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Value added or tunneling? Evidence from new product announcements by Taiwanese business groups

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Abstract

Using new product announcement events made by group member firms in Taiwan, this study examines whether the firms' multiple network ties within business groups benefit member firms or whether they provide a channel for controlling shareholders to tunnel. We find that the announcement of new products by group member firms has a positive effect on the market value of other, non-announcing group peers. This evidence is consistent with the value-added hypothesis. More importantly, this effect is stronger when member firms are connected via equity ties. Furthermore, we also offer an original analysis of how family control in business groups affects the impact of network ties on value creation. Our results suggest that the controlling family may discount the market value of member firms.

Keywords: business groups, network, family control, corporate governance, value-added

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INTRODUCTION

Diversified business groups that consist of networks of legally independent firms have been very important in the development of many emerging economies, due to factors such as institutional substitutability, which can overcome the problems of inefficient institutions and insufficient external capital markets in such countries (Dyer & Singh, 1998; Khanna & Palepu, 2000; Gilson, 2007). Business groups are based on interfirm ties through either formal ownership or informal social relations, and they tend to operate under a common administrative mechanism and financial control, leading to the creation of internal capital markets (e.g., La Porta, Lopez-De-Silanes, & Shleifer, 1999; Claessens, Fan, & Lang, 2006), with the individual components working together to take coordinated actions (Khanna & Rivkin, 2001) and allocate capital more efficiently (Stein, 1997). Moreover, business groups have often been seen as innovative technology creators, as interfirm ties serve as channels to share information and human capital, as well as transfer resources, among member firms (Mahmood, Zhu, & Zajac, 2011). Supporting this view, most prior studies argue that business groups can create value due to the benefits of group membership (Guillén, 2000; Khanna, & Palepu, 2000; Khanna & Rivkin, 2001). Furthermore, a number of studies find evidence that business networks can significantly affect corporate innovation performance (e.g., Perks & Jeffery, 2006).

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However, business groups may have a negative effect on performance if controlling shareholders expropriate minority shareholders by exploiting network ties to transfer resources out of firms for their private interests (Johnson, La Porta, Lopez-de-Silanes, & Shleifer, 2000; Bae, Kang, & Kim, 2002). The principal–principal agency conflict between controlling and minority shareholders can be especially serious in developing countries with weak shareholder protection (Young, Peng, Ahlstrom, Bruton, & Jiang, 2008).

Because business groups can have both positive and negative influences, the net effects of group membership on performance remain inconclusive in the literature. This raises at least two important questions for business group research: How do group peer firms differ in the impacts received from membership of the business group, and from what do these differences derive?

This study examines two competing views of business groups, the value-added and principal–principal agency conflict ones, based on the stock market reactions of non-announcing firms to new product announcements made by their group members. Good news regarding new products released by member firms indicates a potential increase in competitive advantage and organizational success, thus supporting the value-added view (Porter, 1985), while bad news regarding new products may lead to substitution when member firms maintain existing lines of business that enhance internal competition. The value-added view implies that a member firm's performance depends not only on its own resources and financial conditions, but also on those of other members. We thus explore the evidence for this within member firms by considering the market's *ex ante* valuation of new product announcements (Bae, Cheon, & Kang, 2008; Cheung, Haw, Tan, & Wang, 2014).

This study utilizes new product announcements because they are strongly associated with increases in firm value. New product announcements are common in Taiwan because it has an export-oriented economy, and thus its companies need to engage in more innovative activities in order to ensure the competitiveness of their products, and this provides us with enough sample observations to ensure the statistical power of our tests. New product innovations are accompanied by the risks associated with the development process, and the uncertainty as to whether they will be able to generate cash flow in the future. When information is released about new products to the markets, investors may update their forecasts of the impacts of these products on a firm's expected future earnings, as well as the associated risks, and these are reflected in the stock price. Prior studies documented that efficient stock markets were capable of responding to value-enhancing innovations by considering specific characteristics of innovation (Cho & Pucik, 2005; Chang, Wu, & Wong, 2010). Moreover, resource dependence theory suggests that firms are influenced by resources outside of their own boundaries through the networking ties they have with other companies. Therefore, when a member firm announces the introduction of a new product, the impacts are expected to spillover to its peers in the business group, and the effects can be dissimilar depending on the types of network ties that exist among the companies. As a result, share prices will adjust and reflect investors' expectations about the future profits and risks of the firms in the group.

