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Essay on Anti-takeover Provisions and Corporate Spin-offs

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Abstract

Despite the prevalent use of anti-takeover provisions (ATPs) based indices as measures of corporate governance quality, the role of ATPs (efficiency vs. entrenchment hypotheses), and their relationship to firm performance are not fully understood. Corporate spin-offs offer a unique opportunity to disentangle entrenchment motives from efficiency motives behind the adoption of ATPs. This setting also provides relatively clean inferences on the relation between ATPs and firm performance. This paper studies the design of ATPs in spun-off firms relative to their parents, the determinants of ATPs, and their relationship to subsequent firm performance. We show that spun-off firms typically are endowed with a higher number of ATPs than their parents, and the additional provisions are mostly delay provisions. Our results on the determinants of ATPs suggest they are more likely to be motivated by efficiency than by entrenchment. Further, in sharp contrast to the negative relationship between ATP indices and equity returns as documented in Gompers, Ishii and Metrick's (2003) and Bebchuk, Cohen, Ferrell (2004), we find a strong positive relationship between ATP indexes and subsequent stock returns for our sample spun-off firms.

Chapter 1. Introduction

1.1. Problems in ATP-based governance Index

Anti-takeover provision based composite index such as the G-index and E-index having become the de facto measure of corporate governance in industry reports and academic research papers.[1] However, five main questions regarding anti-takeover provisions remain unanswered, and the answers to such questions are directly linked to the rationale and validity regarding the use of ATP-based measures as corporate governance measure. First, even though both G-index and E-index assign equal weights to each composite provision, are the importance as well as the impacts really same across all the provisions? If not, which provisions are more likely to be added and which provisions are more likely to be dropped? Second, if more anti-takeover provisions are indeed considered poor governance that entrench management and destroy firm value (this is the major underlying assumption under the ATP-based governance index measures), why would it be widely adopted by firms? Wouldn't shareholders be better off just banning the adoption of such measures outright? Third, what's the relationship between the governance as afforded by the corporate charters and bylaws (where the anti-takeover provisions are specified) and other corporate governance mechanisms, such as monitoring by large stakeholder, product market competition, managerial incentive, etc.? Is it a good practice to use the ATP index as a primary proxy for overall corporate governance quality? Fourth, is there indeed any relationship between the number of anti-takeover provisions adopted by firms and firm financial and operating performance as shown in IRRC based empirical study? If there is, what is causing the

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[1] See "leeds-faculty.colorado.edu/bhagat/CorpGovFirmPerformance.ppt"

statistical relation? Fifth, do institutional investors generally follow the implication of IRRC based empirical study?

The G-index and E-index gained its popularity as a corporate governance measure due to the negative relation between the respective index and firm performance documented in the Gompers, Ishii and Metrick's (2003) and Bebchuk, Cohen, Ferrell (2004), and substantiated by many following on studies. However, not only the empirical evidences on the negative relation between the ATP-based indexes and firm performance are somewhat weak and sometimes mixed, but also the interpretation of such a relationship faces a high hurdle of endogeneity issues.

1.2. Spin-off as an Experiment

In this paper, we attempt to shed light on the previous five questions by studying the adoption of ATPs and its relationship with firm performance and institutional holdings in corporate spin-offs. Spin-off is a corporate event that a new public company (*the subsidiary*) is created by distributing the shares of one or multiple subsidiaries from a parent company (*the parent*) to its shareholders. After spin-off, the subsidiary will be independent from the parent in both management and ownership. No cash is generated for either the parent or the subsidiary. Corporate spin-offs offer three unique advantages in helping us to gain additional insights on ATPs. First, spin-off is among the few corporate events which offer an opportunity to explore the design of ATPs. To study the ATP design based on the panel analysis is subject to the problem that firms rarely update their ATPs according to the changing characteristics over time (Field and Karpoff 2002). In contrast, the ATPs of the newly spun-off firms are structured from a clean slate, with other corporate governance mechanisms and firm characteristics in place. Further, the difference in ATPs between parents and subsidiaries could shield light on the relative importance

among ATPs from the designers' perspective. Therefore, the event of spin-off enables us to enter the black box of ATP design.

Second, unlike in other settings where the adoption of ATPs are proposed by management and need shareholder approval, ATPs of spun-off firms are designed by the management of pre-spin-off parent firm without any need of shareholder approval. In addition, no capital is raised in a spin-off. Therefore, the adoption of ATPs in a spin-off faces much less interferences and pressure from current or potential shareholders than in IPO and other corporate events. The structure of ATPs being designed must be optimal from the designer's point, whether the designer's incentive is or not aligned with shareholders.

Third, the management of pre-spin-off parent firm not only designs the ATPs of spun-off firm, but also decides on who will be managing the firm. Therefore, it is much easier for researchers to identify whether ATPs are likely to be driven by entrenchment purpose (when the designer of ATPs will be the top manager of the subsidiary – *parent top management group*) so that ATP setting is optimal to the managers, or ATPs are driven by efficient purpose (*non-parent top management group*) so that ATP setting is optimal to the shareholders.[2] This well-defined incentive of ATP adoptions would critically help us to deal with the endogeneity issue when interpreting the statistical relationship between ATPs and subsequent firm performance, which has posted a serious challenge in previous empirical studies on this issue.

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[2] If the voluntary spin-off is aimed to "unlock hidden value" and/or improve efficiency, when the parent management will not keep managing the spun-off firms, it will be very unlikely that the parent management design the ATPs to help entrench the new management of spun-off firms.

1.3. Result Overview

Examining the adoptions of ATPs in 104 firms which were spun-off between 1997 and 2008, we find that spin-off subsidiaries have more ATPs than characteristics matched firms in IRRC, showing that the ATP design for spin-off subsidiaries is different from that for most of IRRC firms. Actually on average, the spun-off firms adopt more ATPs than their parent firms. The average G-index and E-index of parents are 12.920 and 2.318, while the numbers for subsidiaries are 14.102 and 2.807. At the provision level, firm managers prefer to adopt delay provisions, protection provisions, and limitation on bylaw amendment which provides protection on the delay provisions. The adoption of these provisions constitutes most of the differences in ATP index between parents and subsidiaries. We also find that the IRRC database is subject to substantial data collecting errors. As much as 65% of director indemnification incidence, 48% of limitations of director liability incidence, 27% of severance agreements incidence, and 11% of indemnification contracts incidence are underreported by IRRC due to data collection error. Such errors could cause variation in G-Index[3].

Even though the building of ATP-index is subject to problematic assumption and data collecting errors, ATP-index could still reveal important information at the aggregate level. We further examine the determinants of ATP-index for the spun-off subsidiaries in light of firm characteristics, parent management incentive, and other corporate governance mechanisms. We find that firms with higher growth prospect, firms that are more likely to be a takeover target tend to have more ATPs adopted. In addition, we also find that firms with strong alternative governance mechanisms, such as having higher institutional block ownership or pension

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[3] E-index does not include these four provisions.

ownership, facing strong product market competition tend to have more ATPs adopted. This result highlights the need to view ATPs in the context of overall corporate governance environment a firm is operating in rather than in isolation as a corporate governance quality measure. This is consistent with the simultaneous equations analysis in Bhagat and Bolton (2008). Even though ATP could potentially entrench management by reducing the threat of market for corporate controls, when other corporate governance mechanism are in place helping to mitigate the agency cost, firms could utilize ATPs for efficient purpose, such as enhancing bargaining power (DeAngelo and Rice 1983; Stulz 1988), encouraging innovation and adoption of long-term risky but value enhancing project (Stein 1988; Stein 1989; Manso 2011).

In the third part of our dissertation, we analyze the relationship between ATPs and the spun-off firms' subsequent financial and operating performances. For our sample spun-off firms, we find a strong positive association between the ATP measures (G-index and E-index) and subsequent long-term stock performance, in sharp contrast to the negative (but somehow weak) relation between ATP index and equity returns as documented by Gompers, Ishii and Metrick (2003) and Bebchuk, Cohen, Ferrell (2009). The relationship between ATP and operating performance for our sample spun-off firms is weak, but still on the positive side, suggesting that the higher number of ATP provisions being adopted for efficient purpose while the positive implications may not be fully comprehended by investors at the beginning of spin-off completion. All result remains after we exclude the top management group which is subject to high entrenchment probability.

Fourth, we investigate the institutional holding change after spin-off. We find that institutional holding declines more for subsidiaries with higher ATPs immediately after spin-off. Then, the institutional holdings increase back to the pre-spin-off level within the next 9 months. In the

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following two years, institutional investors increase share holdings in most of spin-off firms, but more on high ATP firms. This result suggests that institutional investors generally applied suggestions from proxy advisory companies such as IRRC by selling more aggressively on subsidiaries with high ATPs. As more information including the operating performance is revealed into the market, they drop those suggestions. We also show that pension funds are different from most of the institutional investors as they sell more aggressively for low ATP firms instead.

Finally, we explore the relation between managerial background and subsidiary ATPs. We classify subsidiary CEOs based on their top management/governance experience and employment history and find that if the CEO of a subsidiary has less top management/governance experience, more ATPs are set in the subsidiary to increase the difficulty of hostile takeover, so as to protect unexperienced CEOs and help them to gain precious time for accumulating top management experience through daily practice.

1.4. Contribution

What does this dissertation contribute to our understanding of anti-takeover provisions and its relationship with firm performance? First, we are the first to systematically examine the ATP composite index in spun-off subsidiaries and its relationship to the subsequent firm performance. Daines and Klausner (2004) is the first and only prior study who examines the design of anti-takeover provisions in spun-off subsidiaries[4]. However, they only focus on staggered board and voting restrictions, without covering the wide set of provisions which form the basis of G-index

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[4] The definition of Spin-off in Daines and Klausner (2004) includes tax-free spin-offs and carve-out.

and E-index. In addition, they did not study the spun-off firms' post-spin-off performance either. Chemmanur et al (2009) is the only other study on anti-takeover provisions in corporate spin-offs. However, they rely on IRRC coverage for the ATP index measure which lead them primarily focus on the ATP of spin-off parents, not the subsidiaries, due to the fact that very few spun-off subsidiaries are tracked by IRRC immediately after their independence[5].

Besides the uniqueness of corporate spin-off which provide the advantages in addressing the questions on the determinants of ATPs and on the interpretations of relationship between ATP and subsequent firm performance, the spun-off firms can also be viewed pretty much as an out of sample study on the relationship between ATP and firm performance, due to the sampling bias of IRRC which primarily covers large firms and collecting errors in four provisions. Our results suggest that the (weak) negative relation between ATP and firm performance as documented by studies based on the IRRC sample cannot be generalized to out-of-sample firms. If anything, the negative relation between G-index, E-index and firm performance based on the IRRC sample could possibly be driven by a small subsample of IRRC firms which have more free cash flow problems.

Third, our study provides some supports that firms adopt ATPs when they perceive potentially more benefits derived from the adopted anti-takeover provisions (efficient hypothesis) such as possibly enhancing bargaining power in takeovers, pursuing high growth strategy or protecting unexperienced CEOs. Our findings also speak the substitutory role of market for corporate control discipline and other alternative corporate governance mechanism. We show when there is

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[5] In our spin-off sample, 12.5% of the subsidiaries are tracked by IRRC immediately after their independence.

sufficient large shareholder monitoring and/or product market competition, firms could adopt more anti-takeover provisions to extract the potential benefits without worrying too much about the loss in managerial discipline. Therefore, our findings raise caution on the simplistic approach of primarily relying on the G-index and/or E-index as a corporate governance quality and managerial entrenchment measure. It calls for taking account specific firm characteristics and other governance measures to properly interpret whether the amount of anti-takeover provisions deviate from its optimal level.

The rest of the dissertation is organized as follows. Chapter 2 discusses the related background and theoretical discussions on anti-takeover provisions and related empirical evidence. We will also bring in discussions on the related literature to this paper. Chapter 3 describes data and research design. Chapter 4 presents our findings.

Chapter 2. Backgrounds and Related Literature

2.1. Spin-off literature

The decision to spin-off is always associated with significant market reactions. Previous literature shows a positive abnormal return of around 3 percent during the two days surrounding the spin-off announcement date (Hite and Owers 1983; Miles and Rosenfeld 1983; Rosenfeld 1984). This announcement return, combined with the positive long-run excess stock returns (Cusatis, Miles, and Woolridge 1993; Desai and Jain 1999; McConnell et al. 2001) and improved operating performance (Desai and Jain 1999; Daley, Mehrotra, and Sivakumar 1997), suggest that the independence of the subsidiaries from the parent firm increase the operation efficiency of subsidiaries. Previous literature argues that part of the market reaction is driven by improvement of the employment contract, both explicit and implicit, remove of negative synergy and improved of corporate transparency.

1. Efficient re-contracting

Managerial compensation is widely taken as an important governance mechanism to align the interests of managers with that of shareholders. Aron (1991) argue that it is desirable to motivate managers through linking managers' compensation to the market value of the assets they manage, and the compensation mechanism for division managers could be improved through spin-off because the stock value of a company is a noisy signal of any one divisional manager's productivity and spin-off creates market measure that reflects the productivity of the spun-off divisions alone. His model further shows that the value of spinning off arises from the creation of the manager productivity measure through re-contracting.

Seward and Walsh (1996) examine the compensation contracts of spin-off subsidiary CEOs and confirm the efficiency improvement of the employment contract. They show that most of the subsidiary CEOs comes from formerly combined company. Subsidiary CEOs will earn the majority of his income through performance-contingent compensation. In addition, outside directors comprise a majority numbers on compensation committee of the subsidiary. However, they are not able to find any relation between spin-off announcement return and the relative amount of performance-contingent compensation.

In addition, a history of strategic spin-off will also create incentive for researchers. Corporate's investment in R&D activity is facing to a problem that many of the innovation does not contribute to company growth, but to the increase number of publications, patents or software authored. Based on an in-depth case study of France Telecom, the French company involved in strategic spin-off for fifteen times, Ferrary (2008) argues that strategic spin-off change the incentive pattern by enabling a researcher to create a company based on work that he himself has carried out within the R&D department of this mother company, constitutes both an economic incentive (through the status of shareholder) and a symbolic one (through the status of entrepreneur).

2. Elimination of negative synergies

Negative synergy implies that when divisions of a company combine their efforts, they can accomplish less together than if adding their accomplishments achieved separately. Negative synergy for spin-off firms could generally take two forms.

The first form is operating inefficiency. Inefficiency is removed through spin-off because managers are getting more focused after separation. Using different method to identify focus

improving spin-offs, Desai and Jain (1999) and Daley, Mehrotra, and Sivakumar (1997) both examine the change in operating performance around the spinoff and find superior long-run operating performance following spinoffs for focus-increasing firms, suggesting that the separation leaves the room for improvement of operating efficiency.

The second form is inefficient internal capital allocation. Scharfstein and Stein (2000) argue that the agency problem not only exists at the CEO level, but at the division head level as well. In their two-tiered agency model, division head from weak divisions would like to take rent-seeking activities to increase their bargaining power when negotiating a compensation package with CEO, given their relatively lower opportunity costs. In order to avoid pay the managers of week divisions too high relative to the managers of strong divisions, CEO may choose to distort investment in favor of week divisions as a compensation to them. This will create negative synergy as the assets are not efficiently allocated. To spin-off week divisions from the parent could avoid such kind of inefficiency.

3. Information asymmetry

Nanda and Narayanan (1998) develop a model of asymmetric information about firm value between the managers of the firm and the market. In their model, market can observe the aggregate cash flows of the firm but not the individual divisional cash flow. Efficiently, the market will undervalue the successful divisions and overvalue the poorly performing divisions. This results in the undervaluation of the combined firm. An equilibrium is then developed so that an undervalued firm that requires external capital to finance growth opportunities will resort to raising capital through divesting the underperforming divisions. Then the market will realize that the divested divisions are overvalued and the remaining division are undervalued, and offer a fair price to both types of divisions.

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Krishnaswami and Subramaniam (1999) further argue that spin-off could enhance firm value through the improvement of the transparency. An ordinary disclosure of this information by a combined firm without separating the divisions is subject to a creditability challenge because shared costs across divisions could be manipulated. Spin-off eliminate the possibility of shared costs manipulation, and therefore transparency is got improved. Based on a sample of 118 spin-offs, they show that spin-off firms have higher levels of information asymmetry compared to their industry and size matched counterparts. Significant information asymmetry decrease is observed after spin-off. However, Veld and Merkoulova (2004) does not find support for their information asymmetry argument based on a European sample of 156 spin-offs from 15 different European countries.

To conclude, the spin-off decision could improve the corporate governance in two ways: first, it could improve the governance condition through employment re-contracting, so that the interests of both managers and researchers will be more aligned with that of shareholder. Second, it could reduce the agency problem and information asymmetry through eliminating negative synergy and improving operating transparency. Given the significant improved governance condition through separation, the spin subsidiaries will be very unlikely to reduce ATP to further improve the governance condition, unless the designer believe that governance problem is a big concern in the combined firms and improve governance through spin-off is insufficient. This leads to our first hypothesis:

Hypothesis 1A (H1A): Subsidiaries have more ATPs than parents.

Hypothesis 1B (H1B): Subsidiaries do not have more ATPs than parents.

