

國立政治大學會計學系博士班博士學位論文

指導教授:梁嘉紋 博士

會計品質是否影響策略聯盟的形成？

Does Accounting Quality Affect Corporate Alliance Formation?



研究生:黃榆芳 撰

中華民國一百零八年十一月

致謝辭

回首博士班的日子歷歷在目，轉眼即將邁向人生另一段旅程。博士班紮實的訓練讓我獲益良多，師長們的教誨亦使我成長茁壯，在論文的撰寫過程中，承蒙許多人的支持和鼓勵，讓我能更有勇氣與動力完成論文與取得博士學位。在此，感謝師長、同學、家人與朋友們的協助及愛護，讓我的博士班生活充滿美好回憶。

我心中滿懷感激，僅以此謝辭表達我內心的感激與感動，首先要感謝指導教授梁嘉紋 博士的教導，不僅在學業上耐心指導，使我漸入佳境，並且體會到研究的樂趣，在生活上也給予許多關心，非常感謝老師一路上給予鼓勵與提攜，讓我得以順利取得博士學位。本論文得以完成，同時要感謝口試委員陳宇紳 博士、詹凌菁 博士、許文馨 博士與周庭楷 博士給予寶貴的建議與指導，使得論文得以更完臻。

博士班的日子雖然漫長，但過程中有許多師長及同儕的陪伴，讓博士之路不再孤單，感謝桓伊學姐、品如學姐、柏祥學長的幫助，一起準備資格考，分享博班生活點滴及互相加油打氣；感謝系辦助教們在日常生活的幫助；感謝好友觀智、瑞璇及怡萱的鼓勵；感謝所有在學習路上幫助過我的師長及朋友，最後要感謝我的父母，對我的疼愛及栽培，支持我、鼓勵我，讓我無後顧之憂地朝目標邁進。紙短情長，要感謝的人實在太多了，請容許我將感謝放在心中，謝謝你們。

在此謹將此論文獻給我最敬愛的老師、親愛的家人以及所有給予我關懷與協助的好友。

黃榆芳謹識於

政治大學會計研究所

中華民國一〇八年十一月

ABSTRACT

The business world has been experiencing a worldwide trend towards greater integration and consolidation during the past decades. Firms increasingly cooperate with partners that can enhance efficiency and firm value. However, alliances could imply risks and costs. To control the transaction risk of failure and reduce the uncertainty, firms need to devote much effort to partner selection. Our study investigates this issue from the perspective of accounting. We investigate whether earnings quality is an important determinant for forming alliances. We find that earnings quality, measured as discretionary accruals and restatements, is positively related to the likelihood of strategic alliances formation and the number of strategic alliances formed. We also find that earnings quality is particularly important when forming R&D alliances. Finally, our results demonstrate that the importance of earnings quality in forming strategic alliances increases for firms with high information asymmetry.

Keywords: Strategic alliances, Partner selection, Earnings quality, Transaction cost

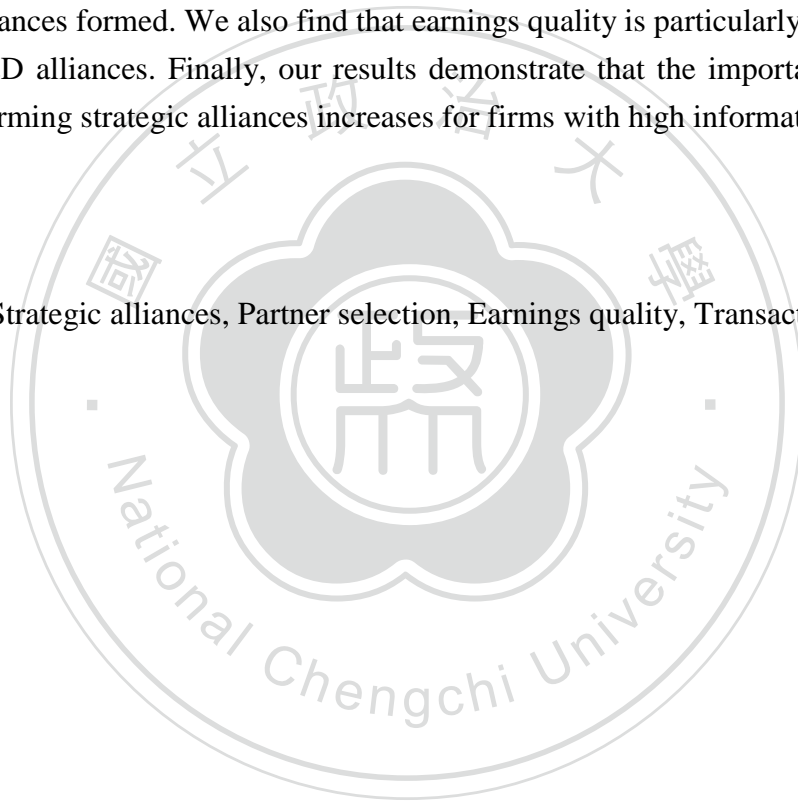


TABLE OF CONTENTS

1. INTRODUCTION	1
2 RELATED LITERATURE AND HYPOTHESIS DEVELOPMENT	4
2.1 STRATEGIC ALLIANCE	5
2.2 EARNINGS QUALITY	7
3. RESEARCH DESIGN	13
3.1 DATA AND SAMPLE SELECTION	13
3.2 VARIABLE MEASUREMENT	14
3.2.1 EARNINGS QUALITY	14
3.2.2 STRATEGIC ALLIANCES	14
3.2.3 CONTROL VARIABLE	15
3.3 EMPIRICAL MODELS	15
4. RESULTS	17
4.1 DESCRIPTIVE STATISTICS	17
4.2 EMPIRICAL RESULTS	21
5. ADDITIONAL ANALYSES	31
5.1 SENSITIVITY TEST	31
5.2 RESTATEMENT	35
5.3 JOINT VENTURE	38
5.4 SELF-SELECTION	40
6. CONCLUSION	43
APPENDIX	44
REFERENCES	45

LIST OF TABLES

Table 1	Sample Selection and Sample Grouping	14
Table 2	Descriptive Statistics	18
Table 3	Pearson Correlation	20
Table 4	Regression of the Strategic Alliance on Earnings Quality with Probit Model	22
Table 5	Regression of the Frequency of Strategic Alliance on Earnings Quality with Poisson and Negative Binomial Models	24
Table 6	Regression of the Different Types of Strategic Alliances on Earnings Quality with Probit Model	26
Table 7	Regression of the Strategic Alliance on Earnings Quality with Probit Model: Effect of Information Asymmetry	28
Table 8	Regression of Frequency of the Strategic Alliance on Earnings Quality with Poisson and Negative Binomial Models: Effect of Information Asymmetry	30
Table 9	Regression of the Strategic Alliance on Earnings Quality with Logit Model	32
Table 10	Regression of the Different Types of Strategic Alliances on Earnings Quality with Logit Model	33
Table 11	Regression of the Strategic Alliance on Earnings Quality with Logit Model: Effect of information asymmetry	34
Table 12	Regression of the Relation between Strategic Alliances and Accounting Restatement for the Propensity-score-matched Sample	36
Table 13	Regression of the Joint Venture on Earnings Quality with Probit Model	39
Table 14	Two-stage Regression of the Strategic Alliance on Earnings Quality with Heckman Model	41

1. INTRODUCTION

As the business world experiences greater integration and consolidation, strategic alliances become a commonly observed phenomenon. The number of strategic alliances has increased dramatically in the past few decades (Greve, Rowley, and Shipilov 2014). Among all the necessary activities regarding forming strategic alliances, partner selection plays an important role in the success of alliances (Koot 1988). Little research so far examines the importance of accounting issues in alliance formation. In this study, we investigate the determinants of inter-firm strategic alliances from the accounting perspective. As KPMG's report suggests¹, after reaching a mutually recognized business plan, firms need to address the accounting issues, such as valuation and profit-sharing, which are based on the earnings quality of financial statements. Therefore, we argue that earnings quality is an important determinant of alliance formation. The objective of this study is to examine whether earnings quality impacts the formation of strategic alliances.

The benefits of alliance collaboration include access to the knowledge or technology that is critical to innovation, the economy of scale, accessing new markets, and risk diversification (Groot and Merchant 2000; Hagedoorn 2002; Anderson and Sedatole 2003; Ding, Dekker, and Groot 2010). However, alliances could imply risks and costs. Alliances with other businesses can be risky since inter-firm cooperation has a high failure rate (Chua and Mahama 2007; Lunnan and Haugland 2008). To control the transaction risk of failure and reduce the uncertainty, firms need to devote a lot of effort to partner selection. Although prior studies show that “selection effort” could largely curtail the risk and uncertainty (e.g., Blumberg 2001; Dekker 2008), they rarely examine the factors that firms pay attention to during the selection process.

Prior research emphasizes how firms choose alliance partners. Generally, there are four factors that firms would consider in their partner selection process: trust, commitment, complementarity, and financial payoff. Shah and Swaminathan (2008) find that trust is a key factor influencing partner selection and subsequent strategic alliance performance. Ding, Dekker, and Groot (2013) argue that firms are more likely to view trust and reputation as critical criteria when encountered with greater transaction risk from high task interdependence and broad transaction scope. Thus, partner selection based on trust and reputation could lower the transaction risks and increase the success rate of strategic alliances. On the other hand, prior research documents that accounting restatement damages a firm's reputation for integrity and competence (Dechow, Sloan, and Sweeney 1996; Palmrose, Richardson, and Scholz 2004; Karpoff, Lee, and Martin 2008a), and the trust the

¹ Weber-Rymkovska, Bhajji, Rassloff, and Zinke. 2017. Strategic alliances: a real alternative to M&A? Driving growth through strategic alliances. <https://assets.kpmg/content/dam/kpmg/xx/pdf/2017/11/strategic-alliances-toolkit.pdf>

stakeholders placed on it, having the impact on their decision-making behavior. In addition, when both sides of the alliances do not have a history of cooperation with each other, they tend to rely greatly on public financial information to reduce information asymmetry. As a result, earning quality serves as the base of the reliability of the financial statements and becomes the foundation of trust for the alliance partners.

Prior research finds that a firm will also consider the impact of financial payoff when they select the partners. A firm is more likely to strike the cooperation deal with the partners who can provide strategic advantages and improve the financial value of the alliance. (Achrol, Scheer, and Stern 1990; Jap 1999; Dyer 2000; Hitt, Ahlstrom, Dacin, Levitas, and Svobodina 2004). Firms seeking for cooperation might use the information revealed in the financial statements to evaluate the financial performance and soundness of its prospective partners, so the faithfulness and accuracy of the financial statements are extraordinarily important.

Apart from trust and financial payoff, earnings quality also has an effect on strategic alliance formation through the channel of profit-sharing. In practical situations, there could be profit-sharing disputes resulting from various aspects of accounting, for it is impossible to define every aspect related to profit-sharing activities. Disputed subjects could be which account, either sales or net income represents the payoff to be shared.

In practice, the success of strategic alliances relies heavily on the realization of profit sharing according to the contracts². Zamir, Sahar, and Zafar (2014) suggest that disagreement on revenue sharing is one of the three major reasons for the failure of strategic partnerships. Unlike a joint venture, which is a separate entity and regulated by specific accounting principles, a contractual alliance is less likely to be monitored and reviewed, and thus, the earnings quality becomes important. Prescribed accounting treatments are not available for contractual alliances while they exist for joint ventures under Accounting Standard Codification (ASC) 323 Investments—Equity Method and Joint Venture (Kogut 1988; Osborn and Baughn 1990). Mayer and Teece (2008) find that the nature of the payments to alliances partners and expenses allocation between alliances requires a complex accounting structure for the revenue distribution, overhead allocation, and cost reimbursement within the alliance partners. Furthermore, contractual alliances are not directly controlled by the equity structure, which leads to the loose control system and severe information asymmetry. Although the informal non-equity structure of contractual alliances enables the firms to maintain the control of their own operations (Rigsbee 2010), they also represent higher leakage risks of intellectual property rights and coordination costs (Oxley

² According to the experience of Mark Greiz Consulting on Sephora and XpresSpa strategic alliance, the firms were unable to agree on the revenue sharing, such as a split of total retail plus service sales and most eight "nail spas" were closed after six months.

1997; Gulati and Singh 1998). In other words, the incomplete contracts of strategic alliances could not specify all future contingencies. The information on contracts would be non-verifiable and increase the possibility of agency behavior (Demirkan and Zhou 2016). Therefore, we focus on contractual alliances to examine the impact of earnings quality on strategic alliances.

In short, to lower the transaction risks caused by strategic alliances, firms tend to select partners with a higher reputation and trustworthiness for cooperation. Earnings quality could effectively reduce information asymmetry from the lack of prior cooperation experience and enhance the firms' trust for each other. In addition, firms attach importance to financial payoff when seeking cooperation, so the information quality of financial statements becomes extraordinarily important. Specifically, firms pay attention to whether the financial statements give a fair presentation. Because that the incomplete contracts for contractual alliances have a higher possibility of future contingencies (Das, Sen, and Sengupta 1998) and there are no standard accounting requirements on strategic alliances activities (Healy and Palepu 2001), it is difficult for both parties to specify fair profit sharing. In practice, although the contracts might specify the percentage of the share of the profit, profit itself may be a vague term. Thus, there exist room for potential disputes or manipulation because it is impossible to define every aspect related to profit-sharing activities. Under such circumstances, the quality of financial statements becomes crucial as potential alliance partners would cast more doubt on firms exhibiting low financial reporting quality. Hence, if the financial information of the alliance partners exhibits higher reporting quality, firms would be more willing to cooperate with them to reduce the risk of unfair profit sharing. Derived from the above three arguments, we, therefore, predict that firms would pay attention to earnings quality when selecting the alliance partners.

Among all types of strategic alliances, R&D alliances not only suffer from the incomplete contract nature but are also associated with the long-deferred nature of R&D activities. It is easy for firms to encounter hold-up problems and thus increase the uncertainties. Hence, we hypothesize that earnings quality is particularly important for R&D alliance formation as it is the most publicly available information to judge the integrity of the management and thus influence the trust placed on the partners. In addition, when there is information asymmetry, which results in adverse selection and moral hazard, firms would try to generate as much information as possible to decrease the risk and uncertainties. Therefore, we predict that when information asymmetry is higher, firms will pay more attention to earnings quality when making their strategic alliance decisions.

We use a large sample of 49,302 firm-year observations from Compustat for financial data during the sample period of 2004-2015 to investigate our research question. Then we

obtain the announcements of strategic alliances based on the Security Data Corporation (SDC) Joint Ventures/Strategic Alliances database.

We find that earnings quality measured by abnormal accruals is positively associated with the likelihood and the frequency of forming inter-firm strategic alliances. We also find that earnings quality is particularly important when forming R&D alliances. Finally, our results demonstrate that the importance of earnings quality in forming strategic alliances increases for firms with high information asymmetry.

Our study contributes to the alliance literature by considering a previously overlooked determinant of strategic alliance formation: earnings quality. Previous alliance literature focuses mainly on the analysis of the determinants on the formation of strategic alliances mostly based on transaction costs theory, which are composed of trust, commitment, complementarity, and the financial payoff (Granovetter 1985; Hill 1990; Hitt et al. 2004; Shah and Swaminathan 2008). Among these four factors, we focus on trust and payoff, for they are related to the reporting quality. From the perspective of accounting, our study provides empirical evidence that earnings quality is important in forming strategic alliances. We also show that the relation between earnings quality and strategic alliance formation is particularly important for R&D alliances. In addition, we provide evidence that earnings quality has a greater impact on strategic alliance formation in situations of higher information asymmetry.