The resource-based view of the firm suggests that a firm's comparative advantage is based on the internal resources it has under its complete control (Penrose, 1959), and thus this view focuses on internal rents. Firms have traditionally been seen as possessing a set of resources for survival and growth (Barnett, Greve, & Park, 1994). Beyond internal resources, the resource dependence theory asserts that companies build relationships with others in order to acquire the external resources that they need and enable them to develop key competences through co-operation (Pfeffer & Salancik, 1978). Firms benefit from forming valuable ties with complementary partners to reduce environmental uncertainty and interdependence (Baum, Calabrese, & Silverman, 2000; Katila, Rosenberger, & Eisenhardt, 2008). Moreover, firms can leverage their direct and indirect ties to form a web of interactions as a social network (Gulati, 1995; Hsu, 2007) that provides a broader range of information and resources to create value. Business groups are thus viewed as networks, and a member firm's valuation may be

affected by different types of network ties that have different effects, both individually and in combination with each other. Following Mahmood, Zhu, and Zajac (2011), the current study sees member firms as connected through three types of interfirm ties, namely those based on equity, directors, and buyer–supplier relationships. We propose that member firms utilize these different types of network ties to acquire resources and information to enhance their value, and examine the role that these ties play in value-adding activities. These three ties have been analyzed separately in the prior literature, but never together. Our aim is thus to shed additional light on how member firms in emerging economies create value.

In developing this line of argument, we offer a contingency model that specifies whether and how different types of intragroup ties can influence the value-added by group membership. Prior research shows that business groups are often controlled by a dominant family (e.g., Luo & Chung, 2005), and this can lead to a conflict of interest between family owners and minority shareholders (Claessens, Djankov, Fan, & Lang, 2002; Young, Peng, Ahlstrom, & Bruton, 2002). The focus of this latter stream of work has primarily been on how the effects of different types of ties on value may be influenced by family owners. However, the findings in this area are inconclusive. Gilson (2007) found that controlling families can compensate for under-developed institutions in emerging economies, and thus increase the returns of member firms. In contrast, Claessens et al. (2002) reported that family owners may extract firm resources for their own interests, leading to negative effects on firm performance.

This work applies the event-study methodology to measure how a new product announcement of a business group's member firm influences investor perceptions of the other member firms by determining the stock market reactions to such announcements. Using this method, researchers can show that there is an 'abnormal' stock return to assess the impact of an unanticipated event on the value of a firm (McWilliams & Siegel, 1997). Changes in stock prices, which are an indirect measure of new information, represent investors' revisions of their expectations with regard to the discounted value of a firm's future cash flows. This concept is well accepted and has been used extensively in the finance, accounting, marketing, and management literature (Chaney, Devinney, & Winer, 1991; McWilliams & Siegel, 1997; Chang, Wu, & Wong, 2010). We also investigate the importance of the various types of interfirm ties in business groups and control structures when evaluating the effects of new product announcements across member firms.

The hypotheses are tested against a sample of new products announcements made by Taiwanese firms. This sample has several characteristics that make it particularly suitable for this work. In Taiwan about 78% of listed companies are controlled by family groups (Chin, Chen, Kleinman, & Lee, 2009), and these are characterized by interlocked directorates and cross-shareholding among member firms, within the context of a traditional Chinese culture. The founders of business groups often prefer to select family members as CEOs or directors of member firms. Over time, such owners tend to transfer or eventually divide the business to their children and other relatives (Wilkinson, 1996). In addition, the Taiwanese government uses tax incentives and market deregulation to encourage people to invest in new firms, and thus local business groups often have many member firms, despite their small size (Chung, 2001). Moreover, a firm's ownership, control structures, and transaction relationships are publicly disclosed in annual reports, which enable the researcher to identify listed group member firms and their group membership. Finally, Taiwan's stock market is relatively efficient in responding to the announcements of listed companies (Chang, Chen, & Liu, 2004). These characteristics thus suggest that Taiwan provides an appropriate context for testing our research questions.