2.2. Anti-takeover provisions and corporate governance

The second strand of literature our paper is closely related to is the vast literature on corporate governance and especially the ones that focus on the negative effect (entrenchment hypothesis) of anti-takeover provisions on corporate governance quality. The link between anti-takeover provisions and corporate governance starts with the disciplinary role of the market for corporate control on firm management. The creditable threat of a control contest by rivals works to discipline firm management to work hard and make efficient use of the firm asset, or otherwise a more competitive rival will see profit opportunity to acquire control of a poorly managed firm. Anti-takeover provisions (ATPs) as mostly specified in the corporate charters and bylaws make control contest more difficult, therefore the adoptions of such provisions have been viewed as potentially dampening the power of market for corporate control and entrenching the management.

This view led to the use of ATPs as corporate governance measure, with any voluntary or system-wide (such as related state law changes) changes being viewed as a change in the entrenchment level of firm management. Supporting this line of view, early studies Borokhovich, Brunarski and Parrino (1997) Bertrand and Mullainathan (2003) documented the association between the adoption of a particular provision and the subsequent value decreasing actions taken by firm management. Later studies expand on finding negative relationship between composite ATP-indexes and equity returns (see Gompers, Ishii and Metrick (2003), Bebchuk and Cohen (2005) Bebchuk, Cohen and Ferrell (2009)). Building on the findings and implications of these influential studies, numerous empirical studies and industry reports have employed the ATP-index as primary proxy for corporate governance quality.

Despite the sheer amount of literature that equate anti-takeover provisions with managerial entrenchment and poor corporate governance, anti-takeover provisions have been widely adopted by firms, even in more than half of the IPO firms (Field and Karpoff (2002). If "agency problem" is the main underlying driving force for the wide use of anti-takeover provision as suggested by this line of literature, then it is a "puzzle" why shareholders do not choose to just outright banning the adoption of such provisions. This brings to the alternative view on anti-takeover provisions which we will discuss next.

2.3. The efficient hypotheses of anti-takeover provisions

Bargaining power hypothesis is the most fundamental motivation of adopting ATPs. It argues that ATPs may significantly increase the acquirers' costs of conducting hostile takeover. This put potential acquirers in a condition that in order to quickly finish the deal with affordable costs, the deal has to be made through negotiation with target managers. This help target managers gain bargaining power in the M&A negotiation, and acquirer have to pay a higher premium in a friendly offer in order to not pay for the even higher costs through hostile takeover if acquirer want the transaction to go through. Such higher premium, according to the theory of Stulz (1988), is at the costs of less takeover probability because if the protection of targets is too strong, the costs of hostile takeover could be too high for acquirers to accept. Such mechanism is also supported by previous empirical studies (Comment and Schwert, 1995; Schwert, 2000). This leads to our second set of hypothesis:

Hypothesis 2A (H2A): Subsidiaries with higher likelihood / higher willingness to be acquired after spin-off have more ATPs.

Hypothesis 2B (H2B): Subsidiaries with higher likelihood / higher willingness to be acquired do not have more ATPs.

The theoretical paper by Stein (1988, 1989) and Manso (2010) moves one step further based on the bargaining power hypothesis and focus on the impact of increased bargaining power on firm management. They models imply that ATPs could promote innovation and long-term growth. Stein (1988, 1989) argues that ATPs may help to avoid managers to behave myopically. Given the information asymmetry between shareholders and managers, some of the inner work of managers, especially for those long-term projects, could not be observed or understood by shareholders. Therefore, stock price may be undervalued. Managers may have to forsake these projects to raise the stock price so that the company will not be ripped off by raiders. Strong protection over hostile takeover through more ATPs could release managers from such type of concern so that they don't have to behave myopically. Manso (2010) models the compensation of the agent by looking at the path of performance. He argues that standard pay-for-performance schemes may have adverse effect on innovation because managers may be punished by the failing of innovation approach, which is of high risk. Therefore, an optimal scheme should exhibit substantial tolerance for the early failure and reward for long-term success. He suggests that managerial entrenchment by ATPs may boost the tolerance level of a corporation and motivate managers to support more innovation. Therefore, our third set of hypothesis is:

Hypothesis 3A (H3A): Subsidiaries with higher growth potential have more ATPs.

Hypothesis 3B (H3B): Subsidiaries with higher growth potential do not have more ATPs.

2.4. Anti-takeover provisions and other corporate governance methods

As suggested by agency theories starting from Jensen and Meckling (1976), agency problems come with the conflict of interests between managers and shareholders, which are apparently not exceptional for spin-off subsidiaries. As the entrenchment consequences of ATPs are well recognized, to look from a big picture of corporate governance, a complete corporate governance system relies on several governance methods that work together from both internal and external, and the number of ATPs should depend on the strength of other governance methods, with either a complement or a substitute relation.

The empirical results in previous literature actually lead to 2 totally contradict predictions: Cremers and Nair (2005) test the interaction between internal and external governance, and however suggest a mutual complementary relation when they are associated with profitability and long-run abnormal returns. Following this implication, in order to have a better performance, a firm may need to have both strong internal governance and strong external governance, and we should expect a negative relation between ATPs and the strength of other governance. On the other hand, Giroud and Mueller (2010, 2011) show an opposite result by looking at the interaction between market discipline and product market competition. They find that the effects of ATPs on equity returns, operating performance, and firm value are only significant in noncompetitive industries, suggesting that a substitute relation among different governance methods. Following their logic, if a subsidiary is subject to sufficient governance, internal or external, shareholders may not rely heavily on the market discipline and will not intentionally reduce the number of ATPs. Our fourth set of hypothesis is:

Hypothesis 4A (H4A): Subsidiaries with strong existing governance have more ATPs.

Hypothesis 4B (H4B): Subsidiaries with strong existing governance do not have more ATPs.

2.5. Anti-takeover provisions and firm performance

Both Gompers, Ishii and Metrick's (2003) and Bebchuk, Cohen, Ferrell (2004) find that the decile of firms with the strongest takeover defenses has poorer financial performance than the Decile with the weakest defenses. However, the authors all mentioned that due to the limitation of panel analysis, their study only implies the negative relation between ATP index and long-run performance, but not causality between these two. The negative ATP-return relation could be driven by the factor that managers of poor performing firms may worry about their job security and entrench themselves though adding ATPs. If so, then the selection bias is corrected, the negative relation should get weaker, disappear or even get reversed.

Some literature deals with this causality issue by conducting event studies to analyze the impact of the passage of state antitakeover statute. For instance, charter amendment event is frequently used to test the exogenous effects (Jarrell and Poulsen 1987; Baghat and Jefferis 1991). Even though negative abnormal return is observed around the event, these event studies, as argued by Gompers, Ishii and Metrick's (2003), face the difficulty to exclude the effect of the unrelated information that comes with the events. This difficulty could be overcome if an event of changes in state takeover laws are adopted (usually the business combination laws). However, law effect studies may also face a problem that it is difficult to identify the exact time when the market becomes aware of the impending law passage. All of these difficulties limit the explanation power of event studies.

Another string of literature tries to solve the causality problem by finding a situation when the interests of managers and shareholders are closely aligned. In that case, managers have no

incentive to entrench themselves, and the corporate decision about the use of ATPs should be based on nothing but firm value. A group of IPO companies may be an acceptable sample to fit in this setting. Given that entrepreneurs normally work as managers and hold large proportion of firm principles before going public, the separation of ownership and control is still in the progress. Then, the agency conflicts between managers and shareholders may not be as severe as those in seasoned public companies. If we assume that corporate governance is priced by the investors, in order to raise more capital, firm's governance mechanism will be efficiently built. Several studies investigate the rationale for companies' choices about the number of ATPs by IPO companies. Based on a sample of 1019 IPOs from 1988 to 1992, Field and Karpoff (2002) find that managers deploy takeover defenses particularly when they own few shares, enjoy high compensation, and are relatively free from monitoring by non-managerial shareholders. This suggests that IPO managers are likely to deploy defenses when their personal benefits are high and they bear few of the costs. On the contrary, Daines and Klausner (2001) do not find evidence to support the private benefit hypothesis. Their study shows that more ATPs are adopted when takeover activities are more frequent and firm performance is more transparent, which is in support of management entrenchment hypothesis. Interestingly enough, both of these two literature shows that IPO firms actually build their governance mechanism inefficiently, either for private benefits or for managerial entrenchment. This, however, also suggests that IPO is not a satisfactory experiment setting to test the direct impact of ATPs on firm performance. Given the limitation of these literatures, it is still far from clear about how shareholders' wealth may be influenced by introducing more or less ATPs. This motivated me to find another corporate event that ATPs will be designed optimally.

As discussed earlier, ATP setting in a spin-off faces much less interferences and pressure from current or potential shareholders. In addition, the ATP design for most of the spin-off subsidiaries is unlikely to be subject to the entrenchment problem (except for the top-management group). These unique features make the event of spin-off well suited to the empirical motivation. Our last set of hypothesis is:

Hypothesis 5A (H5A): Subsidiaries with higher ATPs have lower long-run performance.

Hypothesis 5B (H5B): Subsidiaries with higher ATPs do not have lower long-run performance.

Chapter 3 Data and Sample

3.1. Spin-off sample and data

Our original sample includes 312 U.S. spin-offs over the period 1997-2008. This sample is built by combining the deals in Thomson Financial SDC Platinum (SDC) mergers and acquisitions database with the deals in CRSP with a distribution code of 3753 or 3763. To ensure the sample quality, we searched FACTIVA News and electronic filings on EDGAR to further check the identity of each spin-off. Based on the searching result, 30 dual class spin-offs, 23 two-stage spin-off, 2 carve-outs which are misclassified[6], 19 merger related spin-offs[7], 3 taxable spinoffs[8] and 1 case that was not finalized are further dropped from the sample, which leaves a sample size of 237. Further, 60 events are excluded because the subsidiaries could not be tracked in Compustat database. 40 observations are dropped if the spin-off subsidiaries come from financial (SIC 6000-6999) and utility industries (SIC 4910-4949), so that our stock performance measures may not be driven by tax reasons. One special case is dropped as the subsidiary firm may issue another class of common stock to raise capital on the spin-off date. This, in combine

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[6] For two-stage spin-off, parent may sell up to 20% of the subsidiary shares to the public through equity carve out, and distribute the remaining share to shareholders in the second stage. I exclude carve-outs and two-stage spin-offs in our sample to reduce the short-term tensions between the firm insiders and outside investors, which may influence the initial design of ATPs.

[7] A spin-off is merger motivated if the spin-off is announced with a merger and acquisition plan of the combined firm. In this case, spin-off is part of the restructuring process, which may increase the complexity of ATP settings.

[8] According to Section 355 of the Tax Code by the securities and Exchange Commission (SEC), if the parent and subsidiary are actively engaged in business for at least five years before the spin-off, the parent owns at least 80 percent of the total combined voting power of all classes of stock entitles to vote, at least 80 percent of the total number of shares of subsidiary's stock, and at least 50 percent of the value of all the subsidiary's stock, the parent distributes all of its subsidiary's stock, and no pre-arranged plan exists for shareholders to sell the subsidiary stock subsequent to the distribution, the spin-off is tax-free. 3 spin-offs are taxable in our original sample.

with the 29 spin-off subsidiaries the charter or bylaws of which could not be found in EDGAR, leaves us with a final sample of 104 spin-offs from 97 spin-off events[9]. For each of the 104 subsidiaries, we collected their stock trading information from CRSP, accounting information from Compustat, and institutional holdings from 13-F.

We report the distribution of spin-offs by event year in Table 1. Spinoff was very common in late 1990s. 1997-1999 is the hottest period with a frequency of 44 in total. And spin-off became less common thereafter, especially for the period between 2004 and 2006, as a total of 4 spinoffs took place in each year. After year 2006, the events of spin-off became active again. We also test industry distribution based on the Fama and French (1997) 10-industry code. In Table 2, we also show the distribution of spin-offs by industry, where Industry is classified into 10 categories according to Fama and French (1997). Our sample has more companies from manufacturing. Business equipment and other industry, while less from consumer durables industry, oil, gas, and coal extraction and production industry, and telephone and television transmission industry. We do not find apparent industry cluster in a single industry.

3.2. ATP provisions and the construction of composite indexes

Investor Responsibility Research Center (IRRC) takeover defense database (RiskMetrics acquired IRRC in 2006) is widely used in corporate governance literature. However, IRRC only collects anti-takeover provisions for companies listed in S&P 1500 or companies with high

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[9] Some firms may spin-off several subsidiaries in one deal. For instance, in Aug 11, 2008, IAC/InterActiveCorp distributes shares for 4 subsidiaries: HSNi, ILG, Ticketmaster, and Tree.com.

Table 1: Sample distribution by year[a]

Year	Frequency	Percentage
1997	15	14.42
1998	15	14.42
1999	14	13.46
2000	8	7.69
2001	10	9.62
2002	8	7.69
2003	5	4.81
2004	4	3.85
2005	4	3.85
2006	4	3.85
2007	7	6.73
2008	10	9.62
Total	104	100

[a] Table 1 shows the distribution of spin-offs by event year. Percentage is the number of spin-offs in one year over our total sample size (in percentage).

Table 2: Sample distribution by industry[a]

Fama-French industry (10 industries)	Frequency	Percentage
Consumer NonDurables	7	6.73
Consumer Durables	5	4.81
Manufacturing	19	18.27
Oil, Gas, and Coal Extraction and Production	3	2.88
Business Equipment	18	17.31
Telephone and Television Transmission	5	4.81
Wholesale, Retail, and Some Services	11	10.58
Healthcare, Medical Equipment, and Drug	15	14.42
Other	21	20.19
Total	104	100

[a] Table 2 shows the distribution of spin-offs by industry. Industry is classified into 10 categories according to Fama and French (1997). Percentage is the number of spin-offs in one year over our total sample size (in percentage).

institutional ownership for every two to three years from 1990 to 2006[10]. Most of the spin-off

subsidiaries in our sample are not big enough to be tracked within one year after the spin-off. To

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[10] There has been a significant change in RiskMetric's governance data since the year 2007 when IRRC is acquire. Many provisions used in G-index are no longer collected.

ensure a uniform standard, we hand collected the 22 firm-level corporate governance provisions, 6 state corporate law statutes (including opt-in and opt-out provisions) in G-index) immediately before spin-off for all spin-off parents and those immediately after spin-off for all subsidiaries.

Even though Gompers, Ishii and Metrick's (2003) give a clear definition of firm-level corporate governance provisions, to identify them is tricky, because most of the provisions in the firm filings are shown in a descriptive way that it is hard to identify them directly by searching the provision names. Further, neither Gompers, Ishii and Metrick's (2003) nor IRRC provides any detail about the exact filings they use to collect each provision. Therefore, before we start to collect ATPs for the spin-off parents and subsidiaries, we used the following mechanism to reduce the collecting method error and ensure a good data quality:

We build a group of 40 IRRC companies for each firm-level provision and make sure that in each group, half of the companies have the provision and half do not. Then we searched for the selected provision in each corresponding group and check whether IRRC shows a different opinion about the existence of ATP. Overall, the result suggests that we share a very similar approach as IRRC to identify ATPs, except for 4 provisions: limitation of director liability, director indemnification, indemnification contracts and executive severance agreements. We observe significantly higher incidences for all these four provisions. The only source to identify limitation of director liability and director indemnification is corporate charter. After checking the charter contents, we believe that he incidence difference is due to the problem in the IRRC collecting method. Cremers and Ferrell (2013) compare the incidence of each ATPs in their hand collect sample with that in the IRRC database, and find large discrepancies for these two provisions as well. We identify indemnification contracts and executive severance agreements mainly from exhibit of annual reports and content of proxy statements. The comparison result

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shows that IRRC underreport the incidence in both two sources, suggesting that these two provisions are also unreliable in IRRC database.

Based on the definitions of firm-level corporate governance provisions in Gompers, Ishii and Metrick's (2003) and the comparison test result, we formalize our ATP collecting method as follows:

The firm level corporate governance provisions are identified based on the analysis of the earliest corporate charters, bylaws, annual reports (10-K), and proxy statements (DEF-14) available. Corporate charter and bylaw are obtained through checking the exhibits of 10-K. 11 provisions are identified based on the information in charters and bylaws: fair price provisions, blank check, supermajority requirements, limitation of director liability, directors' duties provisions, Anti-greenmail provisions, limitations on action by written consent, special meeting limitations, director indemnification, bylaw amendment limitations, and charter amendment limitations[11]. 3 Variables are built by combining charter and bylaw information with proxy statement (unequal voting rights, cumulative voting rights, and classified board). State of incorporation, dual class and poison pills are gathered from 10-K and its attachments. We search the proxy statements to identity golden parachute, pension parachute, silver parachute, compensation plans with changes-in-control provisions, and secret ballot. Indemnification contracts information and executive severance agreements both comes from either exhibits in each 10-K, which may provide link to the contract content, or the contents of proxy statement.

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[11] Opt-in and opt-out options to state corporate law statutes are also collected through corporate charters and bylaws.

To ensure that we do not miss some contracts or agreements when firms are using some uncommon names, we check all the contract names listed in the exhibits.

Using these 22 firm level provisions, 6 state corporate law statutes and the options to opt-in or to opt-out the state laws, we build the G-index and E-index by following Gompers, Ishii and Metrick's (2003) and Bebchuk, Cohen, Ferrell (2004). We add one point for every provision that restricts shareholder rights and is included in the index, and calculating the aggregating points[12]. Among these 28 provisions, 20 are unique because there are some overlaps between firm-level analogue and state law. For instance, we have both fair price for firm level provision and fair price state law. One point is deducted for each overlap, which makes the range of G-index to be 0 to 24 and the range of E-index to be 0 to 6.