Our work also contributes to the literature on the consequences of earnings quality. Most academic studies up to date focus on the impact of earnings quality on various stakeholders including managers (Desai, Hogan, and Wilkins 2006; Arthaud-Day, Certo, Dalton, and Dalton 2006; Karpoff et al. 2008a), investors (Dechow et al. 1996; Beneish 1999; Palmrose et al. 2004; Karpoff et al. 2008a, 2008b), creditors (Graham, Li, and Qiu 2008), customers (Jones 1995), employees (Jones 1995; Trevino, Weaver, and Reynolds 2006) and operating communities (Chakravarthy, deHaan, and Rajgopal 2014). However, few academic studies examine the effect of earnings quality on the prospective strategic alliance partners, which are also very crucial stakeholders of the firm.

The remainder of the paper proceeds as follows. In Section 2, we review related literature and develop our hypothesis. We discuss the sample and research methodology and provide descriptive statistics in Section 3. Section 4 presents the results of the multiple regression analyses. Section 5 discusses the additional test. Section 6 concludes the paper.

2 RELATED LITERATURE AND HYPOTHESIS DEVELOPMENT

This study focuses on the relation between financial reporting quality and the formation of corporate alliances. In this section, we review the literature on strategic alliances and accounting quality and develop our hypothesis.

2.1 STRATEGIC ALLIANCE

Strategic alliances involve voluntary cooperative agreements between firms that involve exchanging, sharing, or developing resources or assets (Li, Qian, and Qian 2013). Fich, Starks, and Yore (2014) define that a strategic alliance is a relation between two or more parties to pursue collaboration to achieve a synergy in which the benefits are higher than those from individual efforts. Firms could realize benefits by alliance cooperation, such as obtaining more valuable resources, risk diversification, cost reduction, and in turn, consolidating their market position. (Groot and Merchant 2000; Hagedoorn 2002; Ding et al. 2010). Some of the previous studies oppose inter-firm relationships because there is an apparent high failure rate for inter-firm relationships (Chua and Mahama, 2007; Lunnan and Haugland 2008). Despite the growing amount of recent literature committing to exploring the effect of transaction risk on ex-ante control options in inter-firm relationships, especially in terms of partner selection and contracting, much scope is still to be explored about these choices as instruments for risk management. Although prior studies examine "selection effort" (e.g., Blumberg 2001; Dekker 2008), and "contract extensiveness" (e.g., Anderson and Dekker 2005), little research so far explores the factors that firms specifically focus on in the selection process from the perspective of accounting.

A substantial body of research on corporate alliances emphasizes how firms choose alliance partners. Previous studies suggest that trust and reputation are critical factors that influence partner selection and subsequent strategic alliance performance (Shah and Swaminathan 2008). A firm's reputation has an impact on trust (Oliver 1988) and thus influencing strategic alliance forming. Ding et al. (2013) find that when firms encountered greater transaction risk from high task interdependence and broad transaction scope, they are more likely to view trust and reputation as critical criteria on partner selection. To mitigate the effect of the transaction risks caused by strategic alliances, firms tend to select partners with a higher reputation and trustworthiness for cooperation.

Trust can help minimize firms' uncertainties and decrease the possibility of opportunism in strategic alliances. (Ring and Van de Ven 1992; Sitkin and Roth 1993; Gulati 1995; Smith and Barclay 1997; Das and Teng 1998; Doz and Hamel 1998; Koza and Lewin 1998; Anand and Khanna 2000; Arino, de la Torre, and Ring 2001; Das and Rahman 2001; Wuyts and Geyskens 2005). Parkhe (1993) suggests that when there is a prior history of cooperation between two firms, the trust will increase, and the perception of expected opportunistic behavior will be curbed. Trust reduces the fear of opportunistic behavior (Gulati 1995 ; Inkpen and Tsang 2005). Additionally, trust brings a successful alliance. Das and Teng (1998) argue that satisfactory cooperation needs to have sufficient confidence in partner cooperation for alliances to work, and the sense of confidence comes from trust and control. The higher the fit between the intent and morphology of an alliance, the more

possible the alliance members will experience trust (Koza and Lewin 1998 ; Ireland, Hitt, and Vaidyanath 2002). Trust may also enhance the belief that the partner will be willing and capable to fulfill role obligations and to maximize joint gains (Ganesan 1994 ; Dacin, Oliver, and Roy 2007).

Prior studies suggest that reputation is an important factor in alliance success, whether a relationship is short or is infinite in duration (Granovetter 1985; Hill 1990 ; Cravens, Oliver, and Ramamoorti 2003). According to transaction cost and agency theories, a positive reputation can reduce both the search and monitoring costs caused by allying with a specific company, which in turn lowers the overall transaction costs involved (Williamson 1975; Weigelt and Camerer 1988 ; Roberts and Dowling 2002; Kim and Mahoney 2005). Also, a positive reputation can lessen the possibility of "moral hazard" and "adverse selection," working as the alternative of direct experience with a partner. Based on the resource-based theory, firms may have sustainable competitive advantages when a firm owns a positive reputation, which also can be a valuable intangible asset for firms (Barney 1991; Hall 1992 ; Jiang, Li, and Gao 2008). Dollinger, Golden, and Saxton (1997) suggest that firms' benefits from alliance participation are positively associated with the reputation of their partners, shared decision making, and strategic similarities between partners. Furthermore, they suggest that doing business with the partners of a strong positive reputation provides emerging market firms with legitimacy and prestige in the marketplace.

On the other hand, the impact of financial payoff on the effectiveness of relationships is also considered when selecting alliance partners. The firms that can enhance the financial value of the alliance and provide resulting strategic advantages offer more incentives for alliance deals. (Achrol et al. 1990; Jap 1999; Dyer and Chu 2000; Hitt et al. 2004). Higher financial payoffs could be the consequence of higher revenues or lower costs. Higher revenues are in connection with better business opportunities (Bucklin and Sengupta 1993). Financial payoffs may also be the result of cost reductions with better economies of scale, which is contributed by combining production or research and development (R&D) operations in a strategic alliance (Dussauge, Garrette, and Mitchell 2004).

A noticeable characteristic of the governance structure of the strategic alliances is incomplete contracting. The incomplete contracting literature was pioneered by Klein, Crawford, and Alchian (1978), Grossman and Hart (1986), Hart and Moore (1988), and Hart (1988). The information of the incomplete contracts, which do not specify all future contingencies, would be non-verifiable and increase the possibility of agency behavior (Demirkan and Zhou 2016). A case study by Mayer and Teece (2008) finds that the nature of the payments to alliances partners and expenses allocation between alliances requires a complex accounting structure for the revenue distribution, overhead allocation, and cost reimbursement. For example, although alliance firms have to accept the agreed estimated

manufacturing costs for each product, the price for each product is specified in supplier contracts but not in alliance contracts. In alliances, firms must ensure that their alliance partners provide adequate resources to cover their share of the manufacturing costs, which matches their share of the revenues. We suggest that since contractual alliances are informal contracts that can not specify all the conditions and related rules, possibly leading to profit-sharing disputes, the level of financial disclosure and earnings quality become very crucial as low earnings quality exaggerates the problems of potential profit-sharing disputes.

2.2 EARNINGS QUALITY

We review the literature on the consequences of earnings quality. Prior research documents that restatement damages a firm's reputation for integrity and competence (Dechow et al. 1996; Palmrose et al. 2004; Karpoff et al. 2008a). There are two effects on the restatement: wealth effects and information effects. Wealth effects refer to the interest parties' expectation of future cash flow, which has an impact on shareholders' wealth. Information effects refer to future uncertainty about the company, which increases information risks. Graham et al. (2008) point out that a lender would reevaluate a firm's expected future cash flows if a firm experiences financial restatement. Prior studies provide evidence that customers would be skeptical about a firm's intent and ability after restatement, resulting in a decline in customer demand (Jones 1995). Amel-Zadeh and Zhang (2015) find that because of information risk, firms recently filed financial restatements that are less likely to become takeover targets than non-restating firms.

Earnings quality influences related parties of the firms. First, studies suggest significant negative labor market consequences for firms with low earnings quality. Earnings quality increases the likelihood of managers' turnover. Managers of restating firms lose their reputation. Thus, top managers experience turnover following restatement (Desai et al. 2006; Arthaud-Day et al. 2006; Karpoff et al. 2008a). Feroz, Park, and Pastena (1991) find that most firms were subjects of AAERs managers who lost their jobs. Menon and Williams (2008) provide evidence of a high incidence of CEO and CFO changes following auditor resignations.

Second, evidence shows that earnings quality affects the cost of equity capital. Much of the research finds that the restatement damages the stakeholder's relationships, such as the higher cost of capital (Hribar and Jenkins 2004; Graham et al. 2008; Kravet and Shevlin 2009). Prior research shows that an accounting violation is estimated to result in cumulative reputation-related losses of 27 percent for the firms compared to their pre-restatement market value (Karpoff et al. 2008a). Low earnings quality results in higher cost of equity capital when referring to the consequences of external indicators such as restatements and AAERs as a proxy for earnings management (Dechow et al. 1996; Hribar and Jenkins 2004). Biddle and Hilary (2006) suggest that high earnings quality would result in lower information

asymmetry between managers and outside suppliers of capital and thus improves investment efficiency.

Third, creditors are influenced by earnings quality. Graham et al. (2008) explore the effect of the financial restatement on bank loan contracting. Compared with loans initiated before restatement, loans initiated after restatement have significantly shorter maturities, higher spreads, higher likelihood of providing collateral, and more restrictions on the covenant. Fraudulent restating firms have a significantly more substantial increase in loan spread than other restating firms. In addition, they provide evidence that the restating firms pay higher upfront and annual fees, and lenders are more unwilling to initiate a loan.

Fourth, earnings quality has also an impact on the customer, for firms with a good reputation can lower their customer search and monitoring costs and charge a higher price for their products. The purchase price implies the qualities and continuing availability of the goods (Bowen, DuCharme, and Shores 1995; Jones 1995). Therefore, a severe restatement would raise customer's suspicion about a firm's intent or ability to fulfill its commitments, and customers would lower their demand for the firm's products.

Fifth, earnings quality affects employees' quality. Jones (1995) finds that employees would work for firms with ethics and values. They form expectations about their working conditions, upward mobility, and long-term compensation depending on implicit promises by management. There is a high possibility that a firm's reputation for honoring its commitments would be damaged after a serious restatement. Employees are likely to have opportunistic behavior and in turn, reduce their productivity. If firms have lower earnings quality, it becomes more difficult for them to attract the highest quality workers (Jones 1995; Trevino et al. 2006).

Last, prior studies show the impact of a restatement on operating communities. Prior research finds that firms having a satisfactory mutual relationship with powerful local constituents are able to deal with threats in a crisis (Fombrun and Shanley 1990; O'Connor 2001). In contrast, Chakravarthy et al. (2014) suggest that firms with a reputation for opportunism damage their relationships with local political leaders and constituents. Thus, it implies that firms commit to its geographic operating communities to be a responsible citizen and taxpayer.

Prior studies also review the impact of earnings quality on managers' decisions. Firstly, prior research examines the effects of target firm-specific information and accruals quality on takeover outcomes (Martin and Shalev 2009; Marquardt and Zur 2015). The studies suggest that the higher the target's information quality is, the lower the likelihood of withdrawal of an acquisition offer is. Similarly, Francis, LaFond, Olsson, and Schipper (2005) find that both economic fundamentals and management decisions are associated with

financial reporting quality, which is accruals-based, and this is expected to have implications for potential acquisition decisions. Amel-Zadeh and Zhang (2015) document that restating firms are significantly less likely to receive a takeover bid than non-restating firms.

Secondly, earnings quality also affects investment decisions. In the period of overstated earnings, misreporting firms overinvest in property, plant, and equipment (McNichols and Stubben 2008). Wang (2006) finds that misreporting firms are more likely to overinvest in R&D and stock-financed mergers and acquisitions. Higher quality financial statements increase investment efficiency by reducing information asymmetry between managers and outside suppliers of capital (Biddle and Hilary 2006).

Thirdly, earnings quality affects IPO pricing. Prior studies show that earnings management leads to IPO mispricing whether earnings management contributes to IPO mispricing (Teoh, Welch, and Wong 1998). Boulton, Smart, and Zutter (2011) find that there is higher IPO underpricing in countries with poorer quality earnings information, even after controlling for many country- and deal-specific characteristics.

Based on the above literature, we argue that strategic alliances could be beneficial yet risky for a firm, with the uncertainty and transaction risk, which might occur in the future. However, uncertainty and opportunism could be lowered through the careful selection of partners to influence future performance. According to previous research, trust and reputation are important factors when a firm selects its partners. Prior literature indicates that when two firms have a history of cooperation, the trust between each other will increase, and the perception of expected opportunistic behavior will reduce (Parkhe 1993). In other words, when both sides are unfamiliar with each other, to reduce information asymmetry, they rely greatly on public information to gain a better understanding of their potential partners. Financial statements, which serve as the most standardized information disclosure measure, will be examined thoroughly by alliance seeking firms. To be more specific, if the earnings quality is reliable, the trust will be enhanced.

Prior researchers found that a firm considers the impact of financial payoff when they select the partner. The more the partner can improve the financial value of the alliance and provide strategic advantages, the more ideal it is as a target of alliances (Achrol et al. 1990; Jap 1999; Dyer 2000; Hitt et al. 2004). Firms are more likely to choose partners who can enhance the financial payoff, which is shown in financial statements. To further understand the financial position of the possible partners, firms have to consider the reported figures and the faithfulness of the financial statements to lower the risks. As earnings quality is an indication of the reliability of financial statements that serve as the base to assess the financial payoff, earnings quality is an important factor when selecting partners. Firms are more likely to choose partners who can enhance the financial payoff.

Disagreement on revenue sharing is one of the major reasons for the failure of strategic partnerships (Zamir et al. 2014). According to some guidance material on strategic alliances³, successful strategic alliances require the firms to translate the agreed strategic and financial aspiration into a clear, detailed business plan (Weber-Rymkowska, Bhajji, Rassloff, and Zinke 2017). Once both firms have completed the alliance business model, they need to deal with the more detailed question of valuation and profit-sharing models, which are based on the earnings quality of financial statements.

It can be challenging to calculate a "fair" distribution of expected financial gain that reflects relative contributions to incremental revenue. In practical situations, there could be profit-sharing disputes regarding which account represents the payoff or how expenses are recognized or allocated, resulting from the distrust between the alliance firms. For example, firms could specify either the sales or the net income to be shared by each other. Although the profit-sharing section of the contracts might define the percentage of the share of the profit, yet the term "profit" itself is sometimes not well defined in the profit-sharing contract. Thus, there still exists room for arguments or manipulation, for it is impossible to define every aspect related to profit-sharing activities. The realization of profit-sharing contracts relies greatly on the reliability of the figures shown by their partners' financial statements. Therefore, the higher the earnings quality, the more likely to form alliances, as firms could generate more information when sharing the corresponding profits and make more precise calculations.

We take the global offering document of Digital Hollywood Interactive Limited in Hong Kong as an example, which is a listed online game publisher for China-based game developers. The document specified that the company cooperated with game developers, publishing platforms, and payment channels and, thus, bear the risks from revenue sharing disputes. The net billing, which is the gross billing from the users deducted with the fees paid to the publishing platform, is shared between Digital Hollywood Interactive and the game developers. The share of net billing taken by the game developers range from 20% to 30%.