The results of our study show that the stock price reactions of non-announcing member firms are positively associated with those of their announcing group peers around new product announcements, suggesting the existence of a value-added effect. More importantly, these abnormal returns are greater

when member firms are connected via equity ties. The evidence further shows that the positive association between the market reactions of non-announcing and announcing member firms is less pronounced with regard to the new product announcements made by member firms within family business groups. This implies that family ownership does more harm than good with regard to investor reactions to such announcements, suggesting that interfirm networks provide controlling families with more opportunities to undertake expropriation activities from minority shareholders, consistent with Cheung et al. (2014).

The rest of this paper is organized as follows. Section II provides the theoretical background and development of the hypotheses. Section III describes the sample and empirical methodology. The results are presented in Section IV, and the conclusions of this work are given in Section V.

BACKGROUND AND HYPOTHESES

Business groups as networks

Business groups are clusters of legally independent firms that form networks based on both formal and informal ties in order to coordinate their activities and combine their resources to create more value (Granovetter, 1995). Such networks are characterized by relational rents (Dyer & Singh, 1998; Gulati, Nohria, & Zaheer, 2000). Prior research suggests that membership of a business group may lead to better financial performance for the constituent firms (Khanna & Palepu, 2000; Khanna & Rivkin, 2001). Moreover, due to their interfirm ties, member firms can reduce environmental uncertainties and achieve better information flows, thus increasing their learning capabilities. Such cross-firm learning enables members to access valuable resources and exchange complementary knowledge and information about customer needs (Srinivasan, Lovejoy, & Beach, 1997). This contributes to the creation and accumulation of knowledge capital, and thus helps members learn of and exploit additional market opportunities (Yli-Renko, Autio, & Sapienza, 2001). The efficacy of network ties leads to greater trust and the accumulation of internal capabilities among member firms, which can strengthen the long-term interests of these business groups as a whole (Dyer & Singh, 1998).

In addition, firms within business groups generally operate under common administrative and financial control procedures (Luo & Chung, 2005), which enable coordinated actions and the ability to obtain timely and sufficient financial support for innovative projects, promoting the capability to develop new products and create valuable synergies (Yiu, Bruton, & Lu, 2005). On the other side, business groups with highly concentrated ownership may face principal–principal agency conflicts, as the investment activities of member firms could be driven more by the controlling shareholders' attempts to appropriate wealth through tunneling than by their own merits. Such an ownership structure gives the controlling owners strong incentives to diversify their wealth and engage in more unrelated expansion, which can then lead to bureaucratic and coordination costs (Hoskisson, Johnson, Tihanyi, & White, 2005).

A business group's internal resources and capabilities are a source of competitive advantage for member firms. However, the resource dependence theory suggests that the member firms can thus combine and apply their internal resources by network ties to create new products more quickly and cost-effectively than their independent competitors are able to (Guillén, 2000). Moreover, business groups that undertake product innovation projects can develop a unique portfolio of knowledge and capabilities by which to create valuable synergies (Yiu, Bruton, & Lu, 2005). Business groups that engage in more product innovation projects would also promote the capabilities of the other member firms via their networks. We thus present the following hypothesis:

> Hypothesis 1: The stock price reactions to new product announcements made by member firms are positively associated with the stock price reactions of their group peers.

Direct effect of equity ties

Physical resources are important in the successful development of new products, because such processes are related to both financial risk and contractual completeness (Fee, Hadlock, & Thomas, 2006). Therefore, member firms often hold equity ties through cross holding equity stakes in other members, which represents a form of partial integration. Equity ties play a role in relationship governance by providing greater financial flexibility and encouraging information sharing, which may improve the overall surplus of the group.

Prior research suggests that external capital markets are often inefficient in emerging economies, and thus group member firms rely heavily on intragroup capital markets to develop new products and services (Mahmood & Mitchell, 2004). To the extent that cross-ownership helps firms insulate themselves from the pressure of short-term profit volatility, and even bankruptcy, managers may be more willing to invest in the development of core competitiveness to enhance long-term growth. Moreover, equity ties are often reciprocal, and thus foster cooperation and mutual monitoring and control, strengthening the mutual interests of corporate shareholders (Gilson & Roe, 1993). The reciprocity of equity ties can lead to more durable relationships, and this can help firms to make continuous investments in updating and refreshing organizational skills, routines, and systems, thus aiding operating performance (Mahmood, Zhu, & Zajac, 2011).