The Panel A of Table 3 shows the incidences of ATPs in our sample as well as in IRRC sample. An ATP is coded as a combined provision if it is covered both under the firm-level provision and state corporate law statutes, with the adjustment for the options to opt-in or opt-out the state law.[13] The first three columns compare the incidence of each provisions as well as the aggregate index between our sample and IRRC full sample in 1997-2008. 9889 firm-year observations are recorded in IRRC during that period. The difference is in bold if its absolute value is higher than 10 percent.

Overall, both G-index and E-index are higher for spin-off subsidiaries. At the individual provision level, as expected, we observe large difference for limitation of director liability,

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[12] Secret ballot and cumulative voting may increase shareholder rights. Following Gompers, Ishii and Metrick's (2003), for each one, I add one point to G-index when a firm does not have the provision. For each remaining provision, I add one point when a firm has it.
[13] Supermajority, Anti-greenmail, Directors' duties, and Fair price are combined provisions

Table 3: ATPs and ATP-index comparison[a]

Panel A： Combined ATP incidence

	Subsidiaries			Parents and Subsidiaries		
	Sample	IRRC	Difference	Sample	IRRC	Difference
N	104	9889		63 (13)	63	
Index						
G-index - Mean	11.92	9.18	2.74	11.41	9.76	1.65***
E-index - Mean	2.64	2.44	0.21	2.70	2.70	0.00
Delay						
Blank check	95.19%	89.57%	5.62%	96.83%	96.83%	0.00%
Classified board	75.00%	60.71%	14.29%	76.19%	76.19%	0.00%
Special meeting	82.69%	43.09%	39.60%	65.08%	65.08%	0.00%
Written consent	77.88%	41.26%	36.63%	55.56%	58.73%	-3.17%
Protection						
Compensation plans	69.23%	71.76%	-2.53%	76.19%	73.02%	3.17%
Contracts	27.88%	9.05%	18.83%	20.63%	9.52%	11.11%***
Golden parachutes	67.31%	67.84%	-0.54%	71.43%	65.08%	6.35%
Indemnification	98.08%	22.79%	75.28%	90.48%	25.40%	65.08%***
Liability	99.04%	40.41%	58.63%	95.24%	47.62%	47.62%***
Severance	43.27%	7.46%	35.81%	28.57%	1.59%	26.98%***
Voting						
Bylaws	55.77%	20.73%	35.04%	30.16%	31.75%	-1.59%
Charter	0.00%	2.92%	-2.92%	0.00%	0.00%	0.00%
Cumulative voting	0.00%	10.61%	-10.61%	6.35%	6.35%	0.00%
Secret ballot	14.42%	11.29%	3.14%	26.98%	22.22%	4.76%*
Supermajority[b]	21.15%	34.25%	-13.10%	25.40%	22.22%	3.17%
Unequal voting	0.00%	1.58%	-1.58%	0.00%	0.00%	0.00%
Other						
Anti-greenmail[b]	7.69%	16.04%	-8.35%	11.11%	11.11%	0.00%
Directors' duties[b]	16.35%	10.84%	5.51%	12.70%	4.76%	7.94%**
Fair price[b]	32.69%	47.92%	-15.23%	46.03%	47.62%	-1.59%
Pension parachutes	2.88%	1.60%	1.29%	4.76%	3.17%	1.59%
Poison pill	49.04%	57.08%	-8.05%	76.19%	74.60%	1.59%
Silver parachutes	0.00%	2.00%	-2.00%	1.59%	1.59%	0.00%
State						
Business combination law[c]	83.65%	87.89%	-4.23%	88.89%	88.89%	0.00%
Cash-out law[c]	0.96%	2.92%	-1.96%	0.00%	0.00%	0.00%

(Table 3 continued)

Panel B：ATP incidence for combined ATPs

	Subsidiaries			Parents and Subsidiaries		
	Sample	IRRC	Difference	Sample	IRRC	Difference
N	104	9889		63 (13)	63	
Pre-adjustment						
Supermajority	17.31%	15.69%	1.61%	15.87%	11.11%	4.76%*
Anti-greenmail	1.92%	4.42%	-2.50%	7.94%	7.94%	0.00%
Directors' duties	14.42%	7.65%	6.77%	12.70%	6.35%	6.35%**
Fair price law	19.23%	25.03%	-5.80%	33.33%	33.33%	0.00%
Anti-greenmail law	7.69%	14.01%	-6.31%	4.76%	4.76%	0.00%
Directors' duties law	2.88%	4.29%	-1.40%	0.00%	0.00%	0.00%
Fair price law	19.23%	32.12%	-12.89%	20.63%	20.63%	0.00%
Control share acquisition law	13.46%	27.36%	-13.90%	12.70%	12.70%	0.00%

[a] Table 3 shows the incidences of ATPs in my sample as well as in IRRC sample. In Panel A, four ATPs are coded as a combined provision if they are covered both under the firm-level provision and state corporate law statutes, with the adjustment for the options to opt-in or opt-out the state law. Panel B shows the incidence of each firm-level provisions and state corporate law statute for the four combined provisions. The first three columns compares the incidence of each provisions as well as the aggregate index between my sample and IRRC full sample in 1997-2008. The difference is in bold if the absolute value is larger than 10%. The last three columns compares the incidence of each provisions as well as the aggregate index between our record and IRRC record, for a subsample which includes all the parents and subsidiaries that are in my sample but are also covered by IRRC within 2 years around spin-off. This subsample includes 50 parent companies and 13 spin-off subsidiaries. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and *** respectively.
[b] The incidences of Supermajority, Anti-greenmail, Directors' duties, and Fair price is the combination incidence for firm level provisions and state law provisions as well as the firm's decision to opt-in or opt-out the state law provisions
[c] The incidences of state business combination law and cash-out law is the combination incidence state law provisions as well as the firm's decision to opt-in or opt-out the state law provisions

director indemnification, indemnification contracts and executive severance agreements, which

is subject to IRRC collecting error. In addition, we find that the incidences of classified board,

limitations on action by written consent, special meeting limitations, and bylaw amendment

limitations are much higher in our sample, compared to those in IRRC sample. In contrast, three

provisions have smaller incidences in our sample: cumulative voting, supermajority, and fair price.

Large incidence differences in those 11 provisions could be driven by both the difference in data collecting method and the difference in sample characteristics. To further explain these incidence differences as well as double-checking our data collecting method, we build a subsample which includes all the parents and subsidiaries that are in our sample but are also covered by IRRC within 2 years around spin-off, and compare the incidence and index differences between our record and IRRC record. 60 companies are identified to match the criteria, with 50 parent companies and 13 spin-off subsidiaries.

The comparison result is shown in the last three columns of Panel A in Table 3. We found that the incidence differences are significant for only 4 of those 11 provisions. And these 4 provisions are exactly the ones that are underreported by IRRC as we mentioned earlier, suggesting that the large incidence differences of the remaining 7 provisions are driven by sample characteristics. The other two provisions that we see significant incidence difference are secret ballot and directors' duty, with incidence difference of 4.76% and 7.94% respectively. In aggregation, the average G-index is higher in our record, with an average of 11.41 in our record and 9.76 in IRRC record. However, E-index is very close in two records. We further applied the additional test by comparing the incidence of each firm-level provisions and state corporate law statute for the four combined provisions. The result is shown in Panel B of Table 3. The result shows that IRRC firms are more likely to be incorporated in a state with fair price law and control share acquisition law.

Chapter 4 Empirical Result

4.1. Design of ATPs

4.1.1. Spin-off subsidiaries V.S. IRRC matched firms

As we show in the last section, most of the large incidence differences between IRRC sample and spin-off sample are driven by sample characteristics. In terms of the sample characteristics, it could either be the unique firm characteristics of spin-off sample, or be the uniqueness of ATP design for spin-off subsidiaries. In order to differentiate these two, we match each subsidiary with an IRRC firm in the spin-off year based on industry and firm size. More specifically, they should be in the same industry (same two-digit SIC code) and smallest size difference in the event year. As IRRC only collected ATPs for selected years from 1997-2006, we set the most recent IRRC record as the record for a year if the record is missing in that year. Then, by comparing the ATP incidence of our sample with IRRC matched sample, we are able to control firm characteristics and test whether the ATP design for spin-off subsidiaries is unique compared to the normal firms.

Eventually, 100 of the 104 subsidiaries are matched. The remaining 4 are unmatched because their SIC code in Compustat ends in 99, which means non-classifiable. The comparison result is shown in the first three columns of Table 4. The first column shows the incidences of each ATPs as well as the average ATP-index of our sample, and the second column shows those of the matched sample. Their differences are shown in column three. At the aggregate level, the difference of G-index between our sample and the matched sample are 3.30 and significant at 1% confidence level. To reduce the impact of IRRC data error, we adjusted the G-index by

Table 4: ATPs and ATP-index comparison[a]

	Subsidiaries and IRRC matched firms			Parents and subsidiaries		
	Sample	IRRC (Matched)	Difference	Subsidiary	Parent	Difference
N	100	100		87	87 (76)	
Index						
G-index - Mean	12.00	8.70	3.30***	12.17	11.01	1.16 ***
G-index (Error adjusted) - Mean	9.32	7.91	1.41 ***			
E-index - Mean	2.72	2.39	0.33**	2.80	2.33	0.47***
Delay						
Blank check	95.00%	90.00%	5.00%	98.85%	95.40%	3.45%*
Classified board	77.00%	56.00%	21.00%***	77.01%	62.07%	14.94%***
Special meeting	82.00%	35.00%	47.00%***	86.21%	63.22%	22.99%***
Written consent	77.00%	41.00%	36.00%***	85.06%	47.13%	37.93%***
Protection						
Compensation plans	68.00%	57.00%	11.00%	72.41%	75.86%	-3.45%
Contracts	29.00%	2.00%	27.00%***	24.14%	21.84%	2.30%
Golden parachutes	69.00%	64.00%	5.00%	68.97%	66.67%	2.30%
Indemnification	98.00%	25.00%	73.00%***	97.70%	90.80%	6.90%*
Liability	99.00%	41.00%	58.00%***	98.85%	93.10%	5.75%*
Severance	41.00%	11.00%	30.00%***	43.68%	34.48%	9.20%**
Voting						
Bylaws	57.00%	21.00%	36.00%***	62.07%	29.89%	32.18%***
Charter	0.00%	5.00%	-5.00%**	0.00%	1.15%	-1.15%
Cumulative voting	0.00%	14.00%	-14.00%***	0.00%	5.75%	-5.75%**
Secret ballot	15.00%	7.00%	8.00%**	17.24%	22.99%	-5.75%
Supermajority[b]	22.00%	36.00%	-14.00%**	24.14%	25.29%	-1.15%
Unequal voting	0.00%	2.00%	-2.00%*	0.00%	0.00%	0.00%
Other						
Anti-greenmail[b]	8.00%	10.00%	-2.00%	5.75%	12.64%	-6.90%**
Directors' duties[b]	17.00%	14.00%	3.00%	16.09%	14.94%	1.15%
Fair price[b]	34.00%	31.00%	3.00%	33.33%	43.68%	-10.34%**
Pension parachutes	3.00%	1.00%	2.00%	3.45%	3.45%	0.00%
Poison pill	51.00%	57.00%	-6.00%	51.72%	58.62%	-6.90%
Silver parachutes	0.00%	0.00%	0.00%	0.00%	1.15%	-1.15%
State						
Business combination law[c]	86.00%	91.00%	-5.00%	82.76%	87.36%	-4.60%
Cash-out law[c]	1.00%	1.00%	0.00%	1.15%	1.15%	0.00%

(Table 4 continued)

excluding the four problematic provisions: limitation of director liability, director indemnification, indemnification contracts and executive severance agreements. The adjusted index is called G-index (Error adjusted). Even though the difference in G-index drops more than half after the adjustment, it remains significant at 1% confidence level. Consistent with adjusted G-index, E-index, which is not subject to IRRC errors as well, shows significant difference between two samples.

At the provision level, except for the 4 problematic provisions, we see that our sample has significantly higher incidence for classified board, limitation on special meeting, limitation on action by written consent, limitation on bylaws amendment, and secret ballot. One should be mentioned is that four of these five provisions are related: The first three are all delay provisions, and limitation on bylaws amendment may increase the difficulty of removing the provisions in bylaws where most of the delay provisions are defined. In contrast, the incidences of three voting provisions are higher in IRRC matched sample: limits on charter amendment, cumulative voting and supermajority.

Overall, our result suggests that ATP design for spin-off subsidiaries is different from that for the normal firms. Compare to normal firms, spin-off subsidiaries tend to have higher G-index

and higher E-index on average, which is the aggregate result of more delay provisions and less voting provisions.

4.1.2. Parents V.S. subsidiaries

Another benchmark that could be applied here is the parent companies. Unlike IPO firms, spin-off subsidiaries were business segments of public companies before the separation. They had been operated in a business environment that corporate charters and bylaws are strictly enforced before going public. This experience makes ATP setting difference between the parents and the subsidiaries especially interesting, because the setting of ATPs for subsidiaries could be taken as an adjustment of existing ATP design in parents, and the change could reveal managers' real opinion on each provision. A practical question is to be answered: if managers believe that the subsidiaries need more ATPs, what provisions would they add? And if they would like to drop some ATPs, which one would be dropped?

The answer to this question should be based on the incidence of ATPs for both parents and subsidiaries. Due to the fact that online filing starts from year 1997 and the most recent restatement of charter and bylaws before spin-off for parent firms could be filed before 1997, we are able to collect the parent ATPs for 87 spin-off subsidiaries (76 spin-off events) [14]. The comparison for these 87 pair of parents and subsidiaries is shown in the last three column of Table 4.

The result is Table 4 shows support the hypothesis H1a. Both G-index and E-index of subsidiaries are significantly higher than those of parent companies. The mean G-index and E-

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[14] Some parents may spin-off multiple subsidiaries in the same event.

index for subsidiaries are 12.17 and 2.08, while those for parents are 11.01 and 2.33. The fact that anti-takeover protection is strong for subsidiaries than for parents suggests that the improvement of governance through the event of spin-off leaves rooms to increase number of ATPs for other purpose.

Looking at the provision level, we found that significantly more subsidiaries have delay provisions as well as the protection on delay provisions (limits on bylaws amendment) than their parents, suggesting that when they want to add more ATPs, delay provisions are among their priority. Subsidiaries also have significantly higher incidence in protection provisions such as director indemnification, limitations on director liability and severance agreement. In contrast, lower incidences are identified for subsidiaries in cumulative voting, anti-green mail, and fair price.

The incidence difference of ATPs implied that subsidiaries generally have stronger protection against hostile takeover than parents. More specifically, subsidiaries choose to add the provisions that could delay the takeover and the provisions that could offer more protection on the interests of subsidiary top managers. Our result further provides the evidence that ATPs are not valued equally, at least from the top managers' point of view.

4.1.3. Top management background

In this paper, we assume that the entrenchment ability and possibility should only be strong for parent top management group, based on the fact that parent top managers are given the opportunity to design the ATPs for subsidiaries without shareholder approval. The question is whether top managers would really take the opportunity to add more ATPs to the subsidiaries they would like to manage after the spin-off, so as to get themselves entrenched.

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To answer this question, we separate the spin-off sample into two parts based on the background of the CEO of subsidiaries: whether he/she was the top manager of parent company before spin-off. We define top manager position as CEO, chairman and president. The CEOs of 21 subsidiaries were top managers of parents before spin-off and these subsidiaries are classified into parent top management group, and non-parent top management group includes the remaining 83 subsidiaries.

The comparison table is shown in Table 5. Contrast to what we expected, both the G-index and E-index of parent top management group is significantly lower than those of non-parent top management group. Most of the index differences between two groups are driven by the delay provisions, protection provisions, and limitations on bylaws amendment. The only two exceptions are the fair price and secret ballot. The result suggests that top managers do not take advantage of the opportunity of designing ATPs for the subsidiaries they will lead after spin-off to entrench themselves. In fact, both G-index and E-index are higher for spin-off subsidiaries that will not be leaded by them. This result, raises the question that if ATPs can only entrench management and hurt firm value, why would parent top managers choose to entrench other people rather than themselves.

4.2. Determinants of ATPs

If ATPs can only hurt firm value, there will be no reason for firms to continue to adopt them. In this section, we study the determinants of ATPs for spin-off subsidiaries. We list several possible explanations based on previous corporate governance literature as well as their respective proxy variables as follows:

Table 5: ATPs and ATP-index comparison

	Subsidiaries		
	Non-parent top management	Parent top Management	Difference
N	83	21	
Index			
G-index - Mean	12.07	11.29	0.79 *
G-index (Error adjusted) - Mean			
E-index - Mean	2.76	2.19	0.57 **
Delay			
Blank check	96.39%	90.48%	5.91%
Classified board	78.31%	61.90%	16.41%*
Special meeting	84.34%	76.19%	8.15%
Written consent	84.34%	52.38%	31.96%***
Protection			
Compensation plans	72.29%	57.14%	15.15%*
Contracts	27.71%	28.57%	-0.86%
Golden parachutes	68.67%	61.90%	6.77%
Indemnification	98.80%	95.24%	3.56%
Liability	100.00%	95.24%	4.76%**
Severance	42.17%	47.62%	-5.45%
Voting			
Bylaws	59.04%	42.86%	16.18%*
Charter	0.00%	0.00%	0.00%
Cumulative voting	0.00%	0.00%	0.00%
Secret ballot	16.87%	4.76%	12.11%*
Supermajority[b]	20.48%	23.81%	-3.33%
Unequal voting	0.00%	0.00%	0.00%
Other			
Anti-greenmail[b]	6.02%	14.29%	-8.26%
Directors' duties[b]	18.07%	9.52%	8.55%
Fair price[b]	26.51%	57.14%	-30.64%***
Pension parachutes	3.61%	0.00%	3.61%
Poison pill	51.81%	38.10%	13.71%
Silver parachutes	0.00%	0.00%	0.00%
State			
Business combination law[c]	84.34%	80.95%	3.38%
Cash-out law[c]	1.20%	0.00%	1.20%

[a] Table 5 compares the incidence of each provisions as well as the aggregate index between parent top-management group and non-parent top management group. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and *** respectively.

