test, none of the explanatory variables seems to be endogenous.

The *"independence models"* examine in total 9 different variables that could affect the independence of the board. Hereby, Table VII, Column I, exhibits a non-linear and significant U-shaped relationship between the fraction of executive directors (EXEC) and firm performance. Former executives (FEXEC) or directors with business relationships

Dependent Variable Method	Q OLS (I)	INDEP OLS (II)	NOS OLS (III)	Q 2SLS (IV)	INDEP 2SLS (V)	NOS 2SLS (VI)
Q		-0.01340 (0.016)	-0.10643 (0.125)		0.01838 (0.120)	1.20302 (1.079)
INDEP	-0.26361 (0.339)		1.28805 (**) (0.560)	-0.02510 (1.071)		2.84625 (2.191)
NOS	-0.05010 (0.045)	0.01613 (*) (0.009)		-0.06287 (0.216)	-0.04745 (0.056)	
STMV	-0.01557 (**) (0.007)			-0.01580 (**) (0.008)		
ln(BSIZE)		0.18397 (***) (0.049)			0.21852 (***) (0.063)	
MUCL		-0.10019 (**) (0.043)			-0.12101 (**) (0.053)	
LAW			1.72155 (**) (0.804)			2.22742 (**) (1.102)
ITA			-1.15611 (0.857)			-1.27667 (1.107)
HHIBLOCK	-0.33819 (0.336)	-0.03827 (0.079)	0.85293 (0.560)	-0.29784 (0.411)	0.03754 (0.127)	1.68255 (*) (0.950)
SGR	0.43814 (***) (0.112)	-0.02070 (0.025)	0.18144 (0.195)	0.44559 (***) (0.119)	-0.02808 (0.058)	-0.34843 (0.522)
DIVER	-0.36776 (**) (0.162)	0.05020 (0.035)	-0.14673 (0.275)	-0.38208 (**) (0.173)	0.06395 (0.058)	0.19675 (0.506)
IPO	0.28479 (*) (0.165)	-0.08183 (**) (0.036)	-0.00292 (0.279)	0.30032 (0.183)	-0.11024 (*) (0.065)	-0.33027 (0.524)
LIUS	0.53642 (0.333)	-0.13152 (*) (0.074)	1.47006 (***) (0.560)	0.56077 (0.423)	-0.08875 (0.109)	0.92053 (0.879)
INDUSTRY	included	included	included	included	included	included
Multiple R²	0.44003	0.28996	0.22541	0.43834	0.07750	-0.28345
Adjusted R²	0.36923	0.19556	0.12244	0.36733	-0.04515	-0.45408
McElroy R²	0.36705	—	—	0.31571	—	—
Sargan test (NR^2)	—	—	—	0.15687	0.08757	0.37036

(BREL) are unimportant. The model with all variables that account for independence explains 47.84 percent of the variation in Tobin's Q (R^2) (Column IV). Besides, in the full-specified model, the fraction of family representatives (FR) on the board depicts a positive relationship.

The same procedure as above is conducted for the "external commitment models". The number of all mandates (NOS) is split into 9 sub-variables. Additionally, the fraction of executive directors (EXEC) is included as control variable that accounts for internal commitments. Table VIII, Column I, presents variables that are related to executive activities. The evidence demonstrates that, while executive directors (EXEC) are positively associated with firm performance, executive positions outside the firm depict a negative relationship (OCEO/OOFF). Seemingly, investors question the due diligence of executives from firms other than their own. No further insights are generated by regressions that include directorships (both as chairman (NOCOB) and as ordinary director (NOD)) and influential functions such as membership of interest groups (MOI), political groups (MOP) or charities (CHA) as well as advisory activities (ADV), and jobs in commissions (COMM) (Columns II, III, and IV).

3.4   Board activity

As mentioned before, board independence or external commitment may be indirectly related to Tobin's Q. The status of board members vis-à-vis the firm and their activities outside the board room can affect the time committed to the board. Vafeas (1999) reasons that meetings proxy for internal activity of the board. Jiraporn et al. (2009) show that directors with external mandates are more frequently absent from meetings than others. For these reasons and given that independence is a measure of monitoring capacity, it can be expected that board independence and board activity are positively related. In contrast, if directors with external commitments do not devote enough time to the board, this variable should be negatively associated to board activity.