Equity ties can increase relationship efficiency (Aghion & Tirole, 1994), and so overcome contract-related problems in emerging economies. Equity ownership can encourage the efficient actions of one party, which can then indirectly benefit the other party in ways that are outside the scope of any contractual agreement. In such cases the actions of one party can have a significant, positive spillover effect on their partner(s). Resource dependence theory suggests that equity ties help both trading parties to establish close product market relationships by internalizing the supply chain for new products, thus enhancing operating performance (Allen & Phillips, 2000). This leads to our second hypothesis:

> Hypothesis 2: Upon new product announcements made by member firms, the strength of the equity ties between member firms with their group peers is positively associated with the stock price reactions of their group peers.

Direct effect of interlocking directors

Director interlocking occurs when an executive or director at one firm joins the board of another, leading to high levels of trust among network partners that can encourage cooperation and the exchange of high quality information (Gulati, 1999). Prior research suggests that director interlocking functions as important conduits for information and resources (Podolny, 2001). Through these, the executives of member firms can learn from each other about how to more effectively and efficiently exploit technological knowledge that cannot be easily observed by outsiders. This would help them overcome the uncertainties that commonly arise during new product development (Lorsch & Maclver, 1989). In support of this, the resource dependence perspective suggests that interlocking directors bring benefits to firms rather than an increased level of conflict (Palmer, Friedland, & Singh, 1986).

The interlocking director ties that exist among business group members tend to affect their strategic management of these firms (Heracleous, 1999), primarily with regard to inter-firm control. This is because boards should not only monitor and discipline top management, but also be involved in strategic decision-making (Baysinger & Hoskisson, 1990). Decisions about product innovations represent a key corporate strategy commitment that affects the vertical and horizontal relatedness of a business group. If directors take their strategic responsibilities seriously (Dulewicz, MacMillan, & Herbert, 1995), then they should attempt to engage in practices that restrict internal competition.

The strategic role of interlocking directors can thus effectively deliver the highest possible strategic benefits to the focal firms and their partners.

Innovative capabilities are a combination of a complementary set of resources and information, which can enable member firms to achieve their innovative goals (Luo & Chung, 2005). Studies also show that the emergence of collaborative relations depends to a great extent on the level of trust between the parties within more durable networks (Gulati & Singh, 1998). Member firms connected by director ties thus have a greater likelihood of exchanging strategic information and new ideas, enhancing their competitive advantages. Based on the above discussion, we present the following hypothesis:

> Hypothesis 3: Upon new product announcements made by member firms, the strength of the interlocking director ties between member firms with their group peers is positively associated with the stock price reactions of their group peers.

Direct effect of buyer–supplier ties

Buyer–supplier ties can serve as a vehicle for technological knowledge transfers among the member firms within business groups. Good supply chain relationships can generate sustainable collaborative advantages (Kanter, 1994), by which firms may form strategic partnerships to access or acquire necessary and valuable resources, thus enhancing their innovative capabilities. Moreover, buyer–supplier ties may foster inter-organizational learning by enabling the sharing of complex, tacit, and specific technological knowledge (Grant, 1996), as well as product information about future industry trends (von Hippel, 1998). A long-term relationship in this context builds trust that enables supply chain partners to become more involved in knowledge development, and increase specific investments that promote new product development to attain their common goals, including the maximization of group profitability (Chang & Hong, 2000). Resource dependence theory proposes that buyer–supplier ties thus help create a complementary relationship, leading to improved competitive advantages (Krause, Handfield, & Tyler, 2007).

However, a long-term relationship may also lead to opportunistic behavior between two partners (Parkhe, 1993), because cooperative joint actions can help each party to absorb considerable amounts of specific knowledge from the other in order to develop substitutions, and this may ultimately decrease the level of cooperation between them. We believe that imitation and substitution can occur when one partner expands its operations to a wider scale and scope, which may overlap in the business that occurs between the transaction partners, thus producing a generic relationship. Such a generic relationship would cause the members to be less motivated to make relationship-specific investments (Dyer & Singh, 1998), and lead to less value creation between transaction partners, in order to avoid to harming one partner's products that may be competing with those of another.