[b] The incidences of Supermajority, Anti-greenmail, Directors' duties, and Fair price is the combination incidence for firm level provisions and state law provisions as well as the firm's decision to opt-in or opt-out the state law provisions

(Table 5 continued)

1. Bargaining power

According to bargaining power hypothesis, ATPs may significantly increase the acquirers' costs of hostile takeover and therefore help target managers to gain bargaining power in the M&A negotiation. We argue that those firms that could be involved into M&A negotiation in the near future, including those that are highly likely to be acquired or those are open to M&A negotiation, should have more anti-takeover provisions, so that acquirer have to pay a higher premium in a friendly offer in order to not pay for the even higher costs of hostile takeover if acquirer really want the transaction to go through

We use three variables to test bargaining power hypothesis: acquired dummy, takeover probability, and industry bids. Both acquired dummy and takeover probability are firm-level measures. Both takeover probability and average bids are used to proxy the future takeover probability:

Acquired dummy is set equal to one if the subsidiary is acquired within three years after spin-off and zero otherwise. Even though this is an ex post measure, it give us a subset of spin-off subsidiaries that are open to M&A negotiation.

Takeover probability is the expected takeover probability calculated by following Palepu (1986), Comment and Schmert (1995) and Billett and Xue (2007). We predict the probability of takeover through a probit regression. Our explanatory variables are total assets, market-to-book ratio, leverage, ROE, industry average bids, number of companies within the industry for a given

year (classified by following Fama and French 1997), earnings to price ratio, non-operating income, and liquidity (net liquid asset to total asset). We also control the year fixed effect and industry fixed effect by adding dummy variables in the regression. After the model is built, we predict the probability of takeover by using the data of subsidiaries in the spin-off year.

Industry bids is defined by following Daines and Klausner (2001). It is the average number of parties that made friendly or hostile acquisition bids in subsidiary' industry in three years before spin-off. Based on the implication of bargaining power argument, we expect that ATP-index may be positively related to these three variables.

2. Innovation and long-term growth

The theoretical paper by Stein (1988, 1989) and Manso (2010) argue that ATPs may increase the shareholders' tolerance on short-term failure, therefore promote long-term investment and innovation. We use BE/ME and R&D intensity as our measures of future growth and innovation level. If ATP index is set high to promote long-term growth and innovation, we expect that firm with higher G-index and E-index may have lower BE/ME and higher R&D intensity.

BE/ME is book-value of equity over market value of equity. Book equity is stockholders' equity plus balance sheet deferred taxes and investment tax credit minus the book value of preferred stock. Market value of equity is the common stock price multiplied by common shares outstanding at the spin-off year end.

R&D intensity is the industry average R&D expense over total sales.

3. Other corporate governance methods

Here, we build five variables to proxy for the strength of other governance method. Following Cremers and Nair (2005), we use pension holdings and institutional blockholdings as internal governance measure. In order to measure board independence, we use CEO/Chairman dummy. We also use Herfindahl-Hirschman Index to proxy for product market competition. Our last governance measure is book leverage.

Pension holdings is the total percentage equity holding by 18 largest public pension funds.

Institutional blockholdings is the total percentage equity holding by shareholders with more than 5 percent shareholdings.

CEO/Chairman dummy equals to one if the CEO of the subsidiary is also the chairman of board immediately after spin-off and zero otherwise. We collect board and CEO information from the proxy statements.

Herfindahl-Hirschman Index is sum of squared market shares. Market shares are computed from firms' sales over the total sales of all U.S. public firms in Compustat within the same industry. Industry is classified into 49 categories according to Fama and French (1997).

Book leverage is long-term debt divided by total assets.

4. Other control variables

We add several control variables that could be related to ATP-Index:

Parent top manager is a dummy variable that equals to 1 if the top managers of parent will become CEO of subsidiary after spin-off, and zero otherwise. Top manager dummy is used to test whether parent top managers may take the opportunity of designing ATPs to entrench themselves if they will lead the subsidiaries. Even though the previous result suggests that G-

index and E-index are higher for non-parent top management group, it is not conclusive until we control firm characteristics and other possible explanations.

Profitability is return on equity, which is earnings divided by book value of equity and is winsorized at 5%. Jensen (1986) argues that managers, as the agents of shareholders, may have incentives to use firm's free cash flow to make the investment beyond the optimal level. Profitable firms need more governance because they have more free cash flow.

Delaware is a dummy variable which equals to 1 if the company is incorporated in Delaware and 0 otherwise to proxy for the Delaware effects. Romano (1986) argues that as franchise tax constitutes a huge percentage of the total revenue of the state of Delaware, it pre-commits that Delaware will not revise its corporate law policy to the detriment of shareholders' interests. For instance, Daines (2001) finds that Delaware firms are more likely to attract takeover bids than companies incorporated in other states because Delaware has relatively mild antitakeover statute which facilitates takeovers. Therefore, Delaware firms are expected to have lower ATP-index given the state's reputation for continuous supports to shareholders.

Analyst forecast error is used to measure the level of information asymmetry, as firms with more information asymmetry may probably need more governance. We measure Analyst Forecast Error as the industry average value of the absolute value of the difference in earnings per share between the I/B/E/S actual and I/B/E/S forecasted, deflated by price. We also control then firm size as the probability of takeover is smaller for large firms as more capital needs to be used. Firm size is the log value of total assets.

The descriptive statistics for all these variables are shown in Table 6. We separate our sample into 3 groups based on G-index and E-index. Group 1 includes spin-off subsidiaries with G-

Table 6: Characteristics of spin-off subsidiaries[a]

Panel A: G-index

Variables	Group 1 G-index (0-11)		Group 2 G-index (12-13)		Group 3 G-index (14-24)		Difference		Total	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
N	45		34		25				104	
BE/ME	1.218	0.553	0.650	0.424	0.941	0.449	-0.276	-0.104	0.966	0.442
R&D intensity	0.246	0.119	0.218	0.119	0.219	0.127	-0.028	0.008	0.230	0.122
Acquired dummy	0.089	0.000	0.088	0.000	0.200	0.000	0.111	0.000	0.115	0.000
Takeover probability	0.035	0.039	0.036	0.035	0.032	0.031	-0.003	-0.008	0.035	0.035
Industry bids	1.057	1.004	1.270	0.831	0.959	0.826	-0.097	-0.177	1.103	0.944
Institutional blockholdings	0.164	0.128	0.218	0.217	0.268	0.291	0.103**	0.163***	0.207	0.191
Pension holdings	0.009	0.007	0.012	0.014	0.015	0.015	0.007***	0.008***	0.011	0.013
CEO/chairman	0.489	0.000	0.441	0.000	0.520	1.000	0.031	1.000	0.481	0.000
Herfindahl index	0.064	0.048	0.055	0.045	0.053	0.042	-0.011	-0.005	0.059	0.045
Leverages	0.251	0.163	0.170	0.097	0.211	0.206	-0.040	0.043	0.215	0.161
Top manager dummy	0.289	0.000	0.088	0.000	0.200	0.000	-0.089	0.000	0.202	0.000
Profitability	-0.273	0.049	-0.687	0.007	0.152	0.126	0.425*	0.078**	-0.306	0.052
Delaware	0.778	1.000	0.853	1.000	0.720	1.000	-0.058	0.000	0.788	1.000
Analyst forecast error	0.044	0.023	0.035	0.027	0.030	0.028	-0.014	0.005	0.038	0.025
Assets	6.280	6.181	6.109	6.398	6.454	6.302	0.174	0.121	6.266	6.295

(Table 6 continued)

Panel B: E-index

Variables	Group 1 E-index (0-2)		Group 2 E-index (3)		Group 3 E-index (4-6)		Difference		Total	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
N	43		30		31				104	
BE/ME	1.393	0.623	0.510	0.351	0.814	0.426	-0.579*	-0.198*	0.966	0.442
R&D intensity	0.218	0.113	0.251	0.126	0.228	0.177	0.010	0.063	0.230	0.122
Acquired dummy	0.116	0.000	0.100	0.000	0.129	0.000	0.013	0.000	0.115	0.000
Takeover probability	0.035	0.037	0.037	0.039	0.033	0.031	-0.002	-0.006	0.035	0.035
Industry bids	1.288	1.118	0.964	0.826	0.982	0.758	-0.306	-0.361*	1.103	0.944
Institutional blockholdings	0.165	0.128	0.195	0.185	0.277	0.268	0.113***	0.140***	0.207	0.191
Pension holdings	0.008	0.007	0.014	0.016	0.013	0.014	0.005***	0.007***	0.011	0.013
CEO/chairman dummy	0.442	0.000	0.400	0.000	0.613	1.000	0.171	1.000	0.481	0.000
Herfindahl index	0.067	0.048	0.048	0.045	0.057	0.042	-0.009	-0.006	0.059	0.045
Leverage	0.241	0.142	0.219	0.225	0.176	0.159	-0.065	0.017	0.215	0.161
Top manager dummy	0.279	0.000	0.133	0.000	0.161	0.000	-0.118	0.000	0.202	0.000
Profitability	-0.314	0.016	-0.358	0.068	-0.246	0.081	0.068*	0.064**	-0.306	0.052
Delaware	0.698	1.000	0.933	1.000	0.774	1.000	0.077	0.000	0.788	1.000
Analyst forecast error	0.049	0.027	0.033	0.022	0.027	0.024	-0.022**	-0.003	0.038	0.025
Assets	6.255	6.288	6.063	6.207	6.476	6.338	0.221	0.050	6.266	6.295

[a] Table 6 shows the basic characteristic of spin-off subsidiaries (unless specified). We separate our sample into 3 groups based on G-index and E-index. Group 1 includes spin-off subsidiaries with G-Index (E-index) smaller than or equal to 11 (2). Group 2 includes spin-off subsidiaries with G-Index (E-index) equaling to 12 or 13 (3). Group 3 includes spin-off subsidiaries with G-Index (E-index) larger than 13 (3). BE/ME is book-value of equity over market value of equity. R&D intensity is the industry average R&D expense over total sales. Acquired dummy equals to one if the subsidiary is acquired within three years after spin-off and zero otherwise. Takeover probability is the expected takeover probability by following Palepu (1986), Comment and Schmert (1995) and Billett and Xue (2007). Industry bids is defined as the average number of parties that made friendly or hostile acquisition bids in subsidiary' industry in three years before spin-off. Institutional blockholdings is the total percentage equity holding by institutional investors with more than 5 percent shareholdings. Pension holdings is the total percentage equity holding by 18 largest public pension funds.

(Table 6 continued)

CEO/Chairman is a dummy variable which equals to one if the CEO of the subsidiary is also the chairman of subsidiary board immediately after spin-off and zero otherwise. Herfindahl Index is sum of squared market shares. Leverages is long-term debt divided by total assets. Top manager dummy is a dummy variable that equals to 1 if the top managers of parent will become CEO of subsidiary after spin-off, and zero otherwise. Profitability is return on equity, which is earnings divided by book value of equity and is winsorized at 5%. Delaware is a dummy variable which equals to 1 if the subsidiary is incorporated in Delaware and 0 otherwise. Analyst Forecast Error is the industry average value of the absolute value of the difference in earnings per share between the I/B/E/S actual and I/B/E/S forecasted, deflated by price. Assets is the log value of total assets. Industry is classified into 49 categories according to Fama and French (1997) for all industry variables and industry adjusted variables. We use t-test to test the mean difference of subsidiary characteristics between group 1 and group 3, and Wilcoxon rank-sum test for the median difference. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and *** respectively.

Index (E-index) smaller than or equal to 11 (2). Group 2 includes spin-off subsidiaries with G-Index (E-index) equaling to 12 or 13 (3). Group 3 includes spin-off subsidiaries with G-Index (E-index) larger than 13 (3). The differences in each variable between Group 1 and Group 3 are also shown in the table. Overall, we find that low ATP group tends to have lower pension holdings, institutional blockholdings, and profitability. In addition, high E-index firms have lower mean and median BE/ME, suggesting a higher growth potential.

We use Poisson regression to empirically test the determinants of ATPs for spin-off subsidiaries because both G-index and E-index are count variables. We include year dummies to control for economy-wide shocks and timely trends, and industry dummies to control for the residual dependence at the industry level. We report t-values in parentheses that calculated using a robust standard error. The test result is shown in Table 7.

In the first three columns, we explore the possible explanations for the setting of G-index. We find that G-index of subsidiaries around spin-off is higher if a company will be acquired within 3 years after being spun-off or if it has higher expected takeover probability. Both variables are significant at 1% confidence level. In terms of the relation between G-index and other governance measures, we found that G-index is set higher by parent managers when institutional block holdings and pension holdings are higher and Herfindahl index is lower for subsidiary, Given the fact that internal governance and product market competition are both known before designing ATPs, our result suggests that parent managers take market discipline as a substitute to other governance mechanisms, which is consistent with the findings of Giroud and Mueller (2010, 2011). We also find a positive relation between G-index and firm profitability, implying that in a well-designed corporate governance system, free cash flow problem may not need a special attention. Further, we find a negative relation between G-index and parent top manager

Table 7: Determinants of ATP-index[a]

Variables	G-Index			E-Index		
	(1)	(2)	(3)	(4)	(5)	(6)
BE/ME	-0.008	-0.029***	-0.008	-0.069**	-0.191***	-0.064**
	(-1.378)	(-2.675)	(-1.376)	(-2.176)	(-3.069)	(-2.427)
R&D intensity	-0.217	-0.407	-0.028	-0.844	-1.630	-0.429
	(-0.367)	(-0.464)	(-0.044)	(-0.523)	(-0.535)	(-0.265)
Acquired dummy	0.158***		0.157***	0.302**		0.311**
	(3.463)		(3.932)	(2.114)		(2.334)
Takeover probability		7.624***			14.770	
		(2.671)			(1.390)	
Industry bids	-0.010	-0.101**	-0.000	-0.037	-0.239	-0.016
	(-0.579)	(-2.142)	(-0.027)	(-0.657)	(-1.450)	(-0.274)
Institutional blockholdings	0.379***	0.283***		0.798***	0.675**	
	(3.557)	(2.798)		(2.614)	(2.142)	
Pension holdings			6.843**			19.536**
			(2.117)			(2.493)
Herfindahl index	-1.352***	-1.700***	-1.201**	-3.251**	-3.608*	-2.773*
	(-2.835)	(-3.654)	(-2.484)	(-2.018)	(-1.946)	(-1.812)
CEO/chairman	-0.040	-0.068**	0.000	-0.029	-0.103	0.056
	(-1.324)	(-2.011)	(0.016)	(-0.270)	(-0.748)	(0.584)
Leverage	-0.106	-0.196***	-0.120	-0.322	-0.414*	-0.380
	(-1.332)	(-2.747)	(-1.375)	(-1.410)	(-1.810)	(-1.608)
Parent top manager	-0.020	-0.071*	-0.040	-0.061	-0.074	-0.104
	(-0.509)	(-1.670)	(-0.995)	(-0.518)	(-0.494)	(-0.912)
Profitability	0.037**	0.046**	0.034**	0.059	0.106*	0.051
	(2.493)	(2.333)	(2.296)	(1.192)	(1.901)	(1.066)
Delaware	-0.059	-0.038	-0.043	0.058	0.014	0.100
	(-1.413)	(-0.870)	(-0.993)	(0.423)	(0.075)	(0.756)
Analyst forecast error	0.359	0.082	0.165	-0.581	-1.209	-1.278
	(1.040)	(0.210)	(0.507)	(-0.421)	(-0.759)	(-0.928)
Assets	0.004	0.012	• -0.011	0.021	0.048	-0.026
	(0.366)	(0.920)	(-1.065)	(0.566)	(0.990)	(-0.746)
Constant	2.466***	2.610***	2.559***	0.679	1.059	0.980**
	(16.499)	(17.790)	(22.983)	(1.310)	(1.492)	(2.508)
Observations	104	66	104	104	66	104
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y

[a] Table 7 tests the determinants of ATPs based on robust Poisson regressions. The dependent variables are G-index, and E-index of spin-off subsidiaries. G-index is our hand-collected

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governance index of spin-off subsidiaries by following Gompers, Ishii, and Metrick (2003) immediate after spin-off. E-index is our hand-collected entrenchment index of spin-off subsidiaries by following Bebchuk, Cohen, and Ferrell (2009) immediate after spin-off. BE/ME is book-value of equity over market value of equity. R&D intensity is the industry average R&D expense over total sales. Acquired dummy equals to one if the subsidiary is acquired within three years after spin-off and zero otherwise. Takeover probability is the expected takeover probability by following Palepu (1986), Comment and Schmert (1995) and Billett and Xue (2007). Industry bids is defined as the average number of parties that made friendly or hostile acquisition bids in subsidiary' industry in three years before spin-off. Institutional blockholdings is the total percentage equity holding by institutional investors with more than 5 percent shareholdings, and pension holdings is the total percentage equity holding by 18 largest public pension funds. Herfindahl Index is sum of squared market shares. CEO/Chairman is a dummy variable which equals to one if the CEO of the subsidiary is also the chairman of subsidiary board immediately after spin-off and zero otherwise. Leverages is long-term debt divided by total assets. Parent top manager is a dummy variable that equals to 1 if the top managers of parent will become CEO of subsidiary after spin-off, and zero otherwise. Profitability is return on equity, which is earnings divided by book value of equity and is winsorized at 5%. Delaware is a dummy variable which equals to 1 if the subsidiary is incorporated in Delaware and 0 otherwise. Analyst Forecast Error is the industry average value of the absolute value of the difference in earnings per share between the I/B/E/S actual and I/B/E/S forecasted, deflated by price. Assets is the log value of total assets. Industry and year fixed effects are all controlled. Robust t-statistics are reported in parentheses. Industry is classified into 49 categories according to Fama and French (1997) for all industry variables and industry adjusted variables. Industry fixed effect is based on 10-industry classification according to Fama and French (1997). Significance at the 10%, 5%, and 1% levels is indicated by *, **, and *** respectively.

dummy, though the coefficient is insignificant in Model 1 and 3. It suggests that parent top managers do not take advantage of the ATP design rights to entrench themselves if they will manage the subsidiaries after the separation. We further test the design of E-index, which is shown in column 4-6. Similar to G-index, E-index is positively related to acquired dummy, pension holdings and institutional blockholdings, and negatively related to Herfindahl Index. One exception is that we do not find any relation between expected takeover probability and E-index. A possible explanation is that E-index is built based on the provisions that related to the

firm valuation and performance, and the provisions that not included in E-index could be related to the takeover probability. Further, we do not find any impact of profitability on E-index as well. However, the coefficient of BE/ME is significant with a negative sign, meaning that growth firms tend to have higher E-index. To summarize, we find support for hypotheses H2a, H3a and H4a. Our result implies that the design of ATPs should be understood based on the corporate governance environment. There is a mutual substitute relation between market discipline and other governance mechanism including the internal governance and product market competition. If other governance is strong, possible entrenchment issue may not be a big concern. Therefore, firms may set more ATPs so as to meet the need to gain bargaining power in M&A negotiation and promote long-term growth. We do not find any evidence of agency problem in the ATP design process for spin-off subsidiaries.