In order to test these questions empirically, we employ Poisson regressions with the number of all meetings (including committee meetings) or the total hours spent in all meetings as its dependent variables (*BMTGS* and *BHRS*). These are regressed on board independence with its broadest criteria (*INDEP_EXT*) and the fraction of executives on the board (*EXEC*), in addition to external commitments which consist of all external mandates (*NOS*) and external directorships in listed (sample) firms (*NOLD*). As a control variable, the number of board committees is employed (*NOCO*).

Table IX displays summary statistics of meeting variables. In total and on average, board members met 17.61 times in one year, which gives a total board time of 71.38 hours. In comparison, the number of ordinary board meetings (excluding committee meetings) is 7.254 on average (median: 6), and the average length of an ordinary meeting

Table VII: The table presents OLS regression coefficient estimates for board independence. The sample consists of 197 SPI firm observations in 2008. The dependent variable is Tobin's Q (market value of equity and book value of debt over total assets). EXEC is the fraction of executive directors, FEXEC is the fraction of former executive directors, and BREL is the fraction of directors with business relations. CEOC is 1 if the CEO is chairman; CEOD is 1 if the CEO is director; LTEN is the fraction of directors with tenure longer than 6 years; BLDIR is the fraction of blockholding directors; SHR is the fraction of shareholder representatives; FR is the fraction of family representatives. ln(BSIZE) is the natural logarithm of board size; MBA is the fraction of directors holding a MBA degree; PR is the fraction of directors with professional status; SINGY is 1 if the term of office is 1 year; FAM is 1 if a blockholder is a family. The intercept and the control variables from Table IV are not presented to save space. White (1980) standard errors are reported in parantheses and significance at the 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and *, respectively.

Independent Variables	Dependent Variable: Tobin's Q							*Instrument (Wald-test)†*
	(I)		(II)	(III)	(IV)			
EXEC	-1.75051	(*)			-2.05231			*ln(BSIZE)*
	(1.004)				(1.400)			(5.89 / - / **)
EXEC^2	3.51610	(***)			4.19351	(***)		
	(1.176)				(1.400)			
CEOC					-0.21881			*MBA*
					(0.298)			(5.34 / - / **)
CEOD					0.25780			*PR*
					(0.251)			(8.90 / - / ***)
FEXEC			0.66372		0.68348			*MBA*
			(0.599)		(0.668)			(4.06 / + / **)
BREL				-0.59497	-0.25673			*SINGY*
				(0.625)	(0.583)			(6.37 / + / **)
LTEN					0.27369			*SINGY*
					(0.269)			(4.10 / - / **)
BLDIR					-0.23689			*ln(BSIZE)*
					(0.631)			(10.74 / - / ***)
SHR					-0.00065			*ln(SALES)*
					(0.392)			(8.03 / - / ***)
FR					1.11877	(**)		*FAM*
					(0.556)			(65.36 / + / ***)
Control Variables	included		included	included	included			
Wald-test§	8.93240	(***)	0.09910	2.63450	0.93860			
DWH-test††	0.61980		-0.91920	-1.50210	0.85270			
Multiple R^2	0.44870		0.42390	0.42300	0.47840			
Adjusted R^2	0.38260		0.35850	0.35750	0.38780			

† Wald-statistics for excluded instrument in the first-stage / sign / significance
§ Wald-test for functional form: restricted vs. unrestricted model (i.e., non-linear)
†† Durbin-Wu-Hausman: (robust) t-statistics in Columns I, II, III and
Wald-statistics for the joint significance of the residuals in Column IV

Table VIII: The table presents OLS regression coefficient estimates for external commitments. The sample consists of 197 SPI firm observations in 2008. The dependent variable is Tobin's Q (market value of equity and book value of debt over total assets). EXEC is the fraction of executive directors; NOS is the number of mandates p. d.; NOCOB is the number of chairmanships p. d.; NOD is the number of directorships p. d.; OCEO is another CEO employment p. d. (p. d. denotes per director); OOFF is another officer employment p. d.; MOI is the membership of interest group p. d.; MOP is the membership of political groups p. d.; CHA is the membership of charity p. d.; ADV denotes advisory services p. d.; COMM is the membership of a commission p. d. DR is the fraction of directors holding a doctoral degree; ln(ASSETS) is the natural logarithm of total assets; CEOD is 1 if the CEO is director; LAW is the fraction of law graduates on the board; ln(DEBT) is the natural logarithm of total debt; STA is 1 if a blockholder is the state; R&D is 1 if data on R&D is available; PRI is 1 if a blockholder is a private. The intercept and the control variables from Table IV are not presented to save space. White (1980) standard errors are reported in parantheses and significance at the 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and *, respectively.