Both complementarity and substitution suggest that there are positive as well as negative effects of buyer–supplier ties on innovation, and the net effect is thus ambiguous. Based on the above arguments, we make the following hypothesis.

> Hypothesis 4: Upon new product announcements made by member firms, the strength of the buyer–supplier ties between member firms with their group peers is positively associated with the stock price reactions of their group peers.

Moderating effect of family control

While our study focuses on how the different types of ties formed by a focal firm can have different effects on the performance of member firms, we now further investigate how the effects of different types of ties on performance may be influenced by the controlling ownership of business groups.

Empirical studies show that the level of ownership concentration in diversified business groups is generally high in East Asia, with the controlling shareholders often being members of the same family (e.g., Luo & Chung, 2005). There are differing views on the value of family control. Some studies emphasize that a family-controlled business group can more easily allow member firms to adopt growth strategies, based on the desire to provide family members with secure employment, and such works highlight the high levels of loyalty among family members who work for the group (Lubatkin, Schulze, Ling, & Dino, 2005). In contrast, other studies pay more attention to the fact that family control can create a principal–principal agency relationship between the family owners and minority shareholders (Young et al., 2002). The empirical findings are also divergent. For instance, Anderson and Reeb (2003) found that family owners are more willing to encourage member firms to undertake long-term innovative investments for their survival, rather than evaluating them based on short-term returns. However, Joh (2003) found that family ownership can be harmful to firm performance due to the expropriation of resources out of the firm.

To the extent that both types of ties and family control affect performance, we propose that an optimal intragroup network depends on the match between the types of ties and family control. We expect that some types of ties may be more harmful to the performance of member firms when they are under family control. Specifically, we consider how the effects of a focal firm's equity and director ties may vary depending on the concentration of family ownership. As noted earlier, director ties primarily exert inter-firm control among members. When a family owner holds a significant stake, enough to be the largest shareholder of a business group, they are likely to appoint family members and close friends to the board of directors (La Porta, Lopez-De-Silanes, & Shleifer, 1999; Claessens, Djankov, & Lang, 2000; Peng & Jiang, 2010), and the trusted internal networks that arise from this can lead to more efficient resource allocation and more informed decision making, resulting in enhanced firm value (Khanna & Rivkin, 2001; Miller, Lee, Chang, & Breton-Miller, 2009). Moreover, family business groups for which the founder or family members serve as the chairman of the board or CEO create powerful reputation effects, in that such individuals run the business and are able to overcome possible transaction risk to maximize profitability (Anderson & Reeb, 2003). However, since controlling families with significant shareholdings may have a greater influence on board composition, and the directors who serve on such boards are more likely to represent of the interests of family owners rather than others, this may significantly constrain the ability to identify and implement the most valuable strategies (Hendry, 2005), and so work against value maximization. Therefore, firms under family control may suffer if there is a closer connection between ownership and management, and firm resources may be more likely to be expropriated through director ties.

On the other hand, prior research shows that family control can be enhanced via the pyramidal structures that often exist within business groups, which can create financing advantages by leveraging internal capital markets to pay for expansionary activities (Claessens, Djankov, & Lang, 2000, Claessens et al. 2002; Almeida & Wolfenzon, 2006). This ownership arrangement also allows family shareholders to use only a small cash flow stake to achieve control of member firms. In this way, family members can easily transfer resources between firms (Chang, 2003), benefiting themselves at the expense of minority shareholders (La Porta, Lopez-De-Silanes, & Shleifer, 1999; Yeh, 2005). The value of equity ties may thus decrease when family shareholders control a business group due to the greater likelihood of such opportunistic behavior. Based on this, the final hypotheses are as follows:

Hypothesis 5a: Upon new product announcements made by member firms, family control negatively moderates the relationship between interlocking director ties and the stock price reactions of their group peers.

Hypothesis 5b: Upon new product announcements made by member firms, family control negatively moderates the relationship between equity ties and the stock price reactions of their group peers.