I further control the G-index and E-index of parent companies immediately before spin-off. If the ATPs are efficiently set, the ATP-index should be only related to the characteristics of the subsidiaries and the potential impacts of ATPs. However, a recent study by Fahlenbrach, Prilmeier and Stulz (2012) find that stock return performance of a bank during the 1998 crisis could have prediction power on its stock return performance and probability of failure during the 2008 financial crisis, suggesting that bank's risk culture and/or aspects of its business model may have significant impact on firm investment strategy. It is reasonable to believe that the separation of management in the spin-off process would not lead to a complete separation of corporate culture/business model. If the shared culture between parents and subsidiaries is related to ATPs, I may see a positive relation between parent ATP-index and subsidiary ATP-index, when firm characteristics are completely controlled.

Table 8: Determinants of ATP-index

VARIABLES	G-index		E-index	
	(1)	(2)	(3)	(4)
G-index (Parent)	0.031***	0.028***		
	(4.589)	(3.709)		
E-index (Parent)			0.221***	0.209***
			(5.790)	(5.909)
BE/ME		-0.011**		-0.066***
		(-2.097)		(-3.658)
R&D Intensity		-0.110		-1.816
		(-0.172)		(-1.128)
Acquired Dummy		0.165***		0.370***
		(3.627)		(2.892)
Average Bids		0.007		0.005
		(0.315)		(0.086)
Blockholders Holdings		0.235**		0.229
		(2.028)		(0.933)
Herfindahl Index		-0.897*		-1.279
		(-1.811)		(-0.894)
CEO/Chairman Dummy		-0.025		0.017
		(-0.827)		(0.210)
Leverage		-0.099		-0.415**
		(-1.270)		(-2.061)
Top Manager Dummy		-0.025		0.035
		(-0.560)		(0.264)
Profitability		0.029*		-0.011
		(1.659)		(-0.199)
Delaware Dummy		-0.015		0.156
		(-0.334)		(1.385)
Analyst Forecast Error		0.016		-0.665
		(0.036)		(-0.443)
Assets		0.006		0.012
		(0.517)		(0.425)
Constant	2.023***	2.110***	0.095	0.144
	(23.439)	(12.386)	(0.467)	(0.404)
Observations	87	87	87	87
Year FE	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y

[a] Table 8 tests the determinants of ATPs based on robust Poisson regressions. The dependent variables are G-index, and E-index of spin-off subsidiaries. G-index is our hand-collected governance index of spin-off subsidiaries by following Gompers, Ishii, and Metrick (2003) immediate after spin-off. E-index is our hand-collected entrenchment index of spin-off subsidiaries by following Bebchuk, Cohen, and Ferrell (2009) immediate after spin-off. G-index

(Table 8 continued)

(Parent) is G-index of parent companies immediately before spin-off. E-index (Parent) is E-index of parent companies immediately before spin-off. BE/ME is book-value of equity over market value of equity. R&D intensity is the industry average R&D expense over total sales. Acquired dummy equals to one if the subsidiary is acquired within three years after spin-off and zero otherwise. Takeover probability is the expected takeover probability by following Palepu (1986), Comment and Schmert (1995) and Billett and Xue (2007). Industry bids is defined as the average number of parties that made friendly or hostile acquisition bids in subsidiary' industry in three years before spin-off. Institutional blockholdings is the total percentage equity holding by institutional investors with more than 5 percent shareholdings, and pension holdings is the total percentage equity holding by 18 largest public pension funds. Herfindahl Index is sum of squared market shares. CEO/Chairman is a dummy variable which equals to one if the CEO of the subsidiary is also the chairman of subsidiary board immediately after spin-off and zero otherwise. Leverages is long-term debt divided by total assets. Parent top manager is a dummy variable that equals to 1 if the top managers of parent will become CEO of subsidiary after spin-off, and zero otherwise. Profitability is return on equity, which is earnings divided by book value of equity and is winsorized at 5%. Delaware is a dummy variable which equals to 1 if the subsidiary is incorporated in Delaware and 0 otherwise. Analyst Forecast Error is the industry average value of the absolute value of the difference in earnings per share between the I/B/E/S actual and I/B/E/S forecasted, deflated by price. Assets is the log value of total assets. Industry and year fixed effects are all controlled. Robust t-statistics are reported in parentheses. Industry is classified into 49 categories according to Fama and French (1997) for all industry variables and industry adjusted variables. Industry fixed effect is based on 10-industry classification according to Fama and French (1997). Significance at the 10%, 5%, and 1% levels is indicated by *, **, and *** respectively.

In Table 8, I further test the potential influence of corporate culture on ATP setting in subsidiary. After controlling subsidiary characteristics, I find a positive relation between the ATP-index of parents and subsidiaries, both for G-index and E-index. And the both coefficients are significant at 1% confidence level. Our result is a complement to the study by Fahlenbrach, Prilmeier and Stulz (2012) and shows that corporate culture and/or business model may influence ATP setting. Admittedly, such argument is based on assumption that subsidiary firm characters are well controlled.

4.3. ATPs and firm financial performance

If ATPs are set efficiently based on the whole corporate governance environment, we should not find a negative relation between the respective ATP-index and firm performance documented in the Gompers, Ishii and Metrick's (GIM, 2003) and Bebchuk, Cohen, Ferrell (BCF, 2004). Therefore, in this section we re-exam the relation between ATPs and long-run financial performance for spin-off subsidiaries. By performance, we mean buy-and-hold abnormal return. The abnormal return is defined as the difference between the buy-and-hold return of a spin-off subsidiary and that of a benchmark.

We build three benchmarks in two different ways: First, we follow Desai and Jain (1999). We find 10 matching firms for each subsidiary that are closest in size (5 larger than the subsidiary and 5 smaller than the subsidiary) and are in the same industry (same two-digit SIC code). We rank the matching firms in the order of the absolute value of size difference, and the first one has the smallest absolute value. If the first matching firm disappears within 3 years after the spin-off date of matched subsidiary for some reason, we use the second matching firm from that point on and then the third and so on.

Second, we build our abnormal return measure by using value-weighted and equal weighted return of Fama and French's portfolios from French's website as the benchmark. We fit our sample into the 25 portfolios based on the range of each FF portfolio's respective size and ME/BE ratio at the spin-off month. For the spin-off subsidiaries which delisted during the holding period, we trace the return till the last transaction day, and after that we assume to invest the money in its benchmark from that point on. To test the significance of the abnormal return, for mean abnormal return, we use t-test. For median abnormal return, we use Wilcoxon rank-sum test.

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Table 9 shows the monthly abnormal returns of spin-off subsidiaries over different G-index or E-index values and different time period. We conduct univariate analysis by separating the spun-off subsidiary into three categories by following the same standard as in the previous part. Difference is calculated as the buy-and-hold abnormal returns difference between low G-Index (E-index) group and high G-Index (E-index) group.

Panel A shows mean and median buy-and-hold abnormal return for the first 6 months after spinoff. We found that the abnormal returns are all positive for three groups except for the median abnormal return when using Fama and French's portfolio returns as the benchmarks. To compare the abnormal return over different groups, we find that the abnormal return increases with the ATP-index, and the abnormal return differences between group 1 (low index) and group 3 (high index) are significant in most of the cases. This result shows a sharp contrast to the findings of Gompers, Ishii and Metrick's (2003) and Bebchuk, Cohen, Ferrell (2004). We further extend the holding period from 6 months to 12 months, 24 months and 36 month, which is shown in Panel B, C and D. Actually, all the abnormal return difference are positive, with the highest mean difference and median difference being as high as 71.02% and 53.48% respectively. The result shows that at least for spin-off subsidiaries, firms with low G-index and E-index do not earn higher abnormal returns.

The result in Table 9 also has an interesting implication for spin-off literature. In an unreported test, we calculate the t-value of each ATP-index group for the long-run abnormal return, and find the returns are generally positive and significant for high G-index and E-index groups but not for the low ones. As positive long-run excess stock returns for spin-off subsidiaries has been well documented in literature (Cusatis, Miles, and Woolridge, 1993; Desai

Table 9: ATP-index and buy-and-hold abnormal return (all sample firms)

Panel A: 6-month buy-and-hold abnormal return (month 1 - month 6)

| | G-index | | | | | | | E-index | | | | | |
| | Matched Sample | | FF Sample (Value Weighted) | | (Equal Weighted) | | | Matched Sample | | FF Sample (Value Weighted) | | (Equal Weighted) | |
	Mean	Median	Mean	Median	Mean	Median		Mean	Median	Mean	Median	Mean	Median
Group 1 (N=45)	4.24%	3.29%	3.34%	-7.75%	2.41%	-5.24%	Group 1 (N=43)	3.55%	2.90%	2.08%	-7.77%	1.05%	-6.16%
Group 2 (N=34)	11.31%	3.95%	11.78%	5.69%	11.60%	1.66%	Group 2 (N=30)	9.25%	11.19%	12.06%	7.55%	12.50%	4.29%
Group 3 (N=25)	19.87%	17.46%	21.13%	12.21%	19.29%	9.45%	Group 3 (N=31)	20.46%	16.44%	19.99%	10.67%	17.92%	3.15%
Difference (3-1)	15.63%*	14.17%	17.79%**	19.96%*	16.89%**	14.69%*	Difference (3-1)	16.91%*	13.54%	17.92%**	18.44%*	16.87%**	9.31%

Panel B: 12-month buy-and-hold abnormal return (month 1 - month 12)

	Mean	Median	Mean	Median	Mean	Median		Mean	Median	Mean	Median	Mean	Median
Group 1 (N=45)	10.92%	10.01%	11.32%	3.69%	9.85%	2.65%	Group 1 (N=43)	10.58%	7.84%	11.05%	3.32%	8.86%	2.52%
Group 2 (N=34)	32.32%	23.63%	21.39%	2.41%	19.51%	-2.82%	Group 2 (N=30)	33.04%	19.37%	25.48%	1.18%	24.66%	-0.89%
Group 3 (N=25)	47.70%	22.82%	44.51%	9.13%	44.09%	9.36%	Group 3 (N=31)	42.44%	22.82%	35.48%	15.96%	34.78%	14.40%
Difference (3-1)	36.78%**	12.81%**	33.19%**	5.45%	34.24%**	6.71%	Difference (3-1)	31.86%**	14.99%**	24.43%**	12.64%	25.92%**	11.88%

(Table 9 continued)

Panel C: 24-month buy-and-hold abnormal return (month 1 - month 24)

| | G-index | | | | | | | E-index | | | | | |
| | Matched Sample | | FF Sample (Value Weighted) | | (Equal Weighted) | | | Matched Sample | | FF Sample (Value Weighted) | | (Equal Weighted) | |
	Mean	Median	Mean	Median	Mean	Median		Mean	Median	Mean	Median	Mean	Median
Group 1 (N=45)	26.06%	7.15%	16.74%	1.01%	11.32%	2.42%	Group 1 (N=43)	19.18%	5.68%	10.38%	-9.38%	3.66%	-6.94%
Group 2 (N=34)	31.25%	13.96%	14.74%	8.96%	9.30%	15.21%	Group 2 (N=30)	46.02%	22.92%	32.47%	20.97%	28.64%	23.28%
Group 3 (N=25)	80.40%	51.21%	45.53%	30.19%	45.64%	34.61%	Group 3 (N=31)	65.65%	51.16%	31.44%	36.38%	30.71%	34.61%
Difference (3-1)	54.34% ***	44.07% **	28.80% *	29.18%	34.32% **	32.20% *	Difference (3-1)	46.47% **	45.48% **	21.06%	45.76%	27.05% *	41.55% **

Panel D: 36-month buy-and-hold abnormal return (month 1 - month 36)

	Mean	Median	Mean	Median	Mean	Median		Mean	Median	Mean	Median	Mean	Median
Group 1 (N=45)	28.88%	32.94%	21.77%	0.93%	18.05%	-2.02%	Group 1 (N=43)	25.19%	25.58%	10.59%	-4.95%	5.01%	-8.56%
Group 2 (N=34)	43.02%	25.71%	11.09%	-2.25%	4.67%	-1.92%	Group 2 (N=30)	54.83%	61.25%	36.19%	24.34%	33.09%	26.88%
Group 3 (N=25)	99.90%	67.24%	59.88%	54.41%	58.87%	43.02%	Group 3 (N=31)	81.20%	63.48%	42.68%	39.52%	40.26%	36.47%
Difference (3-1)	71.02% ***	34.30% **	38.12% **	53.48% *	40.82% **	45.04% *	Difference (3-1)	56.01% **	37.90% **	32.08% *	44.46% *	35.25% *	45.03% *

(Table 9 continued)

and Jain, 1999; McConnell, Ozbilgin and Wahal, 2001), our study further imply that the abnormal return could be partly driven by factors related to ATPs.

In our previous empirical setting, one underlying assumption we made is that there is no entrenchment problem in the ATP design process, otherwise our result could be subject to the causality issue. As a robustness check, we further exclude 21 observations in parent top-management group which are subject to high entrenchment possibility, and test the relation between ATP-index and buy-and-hold abnormal return again for the remaining 83 observations.

The result is shown in Table 10. Consistent with the result in Table 9, all differences in buy-and-hold abnormal return are positive. In addition, we see increased value of abnormal return differences and increased number of significant differences when compared to the result in Table 7, suggesting that the positive ATP-return relation is not driven by the managerial entrenchment.

As no model is a complete description of the systematic pattern of the expected return, test of abnormal return is contaminated by the bad-model problem. Fama (1998) criticize the use of long-term BHAR because the bad-model problem could be magnified as BHAR is based on compounding calculation. Fama further argue that the cross-correlation due to the overlap of industry and return horizon may lead to over-rejection issue and is ignored in BHAR calculation.