| Independent | Dependent Variable: Tobin's Q | | | | | *Instrument* |
Variables	(I)		(II)	(III)	(IV)		*(Wald-test)†*
EXEC	-1.84907	(*)			-1.85524	(*)	
	(1.003)				(1.043)		
EXEC^2	3.29007	(***)			3.28635	(***)	
	(1.128)				(1.230)		
OCEO	-0.57818	(*)			-0.67937	(**)	*DR*
	(0.293)				(0.329)		(5.88 / - / **)
OOFF	-0.75677	(**)			-0.73367	(*)	*ln(ASSETS)*
	(0.372)				(0.393)		(3.83 / - / *)
NOCOB			-0.00048		0.08595		*CEOD*
			(0.163)		(0.157)		(9.20 / - / ***)
NOD			-0.05227		-0.02726		*LAW*
			(0.085)		(0.089)		(4.58 / + / **)
MOI				-0.02517	-0.01959		*ln(DEBT)*
				(0.275)	(0.322)		(15.09 / + / ***)
MOP				0.26954	-0.10065		*STA*
				(0.474)	(0.405)		(21.56 / + / ***)
CHA				-0.00843	-0.05503		*ln(BSIZE)*
				(0.185)	(0.187)		(5.29 / + / **)
ADV				-0.04326	-0.02661		*R&D*
				(0.479)	(0.477)		(4.63 / + / **)
COMM				-0.59106	-0.33338		*PRI*
				(0.494)	(0.428)		(3.74 / - / *)
Control Variables	included		included	included	included		
Wald-test§	0.06600		0.24130	0.51560	—		
DWH-test††	0.56730		0.14720	1.77890	—		
Multiple R^2	0.46930		0.42100	0.42350	0.47190		
Adjusted R^2	0.39870		0.35150	0.34310	0.37650		

† Wald-statistics for excluded instrument in the first-stage / sign / significance
§ Wald-test for functional form: restricted vs. unrestricted model (i.e., non-linear)
†† Durbin-Wu-Hausman: Wald-statistics for the joint significance of the residuals in Columns I-III

Table IX: Summary statistics of meeting variables. The basis sample consists of 155 (or 94) observations. The table presents mean, median, minimum (Min) and maximum (Max) for each variable. Abbreviations: d. = director, p. d. = per director. The correlation matrix compares INDEP_EXT, EXEC, NOS, and NOLD. ***, **, and * denote significances on the 0.1, 1, and 5 percent level.

			Correlation Matrix			
Variable	Mean	Median	INDEP_EXT	EXEC	NOS	NOLD
BMTGS	17.610	15.000				
BHRS	71.380	66.500				
INDEP_EXT	0.351	0.286	1			
EXEC	0.114	0.000	-0.34***	1		
NOS	3.366	3.143	0.17*	-0.27***	1	
NOLD	0.387	0.333	0.22**	-0.27***	0.15*	1
NOCO	2.025	2.000				

BMTGS = total number of board meetings (incl. committees)
BHRS = total duration of board meetings in hours (incl. committees)
INDEP_EXT = fraction of independent d. (incl. all criteria)
EXEC = fraction of executive d.
NOS = number of mandates p. d.
NOLD = number of mandates in listed firms p. d.
NOCO = number of committees

is 5.522 hours (median: 5). The sample of Vafeas (1999) depicts 7.45 meetings on average.

The results in Table X indicate that executive directors are negatively related to board frequency and meeting duration, while the number of all mandates, on average, positively affects the number of meetings, but negatively (insignificantly) affect the duration of all aggregated meetings. This suggests that meetings are not as necessary if there are more insiders on the board. Insiders may use other opportunities to discuss the business processes. Furthermore, information may be transmitted more easily between the management and a board consisting of insiders, which reduces the need for meetings. The second result may show that directors with external commitments are highly professional, indicating that they take board work seriously. Their seriousness may explain the number of mandates they have on average.