"Disputes with game distribution platforms, such as disputes relating to game IPs and revenue sharing arrangements, may also arise from time to time, and we cannot assure you that we will be able to resolve such disputes amicably or at all..... We negotiate revenue-sharing arrangements with our game developer partners on a case-by-case basis with reference to a number of factors, including our relative market positions, the proven track record or our evaluation of the revenue generation potential of the relevant games, and our prior business relationships." (China Securities International 2017)

3. <https://assets.kpmg/content/dam/kpmg/xx/pdf/2017/11/strategic-alliances-toolkit.pdf>

As alliance contracts are incomplete contracts, it is almost impossible to articulate all aspects of cooperation, leading to profit-sharing disputes in practice.⁴ The case-by-case nature of agreements indicates that the revenue sharing is negotiated and set after a careful internal assessment of the partner's business potential based on the financial figures. As a result, the earnings quality of the partner becomes very important when making such assessments.

In short, trust, financial payoff, and profit-sharing are the three important aspects that make earnings quality vital for strategic alliance formation. Thus, earnings quality would also be an important factor that firms would take into consideration when selecting partners. We thereby predict that a firm's earnings quality is positively related to the likelihood of strategic alliances formation.

H1: A firm's earnings quality is positively related to the likelihood of strategic alliances formation.

The phenomenon that R&D strategic alliances suffer from the drawbacks of incomplete contracts is commonly observed (Nelson and Winter 1977; Pisano 1990; Akrich, Callon, and Latour 2002). In other words, R&D alliance contracts cannot specify all the circumstances that will occur in the future, thus possibly resulting in hold-up problems. The hold-up problem arises due to the nature that one side of the alliance has to make a sunk, relationship-specific investment, which enables the other side to exploit the fund provider's investments. It can be difficult for the R&D alliance firms to specify intellectual property rights allocation (Teece 1986; Panico 2011) and judge the share of the profits contributed by the investments (Williamson 1975; Klein et al. 1978).

The other characteristic of R&D alliances is the non-verifiability of all future contingencies caused by the long-deferred profit nature of the industries (Higgins, 2007). The payoff of R&D investments takes time to be realized. The long-deferred profit nature of R&D alliances also magnifies the importance of precisely calculating the cost of capital, which is used to decide the downstream and milestone payments in the profit-sharing program. The issues of hold-up problems resulting from opportunism and time lag mentioned-above lead to great uncertainties for the R&D alliance firms. Under the circumstances of considerable uncertainties, earnings quality, hence, is one of the most effective and feasible tools to help the firms to assess the trustworthiness of their possible

⁴ Another example is that AOP filed a lawsuit against PharmaEssentia Corp. to ICC in 2018 because PharmaEssentia did not want to execute their alliance contract anymore. According to the original contract, the manufacturing cost of the medicine should be recognized by AOP. However, PharmaEssentia reckoned that the original profit-sharing model is no longer fair because it is the main contributor to the second-generation process, which reduced the cost by 50%. PharmaEssentia, thus, requested a new alliance contract, which would give itself a higher share of profit. In the same case, AOP also broke the terms of the contract by not offering clinical data to PharmaEssentia and requested a vast amount of payment from PharmaEssentia as the condition to offer data.

partners.

For example, R&D strategic alliances can be commonly found between pharmaceutical firms and biotechnology firms (Pisano 1990; Pisano and Mang 1993; Rothaermel and Deeds 2004; Rothaermel and Boeker 2008; Scherer 2010; Lerner and Malmendier 2010; Festel, Schicker, and Boutellier 2010). Big-scale pharmaceutical firms might provide funds for biotech firms to invest in research and development of new drugs. The biotechnology firms often do not have enough funds to invest in new drugs and specialize in marketing, so it is easier for them to form alliances with the big-scale pharmaceutical firms who can provide the funds and help marketing.

In short, R&D alliances not only inherit the incomplete contract nature of strategic alliances but are also associated with the long-deferred nature of R&D activities. Firms to encounter hold-up problems and thus increase the uncertainties between the alliance firms. Hence, we hypothesize that earnings quality, as the most publicly available information to judge the integrity of the management and thus influence the trust placed on the partners, is particularly important for R&D alliance formation.

H2: R&D alliances formation is highly associated with earnings quality.

To know whether there are cross-sectional differences in the relation between earnings quality and strategic alliance, we examine whether the importance of earnings quality varies with the degree of information asymmetry. Information asymmetry is influential in investment decisions (Owen and Yawson 2013). The existence of asymmetric information results in adverse selection and moral hazard. To reduce information asymmetry via signaling and screening mechanisms, firms seeking cooperation, hence, assess possible partners to grasp their strategic, cultural, organizational fit, and so on. Through a good partner selection, firms can reduce the costs that emerge from adverse selection, moral hazard, and hold-up problems by reducing information asymmetry (Moeller 2010).

However, when there is information asymmetry, firms would try to generate as much information as possible to decrease the risk and uncertainties. Unlike joint ventures, the concerns regarding information asymmetry in contractual alliances are more severe for the fact that there is no independent accounting system for the alliance. The alliances depend on the allied firms accounting systems and, thus, the financial performance of strategic alliances is aggregated into the parent firm financial reports without being able to be observed and differentiated (Demirkan and Demirkan 2014). As a result, when there is a higher degree of information asymmetry, firms require more reliable and accurate financial statement information to lower the risks resulted from information asymmetry. Therefore, accurate and reliable information from financial reports, that is, better earnings quality, mitigates the concerns brought by information asymmetry, and make it more possible for the firms to form

strategic alliances. When information asymmetry is higher, firms might consider a higher possibility of earnings management of target firms. We predict that when information asymmetry is higher, firms will give more consideration for earnings quality when making their strategic alliance decisions.

H3: Ceteris paribus, earnings quality is more positively associated with the likelihood of strategic alliance formation when firms have higher degrees of information asymmetry.

3. RESEARCH DESIGN

3.1 DATA AND SAMPLE SELECTION

We use the Compustat database for financial data to calculate abnormal accruals and obtain the necessary control variable. We start with firms covered by Compustat and identify strategic alliances from the Securities Data Company (SDC) Platinum Joint Ventures/Alliances file, which includes the announcements of alliance agreements or contracts at various stages of the business.

Table 1 describes our sample selection procedure. Extracting all firms in the Compustat database for our sample period of 2004-2015 yields 134,436 firm-year observations. We eliminate 46,975 firm-year observations of financial firms (SIC codes 6000-6999) and utilities (SIC codes 4900-4949) firms. We exclude 27,684 firm-year observations with missing financial data for control variables. Then we eliminate 10,475 firm-year observations with discretionary accrual. We then match these firms to the alliance announcements in the SDC Platinum. Our final sample consists of 49,302 firm-year observations.

Table 1 Sample Selection and Sample Grouping

Panel A: Sample Selection Procedure		
Description	No of observations	
Firm-year observations from Compustat database (2004-2015)	134,436	
Less : financial and Utility firms	(46,975)	
Less : missing financial data for control variables	(27,684)	
Less : missing discretion accrual	(10,475)	
Sample used in regression	49,302	
Panel B: Sample Grouping by Year		
Year	Number of firms	Percentage (%)
2004	4,807	9.75
2005	4,695	9.52
2006	4,526	9.18
2007	4,377	8.88
2008	4,222	8.56
2009	4,087	8.29
2010	3,917	7.94
2011	3,787	7.68
2012	3,691	7.49
2013	3,672	7.45
2014	3,750	7.61
2015	3,771	7.65

3.2 VARIABLE MEASUREMENT

3.2.1 EARNINGS QUALITY

Because earnings quality is unobserved. We adopt two commonly used proxies for abnormal accruals. We use abnormal accruals generated by the modified Jones approach (Dechow, Sloan, and Sweeney 1995) and the approach of Kothari, Leone, and Wasley (2005), respectively, represented by *DA_MJ* and *DA_K*. After obtaining the residual of these two models. We follow prior literature and use the absolute value of abnormal accruals (e.g., Carcello and Li 2013; Li, Qi, Tian, and Zhang 2017) to proxy for earnings quality, with a higher value representing lower earnings quality.

3.2.2 STRATEGIC ALLIANCES

We use two measures of strategic alliance activities to examine whether earnings quality influences the likelihood of firms forming strategic alliances. Following Gulati (1999), *SA* equals 1 if the firms have at least one strategic alliance in year *t*, and 0 otherwise. Some of our sample firms form more than one alliance. We further examine the association between earnings quality and the number of strategic alliances (*NUMSA*). To test H2, which

exams different types of alliances, we include R&D alliances (*RD_SA*), manufacturing alliances (*MF_SA*), and marketing alliance (*MK_SA*). H3 also use *SA* as dummy variables with H1 and *NUMSA* as the number of strategic alliances.

3.2.3 CONTROL VARIABLE

Gulati (1999) suggests that the experience of strategic alliances contributes to subsequent alliances. Following Demirkan and Demirkan (2014), we define *EXP_SA* as the number of strategic alliances from year $t-3$ to year $t-1$. The firms' sizes and strategic alliances were found to be positively correlated (Gulati 1995; Stuart 1998; Gulati, and Westpha 1999). We use *SALE* as the logarithm of sales in year $t-1$ to measure firm size. Some previous work shows that firms with poor earnings performance form strategic alliances to solve operation difficulties. However, some show that it is more likely for firms with strong financial performance to expand (Gulati 1995; Gulati 1999; Gulati and Westpha 1999). Thus, financial profitability is an important determinant of strategic alliance decisions. We include *ROA* to control for financial profitability. Following Hanlon, Rajgopal, and Shevlin (2003), we exclude advertising expenses and R&D expenses to calculate *ROA*, so *ROA* is measured as net income before extraordinary items, advertising expenses, and R&D expense divided by total assets in year $t-1$. Following Gulati (1999), quick ratio (*QRATIO*) is included in the model, computed as current assets minus inventory, is divided by current liabilities to control for liquidity. We employ *DEBCA*, which is long-term debt divided by current assets, to control for long-term solvency. Following Demirkan and Demirkan (2014), we use the market-to-book ratio (*MB*) in year $t-1$ to measure the growth opportunities of the firm and compute leverage (*LEV*) as total liabilities divided by total assets. Following Li et al. (2013), R&D intensity (*RD*) is measured by R&D expenditure divided by total sales. Advertising intensity (*AD*) is computed as the firm's annual advertising expenditure divided by the total sales (Li et al. 2013). Following Reuer and Ragozzino (2006), we control for the concentration of the firm's primary industry of operation. We employ the Herfindahl-Hirschmann Index (*HHI*) of the firm's primary industry at the 2-digit SIC level to capture industry concentration. We also include a squared term, HHI^2 , to avoid possible nonlinear effects. Finally, we include year and two-digit SIC industry fixed effects in the model.

3.3 EMPIRICAL MODELS

To test our H1, we implement the following Probit models to investigate whether earnings quality is associated with a tendency to form strategic alliances. The Poisson and negative binomial models are used to exam whether the earnings quality is associated with the frequency of forming strategic alliances. The tendency to form strategic alliances is demonstrated by *SA*. The frequency of forming strategic alliances is exhibited by *NUMSA*.

$$\begin{aligned}
SA_{i,t} = & \beta_0 + \beta_1 DA_{i,t-1} + \beta_2 EXP_SA_{i,t} + \beta_3 SALE_{i,t-1} + \beta_4 ROA_{i,t-1} \\
& + \beta_5 QRATIO_{i,t-1} + \beta_6 DEBCA_{i,t-1} + \beta_7 MB_{i,t-1} + \beta_8 LEV_{i,t-1} \\
& + \beta_9 RD_{i,t-1} + \beta_{10} AD_{i,t-1} + \beta_{11} HHI_{i,t-1} + \beta_{12} HHI^2_{i,t-1} \\
& + Year\ and\ Industry\ Effects + \varepsilon_{i,t}
\end{aligned} \tag{1}$$

$$\begin{aligned}
NUMSA_{i,t} = & \beta_0 + \beta_1 DA_{i,t-1} + \beta_2 EXP_SA_{i,t} + \beta_3 SALE_{i,t-1} + \beta_4 ROA_{i,t-1} \\
& + \beta_5 QRATIO_{i,t-1} + \beta_6 DEBCA_{i,t-1} + \beta_7 MB_{i,t-1} + \beta_8 LEV_{i,t-1} \\
& + \beta_9 RD_{i,t-1} + \beta_{10} AD_{i,t-1} + \beta_{11} HHI_{i,t-1} + \beta_{12} HHI^2_{i,t-1} \\
& + Year\ and\ Industry\ Effects + \varepsilon_{i,t}
\end{aligned} \tag{2}$$

Where

- SA* = dummy variable with a value equal to 1 if the firm forms a strategic alliance in year *t*, and 0 otherwise;
- NUMSA* = the number of strategic alliances formed in year *t* ;
- DA* = the absolute value of abnormal accruals respectively calculated with Modified-Jones model (Jones 1991; Dechow et al. 1995) and Kothari's model (Kothari et al. 2005);
- EXP_SA* = the number of alliances that the firm previously formed;
- SALE* = logarithm of sales in year *t-1* ;
- ROA* = net income before extraordinary item, advertising expense and R&D expense divided by total assets in year *t* ;
- QRATIO* = current assets minus inventory, divided by current liabilities;
- DEBCA* = total amount of long-term debt divided by the firm's current asset;
- MB* = market-to-book ratio, the ratio of market value to total equity;
- LEV* = ratio of total liabilities to total assets;
- RD* = ratio of R&D expenditures to total sales;
- AD* = ratio of advertising expenditures to total sales;
- HHI* = the sum of squared market shares;
- HHI2* = the square of *HHI*;

To mitigate the effects of extreme values in the regressions, all continuous variables are winsorized between the 1st and 99th percentiles. For consistency with our hypothesis, we predict the signs of β_1 in regression (1) and (2) are negative.

To examine whether the firms with R&D alliances formation is more concerned with the earnings quality, we form the Probit regressions using success in R&D alliance, manufacturing alliance, and marketing alliance as the dependent variable, respectively, along with non-alliance sample. We use the following regression model to test H2:

$$\begin{aligned} TYPE_SA_{i,t} = & \beta_0 + \beta_1 DA_{i,t-1} + \beta_2 EXP_SA_{i,t} + \beta_3 SALE_{i,t-1} + \beta_4 ROA_{i,t-1} \\ & + \beta_5 QRATIO_{i,t-1} + \beta_6 DEBCA_{i,t-1} + \beta_7 MB_{i,t-1} + \beta_8 LEV_{i,t-1} \\ & + \beta_9 RD_{i,t-1} + \beta_{10} AD_{i,t-1} + \beta_{11} HHI_{i,t-1} + \beta_{12} HHI^2_{i,t-1} \\ & + Year\ and\ Industry\ Effects + \varepsilon_{i,t} \end{aligned} \quad (3)$$

Where $TYPE_SA$ represents separate indicator variables for different types of strategic alliances.

- RD_SA = dummy variable with a value equal to 1 if the firm forms research and development alliances in year t , and 0 otherwise;
- MF_SA = dummy variable with a value equal to 1 if the firm forms manufacturing alliances in year t , and 0 otherwise;
- MK_SA = dummy variable with a value equal to 1 if the firm forms marketing alliances in year t , and 0 otherwise;

To examine H3, whether the relation between earnings quality and strategic alliance formation varies with the degree of information asymmetry, we estimate the Probit regression in equation (1) for separate subsamples. The information asymmetry is measured by the market-to-book ratio (Aslan, Easley, Hvidkjaer, and O'Hara 2011). The samples are categorized into two groups by the median of market-to-book ratio, the observations with high information asymmetry, and the ones with low information asymmetry.