This over-rejection issue is especially relevant in our study because more than half of our sample firms cluster at late 1990s. Therefore, we further calculate the abnormal return based on Jensen-alpha approach. The abnormal return is calculated as the intercept of Carhart's (1997) four factor model: $R_{it} - R_{ft} = \Gamma_i + S_{1i}(R_{mt} - R_{ft}) + S_{2i}SMB_t + S_{3i}HML_t + S_{4i}UMD_t + V_{it}$

where R_{it} is the monthly return of subsidiary i at month t, and we use the subsidiaries' monthly

Table 10: ATP-index and buy-and-hold abnormal return (non-parent top management group)[a]

Panel A: 6-month buy-and-hold abnormal return (month 1 - month 6)

| | G-index | | | | | | | E-index | | | | | |
| | Matched Sample | | FF Sample (Value Weighted) | | FF Sample (Equal Weighted) | | | Matched Sample | | FF Sample (Value Weighted) | | FF Sample (Equal Weighted) | |
	Mean	Median	Mean	Median	Mean	Median		Mean	Median	Mean	Median	Mean	Median
Group 1 (N=32)	1.77%	0.43%	-1.46%	-10.01%	-2.95%	-11.72%	Group 1 (N=31)	6.79%	2.90%	-0.39%	-8.45%	-2.19%	-10.56%
Group 2 (N=31)	17.77%	7.86%	13.64%	5.69%	13.00%	1.66%	Group 2 (N=26)	9.97%	4.53%	11.41%	2.35%	11.66%	1.65%
Group 3 (N=20)	29.15%	19.36%	23.24%	18.68%	21.02%	13.48%	Group 3 (N=26)	27.72%	18.09%	21.40%	12.42%	18.99%	3.01%
Difference (3-1)	27.39%**	18.93%**	24.71%**	28.69%*	23.97%**	25.20%*	Difference (3-1)	20.93%**	15.19%	21.79%**	20.88%*	21.17%*	13.57%

Panel B: 12-month buy-and-hold abnormal return (month 1 - month 12)

	Mean	Median	Mean	Median	Mean	Median		Mean	Median	Mean	Median	Mean	Median
Group 1 (N=32)	6.04%	8.76%	5.30%	2.52%	3.11%	2.30%	Group 1 (N=31)	9.75%	12.03%	6.01%	2.91%	2.93%	2.13%
Group 2 (N=31)	38.19%	25.42%	24.15%	2.91%	21.62%	2.13%	Group 2 (N=26)	36.60%	21.11%	28.49%	1.18%	26.99%	-0.89%
Group 3 (N=20)	57.94%	38.07%	53.62%	20.44%	52.47%	16.66%	Group 3 (N=26)	49.31%	38.07%	40.91%	28.06%	39.48%	18.97%
Difference (3-1)	51.90%***	29.31%**	48.33%***	17.92%	49.35%***	14.36%*	Difference (3-1)	39.55%***	26.05%**	34.90%**	25.15%	36.55%*	16.84%*

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(Table 10 continued)

Panel C: 24-month buy-and-hold abnormal return (month 1 - month 24)

	Mean	Median	Mean	Median	Mean	Median		Mean	Median	Mean	Median	Mean	Median
Group 1 (N=32)	19.96%	12.56%	11.00%	-4.58%	6.01%	-3.93%	Group 1 (N=31)	14.49%	7.55%	3.50%	-10.77%	-3.09%	-7.64%
Group 2 (N=31)	35.09%	15.64%	13.69%	8.96%	8.31%	15.21%	Group 2 (N=26)	48.16%	22.92%	32.00%	20.97%	27.98%	23.28%
Group 3 (N=20)	85.80%	53.49%	48.06%	16.65%	47.07%	11.06%	Group 3 (N=26)	66.96%	51.19%	30.67%	31.11%	29.21%	16.42%
Difference (3-1)	65.85%***	40.93%**	37.06%*	21.23%	41.06%**	14.98%	Difference (3-1)	52.47%***	43.64%**	27.17%	41.87%	32.30%*	24.06%*

Panel D: 36-month buy-and-hold abnormal return (month 1 - month 36)

	Mean	Median	Mean	Median	Mean	Median		Mean	Median	Mean	Median	Mean	Median
Group 1 (N=32)	-4.26%	-2.17%	-8.16%	-25.64%	-11.44%	-22.02%	Group 1 (N=31)	-0.38%	-3.05%	-8.84%	-29.00%	-14.58%	-24.29%
Group 2 (N=31)	53.41%	54.70%	16.43%	10.85%	8.89%	-1.60%	Group 2 (N=26)	58.12%	61.25%	26.78%	16.92%	22.51%	16.59%
Group 3 (N=20)	103.20%	68.20%	56.44%	45.18%	54.22%	39.14%	Group 3 (N=26)	80.15%	65.36%	36.72%	30.81%	33.10%	22.14%
Difference (3-1)	107.46%***	70.36%***	64.60%***	70.83%**	65.66%***	61.16%**	Difference (3-1)	80.53%***	68.41%**	45.56%**	59.81%*	47.68%**	46.43%**

[a] Table 10 compares the buy-and-hold abnormal returns of spin-off subsidiaries from non-parent top management group only with difference ATP-index groups. We use two control groups: industry and size matched firms, size and BE/ME matched Fama and

(Table 10 continued)

French's portfolios. For Fama and French's portfolios, we use both value weight and equal weighted return as our benchmark. We separate our sample into 3 groups based on G-index and E-index. Group 1 includes spin-off subsidiaries with G-Index (E-index) smaller than or equal to 11 (2). Group 2 includes spin-off subsidiaries with G-Index (E-index) equaling to 12 or 13 (3). Group 3 includes spin-off subsidiaries with G-Index (E-index) larger than 13 (3). Difference is the value of buy-and-hold abnormal return of Group 3 minus that of Group 1. Significance for differences at the 10%, 5%, and 1% levels is indicated by *, **, and *** respectively.

return of the first 36 months after spin-off. R_{ft} is the risk free rate at t-th month after spin-off. R_{mt} is the monthly market return at t-th month after spin-off. SMB_t is the return difference between a portfolio of small stocks and big stocks. HML_t is the return difference between a portfolio of high market-to-book ratio stocks and low market-to-book ratio stocks. UMD_t is the return difference between a portfolio of past year winner and past year loser.

As it is not possible to test the conventional difference in alpha between different ATP-index groups due to the absence of covariance matrix, we construct 1000 bootstrap samples by random sampling and calculate 1000 alphas for each ATP-index group based on the four factor model. To implement the nonparametric confidence test, we sort and exclude top and bottom 5% of alphas. Finally, we calculate pair-wise t-statistics of the alpha between high ATP-index group and low ATP-index group.

The result is shown in Table 11. The Jensen's alpha is significant for all three G-index groups and E-index groups, which is consistent with the previous empirical result that spin-off subsidiaries typically may have positive abnormal return. To compare the abnormal return among each index groups, we found that the alpha for high G-index group is 0.021 and the alpha for low G-index group is 0.014. High G-index group has higher alpha and the significance level for their difference pf 0.007 is 1%. Even though the difference is smaller for E-index, it is very significant as well.

Overall, both buy-and-hold abnormal return and Jansen's alpha test show that contrast to the empirical result of IRRC based empirical studies, our study, which is based on spin-off subsidiaries, shows that firms with higher ATP-index have better financial performance after

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Table 11: ATP-index and Jensen's Alpha[a]

ATP group	Alpha	ATP group	Alpha
G-index 0-11 (N=45)	0.014***	E-index 0-2 (N=43)	0.013***
G-index 12-13 (N=34)	0.010***	E-index 3 (N=30)	0.014***
G-index 13+ (N=25)	0.021***	E-index 4-6 (N=31)	0.016***
Difference	0.007***	Difference	0.003***

[a] The abnormal return is calculated as the intercept of Carhart's (1997) four factor model:

$$R_{it} - R_{ft} = \digamma_i + s_{1i}(R_{mt} - R_{ft}) + s_{2i}SMB_t + s_{3i}HML_t + s_{4i}UMD_t + v_{it}$$

where R_{it} is the monthly return of subsidiary i at month t, and I use the subsidiaries' monthly return of the first 36 months after spin-off. R_{ft} is the risk free rate at t-th month after spin-off. R_{mt} is the monthly market return at t-th month after spin-off. SMB_t is the return difference between a portfolio of small stocks and big stocks. HML_t is the return difference between a portfolio of high market-to-book ratio stocks and low market-to-book ratio stocks. UMD_t is the return difference between a portfolio of past year winner and past year loser. I construct 1000 bootstrap samples by random sampling and calculate 1000 alphas for each ATP-index group based on four factor model. I sort and exclude top and bottom 5% of alphas. Finally, I calculate pair-wise t-statistics between the alpha of high ATP-index group and that of low ATP-index group. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and *** respectively.

spin-off, compared to low ATP firms. A possible explanation for the positive abnormal return we observe is that market cannot immediately fully factoring the positive potentials associated with high ATPs, such as high ex ante probability of becoming a takeover target or the existence of long-term risky value increasing investment opportunities.

4.4. ATPs and firm operating performance

Another angel to look at the impact of ATPs is to focus on the fundamental, more specifically, the operating performance of the subsidiaries. Based on IRRC data, Gompers, Ishii and Metrick's (2003), Bebchuk, Cohen, Ferrell (2004) and Core, Guay, and Rusticus (2006) find a weak evidence that democratic firms tend to have better operating performance, which provides an explanation on the negative relation between ATP-index and financial performance from the fundamental perspective.

Here, we further test the relation between ATP-index and operating performance for spin-off subsidiaries. We use industry adjusted ROA as our measure of firm operating performance due to the powerful explanation power of ROA mentioned in Barber and Lyon (1996). ROA is measured in three ways: First, following Core, Guay, and Rusticus (2006), ROA is measured as operating income before depreciation (Compustat item #13) over total assets and operating income after depreciation (Compustat data item #178) over total assets, with the latter is the ROA after adjustment of depreciation and the former is not. In addition, I build ROA as net income over total assets. Industry adjusted ROA is the difference between firm ROA and the median ROA in the corresponding Fama and French (1997) industry (49 industries). We compare the mean and median industry adjusted ROA for each of the first three years after spin-off. As firms may be delisted for various reasons, the sample size declines with years. We have 101 observations in the second year and 92 in the third year after spin-off. The result is shown in Table 12.

Panel A of Table 12 compares the mean and median industry adjusted ROA (after depreciation) over difference groups of G-index and E-index. We found that the high G-index group has significantly higher mean and median industry adjusted ROA than low G-index group in the first two years after spin-off. Firms with higher E-index may have better operating performance as well, though none of the difference between dictator group and democratic group are significant. This pattern remains when ROA is measured as operating income before depreciation in Panel B of Table 12. The better operating performance of high ATP-index groups suggests that the more ATPs adopted during spin-off do not necessarily hurt subsequent operating performance. This

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Table 12: ATP Index and Operating Performance[a]

Panel A: Industry adjusted ROA (operating income after depreciation/total assets)

	Year 1			Year 2			Year 3		
	Mean	Median		Mean	Median		Mean	Median	
G-index									
Group 1 (N=45)	4.78%	2.13%	45	0.78%	5.94%	42	3.53%	5.01%	37
Group 2 (N=34)	-3.02%	2.20%	34	-1.66%	3.45%	34	-0.51%	1.36%	33
Group 3 (N=25)	8.31%	7.74%	25	8.85%	8.61%	25	6.50%	5.15%	22
Difference (3-1)	3.53%	5.62%*		8.07%*	2.67%*		2.97%	0.14%	
E-index									
Group 1 (N=43)	2.94%	1.20%	43	-0.70%	4.84%	40	1.32%	1.36%	35
Group 2 (N=30)	3.66%	7.06%	30	4.30%	7.34%	30	4.09%	5.65%	29
Group 3 (N=31)	2.72%	5.11%	31	3.12%	5.74%	31	3.28%	4.33%	28
Difference (3-1)	-0.22%	3.91%		2.83%	0.90%		1.96%	2.97%	
Total	3.08%	3.76%	104	1.96%	5.83%	101	2.79%	3.96%	92

Panel B: Industry adjusted ROA (operating income before depreciation/total assets)

	Year 1			Year 2			Year 3		
	Mean	Median		Mean	Median		Mean	Median	
G-index									
Group 1 (N=45)	5.42%	4.46%	45	0.85%	5.85%	42	4.10%	4.15%	37
Group 2 (N=34)	-0.03%	4.37%	34	-0.08%	5.21%	34	1.07%	0.41%	33
Group 3 (N=25)	8.82%	8.93%	25	9.29%	7.95%	25	6.42%	5.28%	22
Difference (3-1)	3.40%	4.48%		8.44%*	2.10%*		2.32%	1.13%	
E-index									
Group 1 (N=43)	3.58%	4.37%	43	-0.64%	5.78%	40	1.91%	2.95%	35
Group 2 (N=30)	6.09%	8.32%	30	5.03%	8.14%	30	5.13%	8.08%	29
Group 3 (N=31)	4.09%	5.51%	31	4.52%	6.22%	31	4.02%	4.35%	28
Difference (3-1)	0.51%	1.14%		5.16%	0.44%		2.11%	1.40%	
Total	4.46%	4.73%	104	2.63%	6.44%	101	3.57%	4.26%	92

(Table 12 continued)

Panel C: Industry adjusted ROA (net income/total assets)

	Year 1			Year 2			Year 3		
	Mean	Median		Mean	Median		Mean	Median	
G-index									
G-index 0-11	-1.51%	0.76%	45	-0.38%	3.58%	42	0.58%	2.39%	37
G-index 12-13	-7.84%	-0.51%	34	-3.03%	2.75%	34	-2.03%	1.62%	33
G-index 13+	5.05%	5.02%	25	5.14%	5.58%	25	5.18%	4.70%	22
Difference (3-1)	6.56%*	4.26%		5.51%	2.00%		4.59%	2.31%	
E-index									
E-index 0-2	-3.24%	-0.41%	43	-2.05%	2.15%	40	-1.76%	1.08%	35
E-index 3	1.13%	2.69%	30	3.69%	4.02%	30	2.65%	6.07%	29
E-index 4-6	-3.32%	1.53%	31	-0.61%	4.01%	31	1.91%	4.30%	28
Difference (3-1)	-0.08%	1.93%		1.43%	1.86%		3.67%	3.22%	
Total	-2.00%	1.23%	104	0.10%	3.89%	101	0.75%	2.75%	92

[a] Table 12 shows the mean and median industry adjusted ROA over difference G-index and E-index groups. In Panel A, ROA is measured as operating income after depreciation, and in Panel B, ROA is measured as operating income before depreciation. We separate our sample into 3 groups based on G-index and E-index. Group 1 includes spin-off subsidiaries with G-Index (E-index) smaller than or equal to 11 (2). Group 2 includes spin-off subsidiaries with G-Index (E-index) equaling to 12 or 13 (3). Group 3 includes spin-off subsidiaries with G-Index (E-index) larger than 13 (3). Difference is the value of ROA of Group 3 minus that of Group 1. Significance for differences at the 10%, 5%, and 1% levels is indicated by *, **, and *** respectively.

result, combined with significant better financial performance of "the dictator group", implies that the positive implications of ATPs may not be fully comprehended by investors immediately after spin-off.

4.5. ATPs and Institutional Holdings

Given the negative relation between ATP-index and firm performance found in previous literature, it is reasonable to believe that investors may be pessimistic on a firm's future performance if the firm has high ATPs. It is because no matter whether the negative relation is driven by insider information or by poor corporate governance, the empirical implication is very clear: relatively poor performance should be expected for high ATP firms. For the same reason, influential proxy advisory companies such as the Investor Responsibility Research Center has been holding stands against ATPs in their voting recommendations to institutional investors.

As we showed earlier, the ATP setting for spin-off firms is very efficient and a positive and significant relation between ATP-index and firm performance is observed. The question is whether investors apply their knowledge of ATPs for IRRC firms on spin-off firms by selling more aggressively on high ATP spin-off subsidiaries or they know the uniqueness of spin-off firms and choose the opposite response. In this section, we study the investors' response to ATP setting by examining the change of institutional holdings of spin-off subsidiaries within three years after spin-off.

If an institutional investment manager has an aggregate fair market value on the last trading day of any month of any calendar year of at least $100,000,000 shall file a report on Form 13F to the Commission required by Section 13(f) of the Securities Exchange Act of 1934. The filing

should be made within 45 days after the last day of such calendar year and within 45 days after the last day of each of the first three calendar quarters of the subsequent calendar year.[15] I collect institutional holding data from Thomson-Reuters Institutional Holdings (13-F) Database. It is the most commonly used databases for institutional holdings and are also known as CDA/Spectrum 13-F database. The Thomson-Reuters Institutional Holdings Database are available on WRDS as part of the Thomson Financial Network (TFN).

To calculate the institutional holding changes, I first collect the institutional holdings of the parent companies before spin-off and the institutional holdings of the subsidiaries within 3 years after spin-off. As the percentage ownership of each investors does not change upon spin-off, I use the institutional holdings from the latest 13-F of the parent companies before spin-off as a proxy for the institutional holdings of spin-off subsidiaries immediately after spin-off. I calculate the institutional holdings of the subsidiaries 3 months, 1 year, 2 years and 3 years after spin-off as the institutional holdings from the 1st, 4th, 8th, and 12th 13-F of the subsidiaries after spin-off. Then, the institutional holding change during a period is calculated as the difference between the institutional holdings of the subsidiary at the end of the period and the institutional holdings of the parent before spin-off.

The institutional holding changes over different horizon after spin-off is shown in Table 13. The mean institutional holding changes are shown in Panel A and the median changes are in Panel B. From Panel A, the mean institutional holding change within 3 months after spin-off is -19.21% of total shares for low G-index group, -27.37% for the middle group, and -25.59% for

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Table 13: Institutional Holding Change around Spin-off[a]

Panel A: Mean Institutional Holding Change

	Subsidiaries			
	3 Months	1 year	2 years	3 years
G-index				
G-index 0-11	-19.21%	-3.47%	-5.69%	-2.18%
G-index 12-13	-27.37%	1.69%	4.07%	3.18%
G-index 13+	-25.59%	-4.15%	1.26%	4.53%
E-index				
E-index 0-2	-19.18%	-2.73%	-5.59%	-1.78%
E-index 3	-23.42%	-0.98%	2.80%	2.59%
E-index 4-6	-29.27%	-1.80%	2.31%	3.99%

Panel B: Median Institutional Holding Change

	Subsidiaries			
	3 Months	1 year	2 years	3 years
G-index				
G-index 0-11	-8.96%	-2.98%	-1.16%	1.13%
G-index 12-13	-11.03%	0.54%	3.17%	3.13%
G-index 13+	-14.37%	-0.40%	2.95%	8.58%
E-index				
E-index 0-2	-10.51%	-2.63%	-2.21%	-1.57%
E-index 3	-8.73%	-2.17%	2.17%	3.12%
E-index 4-6	-18.05%	1.51%	5.78%	8.51%

[a] Table 13 shows the institutional holding change for spin-off subsidiaries after spin-off over different horizons. Institutional holding change is calculated as the difference between institutional holdings of the subsidiary 3 months, 1 year, 2 years and 3 years after spin-off, and the institutional holdings of the parent companies immediately before spin-off.

high G-index group. The pattern is much clearer when we categorize each sample firms by E-index, with the selling by institutional investors is more aggressive for high ATP-index firms. The median institutional holding change in 3 months horizon is small, when compared with the average value. However, the trend remains as the institutional selling increases with ATP-index. This result suggests that investors apply their knowledge of ATPs for IRRC firms on spin-off firms by selling more aggressively on high ATP spin-off subsidiaries within 3 months after spin-off.