4   Conclusions

The independence and external commitments of boards has been the subject of much empirical research. However, board independence is a vague term to be used as a descriptor for board structure. The same is true for proxies of the board members' external commitments. Over the last few years, critics have petitioned to promote an increased presence of independent directors on boards. Hence, they implicitly state that fewer independents hamper effective monitoring. In the words of Hermalin and Weisbach (2003), such commentators believe that boards are out of equilibrium and have to be adjusted in the shareholders' interest. Similarly, there is increasing criticism of board members

Table X: Board activity. The table presents Poisson regression coefficient estimates for board independence and external commitments. The sample consists of 155 (and 94) SPI firm observations in 2008. BMTGS is the total number of board meetings (including committee meetings) in 2007; BHRS is the total duration of board meetings in hours (including committee meetings) in 2007. INDEP_EXT is an extended definition of independent directors using all seven independence criteria; EXEC is the fraction of executive directors. NOS is the number of mandates per director; NOLD is the number of mandates in sample firms per director; NOCO is the number of committees.

Independent Variables	Dependent Variable			
	BMTGS (I)		BHRS (II)	
(Intercept)	2.44695	(***)	3.79028	(***)
	(0.331)		(0.169)	
INDEP_EXT	0.07343		0.05928	
	(0.155)		(0.167)	
EXEC	-0.51212	(**)	-0.95881	(**)
	(0.255)		(0.440)	
NOS	0.03667	(**)	-0.02261	
	(0.019)		(0.028)	
NOLD	-0.15538		0.14082	
	(0.104)		(0.112)	
NOCO	0.20496	(***)	0.22728	(***)
	(0.042)		(0.047)	
McFadden R^2	0.18546		0.18835	
AIC	1006.7		1586.2	

with multiple mandates. These two issues are further complicated in that they appear to be interrelated. The call for independent directors has led to a growth in the number of 'professional' (outside) directors holding board positions.

We find that neither independence is positively related to Tobin's Q nor that external commitments are negatively related to it. Nevertheless, specific definitions of independence and external commitments do indicate significant relations. For instance, the relationship of internal firm executives to company performance is U-shaped, while executives outside of the firm negatively affect Tobin's Q. Also representatives of family shareholders increase firm value. Thus, investors trust these directors more, which, in turn, results in higher firm valuation. Moreover, the frequency and duration of meetings is negatively affected by insiders.

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.1 Directors in Switzerland

Directors of large firms are usually some of the most influential citizens in the society. Directors with multiple directorships are usually older, outsiders, consultants, bankers or executives, have previously held more powerful positions, and sit on larger boards of larger corporations (Ferris et al., 2003). The amount of networking between directors is country-specific and depends to some extent on the ownership structure of the economy. One special feature of Switzerland as a small open economy is its high concentration of large global corporations.

Switzerland's business network used to be very closed in the past. The so-called "old boys network" operated through business associations, societies, interest groups, political affiliations, and the Swiss Army. Famous examples of business leaders include Fritz Gerber, Rainer E. Gut, and Ulrich Bremi. Later, a new group of connected directors appeared with the likes of Rolf Hüppi, Andres Leuenberger, and Lukas Mühlemann (Schletti, 2006) (for more information see footnote).[17] Nowadays, important business leaders are less active in politics. However, many politicians are members of politically influenced boards in the utilities and health industry sectors (see Fritschi, 2009).

However, this transformation occurred over the last two decades. The average board size decreased from 15 to 10 board members, precipitating a fall in the number of relationships from 105 to 45.[18] Moreover, Swiss directors have been replaced by directors from abroad to some extent. In 1988, 87 percent of all board members were Swiss males, while in 2007 this number shrank to 50 percent (Volonté, 2007). So, even though some directors are very active today, the network intensity cannot be compared to 20 years ago. Further statistical features underline this perception. In 2008, 1,574 director seats were shared with 1,349 directors. Hence, the ratio of seats to directors is 86 percent. In comparison, this ratio was 91 percent for SMI firms in 2007 (and 73 percent in 1988) (Volonté, 2007). Table XII shows the most important directors in 2008 with regard to unified market capitalization, compensation, and directorships. In comparison, Swiss GDP was around CHF 521,101M in 2007.