4. RESULTS

4.1 DESCRIPTIVE STATISTICS

Table 2 presents the descriptive statistics for the variables used in the regressions. In our sample, 5.3 percent of the firms engage in strategic alliances. The mean of the number of strategic alliances announced in a year is 0.073, whereas the maximum is 15.

The average of the absolute value of abnormal accruals DA_MJ and DA_K are 0.234

and 0.038, respectively, which are comparable to prior research (Kim, Park, and Wier 2012). The mean *SALE* of the sample firms is 5.398. The mean *ROA* of the sample firms is -0.128, and the mean quick ratio is 2.244. The average proportion of long-term liabilities over current assets is 77.9%. The mean for market-to-book ratio (*MTB*) is 2.806, and the mean for leverage is 0.730, comparable to the statistics presented in prior studies.

In contrast with the statistics for the full sample, Panel B reports that the average *DA_MJ* for firms with strategic alliances is lower than that in Panel A, consistent with our expectation that the firms with higher earnings quality are more likely to form strategic alliances. The average number of prior strategic alliances formed, *EXP_SA*, is 1.779, which is 6.8 times greater than that mean of 0.262 reported in Panel A. This result is consistent with Gulati (1999) that firms form strategic alliances based on past experience of alliances.

Table 2 Descriptive Statistics

Panel A: Descriptive Statistics for Full Sample						
Variable	N	Mean	Std. Dev.	Q1	Median	Q3
SA	49,302	0.053	0.223	0.000	0.000	0.000
NUMSA	49,302	0.073	0.390	0.000	0.000	0.000
DA_MJ	49,302	0.234	0.386	0.064	0.150	0.255
DA_K	49,302	0.038	0.075	-0.010	0.043	0.078
EXP_SA	49,302	0.262	1.187	0.000	0.000	0.000
SALE	49,302	5.398	2.643	3.551	5.532	7.287
ROA	49,302	-0.128	0.913	-0.030	0.053	0.121
QRATIO	49,302	2.244	2.552	0.882	1.426	2.545
DEBCA	49,302	0.779	1.595	0.000	0.189	0.757
MB	49,302	2.806	7.371	1.058	1.961	3.585
LEV	49,302	0.730	1.401	0.298	0.488	0.683
RD	49,302	0.524	2.794	0.000	0.004	0.092
AD	49,302	0.013	0.035	0.000	0.000	0.008
HHI	49,302	0.066	0.069	0.032	0.043	0.076
HHI2	49,302	0.009	0.036	0.001	0.002	0.006

Table 2 Descriptive Statistics

Panel B: Descriptive Statistics for Strategic Alliance Sample						
Variable	N	Mean	Std. Dev.	Q1	Median	Q3
SA	2,598	1.000	0.000	1.000	1.000	1.000
NUMSA	2,598	1.383	1.037	1.000	1.000	1.000
DA_MJ	2,598	0.204	0.286	0.081	0.162	0.237
DA_K	2,598	0.055	0.082	0.006	0.076	0.136
EXP_SA	2,598	1.779	4.054	0.000	1.000	2.000
SALE	2,598	6.131	2.788	4.141	6.130	8.242
ROA	2,598	-0.025	0.660	0.008	0.083	0.169
QRATIO	2,598	2.485	2.465	1.054	1.631	2.980
DEBCA	2,598	0.566	1.252	0.000	0.163	0.544
MB	2,598	3.724	7.219	1.688	2.923	4.844
LEV	2,598	0.587	0.952	0.281	0.467	0.638
RD	2,598	0.570	2.534	0.000	0.090	0.195
AD	2,598	0.017	0.038	0.000	0.001	0.015
HHI	2,598	0.048	0.043	0.031	0.037	0.047
HHI2	2,598	0.004	0.014	0.001	0.001	0.002

Table 3 presents the Pearson correlations. Consistent with our expectation, the incidence and the frequency of forming strategic alliances are negatively correlated with the abnormal accruals, *DA_MJ*. The correlation coefficients of the control variables are also consistent with our expectations.

Table 3 Pearson Correlation

	SA	NUMSA	DA_MJ	DA_K	EXP_SA	SALE	ROA	QRATIO	DEBCA	MB	LEV	RD	AD	HHI	HHI2
SA	1														
NUMSA	0.792*** ($<.0001$)	1													
DA_MJ	-0.018*** ($<.0001$)	-0.018*** ($<.0001$)	1												
DA_K	0.054*** ($<.0001$)	0.055*** ($<.0001$)	-0.123*** ($<.0001$)	1											
EXP_SA	0.301*** ($<.0001$)	0.540*** ($<.0001$)	-0.022*** ($<.0001$)	0.077*** ($<.0001$)	1										
SALE	0.065*** ($<.0001$)	0.082*** ($<.0001$)	-0.346*** ($<.0001$)	0.119*** ($<.0001$)	0.117*** ($<.0001$)	1									
ROA	0.027*** ($<.0001$)	0.026*** ($<.0001$)	-0.781*** ($<.0001$)	0.339*** ($<.0001$)	0.035*** ($<.0001$)	0.385*** ($<.0001$)	1								
QRATIO	0.022*** ($<.0001$)	0.011** (0.0183)	-0.071*** ($<.0001$)	0.184*** ($<.0001$)	0.006 (0.2048)	-0.257*** ($<.0001$)	0.127*** ($<.0001$)	1							
DEBCA	-0.031*** ($<.0001$)	-0.028*** ($<.0001$)	0.018*** ($<.0001$)	-0.109*** ($<.0001$)	-0.035*** ($<.0001$)	0.075*** ($<.0001$)	-0.091*** ($<.0001$)	-0.203*** ($<.0001$)	1						
MB	0.029*** ($<.0001$)	0.026*** ($<.0001$)	-0.118*** ($<.0001$)	0.057*** ($<.0001$)	0.030*** ($<.0001$)	0.014*** (0.0016)	0.157*** ($<.0001$)	0.073*** ($<.0001$)	-0.062*** ($<.0001$)	1					
LEV	-0.024*** ($<.0001$)	-0.022*** ($<.0001$)	0.617*** ($<.0001$)	-0.255*** ($<.0001$)	-0.025*** ($<.0001$)	-0.256*** ($<.0001$)	-0.745*** ($<.0001$)	-0.230*** ($<.0001$)	0.198*** ($<.0001$)	-0.164*** ($<.0001$)	1				
RD	0.004 (0.3902)	0.002 (0.6792)	0.136*** ($<.0001$)	-0.017*** (0.0002)	-0.006 (0.1554)	-0.309*** ($<.0001$)	-0.163*** ($<.0001$)	0.222*** ($<.0001$)	-0.031*** ($<.0001$)	0.025*** ($<.0001$)	0.087*** ($<.0001$)	1			
AD	0.027*** ($<.0001$)	0.027*** ($<.0001$)	0.090*** ($<.0001$)	-0.050*** ($<.0001$)	0.025*** ($<.0001$)	-0.051*** ($<.0001$)	-0.086*** ($<.0001$)	-0.020*** ($<.0001$)	-0.010** (0.0275)	0.015*** (0.0012)	0.070*** ($<.0001$)	0.010** (0.0275)	1		
HHI	-0.061*** ($<.0001$)	-0.053*** ($<.0001$)	-0.096*** ($<.0001$)	-0.185*** ($<.0001$)	-0.061*** ($<.0001$)	0.143*** ($<.0001$)	0.036*** ($<.0001$)	-0.116*** ($<.0001$)	0.053*** ($<.0001$)	-0.022*** ($<.0001$)	-0.017*** (0.0001)	-0.097*** ($<.0001$)	-0.009** (0.0475)	1	
HHI2	-0.033*** ($<.0001$)	-0.028*** ($<.0001$)	-0.057*** ($<.0001$)	-0.094*** ($<.0001$)	-0.032*** ($<.0001$)	0.077*** ($<.0001$)	0.021*** ($<.0001$)	-0.057*** ($<.0001$)	0.023*** ($<.0001$)	-0.012*** (0.0071)	-0.010** (0.0326)	-0.039*** ($<.0001$)	-0.011** (0.0145)	0.858*** ($<.0001$)	1

Notes: Table 3 reports Pearson correlations.

See Appendix 1 for definitions of the variables.

***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

4.2 EMPIRICAL RESULTS

Table 4 presents the regression analysis for equation (1). The results of the relation between earnings quality and the incidence of forming strategic alliances are reported. The Pseudo- R^2 of column (1) and (2) is 23.5% and 23.6%, respectively. Column (1) presents the discretionary accrual calculated by the modified Jones model. Column (2) presents discretionary accrual calculated by Kothari performance-matching model. The correlation between DA_MJ and SA is negative and statistically significant (-0.113, $p < 0.05$). We also find the association between DA_K and SA significantly negative (-0.557, $p < 0.01$), consistent with H1. Our results suggest that when firms have lower earnings quality, it is less likely to form strategic alliances.

The signs of the control variables which are statistically significant are all as expected. The coefficient on EXP_SA ($p < 0.01$) is positive and statistically significant, indicating that firms learn from past alliance experiences, which in turn helps to form strategic alliances. The coefficient on $SALE$ ($p < 0.01$) is positive and significant, suggesting that larger firms have more resources and more exposure to attract other firms to form allies with them. The coefficient on ROA ($p < 0.01$) is significant and negative, which suggests that firms with poor financial performances are more likely to form strategic alliances to solve their difficulties. The coefficient on Q_RATIO ($p < 0.01$) is significant and positive, which indicates that firms with better liquidity are more likely to form strategic alliances. The coefficient on MB ($p < 0.01$) is significant and positive, which indicate that firms with higher growth opportunity are more likely to form strategic alliances. The coefficients on RD ($p < 0.01$) are significant and positive, indicating that firms with high R&D intensity have a higher demand for strategic alliances. The coefficients on AD ($p < 0.01$) are significant and positive, indicating that firms with high advertising intensity have a higher demand for strategic alliances.

Table 4 Regression of the Strategic Alliance on Earnings Quality with Probit Model

Variable	(1) SA	(2) SA
Intercept	-1.792*** (<.0001)	-1.839*** (<.0001)
DA_MJ	-0.113** (0.0272)	
DA_K		-0.557*** (0.0004)
EXP_SA	0.296*** (<.0001)	0.296*** (<.0001)
SALE	0.079*** (<.0001)	0.082*** (<.0001)
ROA	-0.087*** (0.0006)	-0.037* (0.0807)
QRATIO	0.021*** (<.0001)	0.023*** (<.0001)
DEBCA	-0.008 (0.4011)	-0.007 (0.4504)
MB	0.004*** (0.0037)	0.004*** (0.0060)
LEV	-0.014 (0.3333)	-0.016 (0.2700)
RD	0.012*** (0.0037)	0.012*** (0.0031)
AD	1.152*** (<.0001)	1.101*** (0.0001)
HHI	-1.099 (0.5196)	-0.988 (0.5627)
HHI2	1.415 (0.6537)	1.253 (0.6908)
Pseudo R²	0.2352	0.2360
N	49,302	49,302

Notes: The regressions are estimated using probit regression.

See Appendix for definitions of the variables.

***, ** and * indicate significance at 1 percent, 5 percent, and 10 percent level, respectively (two-tailed).

In Table 5, we estimate the regression (2) with the Poisson and negative binomial models following Reuer and Ragozzino (2006). The results show that the effects of the earnings quality on the number of strategic alliances formed in a fiscal year. The Pseudo- R^2 of column (1) to (4) is 22.5%, 22.5%, 18.2%, and 18.3%, respectively. The coefficients on *DA_MJ* in column (1) and (3) are significantly negative (-0.339, $p < 0.01$ and -0.305, $p < 0.01$, respectively). The coefficients on *DA_K* in column (2) and (4) are significantly negative (-1.194, $p < 0.01$ and -1.069, $p < 0.01$, respectively). The results of the control variables in Table 5 are similar to those reported in Table 4. In Table 5, the coefficients on *EXP_SA*, *SALE*, *QRATIO*, *MB*, *RD*, and *AD* are all positive and significant, while the coefficients on *ROA* is significantly negative ($p < 0.01$). It indicates that firms with past experiences of alliances, larger scale, poor financial performance, high liquidity, high growth opportunities, high R&D intensity, and high advertising intensity are more likely to form strategic alliances. Our results demonstrate that the earnings quality not only increases the probability of forming strategic alliances but also increases the frequency of strategic alliances formation.



Table 5 Regression of the Frequency of Strategic Alliance on Earnings Quality with Poisson and Negative Binomial Models

	(1)	(2)	(3)	(4)
	NUMSA	NUMSA	NUMSA	NUMSA
Variable	Poisson	Poisson	Negative Binomial	Negative Binomial
Intercept	-2.412*** (<.0001)	-2.522*** (<.0001)	-2.863*** (<.0001)	-2.972*** (<.0001)
DA_MJ	-0.339*** (0.0004)		-0.305*** (0.0050)	
DA_K		-1.194*** (<.0001)		-1.069*** (0.0005)
EXP_SA	0.061*** (<.0001)	0.061*** (<.0001)	0.392*** (<.0001)	0.391*** (<.0001)
SALE	0.258*** (<.0001)	0.265*** (<.0001)	0.181*** (<.0001)	0.187*** (<.0001)
ROA	-0.210*** (<.0001)	-0.080** (0.0442)	-0.218*** (<.0001)	-0.095** (0.0342)
QRATIO	0.044*** (<.0001)	0.046*** (<.0001)	0.043*** (<.0001)	0.046*** (<.0001)
DEBCA	-0.039** (0.0334)	-0.035* (0.0523)	-0.022 (0.2730)	-0.019 (0.3320)
MB	0.012*** (<.0001)	0.011*** (<.0001)	0.010*** (0.0009)	0.009*** (0.0020)
LEV	-0.042 (0.1604)	-0.051* (0.0850)	-0.049 (0.1251)	-0.054* (0.0864)
RD	0.045*** (<.0001)	0.046*** (<.0001)	0.036*** (<.0001)	0.036*** (<.0001)
AD	3.299*** (<.0001)	3.201*** (<.0001)	2.565*** (<.0001)	2.461*** (<.0001)
HHI	-3.292 (0.3457)	-2.947 (0.3986)	-2.529 (0.5026)	-2.184 (0.5625)
HHI2	2.830 (0.6920)	2.214 (0.7566)	1.990 (0.7916)	1.449 (0.8474)
Pseudo R²	0.2250	0.2253	0.1824	0.1826
N	49,302	49,302	49,302	49,302

Notes: Column (1) and (2) are estimated using Poisson regression and Column (3) to (4) is estimated using negative binomial regression.

See Appendix for definitions of the variables.

***, ** and * indicate significance at 1 percent, 5 percent, and 10 percent level, respectively (two-tailed).

Table 6 reveals the results of the effect of earnings quality on the formation of R&D alliance, manufacturing alliance, and marketing alliance. The Pseudo- R^2 of column (1) to (6) is 30%, 30%, 21.6%, 21.6%, 23.5% and 23.6%, respectively. Column (1) and (2) show the results that *DA_MJ* and *DA_K* are negatively associated with the probability of forming R&D alliances, suggesting that firms would consider the earnings quality of alliance partners when forming R&D alliances. The coefficients on *DA_MJ* is negative and marginally significant (-0.237, $p < 0.05$). The coefficients on *DA_K* is negative and marginally significant (-0.615, $p < 0.05$). Column (3) and (4) present the effect of earnings quality on manufacturing alliances. The coefficient on *DA_K* and is significantly negative (-0.709, $p < 0.1$), but the coefficient on *DA_MJ* is not significant. Column (5) and (6) present the effect of earnings quality on marketing alliances. The coefficient on *DA_K* and is significantly negative (-0.678, $p < 0.05$), but the coefficient on *DA_MJ* is not significant. These results represent the consistent result of the lower earnings quality the firms have, the less likely to form R&D alliances. However, the effects of earnings quality on forming manufacturing alliances and marketing alliances are weaker. Thus, the likelihood of R&D alliances formation is strongly associated with earnings quality. The results support our H2.