I further extend the horizon to 1 year, 2 years and 3 years. Interestingly, I found that the institutional investors buy back the shares they sold in the first three months after spin-off, as the institutional holding change within the first 12 months is close to zero for all ATP groups. In addition, I was not able to find any relation between institutional holding change and ATP-index at the end of the first year. In the following two years, the institutional holding change is completely turned around as firms with high ATP index experience more institutional holding increases compared to the spin-off holdings. Given our previous finding that high ATP spin-off subsidiaries tend to have better financial and operating performance, this dramatic holding change suggests that institutional investors as a group realize that the negative relation between ATPs and firm performance could not be generalized to spin-off subsidiaries. They make the correction after more information is revealed (at least three months after spin-off), and increase their holdings back to the pre-spin-off level.

However, the institutional holding change could be driven by the subsidiaries delisted within three years after spin-off. More specifically, those delisted firms could be those subsidiaries with poor performance, and may have huge selling pressure at the first three months after spin-off. Then, the overturn on the direction of institutional holding change could be driven by delist of those firms. In order check this possibility, I exclude 14 subsidiaries which are delisted within three years after spin-off and compare the institutional holding change again based on different ATP-index groups.

The comparison result is shown in Table 14. Consistent with the implication in Table 13, I found that in the first 3 months, institutional investors sell more aggressively on the shares of high ATP firms. The mean and median institutional holding change of high ATP firms is almost twice as large as that of low ATP firms. The pattern disappears within the next 9 months and is

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Table 14: Institutional Holding Change around Spin-off (Balanced Panel)[a]

Panel A: Mean Institutional Holding Change

	Subsidiaries			
	3 Months	1 year	2 years	3 years
G-index				
G-index 0-13	-18.82%	-1.96%	-3.14%	-2.18%
G-index 14-15	-28.01%	1.97%	3.86%	3.18%
G-index 15+	-26.94%	-2.55%	1.26%	4.53%
E-index				
E-index 0-2	-18.76%	-0.90%	-2.87%	-1.78%
E-index 3	-24.01%	-0.75%	2.51%	2.59%
E-index 4-6	-30.72%	-0.30%	2.39%	3.99%

Panel B: Median Institutional Holding Change

	Subsidiaries			
	3 Months	1 year	2 years	3 years
G-index				
G-index 0-11	-7.72%	-1.52%	0.76%	1.13%
G-index 12-13	-11.55%	0.76%	2.25%	3.13%
G-index 13+	-13.39%	0.35%	4.83%	8.58%
E-index				
E-index 0-2	-10.48%	-1.30%	-1.07%	-1.57%
E-index 3	-8.78%	-2.14%	2.09%	3.12%
E-index 4-6	-22.12%	2.43%	7.50%	8.51%

[a] Table 14 shows the institutional holding change for spin-off subsidiaries after spin-off over different horizons. Only the 90 subsidiaries that are not delisted within three years after spin-off are included. Institutional holding change is calculated as the difference between institutional holdings of the subsidiary 3 months, 1 year, 2 years and 3 years after spin-off, and the institutional holdings of the parent companies immediately before spin-off.

completely reversed in the following two years. The result in Table 14 suggests that the implication in Table 13 is not driven by the group of subsidiaries which are delisted within 3 years after spin-off. The results in Table 13 and 14 imply that institutional investors generally follow the suggestion from proxy advisory companies such as IRRC by reacting against ATPs at the very beginning and soon realize that the suggestion should not be applied to the spin-off subsidiaries that they are watching or investing. But institutional investors may follow different investment strategy, have different investment horizon and are subject to different regulatory

strictness. Therefore, I further separate institutional investors into several groups and explore whether the previous findings are driven by them all or by certain types of institutional investors. More specifically, I look at pension fund and mutual fund holding changes.

Institutions are classified into 5 different types in Thomson-Reuters Institutional Holdings Database: 1) banks; 2) insurance companies; 3) investment companies and their managers; 4) independent investment advisers; and 5) other institutions. Following previous literature, mutual funds are identified as all institutions with type code 3 and pension funds are identified as all institutions with type code 5. One should be pointed out is that the type code is inaccurate for some independent investment advisors (type code = 4) after year 1998, as they are mistakenly classified as other institutions (type code = 5). I made the correction by mapping the institutions name before and after year 1998, and replace the type code to 4 for all years after 1998 if the type code is 4 in year 1998 and 5 in year 1999 and thereafter.

The change of mutual fund holdings is shown in Table 15. Mutual fund generally sell more aggressively on high ATP firms within the first three months after spin-off. The average holding change for high G-index and low G-index group are -8.13% and -4.85% respectively, with the former almost twice as large as the latter. The pattern remains after we further check the median value and use E-index as the ATP-index. However, in the next 21 months, the holding strategy of mutual funds are different from that of all institutions in two ways: First, the holdings of low ATP firms remain almost unchanged and those of high ATP firms increase gradually over time. Second, it takes more than two years for mutual funds to adjust the holdings of high ATP firms so that the holding changes are same for all ATP groups. These two findings suggest that mutual funds strictly follow the suggestion from proxy advisory companies such as IRRC, and it takes

Table 15: Mutual Fund Holding Change around Spin-off[a]

Panel A: Mean Mutual Fund Holding Change

	Subsidiaries			
	3 Months	1 year	2 years	3 years
G-index				
G-index 0-11	-4.85%	-2.51%	-4.06%	-5.20%
G-index 12-13	-8.51%	-2.57%	-2.46%	-4.76%
G-index 13+	-8.13%	-6.24%	-4.80%	-3.86%
E-index				
E-index 0-2	-5.87%	-3.47%	-5.44%	-6.85%
E-index 3	-6.26%	-1.24%	-1.67%	-3.76%
E-index 4-6	-8.73%	-5.49%	-3.38%	-3.01%

Panel B: Median Mutual Fund Holding Change

	Subsidiaries			
	3 Months	1 year	2 years	3 years
G-index				
G-index 0-11	-2.17%	-2.70%	-2.40%	-2.43%
G-index 12-13	-10.00%	-2.67%	-0.65%	-4.05%
G-index 13+	-6.48%	-7.68%	-7.00%	-3.91%
E-index				
E-index 0-2	-3.37%	-2.67%	-3.84%	-4.04%
E-index 3	-3.52%	-2.29%	-0.32%	-1.48%
E-index 4-6	-7.93%	-7.11%	-5.94%	-3.84%

[a] Table 15 shows the mutual fund holding change for spin-off subsidiaries after spin-off over different horizons. Institutional holding change is calculated as the difference between institutional holdings of the subsidiary 3 months, 1 year, 2 years and 3 years after spin-off, and the institutional holdings of the parent companies immediately before spin-off.

them twice the time for average institutions to confirm that the suggestion should not be applied to the spin-off subsidiaries.

The story is completely different for pension funds, which is shown in Table 16. Different from most of the institutional investors, after spin-off, pension funds sell more shares of low ATP subsidiaries rather than high ATP subsidiaries within the first three months after spin-off. The mean and median holding change for high E-index subsidiaries are 0.17% and -0.60% while those for low E-index subsidiaries are -2.47% and -1.09%. Given the fact that pension funds are generally long-term investors who have more insider information and are known for active

Table 16: Pension Fund Holding Change around Spin-off[a]

Panel A: Mean Hedge Fund Holding Change

	Subsidiaries			
	3 Months	1 year	2 years	3 years
G-index				
G-index 0-11	-2.58%	0.54%	2.37%	3.70%
G-index 12-13	-2.07%	0.81%	1.03%	3.13%
G-index 13+	-0.25%	1.26%	1.07%	2.86%
E-index				
E-index 0-2	-2.47%	0.71%	3.09%	4.96%
E-index 3	-2.98%	0.17%	-0.75%	1.31%
E-index 4-6	0.17%	1.59%	2.30%	3.64%

Panel B: Median Hedge Fund Holding Change

	Subsidiaries			
	3 Months	1 year	2 years	3 years
G-index				
G-index 0-11	-0.99%	0.37%	0.33%	2.03%
G-index 12-13	-0.60%	0.60%	0.65%	3.29%
G-index 13+	-0.84%	0.34%	-0.22%	2.64%
E-index				
E-index 0-2	-1.09%	0.37%	0.76%	4.13%
E-index 3	-0.73%	0.25%	-0.09%	2.16%
E-index 4-6	-0.60%	0.47%	1.40%	2.94%

[a] Table 16 shows the pension fund holding change for spin-off subsidiaries after spin-off over different horizons. Institutional holding change is calculated as the difference between institutional holdings of the subsidiary 3 months, 1 year, 2 years and 3 years after spin-off, and the institutional holdings of the parent companies immediately before spin-off.

governance, their selling behavior implies that they do not think that the entrenchment problem brought by ATPs may be a great concern for their investment. In following 27 months, pension funds increase their holdings in all kinds of spin-off subsidiaries, regardless of the number of ATPs the subsidiaries have.

Overall, my study shows that institutional investors generally following the suggestion from proxy advisory companies such as IRRC and sell more shares on spin-off subsidiaries with more ATPs within the first three months after spin-off. However, they gradually realize the limited implication of applying IRRC based empirical findings on non-IRRC firms, and reverse their

investment strategy by purchase more shares of high ATP firms. Pension funds are the exceptions as they choose the opposite investment strategy.

4.6. ATPs and CEO Background

In a spin-off, the assets of the parent company are divided into two parts. The separation of a subsidiary from a parent company implies that a new management team should be built for the subsidiary as an independent and newly public company. In the previous section, I show that the background of CEO is related to the final setting of ATPs, as the subsidiaries whose CEO was the top manager of the parent firm before spin-off tend to have less ATPs. In this section, I go a step further and look at more detail about subsidiary CEO background and explore the link among CEO background, ATP setting and financial performance.

In a multi-divisional public company, division managers normally process the expertise on firm-specific knowledge while corporate governance expertise is concentrated at the top of the company because it is top managers rather than division managers to take the responsibility for shareholders' interests. When a division is spun-off and become an independent public company, governance expertise is highly required but probably not available within the division, which raise the question of how top management of spin-off subsidiaries is structured. Wruck and Wruck (2001) is the only study look at this issue. Based on a sample of 172 spin-offs from year 1985 to year 1995, they show that the composition of spinoff firms' top management are affected by both the firm-specific human expertise and top management/governance expertise. They find that due to a lack of governance and top management expertise, division managers are less likely to hold the title of chairman. The situation, however, is completely different for top insiders, who were Wruck and Wruck find that of the 110 top insiders, 87 or 79% hold the chairman title. In addition, outsiders rarely hold both the chairmanship and the CEO than top insiders (top

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managers of the parent firms before spin-off) because they don't have enough firm-specific expertise. Therefore, most outsiders are teamed with insiders to form a CEO-chairman management team. Wruck and Wruck (2001) show that top management of the subsidiaries is carefully structure to make sure that the top management team has the necessary expertise.

In the framework of Wruck and Wruck (2001), top management team includes both CEO and chairman who have firm-specific knowledge and top management/governance knowledge respectively. In this framework, the relation between CEO and chairman are cooperative as team members, and the respective expertise could be shared with each other. However, the CEO-chairman relation is actually a governance relationship. The main responsibility of chairman involves to evaluate the CEO performance and management decision, and take possible reaction when the chairman believe that the CEO is not acting in the interests of shareholders. Therefore, even though the expertise transfer could be expected, in a CEO-chairman relationship, it is far from as smooth as in a team relationship.

Given the variety of the CEO background and difficulty in expertise transfer from chairman, what is the possible solution a spin-off designer would choose to ensure the good top management/governance knowledge of the new CEO of the spin-off subsidiaries? This question is actually very important but in my best knowledge has not been explored in the previous literature. Hoffman (2014) argues that activist investors may not only have strong ability but also strong motivation to set newly spin-off subsidiaries as their targets. Spin-off subsidiaries are easy targets because some investors will sell the subsidiary shares immediately after distribution. This allow activists to accumulate shares so as to build position without drawing managers' attention. Spin-off subsidiaries are ideal targets as well because when accumulate enough shares, activists

could influence firm strategy at a very early stage. The lack of top management expertise of CEO will make activist investors' control over the subsidiary even easier.

One possible solution is to set more ATPs for some subsidiaries, the CEO of which does not have top management/governance expertise. CEOs could accumulate sufficient governance knowledge and experience through daily operation. To increase ATPs will increase the difficulty of hostile takeover, which protects unexperienced managers and help them to gain precious time through daily practice. If this is true, we should see that a subsidiary will have less ATPs if the CEO has more top management and governance expertise.

We test this hypothesis by collecting the CEO background information through the proxy statements. We classify the CEO background into 4 categories: top management, management member, division head and outsider. The subsidiary CEOs of the first 3 categories are taken as insiders because they come from the parent company.

1. Top manager

   A subsidiary CEO is classified into top manager group if his was CEO, chairman or president of the parent company before spin-off, regardless of where he will remain his position after spin-off. Top managers are the leader of the management team and have the highest governance/top management expertise among all insiders.

   Top manager group has two sub-groups: dual-position group and jump ships group. If the top manager will resign all management position in the parent company after spin-off, he is classified as a jump ships top manager, otherwise he is classified into dual-position group.

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2. Management member

A subsidiary CEO is classified into management member group if he was executive vice president or chief financial officer (CFO) of the parent company before spin-off, regardless of where he will remain his position after spin-off. Management members are members in top management team and take the responsibility to assistant top managers in daily operation. They have the second highest governance/top management expertise.

3. Division head

A subsidiary CEO is classified into division head group if he was a division head of the parent company before spin-off. The main job function of a division head is to manage the whole division. Sometimes they may take a dual position with a title of both division head and executive vice president. We take division head as their major duty and classify them as division head. They have limited governance/top management expertise but highest subsidiary specific expertise.

4. Outsider

A subsidiary CEO is classified into outsider group if he was not employed in the parent firm immediately before spin-off. Their governance/top management expertise varies but have very limited subsidiary specific expertise. We do not further differentiate the outsider group based on their previous management experience due to the small sample size.

We collect the first CEO background information through proxy statements. We first identify the first CEO of spin-off subsidiaries in the first proxy statement after spin-off. Given to the fact that some CEOs may resign within in one year after spin-off because their responsibility is to

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manage the firm during the event year and hand the subsidiaries to the subsequent managers, we take the subsequent CEOs as the real first subsidiary CEO in these cases. Next, we read the employment history in the proxy statement for each first CEO and identify whether they were employees of parents. And insiders or outsiders are classified based on the employment history. Then, we further check the employment history by reading the last proxy statement of the parent companies before spin-off, identify the job title of each first CEO immediately before and classify the first CEOs. If the first CEO was hired within one year before spin-off, we classify him as an outsider as well, because normally it takes several months from announce the spin-off to finalize it and it is very likely that those CEOs are employed specifically for leading the subsidiary after spin-off. Also, for those first CEOs who were employed by parent company but left the parent company more than 3 years before spin-off, we classify them as outsiders.

The sample distribution and mean and median value of ATP-index of each CEO background group is shown in Table 17. Consistent with the findings in Wruck and Wruck (2001), only 49.04% of the subsidiaries are managed by division head. For the remaining 50.94%, 12 have management members, 21 have top managers and 21 have outsiders. In the top manager group, 9 CEOs have top management positions both in the parent firm and the subsidiary after spin-off and 12 choose to be focused and jump to the subsidiaries.

Table 17: CEO Background and ATPs[a]

CEO background	Observations		Subsidiary G-index		Subsidiary E-index	
	Freq.	Percent	Mean	Median	Mean	Median
Division head	51	49.04%	12.34	13.00	2.98	3.00
Management member	12	11.54%	11.75	11.50	2.33	3.00
Outsider	21	20.19%	11.67	12.00	2.48	3.00
Top manager	21	20.19%	11.28	11.00	2.19	2.00

[a] Table 17 shows the distribution as well as the mean and median ATP-index for different management background of the first CEO of subsidiaries.

In terms of the ATP-index, among the insiders, top managers have the lowest G-index and E-index. The average and median G-index are 11.28 and 11.00 and the mean and median value of E-index are 2.19 and 2.00. Division heads have the highest ATP-index. The average G-index and E-index are 11.34 and 2.98. Management members are in the middle, with the mean G-index and E-index being 11.75 and 2.33. Within the top manager group, if a parent top manager will abandon his position of the parent firms and jump to the subsidiaries, the ATP-index is generally higher than it he would like to keep his position in the parent firm. For outsiders, both G-index and E-index is very close to that of the median insider group: management members. Possible explanation could be that outsider group includes peoples with various management background, including those with top management experience and those with division head experience. Overall, our result suggests that the number of ATPs increases with the level of governance/top management expertise of the first CEO of the spin-off subsidiaries.

I further compare the subsequent financial performance for each management background groups, which is shown in Table 18. Generally, insiders have better performance than outsiders, especially in the second and third year after spin-off. Among insiders, interestingly, both top managers and division head outperform management members most of the time. Within the top manager group, dual position top managers have a mean and median buy-and-hold abnormal return of more than 85% when compared to all three benchmarks. Jump ships top managers do not perform well in the first year but quickly outperform the other non-top manager groups in the next two years.