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[17]Mr. Gerber was CEO and chairman of two blue chip companies between 1988 and 1991 (Zurich and Roche); Mr. Gut was director of six (!) blue chip firms simultaneously from 1988 to 1992; Mr. Bremi was director at Credit Suisse (1988 - 1998), director at Elektrowatt and Georg Fischer (both 1988), and Swiss Re (1992 - 1999). Further, he was national council (Free Democratic Party, FDP) from 1973 until 1991; Mr. Hüppi was was director at Bankverein (1994 - 1997), CEO of Zurich Financial Services (1991 - 2001; director of Zurich Financial Services between 1993 - 2001); Mr. Leuenberger was director at Givaudan (2000 - 2007), Roche (1988 - 2003), Swissair (1998 - 2000), and Swiss Life (1998 - 2002); Mr. Mühlemann was CEO of Swiss Re (1994 - 1996) and director of Swiss Re (1994 - 2001), CEO of Credit Suisse (1997 - 2002 / CEO and director between 2000 and 2002) and director of Swissair (1998 - 2000).

[18]A board of 15 seats implicates 105 ([n * (n-1)] / 2) inter-relationships, whereas 10 directors on average imply 45 relationships.

.2 Legal Aspects: Accountability and Liability

Legal aspects affect the director's independence and his or her scope for external commitments. The Swiss Code of Obligations (SCO), the Swiss company law, outlines the general legal fiduciary duties of the board of directors (SCO Art. 716a).[19] The highest level of a firm's decision-making authority is assigned to the board of directors; however, the board can delegate its operating business — but not strategic decisions and other non-delegable duties — to an executive board (SCO Art. 716b 1). This implies that a firm is free to choose between a one-tiered or two-tiered board structure, and the CEO and chairman positions must not be separated. So, the board is responsible for an adequate composition of the management board. Chairmen are important, because they usually have the the casting vote in majority voting of the board (SCO Art. 713 1), and they are commonly closest to the daily business (SCO Art. 715a 3 & 4).

According to the SCO (SCO Art. 717), directors are obliged to follow the fiduciary duties in the best interests of the corporation with the "duty of care" (*"Sorgfaltspflicht"*, i.e., strict monitoring), the "duty of loyalty" (*"Treuepflicht"*, i.e., no self-dealing) and in "good faith". The SCO does not specify what legal standard of good faith is assumed. Nevertheless, violating good faith can lead to personal monetary liability. An intentional (*"vorsätzlich"*) or (grossly) negligent act (*"fahrlässiges Handeln"*) is usually subject to civil liability (SCO Art. 754 1). Criminal liability is triggered by an intentional or (grossly) negligent, criminal misconduct such as peculation or misappropriation, aggravated unfair management (Swiss Criminal Code (SCC) Art. 158), money laundering (SCC Art. 305bis), corruption (SCC Art. 322), insider trading (SCC Art. 161), fraud (SCC Art. 146) in general or falsification of documents (SCC Art. 251).[20] Hence, an ex-post poor company strategy such as in the case of Swissair in 2001 is not subject to a violation of the fiduciary duties. As in the United States, the business judgment rule is commonly applied in the case of shareholder actions (Kunz, 2010). And today, companies can insure their corporate directors against the financial consequences of litigation (see Daeniker, 2009).

Directors must have the requisite capacity and skill to fulfill their function, and must devote the necessary time and effort to the discharge of their duties. So, from a judicial point of view, insufficient effort, skills or time do not release directors from their duty of care. This suggests that individuals with multiple board seats encounter danger of violating good faith. However, the independence criterion of corporate governance codes

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[19]Besides, the board is liable to the firm's articles of incorporation, the firm's regulation of the board and industry regulation (e.g., banking law), etc.