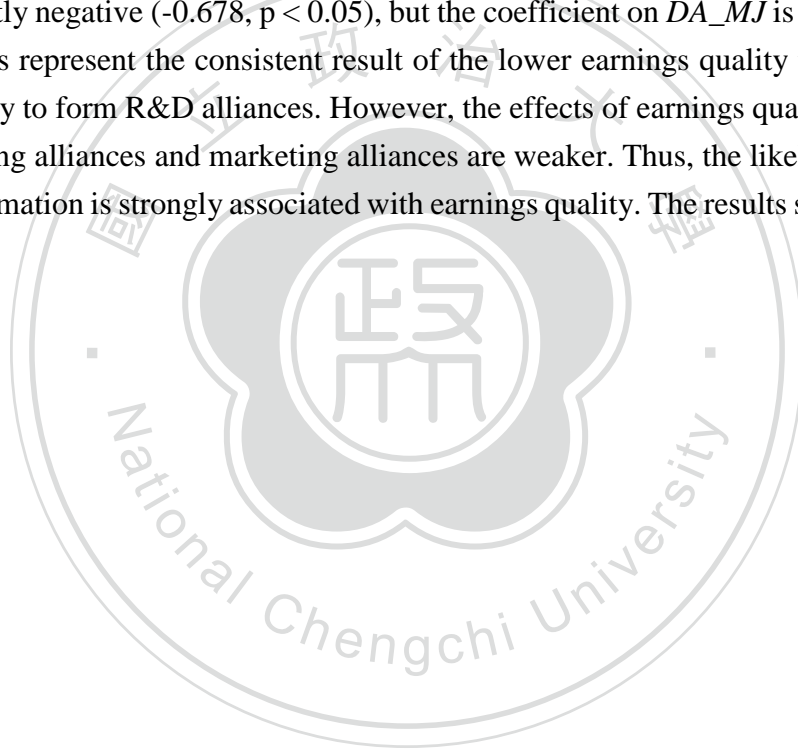


Table 6 Regression of the Different Types of Strategic Alliances on Earnings Quality with Probit Model

Variable	(1) RD	(2) RD	(3) MF	(4) MF	(5) MK	(6) MK
Intercept	-1.809** (0.0337)	-1.825** (0.0326)	-7.366*** (<.0001)	-7.301*** (<.0001)	-2.423*** (<.0001)	-2.454*** (<.0001)
DA_MJ	-0.237** (0.0321)		-0.158 (0.2181)		-0.061 (0.4907)	
DA_K		-0.615** (0.0462)		-0.709* (0.0572)		-0.678** (0.0120)
EXP_SA	0.247*** (<.0001)	0.247*** (<.0001)	0.179*** (<.0001)	0.180*** (<.0001)	0.234*** (<.0001)	0.234*** (<.0001)
SALE	0.081*** (<.0001)	0.083*** (<.0001)	0.083*** (<.0001)	0.086*** (<.0001)	0.064*** (<.0001)	0.068*** (<.0001)
ROA	-0.173*** (0.0007)	-0.090** (0.0388)	-0.052 (0.4010)	0.013 (0.8135)	-0.052 (0.2270)	-0.014 (0.6964)
QRATIO	0.029*** (0.0002)	0.031*** (<.0001)	0.016 (0.1197)	0.017* (0.0883)	0.011 (0.1695)	0.013 (0.1025)
DEBCA	-0.009 (0.7497)	-0.007 (0.8098)	-0.038 (0.2119)	-0.036 (0.2371)	-0.024 (0.1867)	-0.024 (0.1903)
MB	0.003 (0.2671)	0.003 (0.3275)	0.009** (0.0109)	0.008** (0.0160)	0.007*** (0.0059)	0.006*** (0.0092)
LEV	-0.077* (0.0515)	-0.089** (0.0291)	0.020 (0.5495)	0.016 (0.6244)	-0.007 (0.7694)	-0.008 (0.7424)
RD	0.013** (0.0211)	0.013** (0.0183)	0.014* (0.0822)	0.014* (0.0860)	0.012** (0.0497)	0.012** (0.0483)
AD	-0.373 (0.5764)	-0.381 (0.5668)	2.004*** (0.0006)	1.959*** (0.0008)	2.019*** (<.0001)	1.994*** (<.0001)
HHI	1.854 (0.7524)	2.107 (0.7205)	5.566 (0.3908)	5.665 (0.3810)	5.400 (0.1875)	5.403 (0.1872)
HHI2	-13.394 (0.4954)	-14.552 (0.4619)	-31.319 (0.1832)	-31.086 (0.1844)	-15.410 (0.1090)	-15.379 (0.1097)
Pseudo R²	0.3000	0.2998	0.2158	0.2164	0.2352	0.2360
N	47,154	47,154	47,000	47,000	47,310	47,310

Notes: The regressions are estimated using probit regression.

See Appendix for definitions of the variables.

***, ** and * indicate significance at 1 percent, 5 percent and, 10 percent level, respectively (two-tailed).

Table 7 presents the Probit regression results for subsamples partitioned by the market-to-book ratio. Column (1) shows the results when earnings quality is measured by the modified Jones model. The coefficient on *DA_MJ* for the likelihood of strategic alliance formation is significantly smaller for the high information asymmetry subsample than that for the low information asymmetry subsamples (-0.317 and -0.009, respectively; difference significant at the 1% level). Column (2) indicates that when earnings quality is measured by Kothari performance-matching model, the likelihood of strategic alliance formation is also significantly smaller for the high information asymmetry subsample than that for the low information asymmetry subsamples. These findings are consistent with H3 that for firms with high information asymmetry, earnings quality is more important when forming strategic alliances.



**Table 7 Regression of the Strategic Alliance on Earnings Quality with Probit Model:
Effect of Information Asymmetry**

Variable	(1)		(2)	
	SA		SA	
	Low MB	High MB	Low MB	High MB
Intercept	-1.999*** (<.0001)	-1.368*** (0.0041)	-2.001*** (<.0001)	-1.482*** (0.0018)
DA_MJ	-0.009 (0.8893)	-0.317*** (0.0002)		
DA_K			-0.246 (0.3536)	-0.666*** (0.0009)
EXP_SA	0.319*** (<.0001)	0.278*** (<.0001)	0.319*** (<.0001)	0.279*** (<.0001)
SALE	0.087*** (<.0001)	0.079*** (<.0001)	0.089*** (<.0001)	0.081*** (<.0001)
ROA	-0.040 (0.2078)	-0.144*** (0.0013)	-0.032 (0.2043)	-0.036 (0.3803)
QRATIO	0.012 (0.1332)	0.019*** (0.0031)	0.013 (0.1067)	0.020*** (0.0019)
DEBCA	-0.001 (0.9408)	-0.008 (0.6343)	-0.001 (0.9274)	-0.003 (0.8659)
MB	-0.009*** (0.0024)	0.005** (0.0177)	-0.009*** (0.0035)	0.004* (0.0506)
LEV	0.001 (0.9391)	-0.226*** (0.009)	0.001 (0.9535)	-0.225*** (0.009)
RD	0.017** (0.0164)	0.005 (0.3367)	0.017** (0.0163)	0.006 (0.2082)
AD	1.055** (0.0270)	0.865** (0.0177)	1.037** (0.0296)	0.842** (0.0207)
HHI	-1.569 (0.5351)	-1.376 (0.5673)	-1.574 (0.5336)	-1.052 (0.6611)
HHI2	3.161 (0.4827)	0.751 (0.8697)	3.159 (0.4828)	0.302 (0.9473)
Pseudo R²	0.1818	0.1998	0.1820	0.1996
N	24,651	24,651	24,651	24,651
Difference between DA coefficient	0.308*** (0.0022)		0.419 (0.1038)	

Notes: The regressions are estimated using probit regression.

See Appendix for definitions of the variables.

***, ** and * indicate significance at 1 percent, 5 percent, and 10 percent level, respectively (two-tailed).

In Table 8, we estimate the regression (2) with the Poisson and negative binomial models following Reuer and Ragozzino (2006). We split samples at the median level of the market-to-book ratio. The coefficients on *DA_MJ* in column (1) and (3) are significantly negative ($-0.853, p < 0.01$ and $-0.787, p < 0.01$, respectively) in high market-to-book subsample. Column (1) and (3) present that, compared with the low information asymmetry subsamples, the coefficient on *DA_MJ* for the frequency of strategic alliance formation is significantly smaller for the high information asymmetry subsample (difference significant at the 1% level). The coefficients on *DA_K* in column (2) and (4) are also significantly negative ($-1.300, p < 0.01$ and $-1.236, p < 0.01$, respectively) in high market-to-book subsamples. Column (2) and (4) show the coefficient on *DA_K* for the frequency of strategic alliance formation is significantly smaller for the high information asymmetry subsample, compared with the low information asymmetry subsample (difference significant at the 10% level). These results are consistent with H3 that for firms with high information asymmetry, earnings quality is more important when forming strategic alliances.

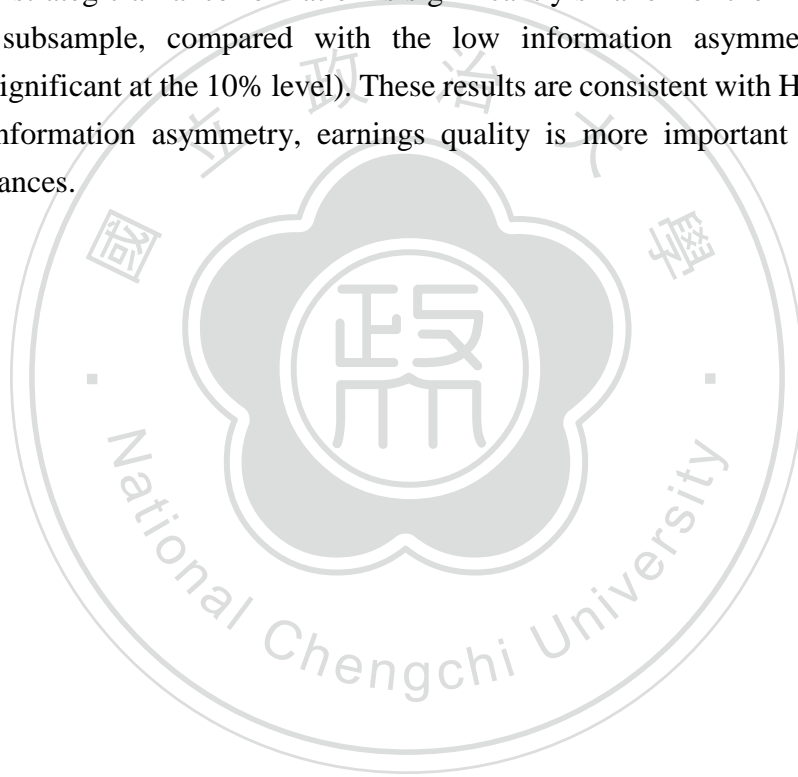


Table 8 Regression of Frequency of the Strategic Alliance on Earnings Quality with Poisson and Negative Binomial Models: Effect of Information Asymmetry

Variable	(1)		(2)		(3)		(4)	
	NUMSA		NUMSA		NUMSA		NUMSA	
	Poisson		Poisson		Negative Binomial		Negative Binomial	
	Low	High	Low	High	Low	High	Low	High
	MB	MB	MB	MB	MB	MB	MB	MB
Intercept	-3.786***	-0.679	-3.794***	-0.920	-3.425***	-1.906**	-3.424***	-2.153**
	(<.0001)	(0.3787)	(<.0001)	(0.2328)	(0.0008)	(0.0356)	(0.0008)	(0.0176)
DA_MJ	0.003	-0.853***			-0.009	-0.787***		
	(0.9816)	(<.0001)			(0.9524)	(<.0001)		
DA_K			-0.488	-1.300***			-0.359	-1.236***
			(0.3182)	(<.0001)			(0.5273)	(0.0009)
EXP_SA	0.175***	0.058***	0.175***	0.058***	0.514***	0.321***	0.514***	0.322***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
SALE	0.253***	0.256***	0.255***	0.263***	0.208***	0.175***	0.210***	0.179***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
ROA	-0.077	-0.274***	-0.066	-0.062	-0.093	-0.317***	-0.082	-0.077
	(0.2171)	(<.0001)	(0.1765)	(0.3258)	(0.1893)	(0.0004)	(0.1355)	(0.3204)
QRATIO	0.034**	0.018*	0.036**	0.020*	0.025	0.036***	0.026	0.038**
	(0.0343)	(0.0811)	(0.0260)	(0.0579)	(0.1695)	(0.0035)	(0.1485)	(0.0020)
DEBCA	0.017	-0.068**	0.017	-0.057*	-0.003	-0.033	-0.004	-0.021
	(0.4569)	(0.0248)	(0.4573)	(0.0568)	(0.9012)	(0.3099)	(0.8872)	(0.5091)
MB	-0.026***	0.016***	-0.026***	0.014**	-0.021***	0.012***	-0.020***	0.010**
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.0006)	(0.0041)	(0.0008)	(0.0176)
LEV	-0.013	-0.649***	-0.013	-0.654***	-0.009	-0.421**	-0.010	-0.418**
	(0.6949)	(<.0001)	(0.6913)	(<.0001)	(0.7923)	(0.0102)	(0.7854)	(0.0105)
RD	0.057***	0.033***	0.057***	0.037***	0.051***	0.019**	0.051***	0.023**
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.0004)	(0.0425)	(0.0004)	(0.0176)
AD	2.829***	2.601***	2.798***	2.584***	2.308**	1.886***	2.287**	1.835***
	(0.0004)	(<.0001)	(0.0005)	(<.0001)	(0.0215)	(0.0043)	(0.0226)	(0.0055)
HHI	-0.625	-6.547	-0.623	-5.766	-2.738	-3.278	-2.733	-2.578
	(0.9052)	(0.1694)	(0.9054)	(0.2266)	(0.6329)	(0.5250)	(0.6334)	(0.6169)
HHI2	2.306	4.617	2.296	3.238	5.164	0.355	5.129	-0.681
	(0.8221)	(0.6515)	(0.8227)	(0.7522)	(0.6343)	(0.9739)	(0.6364)	(0.9500)
Pseudo R²	0.1863	0.2449	0.1864	0.2439	0.1625	0.1862	0.1626	0.1854
N	24,651	24,651	24,651	24,651	24,651	24,651	24,651	24,651
Difference between	0.855***		0.812*		0.778***		0.877*	
DA coefficient	(0.0000)		(0.0785)		(0.0003)		(0.0979)	

Notes: Column (1) and (2) are estimated using Poisson regression, and Column (3) to (4) is estimated using negative binomial regression.

See Appendix for definitions of the variables.

***, ** and * indicate significance at 1 percent, 5 percent, and 10 percent level, respectively (two-tailed).

5. ADDITIONAL ANALYSES

5.1 SENSITIVITY TEST

We explore whether the estimating results for the earnings quality on the likelihood of strategic alliances formation are sensitive to the models used to estimate, and, thus, we re-estimate the regression (1) and (3) with the logit models. Table 9, Table 10, and Table 11 present the empirical results for our H1, H2, and H3 with the logit regression.

Table 9 demonstrates the results of the effect of earnings quality on the likelihood of strategic alliances formation. Column (1) and (2) shows the coefficient on *DA_MJ* and *DA_K* are significantly negative (-0.239, $p < 0.05$, -1.195, $p < 0.01$, respectively), supporting H1.