SAMPLE AND EMPIRICAL METHODOLGY

Empirical context: corporate governance in Taiwan

The legal framework of corporate governance in Taiwan is based on both Company Law and Securities and Exchange Law. Company Law sets out rules to protect the providers of capital, while Securities and Exchange Law require listed companies to ensure timely disclosure and transparency of information, including in company financial reports, announcements of market operations and insider trading information.

Similar to in Japan, Taiwanese company boards are composed of a board of directors and supervisors. Directors have a responsibility for maintaining the value of a firm and ensuring good practices in terms of audit, transparency and accountability, while supervisors take responsibility for independent monitoring. The boards of listed firms should include at least five directors and three supervisors. To further enhance corporate governance, companies listed after January 2002, or those with paid-in capital of more than NT$10 billion after January 2007, are required to appoint two independent directors and one independent supervisor on their boards, and at least one of the elected independent directors and supervisors should have expertise in accounting or finance. In addition, Company Law allows institutional shareholders to elect representatives as board members. This enables the controlling families to increase the number of board seats they control by establishing nominal investment companies, or by holding other firms under their control that also hold shares in the firm. As a result, there is a close relationship between the board of directors and supervisors in the majority of Taiwanese listed firms.

Sample design

We collect an initial sample of new product announcements by firms listed on the board of the Taiwan Stock Exchange from the Taiwan Securities and Futures Institute Database over the period of January 1999 through December 2010. The Taiwan Securities and Futures Institute Database provides news-service abstracts from Taiwan's major newspapers. We select the keywords 'new products', 'new services' and 'new processes' to search for activities related to corporate innovation, as in Zahra, Neubaum, and Huse (2000) and Hayton (2005). We also obtain information on the related firms, products and other factors, such as processes, from these sources.

When repeated announcements are found in different publications, the announcement with the earliest date is kept in the sample. To avoid any confounding events that could distort the measurement of the wealth effects, observations are deleted that have other announcements 30 days before or after the initial date. We also exclude the announcements of firms that are not part of a business group, or where none of the other member firms are listed on the board of the Taiwan Stock Exchange. Finally, we exclude the announcing firms or members of their business groups if their stock price information or financial data are not available from the Taiwan Economic Journal (TEJ) databank. The business group data, including intragroup equity cross-holdings, the names of the directors and buyer–supplier relationships, are obtained from the Business Groups in Taiwan directory. Data on family share ownership are obtained from the TEJ databank, and are used to code family controlled business groups.

Sample characteristics

Our final sample is composed of 68 announcing firms and 129 member firms involved in 305 new product announcements. Table 1 provides the sample distribution by year and industry. As shown in Panel A in Table 1, most of the new product announcements are made in the latter years of our sample period.

TABLE 1. DISTRIBUTION OF INNOVATIONS BY YEAR AND INDUSTRY

	Number of announcements	*Percent of sample*	*Number of firms*	*Number of member firms*
Panel A. Sample distribution by year				
1999	5	1.64		
2000	8	2.62		
2001	8	2.62		
2002	7	2.30		
2003	24	7.87		
2004	23	7.54		
2005	24	7.87		
2006	21	6.89		
2007	31	10.16		
2008	49	16.07		
2009	67	21.97		
2010	38	12.45		
Total	305	100		
Panel B. Sample by industry				
Cement and ceramics	1	0.33	1	1
Food	14	4.59	1	3
Plastics and chemicals	2	0.66	1	6
Textiles	8	2.62	4	6
Electric and machinery	30	9.84	6	7
Electrical appliances and cables	5	1.64	1	3
Paper and pulp	5	1.64	2	2
Steel and iron	6	1.97	1	3
Automobiles	2	0.66	2	3
Chemicals	5	1.64	2	1
Department stores	10	3.28	2	2
Biological products	1	0.33	2	4
Semiconductors	53	17.38	11	25
Computers and office equipment	65	21.31	8	11
Optoelectronics	33	10.80	10	13
Mobile communications	42	13.77	7	8
Electronic components	23	7.54	7	13
Tourism	0	0	0	1
Others	0	0	0	17
Total	305	100	68	129

The largest number of announcements in 1 year is 67 in 2009, accounting for 21.97% of the sample. As shown in Panel B of Table 1, the announcements come mainly from four industries: computers and office equipment, semiconductors, mobile communications and optoelectronics, which together account for 63.26% of the total sample. Firms in the computer and office equipment industry have the highest frequency of innovation, with each firm on average making about eight announcements in the 12-year sample period. This is not surprising, as the computer industry makes the largest contribution to Taiwan's economy.