[20]Fraud can include creative accounting as in the cases of Enron and WorldComm (the two most widely cited cases of failure in corporate governance) which were investigated by the Securities and Exchange Commission (SEC), a government agency and finally lead to SOX in 2002. This liability is personal and has thus to be examined for every director individually (SCO Art 754 para. 1).

encourages professional directors. The criterion prescribes that directors must only act within the contractual obligations to the company. Further financial or personal relations are not permitted. As a consequence, directors seek other external commitments assuming that a directorship is generally not a full-time job. In addition, U.S. courts consider board independence in shareholder lawsuits in order to evaluate the conflict of interests of directors in relation to the duty of loyalty (see Gordon, 2007). The petition to employ a greater proportion of external professionals on company boards has two potentially negative and linked consequences for the commitments of such directors. Multiple mandates lead to insufficient time and there is a trade-off between accountability and independence. Conversely, a sole directorship is subject to wage-dependence and may therefore not raise sensible issues in order to retain his or her position on the board for financial reasons.

In short, prescriptive legislation imposes serious responsibilities on directors and defines the public expectation of their performance. Directors need know-how, time, and independence to fulfill their duties. Lipton (2007) doubts whether it is possible for public companies to attract good board members to serve as directors in the future as a result of the high personal risk involved: The duties of board members have shifted away from monitoring and advising to due diligence and compliance duties since the introduction of the Sarbanes-Oxley (SOX) Act of 2002.

A Tables

A.1 Tables

Table XI: Correlation matrix. This table shows Pearson's correlation matrix between independence and external commitment variables. The sample consists of 197 observations. ***, **, and * denote significances at the 0.1, 1, and 5 percent level.

	Variable	1	2	3	4	5	6	7	8	9	10
1	INDEP	1									
2	CEOC	-0.19**	1								
3	CEOD	-0.20**	-0.18*	1							
4	EXEC	-0.66***	0.39***	0.30***	1						
5	FEXEC	-0.36***	-0.14	-0.09	-0.20**	1					
6	BREL	-0.57***	-0.02	0.05	0.09	-0.05	1				
7	LTEN	-0.11	0.14	-0.01	0.1	0.11	0	1			
8	BLDIR	-0.38***	0.20**	0.03	0.39***	0.14*	0.04	0.09	1		
9	SHR	0.05	-0.08	-0.09	0.04	-0.11	-0.05	-0.1	-0.21**	1	
10	FR	-0.01	0.14*	-0.11	0.07	0.03	-0.07	-0.07	0.23**	-0.22**	1
11	NOS	0.22**	0	-0.13	-0.27***	-0.22**	0.17*	-0.22**	-0.17*	0.01	0.07
12	NOLD	0.23**	-0.15*	-0.07	-0.27***	0.1	-0.16*	-0.07	-0.09	-0.14*	0.04
13	NOCOB	0.07	0.09	-0.20**	-0.14	-0.13	0.18*	-0.08	0.07	-0.01	0.1
14	NOD	0.14*	-0.03	0	-0.19**	-0.14*	0.13	-0.20**	-0.09	-0.03	0.11
15	OCEO	0.09	-0.02	-0.11	-0.17*	0	0.11	-0.11	-0.07	0.1	0.14*
16	OOFF	0.1	0.07	0.05	-0.13	-0.08	0.04	0.02	-0.07	0.02	-0.11
17	MOI	0.24***	-0.07	-0.11	-0.21**	-0.1	-0.05	-0.09	-0.19**	0.04	0
18	MOP	0.13	0	-0.12	0	-0.21**	-0.02	0.04	-0.15*	0.20**	-0.11
19	CHA	0.09	-0.06	-0.09	-0.13	-0.1	0.1	-0.15*	-0.19**	0.02	-0.09
20	ADV	0.06	0	-0.02	-0.09	-0.08	0.08	-0.11	-0.07	-0.14	0.01
21	COMM	0.06	0.09	-0.05	0.02	-0.09	-0.05	0.09	-0.14	0.04	-0.04

	Variable	11	12	13	14	15	16	17	18	19	20
11	NOS	1									
12	NOLD	0.15*	1								
13	NOCOB	0.60***	0.04	1							
14	NOD	0.80***	0.23***	0.29***	1						
15	OCEO	0.19**	0.01	0.32***	0.03	1					
16	OOFF	0.13	-0.21**	0.01	0.02	-0.03	1				
17	MOI	0.47***	0.08	0.18*	0.17*	0.07	-0.04	1			
18	MOP	0.27***	-0.14*	0.16*	0.04	-0.02	0.07	0.20**	1		
19	CHA	0.50***	0.08	0.14*	0.17*	-0.07	-0.02	0.39***	0.20**	1	
20	ADV	0.23**	0.02	0.01	0.11	-0.1	-0.05	0.02	0	0.12	1
21	COMM	0.18*	-0.02	-0.01	0.03	-0.08	0.12	0.17*	0.09	0.18**	0.02