A possible explanation for the performance pattern we observed could be the adverse selection. If a subsidiary is promising or in good standing, there is no reason to replace the leader of the division and give the leadership to an outsider, who compared to insider probably has less firm

Table 18: CEO Background and Abnormal Return

CEO background	Matched Sample				FF Sample (Value weighted)				FF Sample (Equal weighted)			
	3 Months	12 Months	24 Months	36 Months	3 Months	12 Months	24 Months	36 Months	3 Months	12 Months	24 Months	36 Months
Division head	20.05%	40.49%	65.72%	68.91%	12.84%	27.37%	28.07%	25.81%	13.89%	29.49%	33.14%	29.56%
	9.66%	32.35%	52.22%	69.38%	0.50%	3.27%	16.04%	4.72%	-3.30%	4.34%	20.97%	3.02%
Management member	4.35%	4.92%	5.76%	21.07%	7.46%	15.55%	4.11%	11.58%	7.74%	17.55%	11.00%	18.06%
	13.47%	15.48%	8.17%	1.36%	5.03%	17.45%	-2.77%	1.84%	9.83%	20.92%	8.22%	16.48%
Outsider	3.48%	21.54%	8.91%	-4.66%	-0.43%	12.33%	-4.27%	-19.94%	1.71%	13.78%	-2.44%	-15.05%
	3.95%	12.03%	-0.70%	-10.78%	-8.89%	1.43%	-17.88%	-50.18%	-4.74%	2.41%	-21.11%	-47.78%
Top manager	-3.01%	10.75%	32.67%	78.33%	11.55%	18.33%	28.82%	68.83%	11.77%	17.38%	31.28%	70.75%
	2.66%	7.99%	6.74%	59.03%	7.69%	6.28%	19.02%	54.76%	6.04%	4.06%	19.91%	51.98%

specific expertise. Instead, spin-off could be a reward to the division head or a top manager so that he may have more freedom in terms of the management decision after the separation. Therefore, top managers and division heads may choose a good division to lead, and leave the bad division to outsiders. Even though some outsiders may turn a bad division to a good one after several years of operation, but it is hard to expect that it may happen quite often, which explains the relative poor performance of outsiders and better performance of division head and top managers.

Conclusion

The unique ATP design environment for spin-off subsidiaries offers us an ideal empirical setting to better understand ATPs. Based on a sample of 104 spin-off subsidiaries, this paper extend our understanding over ATPs as well as the aggregated ATP-index in three ways.

First, at the provision level, to measure the strength of market discipline by aggregating the identified ATPs from IRRC is subject to two errors: The first error is the data collecting error. We found that IRRC underreport around 50% incidence of director indemnification and limitations on director liability provisions, 27% incidence of severance agreement and 11% incidence of indemnification contracts. Second, ATPs are not valued equally by firm managers. Delay provisions, including blank check, classified board, limits on special meeting and limits on action by written consent, and limits on bylaw amendment which offers protection on delay provisions, are the provisions that managers value most in terms of the shareholders' interests. They also have the preference on the protection provisions which are highly related to the utility of managers. In contrast, they value less on the remaining provisions, including most of the voting provisions. Based on the spin-off sample, we found that these provisions are frequently dropped from subsidiaries during spin-off.

Second, at the aggregate level, we found that even though ATPs may lead to management entrenchment, it could be beneficial to firms in terms of enhancing bargaining power in takeovers or promoting long-term growth. This explains why ATPs are still widely adopted by firms even though influential proxy advisory companies such as the IRRC have been holding similar stands against ATPs in their voting recommendations to institutional investors. In

addition, ATP-aggregated index is negatively related to the strength of alternative governance mechanism, including large shareholder monitoring and product market competition. This substitute relation questions the valid use of ATP index as an overall corporate governance measure and calls for a new measure of the whole corporate governance environment.

Third, we found that the spin-off subsidiary firms with higher ATPs have better financial performance and operating performance. This result is in sharp contrast with the empirical findings of Gompers, Ishii and Metrick's (2003) and Bebchuk, Cohen, Ferrell (2004), which is subject to causality issue as pointed out by the authors themselves. The positive impact of ATPs on firm value further challenges the empirical foundation of the argument that ATPs may hurt shareholders' interests.

Fourth, we explore the holding change of institutional investors within 3 years after spin-off and find that most of institutional investors generally applied suggestions from proxy advisory companies such as IRRC by selling more aggressively on subsidiaries with more ATPs immediately after spin-off. As more information including the operating performance is revealed into the market, they realize that high ATPs do not hurt the value of the spin-off subsidiaries they invested and regain their holdings to the pre-spin-off level. We also find the hedge funds do not follow the suggestions and selling more aggressively on subsidiaries with less ATPs.

Finally, we explore the relation between managerial background and subsidiary ATPs. We show that if the CEO of a subsidiary has less top management/governance experience, more ATPs are set in the subsidiary. A possible explanation is that ATPs are used to protect unexperienced CEOs to gain precious time window to accumulate top management experience through daily practice.

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Appendices

Appendix A: Definition of Anti-takeover Provisions[16]

Blank check (blank check preferred stock): Blank check preferred stock is a type of stock authorized by shareholders but has not been issued yet. The board of directors is given the rights to issue the stock. The stock is called blank check because the board of directors have the authority to design the voting, dividend, conversion and other rights. The primary purpose of blank check preferred stock is to raise capital. It can be used to defense hostile takeover because it could be built as a poison pill. An example could be a preferred stock with the option to be converted to common shares and sold to friend party of managements, therefore creating additional difficulty for outsiders to win a proxy fight. Blank check preferred stock is in corporate charter (statement of incorporation).

Classified board (staggered board): The board directors are classified into several classes and each class can be replaced in different years. This creates additional difficulty for hostile takeover because it takes more than one year to gain control of the board. Typically, classified board provision is in corporate charter and is restated in each proxy statement.

Special meeting (limitations on special meeting): Special meeting is a meeting of shareholders outside the usual annual general meeting. It could be called by shareholders to discuss specific matters. Limitations on special meeting creates additional difficulty for hostile takeover because it can increase the shareholder support level that is required to call a special meeting beyond the

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[16] All ATPs are defined based on the description of Gomper, Ishii and Metrick (2003).

one specified by state law or can eliminate the ability to call a special meeting entirely, therefore increase the probability that the shareholders voting occurs on the next annual meeting. Limitations on special meeting is coded in corporate bylaws and sometimes may also be coded in corporate charters.

Written consent (limits on written consent): Written consent enables shareholders to vote without taking an annual meeting or special meeting. Limits on written consent creates additional difficulty for hostile takeover because it can increase the shareholder support level for the voting results by written consent, require unanimous consent or completely eliminate the rights to take action by written consent, therefore increase the probability that the shareholders voting occurs on the next annual meeting/special meeting rather than immediately through the form of written consent. Limits on written consent is coded in corporate bylaws and sometimes may also be coded in corporate charters.

Compensation plans (Compensation plans with changes-in-control provisions): Compensation plans with changes-in-control provisions enable managers to accelerate the exercise of options and bonus if there will be a change in control. It creates additional difficulty for hostile takeover because it can make the employment contracts more expensive and therefore increase the acquire costs. Compensation plans with changes-in-control provisions are summarized in proxy statement (DEF-14).

Contracts (indemnification contracts): Indemnification contracts are the contracts between the company and individuals (managers and directors) to indemnify them against legal expenses and judgements resulting from lawsuits pertaining to their conduct, permitted under applicable state law. It creates additional difficulty for hostile takeover because managers and directors may be

willing to serve their duty and defend shareholders' interests if they could have more protections. Indemnification contracts are normally attached in the exhibit of annual reports but may sometimes also be included in proxy statements.

Golden parachutes: Golden parachutes give compensation to top executives in the event of termination, demotion or resignation following a change in control. The compensation normally takes the form of cash bonus, which equals to the top executives' salary for several years. It creates additional difficulty for hostile takeover because it adds additional costs for acquirers if they would like to change the top executives. In fact, the impact of this provision is actually ambiguous. Golden parachutes could be taken as an insurance for the top executives on job security, which largely reduce the agency problem for top executives in the M&A negotiation process, and therefore increase the possibility of takeover. As argued by Gompers, Ishii and Metrick (2003), it is taken as an anti-takeover provision because golden parachutes are positively correlated with 15 of the 21 other provisions in a pairwise correlation test. Golden parachutes are summarized in proxy statement.

Indemnification (director indemnification): Director Indemnification uses charters and/or bylaws to indemnify top executives against legal expenses and judgements resulting from lawsuits pertaining to their conduct, permitted under applicable state law. It creates additional difficulty for hostile takeover because managers and directors may be willing to serve their duty and defend shareholders' interests if they could have more protections. Direct Indemnification is normally coded in corporate charters and/or bylaws.

Liability (limitations on director liability): Limitations on director liability eliminates the personal liability of directors to the company or the stockholders for monetary damages or

breach of fiduciary duty as a director, if directors act on behalf of the corporation and exercise an informed business judgment based on all material information reasonably available to them. Limitations on director liability is coded in corporate charters.

Severance (executive severance agreements): Executive severance agreements give compensation to top executives in the event of termination, demotion or resignation and are **not** contingent upon change in control. It creates additional difficulty for hostile takeover because it adds additional costs for acquirers if they would like to change the top executives. Executive severance agreements are normally attached in the exhibit of annual reports but may also be mentioned in proxy statements.

Bylaws (bylaw amendment limitations): Bylaw amendment limitations add limitation on shareholders' ability to amend bylaw. It might take the form of supermajority vote requirement or completely voting ability elimination. It creates additional difficulty for hostile takeover because many anti-takeover provisions are coded in bylaws and it adds additional protection on these provisions. Bylaw amendment limitations are normally coded in corporate charter but may sometimes be coded in bylaws as well.

Charter (charter amendment limitations): Charter amendment limitations add limitation on shareholders' ability to amend corporate charter. It might take the form of supermajority vote requirement or completely voting ability elimination. It creates additional difficulty for hostile takeover because many anti-takeover provisions are coded in charter and it adds additional protection on these provisions. Charter amendment limitations are coded in corporate charter.

Cumulative voting (Non-cumulative voting): Cumulative voting is used to promote more proportional representation than winner-take-all elections through giving shareholders the rights to cast all of their votes for a single nominee for the board of directors when the company has multiple openings on its board. It creates additional difficulty for hostile takeover because it gives minority shareholders the influence on board decision. Cumulative voting is one of the two provisions that may increases shareholders' rights and are coded as one if a firm does not have cumulative voting provision. Cumulative voting could be identified in charter, bylaw and proxy statement.

Secret ballot: Secret ballot is a voting method that all proxy votes are kept confidential. Without secret ballot creates additional difficulty for hostile takeover because shareholders may face pressures from managers and are more likely to stand with them. Secret ballot is one of the two provisions that may increases shareholders' rights and are coded as one if a firm does not have cumulative voting provision. Secret ballot could be identified in charter, bylaw and proxy statement.

Supermajority / Control share acquisition law: Supermajority requires that the threshold shareholder voting requirement for mergers and acquisitions of the company should be higher than the threshold voting requirement of state law. Typical threshold requirements are 66.7%, 75% and 80%. Supermajority creates additional difficulty for hostile takeover because more shareholder supports are required to win a proxy fight for acquirers. Supermajority is coded in corporate charter.

Unequal voting: Unequal voting restricts the voting rights of some shareholders. A normal form of unequal voting is to give more votes to shareholders or limits the voting power of shareholders

whose ownership exceeds certain threshold. Unequal voting creates additional difficulty for hostile takeover because it is more costly for acquirers to accumulate sufficient voting rights to control the target corporation. Unequal voting could be identified in charter, bylaw and proxy statement.

Anti-greenmail / Anti-greenmail law: Greenmail is am agreement between a large shareholder and a company that the large shareholder agrees to sell his stock back to the company, usually at a premium, in exchange for the promise not to seek control of the company for a specified period of time. Even though greenmail payment is made to stop a takeover bid, it attracts some corporate raiders to initiate takeover bids to make money through greenmail. Anti-greenmail provision protect firms to be takeover from these raiders. Anti-greenmail provision is coded in corporate charter.

Directors' duties / Directors' duties law: Directors' duties allow directors to consider the interests of stakeholders when considering a merger and acquisition. It provides a legal basis for the board to reject a takeover even though it is beneficial to shareholders, and therefore increase the difficulty of takeover. Directors' duties is coded in corporate charter.

Fair price / Fair price law: A two-tier tender offer is an offer to first purchase a sufficient number of stockholders' shares to gain control of a firm, and second purchase the remaining shares later with a lower offer. The goal of fair price provision is to prevent pressure on the target's shareholders to tender their shares in the second stage of the two-tiered tender offer. A typical fair price provision would limit the range of prices a bidder can pay in two-tier offers by requiring a bidder to pay to all shareholders the highest price paid to any during a specified period of time before the commencement of a tender offer. Therefore, fair price provision creates

additional difficulty for hostile takeover because it makes tender offer more expensive. Fair price provision is coded in corporate charter.

Pension parachutes: Pension parachute provision prevents the use of the surplus cash in the pension fund of a target to finance the acquisition of an acquirer. It reduces the possibility of the use of this low costs financing method to acquire a corporation. Pension parachute provision is identified in proxy statement.

Poison pill: Poison pill provision provides the holders the special rights in the event of hostile takeover. Two common rights embedded in poison pill provision are the rights to purchase the stock at a discount, which may make the target unattractive, and the rights to exclusively purchase the authorized but newly issued shares, which may dilute the voting power of the acquirer. Poison pill provision is identified in annual report and its attachment.

Silver parachutes: Silver parachutes give compensation to firm's employees in the event of termination, demotion or resignation following a change in control. The compensation normally takes the form of cash bonus, which equals to the employees' salary for several years. It creates additional difficulty for hostile takeover because it adds additional costs for acquirers if they would like to lay-off some employees. Silver parachutes are different from golden parachutes because the former is available to some firm's employees while the latter is to top executives only. Silver parachutes are summarized in proxy statement.

Business combination law: Business combination law imposes a moratorium on certain kinds of transactions (e.g., asset sales, mergers) between a large shareholder and the firm for a period usually ranging between three and five years after the shareholder's stake passes a pre-specified

(minority) threshold. It creates additional difficulty for hostile takeover because it restricts the freedom of acquirers after merger and acquisition. The option to opt-in or opt-out of the business combination law is coded in corporate charter.

Cash-out law (Control-share cash-out law): Control share cash-out law enables the selling of shareholders' stakes to a controlling shareholder at a highest recent price. Control share cash-out law is similar to fair price law but is not contingent on a takeover event. Control share cash-out law creates additional difficulty for hostile takeover because it makes tender offer more expensive. The option to opt-in or opt-out of the control share cash-out law is coded in corporate charter.

Appendix B: List of Public Pension Funds[17]

California Public Employees Retirement System
California State Teachers Retirement
Colorado Public Employees Retirement Association
Florida State Board of Administration
Illinois State Universities Retirement System
Kentucky Teachers Retirement System
Maryland State Retirement and Pension System
Michigan State Treasury
Montana Board of Investment
New Mexico Educational Retirement Board
New York State Common Retirement Fund
New York State Teachers Retirement System
Ohio Public Employees Retirement System
Ohio School Employees Retirement System
Ohio State Teachers Retirement System
Texas Teachers Retirement System
Virginia Retirement System
State of Wisconsin Investment Board

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[17] List of Public Pension Funds is from Cremers and Nair (2005).

Appendix C: Bootstrap

I employ bootstrap to compute standard errors of regression coefficient estimates that are robust to heteroskedasticity and within cluster correlation. Bootstrapping allows us to generate unbiased estimators for the standard errors of the regression coefficients in the presence of non-independence of observations, overlapping measurement periods and heteroskedasticity of regression residuals. I use bootstrap to implement the hypothesis test on the equivalence of the coefficient estimates for regressions of different ATP index groups. Bootstrapping allows us to construct the distribution of the difference between the coefficient estimates of high ATP group and low ATP group.

Generally, bootstrap is applied in this paper in two stages:

1) Standard error correction

First, I construct 1,000 bootstrap samples by randomly sampling, with replacement, from our original date set. Each bootstrap is constructed by sampling based on firm clusters instead of individual firm-year observations in order to preserve the time series properties of the sample and each bootstrap sample consists of the same number of firm clusters as the original data set. Because sampling is done with replacement, firm clusters may be represented once, multiple times or not at all in each replicate. Next, I estimate our regression models on each of the 1,000 samples and construct the distributions of the coefficient estimates using the results of these regressions. Corrected standard errors for the coefficients are calculated as $\sqrt{\sum (\beta_i^* - \overline{\beta^*})^2 /(1,000-1)}$ where $\overline{\beta^*}$ is the mean of the coefficients for the 1,000 replicates and β_i^* represents the coefficient estimate for the ith sample.

2) Equivalence tests

First, I construct 1,000 bootstrap samples as I describe above. Next, I estimate the paired regressions on each of the 1,000 samples and obtain the coefficient estimates from the paired regressions (β^*_{i1} and β^*_{i2}) which I use to construct the distribution for the difference between the paired coefficient estimates (β^*_{i1} - β^*_{i2}). Third, to implement the non-parametric confidence interval test, I sort this series and exclude the top and bottom 5%. If this interval does not include zero then the procedure calls for rejecting the null ($H_0 : \beta^*_{i1} = \beta^*_{i2}$).

Vita

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