Table 10 shows the results of the effect of earnings quality on different types of alliances. Column (1) (2) demonstrates the relation between abnormal accruals and R&D alliances, with Column (3) (4) demonstrate the relation between abnormal accruals and manufacturing alliances and Column (5) (6) demonstrate the relation between abnormal accruals and marketing alliances. Column (1) (2) shows the coefficient on *DA_MJ* and *DA_K* are significantly negative (-0.615, $p < 0.05$, -1.387, $p < 0.05$, respectively). Column (3) and (4) show that the coefficient on *DA_K* is significantly negative (-1.867, $p < 0.1$), while the coefficient on *DA_MJ* is not significant. Column (5) and (6) show that the coefficient on *DA_K* and is significantly negative (-1.769, $p < 0.01$), while the coefficient on *DA_MJ* is not significant. This result is consistent with our expectation that R&D alliances formation is positively related to earnings quality.

Table 11 presents the results of the effects of information asymmetry on the relation between earnings quality and strategic alliances formation. Column (1) shows the coefficient on *DA_MJ* for the likelihood of strategic alliance formation is significantly larger for the high information asymmetry subsamples compared with the low information asymmetry subsamples (-0.656 and 0.007, respectively; difference significant at the 1% level). Column (2) shows the coefficient on *DA_K* is significantly negative for high market-to-book ratio subsamples, but the coefficient on *DA_K* is not significant in low market-to-book ratio subsamples. The results are consistent with H3.

The coefficients on previous alliance experience (*EXP_SA*), firm size (*SALE*), return on assets (*ROA*), quick ratio (*QRATIO*), and market-to-book ratio (*MB*) are significantly positive. Overall, our logit model results are consistent with the results from Probit models.

Table 9 Regression of the Strategic Alliance on Earnings Quality with Logit Model

Variable	(1) SA	(2) SA
Intercept	-3.154*** ($<.0001$)	-3.254*** ($<.0001$)
DA_MJ	-0.239** (0.0326)	
DA_K		-1.195*** (0.0002)
EXP_SA	0.560*** ($<.0001$)	0.560*** ($<.0001$)
SALE	0.166*** ($<.0001$)	0.173*** ($<.0001$)
ROA	-0.169*** (0.0018)	-0.063 (0.1725)
QRATIO	0.046*** ($<.0001$)	0.049*** ($<.0001$)
DEBCA	-0.017 (0.4223)	-0.014 (0.4873)
MB	0.009*** (0.0025)	0.009*** (0.0046)
LEV	-0.031 (0.3408)	-0.035 (0.2758)
RD	0.024*** (0.0036)	0.025*** (0.0031)
AD	2.276*** ($<.0001$)	2.167*** (0.0002)
HHI	-1.934 (0.6199)	-1.689 (0.6647)
HHI2	0.765 (0.9211)	0.406 (0.9580)
Pseudo R²	0.1991	0.1995
N	49,302	49,302

Notes: The regressions are estimated using logit regression.

See Appendix for definitions of the variables.

***, ** and * indicate significance at 1 percent, 5 percent and, 10 percent level, respectively (two-tailed).

**Table 10 Regression of the Different Types of Strategic Alliances on Earnings
Quality with Logit Model**

Variable	(1) RD	(2) RD	(3) MF	(4) MF	(5) MK	(6) MK
Intercept	-3.706* (0.0918)	-3.715* (0.0915)	-25.645*** (<.0001)	-25.876*** (<.0001)	-4.765*** (0.0016)	-4.863*** (0.0013)
DA_MJ	-0.615** (0.0293)		-0.374 (0.2821)		-0.185 (0.4041)	
DA_K		-1.387** (0.0492)		-1.867* (0.0517)		-1.769*** (0.0052)
EXP_SA	0.500*** (<.0001)	0.502*** (<.0001)	0.361*** (<.0001)	0.363*** (<.0001)	0.451*** (<.0001)	0.452*** (<.0001)
SALE	0.199*** (<.0001)	0.204*** (<.0001)	0.217*** (<.0001)	0.226*** (<.0001)	0.167*** (<.0001)	0.178*** (<.0001)
ROA	-0.419*** (0.0008)	-0.202* (0.0587)	-0.139 (0.4087)	0.019 (0.8980)	-0.127 (0.2174)	-0.021 (0.8114)
QRATIO	0.068*** (0.0001)	0.070*** (<.0001)	0.044* (0.0863)	0.048* (0.0624)	0.030 (0.1157)	0.035* (0.0655)
DEBCA	-0.011 (0.8821)	-0.003 (0.9670)	-0.096 (0.2510)	-0.091 (0.2757)	-0.065 (0.1644)	-0.063 (0.1758)
MB	0.011 (0.1229)	0.009 (0.1875)	0.024*** (0.0044)	0.022*** (0.0079)	0.015*** (0.0077)	0.014** (0.0124)
LEV	-0.210* (0.0566)	-0.232** (0.0364)	0.037 (0.7047)	0.028 (0.7707)	-0.018 (0.7737)	-0.022 (0.7284)
RD	0.030** (0.0153)	0.030** (0.0133)	0.034 (0.0918)	0.034 (0.0939)	0.032** (0.0307)	0.032** (0.0317)
AD	-0.886 (0.5676)	-0.952 (0.5387)	4.871*** (0.0005)	4.844*** (0.0005)	4.682*** (<.0001)	4.601*** (<.0001)
HHI	10.630 (0.5054)	10.763 (0.4997)	13.738 (0.4221)	14.214 (0.4062)	13.945 (0.1813)	14.044 (0.1784)
HHI2	-50.855 (0.3264)	-52.127 (0.3141)	-75.387 (0.2063)	-76.094 (0.2023)	-41.602* (0.0903)	-41.708* (0.0896)
Pseudo R²	0.3011	0.3009	0.2147	0.2153	0.2318	0.2328
N	47,154	47,154	47,000	47,000	47,310	47,310

Notes: The regressions are estimated using logit regression.

See Appendix for definitions of the variables.

***, ** and * indicate significance at 1 percent, 5 percent and, 10 percent level, respectively (two-tailed).

**Table 11 Regression of the Strategic Alliance on Earnings Quality with Logit Model:
Effect of information asymmetry**

Variable	(1)		(2)	
	SA		SA	
	Low MB	High MB	Low MB	High MB
Intercept	-3.859*** (0.0005)	-2.148** (0.0297)	-3.868*** (0.0005)	-2.360 (0.0170)
DA_MJ	0.007 (0.9643)	-0.656*** (0.0003)		
DA_K			-0.654 (0.2551)	-1.325*** (0.0008)
EXP_SA	0.595*** ($<.0001$)	0.525*** ($<.0001$)	0.595*** ($<.0001$)	0.526*** ($<.0001$)
SALE	0.194*** ($<.0001$)	0.156*** ($<.0001$)	0.197*** ($<.0001$)	0.162*** ($<.0001$)
ROA	-0.070 (0.3294)	-0.257*** (0.0037)	-0.057 (0.3082)	-0.052 (0.5249)
QRATIO	0.028 (0.1281)	0.038*** (0.0026)	0.030* (0.0968)	0.041*** (0.0015)
DEBCA	0.002 (0.9411)	-0.017 (0.6091)	0.001 (0.9581)	-0.008 (0.8194)
MB	-0.021*** (0.0010)	0.011** (0.0168)	-0.020*** (0.0015)	0.009* (0.0505)
LEV	0.002 (0.9613)	-0.442** (0.0109)	0.002 (0.9643)	-0.440** (0.0112)
RD	0.036** (0.0203)	0.011 (0.2910)	0.035** (0.0215)	0.013 (0.1865)
AD	2.174** (0.0309)	1.676** (0.0179)	2.137** (0.0337)	1.614** (0.0226)
HHI	-1.483 (0.8041)	-3.529 (0.5029)	-1.508 (0.8008)	-2.930 (0.5776)
HHI2	3.226 (0.7740)	0.586 (0.9572)	3.259 (0.7715)	-0.268 (0.9805)
Pseudo R²	0.1797	0.1995	0.1799	0.1993
N	24,651	24,651	24,651	24,651
Difference between DA coefficient	0.663*** (0.0025)		0.671 (0.1679)	

Notes: The regressions are estimated using logit regression.

See Appendix for definitions of the variables.

***, ** and * indicate significance at 1 percent, 5 percent, and 10 percent level, respectively (two-tailed).

5.2 RESTATEMENT

Because restatement is often the indication of severe cases of lower earnings quality, we use restatement as an alternative proxy for low earnings quality to re-estimate hypothesis 1. To avoid selection bias resulting from the factors that affect the possibility of restatements of the firms, following Amir-Zadeh and Zhang (2015), we perform propensity-score matching. In the first stage of our logit model, we use *RESTATEMENT* as the dependent variable. Furthermore, we estimate a propensity score for every firm using the determinants developed by Dechow, Ge, Larson, and Sloan (2011) and Amir-Zadeh and Zhang (2015).

To make an accurate comparison, we align the same firm-year observations for restating and non-restating firms in the same industries while the difference of the matching propensity scores is less than 0.02. The pairing of restating firms and non-restating firms is one-to-three (1:3). This procedure helps to mitigate potential concerns about endogeneity. We perform propensity-score matching, using the following first-stage choice model.

$$\begin{aligned} RESTATEMENT_{i,t-1} = & \beta_0 + \beta_1 RSS_ACC_{i,t-1} + \beta_2 CH_REC_{i,t} + \beta_3 CH_INV_{i,t-1} \\ & + \beta_4 SOFT_ASSETS_{i,t-1} + \beta_5 CH_CS_{i,t-1} + \beta_6 CH_ROA_{i,t-1} \\ & + \beta_7 CEMP_{i,t-1} + \beta_8 ISSUE_{i,t-1} + \beta_9 RET_{i,t-1} \\ & + \beta_{10} RET_{i,t-2} + \beta_{11} ROA_{i,t-1} + \beta_{12} SALE_{i,t-1} + \varepsilon_{i,t} \end{aligned} \quad (4)$$

We use Probit regressions to examine whether restatement influences strategic alliance formation. We modify regression (1) by using restatement instead of discretionary accruals.

$$\begin{aligned} SA_{i,t} = & \beta_0 + \beta_1 RESTATEMENT_{i,t-1} + \beta_2 EXP_SA_{i,t} + \beta_3 SALE_{i,t-1} + \beta_4 ROA_{i,t-1} \\ & + \beta_5 QRATIO_{i,t-1} + \beta_6 DEBCA_{i,t-1} + \beta_7 MB_{i,t-1} + \beta_8 LEV_{i,t-1} \\ & + \beta_9 RD_{i,t-1} + \beta_{10} AD_{i,t-1} + \beta_{11} HHI_{i,t-1} + \beta_{12} HHI^2_{i,t-1} \\ & + Year\ and\ Industry\ Effects + \varepsilon_{i,t} \end{aligned} \quad (5)$$

Table 12 presents Probit regressions of the likelihood of forming strategic alliances on restatement for the propensity-score-matched sample. The coefficient on *RESTATEMENT* is significantly positive (-0.3461, $p < 0.1$), which supports Hypothesis 1. Because of the limited number of samples after categorization strategic alliance types, we do not conduct propensity score matching for H2.

Table 12 Regression of the Relation between Strategic Alliances and Accounting Restatement for the Propensity-score-matched Sample

Panel A: First-stage Logit Regression on Determinants of Restatement	
Variable	RESTATEMENT
Intercept	3.659*** ($<.0001$)
RSST_ACC	-0.238 (0.3868)
CH_REC	0.799 (0.3987)
CH_INV	-0.387 (0.7644)
SOFT_ASSETS	-0.066 (0.7228)
CH_CS	0.256*** (0.0042)
CH_ROA	-0.746** (0.0129)
CHEMP	0.035 (0.7488)
ISSUE	0.238* (0.0876)
RET	5.254*** (0.0003)
RET	-1.850 (0.1270)
ROA	0.560** (0.0174)
SALE	-0.093*** ($<.0001$)
Pseudo R ²	0.3562
N	15,185

Notes: The regressions are estimated using probit regression. For space considerations, we refer the readers to Dechow et al. (2011) for the details of their model specification.

***, ** and * indicate significance at 1 percent, 5 percent, and 10 percent level, respectively (two-tailed).

Table 12 Regression of the Relation between Strategic Alliances and Accounting Restatement for the Propensity-score-matched Sample

Panel B: Second-stage Probit Regression on Determinants of Strategic Alliances	
Variable	SA
Intercept	-137.369 (0.9958)
RESTATEMENT	-0.346* (0.0511)
EXP_SA	0.474*** (<.0001)
SALE	0.150*** (0.0037)
ROA	1.194 (0.2341)
QRATIO	-0.213** (0.0481)
DEBCA	0.077 (0.3358)
MB	0.016 (0.5607)
LEV	-1.399** (0.0271)
RD	0.072 (0.6527)
AD	-0.517 (0.8922)
HHI	1.036 (0.9892)
HHI2	438.922 (0.4657)
Pseudo R²	0.4318
N	3,268

Notes: The regressions are estimated using probit regression.

***, ** and * indicate significance at 1 percent, 5 percent, and 10 percent level, respectively (two-tailed).

5.3 JOINT VENTURE

Our study focuses on contractual alliances instead of joint ventures for two reasons. First, a joint venture, as a separate entity, is governed by accounting standards, while contractual alliances are not. Because of the lack of standardization of financial reports, the earnings quality of the alliance firms is more important than joint venture firms. Second, contractual alliances are of non-equity structure and, thus, looser control system and more severe information asymmetry could exist. The possibility of agency behavior thus increased.

To investigate whether earnings equity plays a more important role in contractual alliances than in joint ventures, we examine the effect of earnings quality on joint ventures. Table 13 shows the results of the effect of earnings quality on forming joint ventures. Column (1) and (2) show that coefficients on *DA_MJ* and *DA_K* of joint ventures are not significant. We compare Table 13 with the main test shown in Table 4, which represents the relation between earnings quality and contractual alliances. We find no evidence that earnings quality is associated with joint venture formation.



Table 13 Regression of the Joint Venture on Earnings Quality with Probit Model

Variable	(1) JV	(2) JV
Intercept	-3.445*** ($<.0001$)	-3.435*** ($<.0001$)
DA_MJ	0.035 (0.6743)	
DA_K		-0.016 (0.9591)
EXP_SA	0.052*** ($<.0001$)	0.052*** ($<.0001$)
SALE	0.141*** ($<.0001$)	0.141*** ($<.0001$)
ROA	-0.173*** ($<.0001$)	-0.184*** ($<.0001$)
QRATIO	0.005 (0.6242)	0.005 (0.6227)
DEBCA	0.036*** (0.0011)	0.036*** (0.0012)
MB	0.002 (0.4718)	0.002 (0.4792)
LEV	-0.052** (0.0485)	-0.051* (0.0509)
RD	0.014 (0.1106)	0.014 (0.1130)
AD	0.353 (0.5510)	0.366 (0.5355)
HHI	-0.809 (0.5698)	-0.827 (0.5612)
HHI2	1.344 (0.4519)	1.357 (0.4475)
Adj R²	0.1333	0.1333
N	49,302	49,302

Notes: The regressions are estimated using probit regression. For space considerations, we refer the readers to Dechow et al. (2011) for the details of their model specification.

***, ** and * indicate significance at 1 percent, 5 percent, and 10 percent level, respectively (two-tailed).

5.4 SELF-SELECTION

When observations are not random drawn from a population distribution, the sample mean is, in general, a biased estimator of the population mean. This form of bias, known as “selection bias,” means that our sample might come with the self-selection issue as not every firm would choose to form strategic alliances for their inherited characteristics. Hence, we use the Heckman model to re-estimate hypothesis 1.