The 68 announcing firms in our sample are members of 30 business groups. The ownership structure distribution of the groups in the sample is split 60–40 between pyramidal and cross-ownership structures, which is similar to the split reported in the Business Groups in Taiwan directory.

Empirical methodology

This study employs the standard event-study method to examine the intragroup stock price responses related to the focal firms' new product announcements. The daily abnormal stock returns are measured as the difference between the actual return and an expected return generated by the market model (Brown & Warner, 1985), which suggests that parameters of estimation can be obtained by regressing the returns to a security on the returns of a market portfolio which is adjusted for the security's risk factor. That is,

$$E(R_{it} \mid I_{t-1},\ R_{mt}) = \alpha_i + \beta_i R_{mt}$$

where $E(R_{it} \mid I_{t-1},\ R_{mt})$ is the expected return on firm i at time t, given the available information (I_{t-1}) and the return on the market portfolio at time t (R_{mt}), α_i is the intercept term, and β_i measures the systematic risk of stock i or sensitivity of the firm's returns relative to the market portfolio. We use the value-weighted Taiwan Stock Exchange All-Share Index as a proxy for market returns, and estimate the firm-specific parameters of the market model using the data over a period from 200 to 40 days before the announcement date. Daily stock return data are obtained from the TEJ databank. The cumulative abnormal returns (CARs) for each firm are calculated by adding the abnormal returns over the event window.

Independent variables

CAR_{focal} uses the 3-day (–1, 1) announcement-period abnormal returns for the announcing firm around its own new product announcement date.

Equity ties are based on the average shareholding ratio between the percentage of the announcing firm's shares owned by member $firm_i$, and the percentage of member $firm_i$'s shares owned by the announcing firm.

The director ties dummy variable equals one if the announcing firm and other member firm share at least one director, and zero otherwise.

The buyer–supplier ties dummy variable equals one when the announcing firm has a long-term buyer–supplier relationship with other member firms, and zero otherwise. We collect data on intragroup buyer–supplier relationships by reading the figures for each group in the Business Groups in Taiwan directory.

We also collect information on the level of family control of each group from the TEJ databank. Following Claessens, Djankov, and Lang (2000) and Filatotchev, Lien, and Piesse (2005), the family control dummy equals one when a family member serves as both the chairman of the board and CEO, and zero otherwise.

Control variables

The control variables are related to: (1) member firm characteristics, that is, investment opportunities, firm size and return on assets (ROA); and (2) the new product announcement characteristics of the announcing firm, that is, announcement frequency and technological opportunity. These variables are explained in more detail below. Data on the firm and new product announcement characteristics are obtained from the TEJ databank, and data on the announcement frequency are obtained from the Taiwan Securities and Futures Institute database.

We estimate the investment opportunities of the member firms by a simple measure of Tobin's Q, where Tobin's Q_{member} denotes the ratio of the market-to-book value of the member firm's assets, and the market value of assets equals the book value of assets minus the book value of common equity, plus the market value of common equity. Tobin's Q is widely used to distinguish firms with good investment opportunities from those with poor ones, capturing their relative undervaluation. Firm size

is measured by the variable Firm $size_{member}$, which equals the natural logarithm of the member firm's book value of total assets for the fiscal year preceding the announcement. Prior research has suggested that firm size can affect a company's cumulative abnormal returns. In addition, small firms are more resource-constrained and vulnerable to market competition, making external resources more valuable to these companies (Chaney, Devinney, & Winer, 1991). Small firms should therefore be more readily affected by the actions of other member firms. Finally, prior studies have reported a negative association between firm size and market reactions to announcements (e.g., Kelm, Narayanan, & Pinches, 1995; Chen, Ho, Ik, & Lee, 2002). In terms of ROA, the variable ROA_{member} denotes the annual member firm return on assets before new product announcements. This is used because successful past performance enhances the ability of firms to develop new competitive capabilities to respond to changes in market conditions (Bolton & Scharfstein, 1990).