Table XII: Important directors in 2007. This table presents statistics on individual directors. Panel A shows the top 10 directors concerning accumulated market value. Panel B shows the top 10 earning directors. Panel C shows directors with 4 or more directorships in listed Swiss firms of this sample. Pos. is the ranking of the director; Dir. denotes Directorships; G. Gender; Nat. Nationality; and NA is not available. The figures are influenced by very large corporations (market values) such as Nestlé: CHF 204,398M, Roche: CHF 171,501M, and Novartis: CHF 162,820M.

Panel A: Top 10 Directors in Combined Market Value (CHF in Millions)

Pos.	Dir.	Market Value	Firms	Name	Age	G.	Nat.
1	3	455,045	Nestlé, Crédit Suisse, Roche	Brabeck-L., P.	63	M	A
2	2	234,193	Nestlé, Swiss Re	Villiger, K.	66	M	CH
3	2	212,353	Nestlé, Logitech	Borel, D.	57	M	CH
4	3	206,120	Nestlé, Kudelski, Edipresse	Kudelski, A.	47	M	CH
5	3	195,721	Novartis, Holcim, Nationale S.	von Planta, A.	52	M	CH
6	2	191,890	Novartis, Syngenta	Landolt, P.	59	M	CH
7	2	181,395	Roche, Swiss Life	Gehrig, B.	61	M	CH
8	2	180,590	Roche, Schindler	Baschera, P.	57	M	I / CH
9	2	179,433	Roche, Givaudan	Hoffmann, A.	49	M	CH
10	2	119,205	UBS, SGS	Marchionne, S.	55	M	I / CAN

Panel B: Top 10 Directors in Combined Compensation (CHF in Millions)

Pos.	EX.	Comp.	Firms	Name	Age	G.	Nat.
1	1	17.839	Petroplus	Lavinia, R. J.	NA	M	US
2	0	17.517	Credit Suisse, Swiss Re	Kielholz, W. B.	56	M	CH
3	1	17.037	Novartis	Vasella, D.	53	M	CH
4	1	11.081	Richemont	Platt, N.	60	M	D
5	1	10.626	EFG International	Cuoni, J. P.	70	M	CH
6	1	10.295	Richemont	Rupert, J.	57	M	SA
7	1	9.030	Roche	Humer, F. B.	61	M	A / CH
8	1	7.700	Syngenta	Pragnell, M.	61	M	UK
9	1	7.082	Banque Pr. E. Rothschild	Alexandre, J.	66	M	UK
10	1	6.776	Pargesa	Frère, A.	NA	M	B

Note: EX.: executive director (yes = 1, no = 0); Comp.: Compensation.
Only Walter B. Kieholz holds two directorships and is the only non-executive.

Panel C: Directors with 4 or More Directorships in Swiss Listed Firms

Dir.	Firms	Name	Age	G.	Nat.
5	Bucher, Credit Suisse, Conzzeta, Sika, Swiss Re	Bechtler, T. W.	58	M	CH
5	AdvalTech, Nationale S., Petroplus, Quadrant, Sika	Grüebler, W.	65	M	CH
4	Adecco, Allreal, Rieter, Swiss Re	Baer, J.	63	M	CH
4	Implenia, Jelmoli, Petroplus, Swissquote	Dennler, M.	51	M	CH
4	BEKB, Givaudan, Jungfraubahnen, Ypsomed	Kappeler, P.	60	M	CH
4	Allreal, Calida, Micronas, SEZ	Lustenberger, T.	56	M	CH
4	Burckhardt Comp., Comet, Geberit, Schaffner	Hess, H.	52	M	CH
4	Georg Fischer, Forbo, Kardex, SPS	Huber, R.	52	M	CH
4	Allreal, Micronas, Orrell Füssli, Panalpina	Hug, R. W.	63	M	CH
4	Lenz. Bergb., Inficon, Kühne&Nagel, Siegfried	Staehelin, T.	60	M	CH
4	Julius Baer, Sika, Sulzer, Vögele	Sauter, D. J.	50	M	CH