Using the two-stage procedure of Heckman (1979) and Lee (1979), we estimate the self-selection model. In the first stage, we conduct the probit regression, which uses the dummy variable, SA, as the dependent variable. The estimates of the first stage model are used to compute the inverse Mills ratios (IMR), λ . Then, in the second stage, the model is estimated by OLS with the inverse Mills ratios (IMR) included as an additional explanatory variable. Our self-section model is given as:

$$SA_{i,t} = \beta_0 + \beta_1 DA_{i,t-1} + \beta_2 EXP_SA_{i,t} + \beta_3 SALE_{i,t-1} + \beta_4 ROA_{i,t-1} + \beta_5 QRATIO_{i,t-1} + \beta_6 DEBCA_{i,t-1} + \beta_7 MB_{i,t-1} + \beta_8 LEV_{i,t-1} + \beta_9 RD_{i,t-1} + \beta_{10} AD_{i,t-1} + \beta_{11} HHI_{i,t-1} + \beta_{12} HHI^2_{i,t-1} + Year\ and\ Industry\ Effects + \varepsilon_{i,t} \quad (6)$$

$$NUMSA_{i,t} = \beta_0 + \beta_1 DA_{i,t-1} + \beta_2 EXP_SA_{i,t} + \beta_3 SALE_{i,t-1} + \beta_4 ROA_{i,t-1} + \beta_5 QRATIO_{i,t-1} + \beta_6 DEBCA_{i,t-1} + \beta_7 MB_{i,t-1} + \beta_8 LEV_{i,t-1} + \beta_9 RD_{i,t-1} + \beta_{10} AD_{i,t-1} + \beta_{11} HHI_{i,t-1} + \beta_{12} HHI^2_{i,t-1} + \beta_{13} SEGMENT_{i,t-1} + \beta_{14} \lambda_{i,t-1} + Year\ and\ Industry\ Effects + \varepsilon_{i,t} \quad (7)$$

In table 14, we present our estimation of regression Equation (7). This specification includes the inverse Mill’s ratio (IMR) from stage one, which controls potential self-selection bias in the second stage. The significance of the coefficients on the IMR suggests the importance of controlling for self-selection bias. The coefficient on DA_MJ is significantly negative (-0.159, $p < 0.1$). The result is consistent with H1 after controlling the self-selection bias.

**Table 14 Two-stage Regression of the Strategic Alliance on Earnings Quality with
Hechman Model**

Panel A: First-stage Probit Regression on Determinants of Strategic Alliances		
	(1)	(2)
Variable	SA	SA
Intercept	-1.648*** (0.000)	-1.698*** (0.000)
DA_MJ	-0.117** (0.025)	
DA_K		-0.544*** (0.001)
EXP_SA	0.296*** (0.000)	0.296*** (0.000)
SALE	0.079*** (0.000)	0.082*** (0.000)
ROA	-0.091*** (0.000)	-0.040* (0.057)
QRATIO	0.021*** (0.000)	0.023*** (0.000)
DEBCA	-0.011 (0.257)	-0.010 (0.292)
MB	0.004*** (0.005)	0.004*** (0.008)
LEV	-0.160 (0.268)	-0.018 (0.215)
RD	0.011*** (0.007)	0.011*** (0.006)
AD	1.093*** (0.000)	1.041*** (0.000)
HHI	-1.849 (0.312)	-1.723 (0.346)
HHI2	2.364 (0.477)	2.176 (0.512)
IMR	0.477 (0.000)	0.476 (0.000)
Adj R²	0.2049	0.2053
N	45,701	45,701

Notes: See Appendix for definitions of the variables.

***, ** and * indicate significance at 1 percent, 5 percent, and 10 percent level, respectively (two-tailed).

**Table 14 Two-stage Regression of the Strategic Alliance on Earnings Quality with
Hechman Model**

Panel B: Second-stage OLS Regression on Determinants of Number of Strategic Alliances		
Variable	(1) NUMSA	(2) NUMSA
Intercept	0.512 (0.422)	0.461 (0.469)
DA_MJ	-0.159* (0.084)	
DA_K		-0.284 (0.237)
EXP_SA	0.187*** (0.000)	0.187*** (0.000)
SALE	0.765*** (0.000)	0.077*** (0.000)
ROA	-0.152*** (0.001)	-0.093** (0.013)
QRATIO	0.004 (0.594)	0.005 (0.550)
DEBCA	-0.147 (0.378)	-0.014 (0.408)
MB	0.003 (0.207)	0.003 (0.214)
LEV	-0.035 (0.161)	-0.038 (0.122)
RD	0.026*** (0.000)	0.026*** (0.000)
AD	0.927** (0.047)	0.896* (0.054)
HHI	-2.014 (0.571)	-1.835 (0.606)
HHI2	4.426 (0.477)	4.198 (0.500)
SEGMENT	0.008 (0.403)	0.008 (0.403)
Adj R²	0.3162	0.3163
N	45,701	45,701

Notes: See Appendix for definitions of the variables.

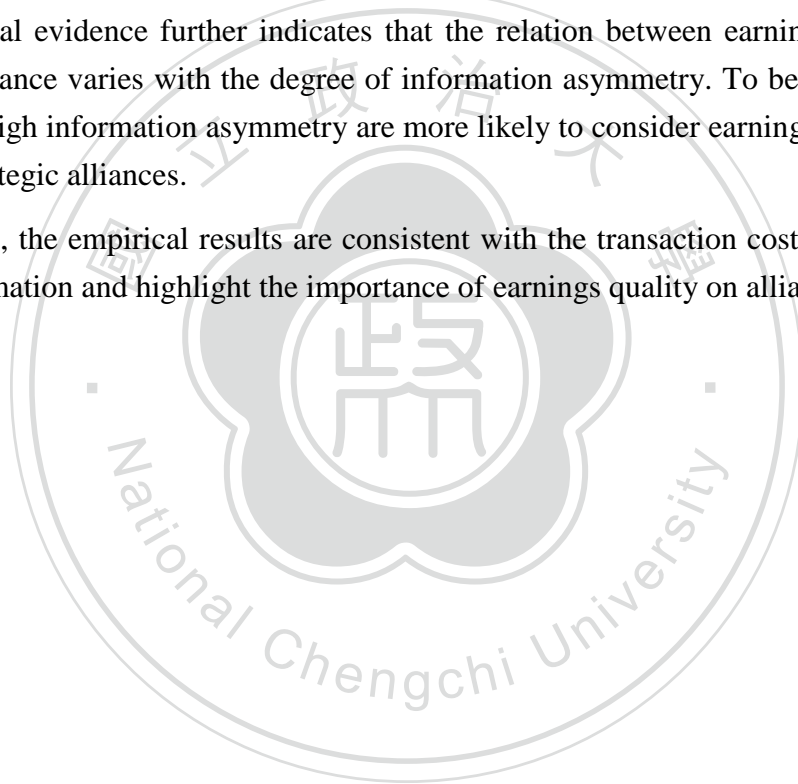
***, ** and * indicate significance at 1 percent, 5 percent, and 10 percent level, respectively (two-tailed).

6. CONCLUSION

Previous research examining the determinants for partner selection of strategic alliances mostly focuses on trust, commitment, complementarity, and financial payoff. There is scant research that explores how the quality of accounting information influences alliances formation. Based on a large sample of U.S. firms during the period between 2004-2015, we investigate whether earnings quality is an important factor for forming strategic alliances. This work fills the gap in the strategic alliance and accounting literature.

Our empirical research concludes that earnings quality is positively associated with the likelihood and the frequency of forming strategic alliances. Besides, the empirical evidence shows that R&D alliances formation is highly associated with earnings quality. Our empirical evidence further indicates that the relation between earnings quality and strategic alliance varies with the degree of information asymmetry. To be more specific, firms with high information asymmetry are more likely to consider earnings quality when forming strategic alliances.

Overall, the empirical results are consistent with the transaction cost perspective of alliance formation and highlight the importance of earnings quality on alliance decisions.



APPENDIX

Variable Definition

Variable Name	Definition
SA	Dummy variable with a value equal to 1 if the firm forms a strategic alliance in year t , and zero otherwise
NUMSA	The number of strategic alliances formed in year t .
DA	The absolute value of abnormal accruals respectively calculated with Modified-Jones model (Jones 1991; Dechow et al. 1995) and Kothari's model (Kothari et al. 2005)
EXP_SA	The number of alliances that the firm previously formed
SALE	Logarithm of sales in year $t-1$
ROA	Net income before extraordinary item, advertising expense and R&D expense divided by total assets in year t
QRATIO	Current assets minus inventory, divided by current liabilities
DEBCA	Total amount of long-term debt divided by the firm's current asset
MB	Market-to-book ratio, the ratio of market value to total equity
LEV	Ratio of total liabilities to total assets
RD	Ratio of R&D expenditures to total sales
AD	Ratio of advertising expenditures to total sales
HHI	The sum of squared market shares
HHI2	The square of HHI
TYPE_SA	Represents separate indicator variables for different types of strategic alliances.
RD_SA	Dummy variable with a value equal to 1 if the firm forms research and development alliances in year t , and 0 otherwise
MF_SA	Dummy variable with a value equal to 1 if the firm forms manufacturing alliances in year t , and 0 otherwise
MK_SA	Dummy variable with a value equal to 1 if the firm forms marketing alliances in year t , and 0 otherwise
RESTATEMENT	Dummy variable with a value equal to 1 if the firm has restated earnings, and 0 otherwise
SEGMENT	The number of business segment

REFERENCES

- Achrol, R. S., L. K. Scheer, and L. W. Stern. 1990. *Designing Successful Transorganizational Marketing Alliances*, Report No. 90-118. Cambridge, MA: Marketing Science Institute.
- Akrich, M., M. Callon, B. Latour, 2002. The key to success in innovation part I: the art of interessement. *International Journal of Innovation Management* 6(2): 187-206.
- Amel-Zadeh, A., and Y. Zhang. 2015. The economic consequences of financial restatements: evidence from the market for corporate control. *The Accounting Review* 90(1): 1-29.
- Anand, B. N., and T. Khanna. 2000. Do firms learn to create value? the case of alliances. *Strategic Management Journal*, March Special Issue 21: 295-315.
- Anderson, S. W., and K. L. Sedatole. 2003. Management accounting for the extended enterprise: performance management for strategic alliances and networked partners. In: Bhimani, A. (Ed.) *Management Accounting in the Digital Economy*. Oxford: Oxford University Press.
- Anderson, S., and H. C. Dekker. 2005. Management control for market transactions: the relation between transaction characteristics, incomplete contract design and subsequent performance. *Management Science* 51: 1734-1752.
- Arino, A., J. de la Torre., and P. S. Ring. 2001. Relational quality: managing trust in corporate alliances. *California Management Review* 44(1): 109-131.
- Arino, A. M., R. Ragozzino, J. J. Reuer, and A. Pearson. 2008. Alliance dynamics for entrepreneurial firms. *Journal of Management Studies* 45(1): 147-168.
- Arthaud-Day, M. L., S. T. Certo, C. M. Dalton, and D. R. Dalton. 2006. A changing of the guard: executive and director turnover following corporate financial restatements. *Academy of Management Journal* 49: 1119-1136.
- Aslan, H., D. Easley, S. Hvidkjaer, and M. O'Hara. 2011. The characteristics of informed trading: Implications for asset pricing. *Journal of Empirical Finance* 18: 782-801.
- Barney, J. 1991. Firm resources and sustained competitive advantage. *Journal of Management* 17: 99-120.
- Beneish, M. D. 1999. Incentives and penalties related to earnings overstatements that violate GAAP. *The Accounting Review* 74(4): 425-457.
- Biddle, G. and G. Hilary. 2006. Accounting quality and firm-level capital investment. *The Accounting Review* 5: 963-982.

- Blumberg, B. 2001. Efficient partner search: embedded firms seeking cooperative partners. *Journal of Mathematical Sociology* 25: 329-354.
- Boulton, T. J., S. B. Smart, and C. J. Zutter. 2010. IPO underpricing and international corporate governance. *Journal of International Business Studies* 41(2): 206-222.
- Bowen, R. M., L. DuCharme, and D. Shores. 1995. Stakeholders' implicit claims and accounting method choice. *Journal of Accounting and Economics* 20(3): 255-295.
- Bucklin, L. P., and S. Sengupta. 1993. Organizing successful co-marketing alliances. *Journal of Marketing* 57: 32-46.
- Carcello, J. V., and C. Li. 2013. Costs and benefits of requiring an engagement partner signature: recent experience in the United Kingdom. *The Accounting Review* 88: 1511-1546.
- Cassell, C. A., L. A. Myers, and T. A. Seidel. 2015. Disclosure transparency about activity in valuation allowance and reserve accounts and accruals-based earnings management. *Accounting, Organizations and Society* 46: 23-38.
- Carcello, J. V., and C. Li. 2013. Costs and benefits of requiring an engagement partner signature: Recent experience in the United Kingdom. *The Accounting Review* 88: 1511-1546.
- Chakravarthy, J., E. deHaan, and S. Rajgopal. 2014. Reputation repair after a serious restatement. *The Accounting Review* 89(4): 1329-1363.
- Chua, W. F., and H. Mahama. 2007. The effect of network ties on accounting controls in a supply alliance: field study evidence. *Contemporary Accounting Research* 24: 47-86.
- Cravens, K., E. G. Oliver, and S. Ramamoorti. 2003. The reputation index: measuring and managing corporate reputation. *European Management Journal* 21(2): 201-212.
- Dacin, T., C. Oliver, and J-P. Roy. 2007. The legitimacy of strategic alliances: an institutional perspective. *Strategic Management Journal* 28(2): 169-187.
- Das, S., P. K. Sen, and S. Sengupta. 1998. Impact of Strategic Alliances on Firm Valuation. *The Academy of Management Journal* 41(1): 27-41
- Das, T. K., and N. Rahman. 2001. Partner misbehavior in strategic alliances: guidelines for effective deterrence. *Journal of General Management* 27(1): 43-69.
- Das, T. K., and B. S. Teng. 1998. Between trust and control: developing confidence in partner cooperation in alliances. *The Academy of Management Review* 23(3): 491-512.
- Dechow, P. M., R. G. Sloan, and A. P. Sweeney. 1995. Detecting earnings management. *The Accounting Review* 70 (April): 3-42.

- Dechow, P. M., R. G. Sloan, and A. P. Sweeney. 1996. Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research* 13(1): 1-36.
- Dechow, P. M., W. Ge, C. R. Larson, and R. G. Sloan. 2011. Predicting material accounting misstatements. *Contemporary Accounting Research* 28(1): 17-82.
- Dekker, H. C. 2008. Partner selection and governance design in interfirm relationships. *Accounting, Organization and Society* 33: 915-941.
- Demirkan, S., and I. Demirkan. 2014. Implications of strategic alliances for earnings quality and capital market investors. *Journal of Business Research* 67: 1806-1816.
- Demirkan, S., and N. Zhou. 2016. Audit pricing for strategic alliances: an incomplete contract perspective. *Contemporary Accounting Research* 33(4): 1625-1647.
- Desai, H., C. E. Hogan, and M. S. Wilkins. 2006. The reputational penalty for aggressive accounting: earnings restatements and management turnover. *The Accounting Review* 81(1): 83-112.
- Ding, R., H. C. Dekker, and T. Groot. 2010. An exploration of the use of interfirm cooperation and the financial manager's governance role: evidence from Dutch firms. *Journal of Accounting and Organizational Change* 6: 9-26.
- Ding, R., H. C. Dekker, and T. Groot. 2013. Risk, partner selection and contractual control in interfirm relationships. *Management Accounting Research* 24(2): 140-155.
- Doz, Y. L., and G. Hamel. 1998. *Alliance Advantage: The Art of Creating Value through Partnering*. Harvard Business School Press: Boston, MA.
- Dollinger, M. J., P. A. Golden, and T. Saxton. 1997. The effect of reputation on the decision to joint venture. *Strategic Management Journal* 18(2): 127-140.
- Dussauge P., B. Garrette, and W. Mitchel. 2004. Asymmetric performance: the market share impact of scale and link alliances in the global auto industry. *Strategic Management Journal* 25: 701-711.
- Dyer, J. H., and W. Chu. 2000. The determinants of trust in supplier automaker relationships in the U.S., Japan, and Korea. *Journal of International Business Studies* 31(2): 259-285.
- Feroz, E. H., K. Park, and V. S. Pastena. 1991. The financial and market effects of the SEC's accounting and auditing enforcement releases. *Journal of Accounting Research* 29: 107-142.
- Festel, G., A. Schicker, and R. Boutellier. 2010. Performance improvement in

- pharmaceutical R&D through new outsourcing models. *Journal of Business Chemistry* 7(2): 89-96.
- Fich, E. M., L. T. Starks, and A. S. Yore. 2014. CEO deal-making activities and compensation. *Journal of Financial Economics* 114(3): 471-492.
- Fombrun, C., and M. Shanley. 1990. What's in a name? reputation building and corporate strategy. *The Academy of Management Journal* 33(2): 233-258.
- Francis, J., R. LaFond, P. Olsson, and K. Schipper. 2005. The market pricing of accruals quality. *Journal of Accounting and Economics* 39: 295-327.
- Ganesan, S. 1994. Determinants of long-term orientation in buyer-seller relationships. *Journal of Marketing* 58(2): 1-19.
- Ghazali, A. W., N. A. Shafie, and Z. M. Sanusi. 2015. Earnings management: an analysis of opportunistic behaviour, monitoring mechanism and financial distress. *Procedia Economics and Finance*, 28: 190-201.
- Graham, J. R., S. Li, and J. Qiu. 2008. Corporate misreporting and bank loan contracting. *Journal of Financial Economics* 89(1): 44-61.
- Granovetter, M. 1985. Economic action and social structure: the problem of embeddedness. *American Journal of Sociology* 91: 481-510.
- Greve, H., T. Rowley, and A. Shipilov. 2014. *Network Advantage: How to Unlock Value From Your Alliances and Partnerships*. San Francisco, Jossey-Bass.
- Groot, T. L. C. M., and K. A. Merchant. 2000. Control of international joint ventures. *Accounting, Organization and Society* 25: 579-607.
- Grossman, S., and O. Hart. 1986. The costs and benefits of ownership: a theory of vertical and lateral integration. *Journal of Political Economy* 94(4): 691-719.
- Gulati, R. 1995. Does familiarity breed trust? the implications of repeated ties for contractual choice in alliances. *Academy of Management Journal* 38(1): 85-102.
- Gulati, R., and H. Singh. 1998. The architecture of cooperation: managing coordination costs and appropriation concerns in strategic alliances. *Administrative Science Quarterly* 43(4): 781-94.
- Gulati, R. 1999. Network location and learning: the influence of network resources and firm capabilities on alliance formation. *Strategic Management Journal* 20(5): 397-420.
- Gulati, R., and J. D. Westphal. 1999. Cooperative or controlling? the effects of CEO-board relations and the content of interlocks on the formation of joint ventures.

Administrative Science Quarterly 44(3): 473-506.

- Hagedoorn, J. 2002. Inter-firm R&D partnerships: an overview of major trends and patterns since 1960s. *Research Policy* 31: 477-492.
- Hall, R. 1992. The strategic analysis of intangible resources. *Strategic Management Journal* 13: 135-144.
- Hanlon, M., S. Rajgopal and T. Shevlin. 2003. Are executive stock options associated with future earnings? *Journal of Accounting and Economics* 36(1): 3-43.
- Hart, O. 1988. Incomplete contracts and the theory of the firm. *Journal of Law, Economics, and Organization* 4(1): 119-39.
- Hart, O., and J. Moore. 1988. Incomplete contracts and renegotiation. *Econometrica* 56(4): 755-785.
- Healy, P. M., and J. M. Wahlen. 1999. A review on the earnings management literature and its implication for standard setting. *Accounting Horizon*, 13(4): 365-383.
- Healy, P. M., and K. G. Palepu. 2001. Information asymmetry, corporate disclosure, and the capital markets: a review of the empirical disclosure literature. *Journal of Accounting and Economics* 31(1-3): 405-440.
- Hechman, J. J. 1979. Sample selection bias as a specification error. *Econometrica* 47(2): 153-162.
- Higgins, M. J. 2007. The allocation of control rights in pharmaceutical alliances. *Journal of Corporate Finance* 13(1): 58-75.
- Hill, C. W. L. 1990. Cooperation, opportunism, and the invisible hand: implications for transaction cost theory. *Academy of Management Review* 15: 500-513.
- Hitt, M. A., D. Ahlstrom, M. T. Dacin, E. Levitas, and L. Svobodina. 2004. The institutional effects on strategic alliance partner selection in transition economies: China vs. Russia. *Organization Science* 15(2): 173-185.
- Hribar, P., and N. Jenkins. 2004. The effect of accounting restatements on earnings revisions and the estimated cost of capital. *Review of Accounting Studies* 9: 337-356.
- Inkpen, A. C., and E. W. K. Tsang. 2005. Social Capital, Networks, and Knowledge Transfer. *The Academy of Management Review* 30(1): 146-165.
- Ireland, R. D., M. A. Hitt, and D. Vaidyanath. 2002. Alliance Management as a Source of Competitive Advantage. *Journal of Management* 28(3): 413-446.
- Jap, S. D. 1999. Pie-expansion efforts: collaboration processes in buyer-supplier relationships. *Journal of Marketing Research* 36(4): 461-475.

- Jiang, X., Y. Li, and S. Gao. 2008. The stability of strategic alliances: characteristics, factors and stages. *Journal of International Management* 14(2): 173-189.
- Jones, J. J. 1991. Earnings management during import relief investigations. *Journal of Accounting Research* 29(2): 193-228.
- Jones, T. M. 1995. Instrumental stakeholder theory: a synthesis of ethics and economics. *The Academy of Management Review* 20(2): 404-437.
- Karpoff, J. M., D. S. Lee, and G. S. Martin. 2008a. The cost to firms of cooking the books. *Journal of Financial and Quantitative Analysis* 43(4): 581-612.
- Karpoff, J. M., D. S. Lee, and G. S. Martin. 2008b. The consequences to managers for financial misrepresentation. *Journal of Financial Economics* 88(2): 193-215.
- Kloyer, M., and J. Scholderer. 2012. Effective incomplete contracts and milestones in market-distant R&D collaboration. *Research Policy* 41: 346-357.
- Kim, J., and J. T. Mahoney. 2005. Property rights theory, transaction costs theory, and agency theory: an organizational economics approach to strategic management. *Managerial and Decision Economics* 26: 223-242.
- Kim, Y., M. S. Park, and B. Wier. 2012. Is earnings quality associated with corporate social responsibility. *Accounting Review* 87: 761-796.
- Kogut, B. 1988. Joint ventures: theoretical and empirical perspectives. *Strategic Management Journal* 9(4): 319-32.
- Koot, W. T. M. 1988. *Underlying Dilemmas in the Management of Joint Ventures*. in F. Contractor and P. Lorange (Eds.), *Cooperative strategies in international business*, 347-367. Lexington, MA: Lexington Books.
- Klein, B., R. G. Crawford, and A. A. Alchian. 1978. Vertical Integration, appropriable rents, and the competitive contracting process. *The Journal of Law & Economics* 21(2): 297-326.
- Kothari, S. P., A. J. Leone, and C. E. Wasley. 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39(1): 163-197.
- Koza, M. P., and A. Y. Lewin. 1998. The co-evolution of strategic alliances. *Organization Science* 9(3): 255-264.
- Kravit, T., and T. Shevlin. 2009. Accounting restatements and information risk. *Review of Accounting Studies* 15(2): 264-294.
- Lee, L-F. 1979. Identification and estimation in binary choice models with limited (censored) dependent variables. *Econometrica* 47(7): 977-996.

- Lerner, J., and U. Malmendier. 2010. Contractibility and the design of research agreements. *American Economic Review* 100(1): 214-246.
- Li, J., and J. Zhong. 2003. Explaining the growth of international R&D alliances in China. *Managerial and Decision Economics*, 24(2-3): 101-115.
- Li, L., B. Qi, G. Tian, and G. Zhang. 2017. The contagion effect of low-quality audits at the level of individual auditors. *The Accounting Review* 92(1): 137-163.
- Li, L., G. Qian, and Z. Qian. 2013. Do partners in international strategic alliances share resources, costs, and risks? *Journal of Business Research* 66(4): 489-498.
- Lunnan, R., and S. A. Haugland. 2008. Predicting and measuring alliance performance: a multidimensional analysis. *Strategic Management Journal* 29: 545-556.
- Marquardt, C., and E. Zur. 2015. The Role of Accounting Quality in the M&A Market. *Management Science* 61(3): 604-623.
- Martin, X., and R. Shalev. 2009. Target Firm-Specific Information and Expected Synergies in Acquisitions. Working paper, Washington University in Saint Louis and New York University.
- Mayer, K. J., and D. J. Teece. 2008. Unpacking strategic alliances: the structure and purpose of alliance versus supplier relationships. *Journal of Economic Behavior and Organization* 66: 106-127.
- McNichols, M. F., and S. R. Stubben. 2008. Does earnings management affect firms' investment decisions? *The Accounting Review* 83(6): 1571-1603.
- Menon, K., and D. D. Williams. 2008. Management turnover following auditor resignations. *Contemporary Accounting Research* 25(2): 567-604.
- Moeller, K. 2010. Emerald Article: Partner selection, partner behavior, and business network performance: An empirical study on German business networks. *Journal of Accounting & Organizational Change* 6(1): 27-51.
- Nelson, R. R., and S. G. Winter. 1977. In search of useful theory of innovation. *Research Policy* 6(1): 36-76.
- O'Connor, N. 2001. UK corporate reputation management: the role of public relations planning, research and evaluation in a new framework of company reporting. *Journal of Communication Management* 6(1): 53-63.
- Oliver, C. 1988. The collective strategy framework: an application to competing predictions of isomorphism. *Administrative Science Quarterly* 33: 543-561.
- Osborn, R., and C. Baughn. 1990. Forms of interorganizational governance for

- multinational alliances. *Academy of Management Journal* 33(3): 503-19.
- Owen, S., and A. Yawson. 2013. Information asymmetry and international strategic alliances. *Journal of Banking & Finance* 37(10): 3890-3903.
- Oxley, J. 1997. Appropriability hazards and governance in strategic alliances: a transaction cost approach. *Journal of Law, Economics, and Organization* 13(2): 387-409.
- Palmrose, Z. V., V. Richardson, and S. Scholz. 2004. Determinants of market reactions to restatement announcements. *Journal of Accounting and Economics* 37: 59-89.
- Panico, C. 2011. On the contractual governance of research collaborations: allocating control and intellectual property rights in the shadow of potential termination. *Research Policy* 40(1): 1403-1411.
- Parkhe, A. 1993. Partner nationality and the structure performance relationship in strategic alliances. *Organization Science* 4(2): 301-325.
- Pisano, G. P. 1990. The R&D boundaries of the firm: an empirical analysis. *Administrative Science Quarterly* 35(1): 153-176.
- Pisano, G. P., and P. Mang. 1993. Collaborative product development and the market for know-how: strategies and structures in the biotechnology industry. In: Rosenbloom, R., Burgelman, R. (Eds.), *Research on Technological Innovation, Management, and Policy*, 5: 109-136. Greenwich, CT: JAI Press.
- Rigsbee, E. 2010. Should I start a strategic alliance or joint venture? Available online at <http://www.rigsbee.com/strategic-alliance-article-Rigsbee-88.htm> retrieved September 22, 2015.
- Ring, P. S., and A. H. Van de Ven. 1992. Structuring cooperative relationships between organizations. *Strategic Management Journal* 13: 483-498.
- Reuer, J. J., and R. Ragazzino. 2006. Agency hazards and alliance portfolios. *Strategic Management Journal* 27(1): 27-43.
- Roberts, P. W., and G. R. Dowling. 2002. Corporate reputation and sustained superior financial performance. *Strategic Management Journal* 23(12): 1077-1093.
- Rothaermel, F., and D. Deeds. 2004. Exploration and exploitation alliances in biotechnology: a system of new product development. *Strategic Management Journal* 25: 201-221.
- Rothaermel, F., and W. Boeker. 2008. Old technology meets new technology: complementarities, similarities and alliance formation. *Strategic Management Journal* 29(1), 47-77.

- Scherer, F. M. 2010. Pharmaceutical innovation. In: Hall, B.H., Rosenberg, N. (Eds.), *Handbook of the Economics of Innovation*. Elsevier, North Holland: 539-574.
- Shah, R. H., and V. Swaminathan. 2008. Factors influencing partner selection in strategic alliances: the moderating role of alliance context. *Strategic Management Journal* 29(5): 471-494.
- Sitkin, S. B., and N. L. Roth. 1993. Explaining the limited effectiveness of legalistic "remedies" for trust/distrust. *Organization Science* 4: 367-392.
- Smith, J. B., and D. W. Barclay. 1997. The effects of organizational differences and trust on the effectiveness of selling partner relationships. *Journal of Marketing* 61(1): 3-21.
- Stuart, T. E. 1998. Network positions and propensities to collaborate: an investigation of strategic alliance formation in a high-technology industry. *Administrative Science Quarterly* 43(3): 668-698.
- Teece, D. J. 1986. Transactions cost economics and the multinational enterprise: an assessment. *Journal of Economic Behavior & Organization* 7(1), 21-45.
- Teece, D. J. 1992. Competition, cooperation, and innovation: organizational arrangements for regimes of rapid technological progress. *Journal of Economic Behavior & Organization* 18(1): 1-25.
- Teoh, S. H., I. Welch, and T. J. Wong. 1998. Earnings management and the long-run market performance of initial public offerings. *The Journal of Finance* 53(6): 1935-1974.
- Trevino, L. K., G. R. Weaver, and S. J. Reynolds. 2006. Behavioral ethics in organizations: a review. *Journal of Management* 32(6): 951-990.
- Wang, T. 2006. Real Investment and Corporate Securities Fraud. Working paper, University of Minnesota.
- Watts, R. L., and J. L. Zimmerman. 1986. Positive accounting theory. Englewood Cliffs, NJ: Prentice-Hall.
- Weigelt, K. and C. Camerer. 1988. Reputation and corporate strategy: a review of recent theory and application, *Strategic Management Journal* 9(5): 443-454.
- Williamson, O. E. 1975. *Markets and Hierarchies*. Free Press: New York.
- Wuyts, S., and I. Geyskens. 2005. The formation of buyer supplier relationships: detailed contract drafting and close partner selection. *Journal of Marketing* 69(4): 103-117.
- Zamir, Z., A. Sahar, F. Zafar. 2014. Strategic alliances: a comparative analysis of

successful alliances in large and medium scale enterprises around the world.

Educational Research International 3(1): 25-39.

Zhang, M., and X. Yin. 2012. The relationship between function and motivation of R&D alliances: an empirical analysis of Chinese software firms. *Physics Procedia* 25: 1162-1167.