As for the new product announcement characteristics, announcement frequency is assessed by the number of new product announcements made by the announcer within the 12 months preceding the announcement date (Chang & Chen, 2002). Chaney, Devinney, and Winer (1991) find that the stock market responds negatively to a higher frequency of new product announcements. On the other hand, when firms have a history of making frequent new product announcements, the idea of R&D intensity will be more deeply impressed on the minds of investors, which should have a positive impact on market reactions. Technological opportunity at the industry level is a dummy variable, which equals one if the announcing firm is in a high-technology industry and zero otherwise, as based on the classification in the Monthly Bulletin Statistics published by the Taiwanese government. Technological opportunity is defined as a firm's efforts with regard to undertaking innovative projects that develop new products to support future growth (Johnson, Hoskisson, & Hitt, 1993). Chen et al. (2002) find that the value of a new product is higher for firms with greater technological opportunity. Finally, we include industry dummies, defined at the level of two-digit SIC codes, and year dummies to control for possible industry and time effects.

The sample statistics of the explanatory variables in this study are provided in Table 2, including the means, standard deviations, and correlation coefficients. Our sample shows significant heterogeneity in abnormal returns across firms, with the mean abnormal return being 0.32 and the median being 0.02. It also shows that the mean ties across member firms are highest for director ties (0.26), followed by equity ties (0.14), and buyer–supplier ties (0.09). The mean value of family control is 60.29%, which indicates that more than half of the business groups in the sample are controlled by family owners.

ESTIMATION AND RESULTS

Empirical results

Following Bae, Kang, and Kim (2002), we assess the two competing views of the value-added perspective and principal–principal agency conflict using the relation between stock market reactions to new product announcements for both the announcing firms and their group peers. For each pair of announcing and non-announcing member firms within the same business group we estimate daily abnormal returns with the event window around the member firm's new product announcement date, one for the announcing firm and the other for their group peers. We find that new product announcers experience significantly positive abnormal returns on the announcement day (0.24%, two-tailed, $p < .07$) and one day before (0.42%, two-tailed, $p < .001$). The average cumulative abnormal returns from day −1 to 1 are 0.94%, statistically significant at the 1% level using a two-tailed test. For the 3-day event window, more than 52.10% of the sample announcements have positive cumulative abnormal returns. Our evidence is consistent with prior studies indicating that new product announcements have a positive impact on the announcing firm's wealth (Chaney, Devinney, & Winer, 1991; Cho & Pucik, 2005).

Table 2. Means, standard deviations and correlation

	Mean	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1. CAR_{member}	0.32	4.61	1.00										
2. CAR_{focal}	0.94	5.08	0.13	1.00									
3. Director ties	0.26	0.44	0.05***	0.01***	1.00								
4. Equity ties	0.14	0.16	0.02***	0.05***	−0.04***	1.00							
5. Buyer–supplier ties	0.09	0.13	−0.04***	−0.05***	0.09 +	0.01***	1.00						
6. Family control	0.60	0.49	−0.04***	−0.03***	0.18	−0.09 +	0.11	1.00					
7. Tobin's Q_{member}	1.48	1.12	−0.06***	0.05***	−0.06	0.06 +	−0.07*	−0.27	1.00				
8. Firm $size_{member}$	16.66	1.45	0.01**	0.02***	0.08***	−0.19**	−0.02***	0.11	−0.18	1.00			
9. ROA_{member}	6.30	11.43	0.00***	0.06***	−0.10*	−0.07	−0.05***	−0.34	0.45	−0.05***	1.00		
10. Announcement frequency	1.58	3.14	0.09^{***}	0.01**	−0.04 +	0.17*	−0.06**	−0.28	−0.03***	−0.06***	0.04***	1.00	
11. Technological opportunity	0.78	0.41	−0.03 +	0.07***	0.06***	0.62	−0.02***	−0.22	0.08*	−0.15	−0.01***	0.15	1.00

Note. ***$p < .001$; **$p < .01$; *$p < .05$; $^{+}p < .10$

TABLE 3. CROSS-SECTIONAL REGRESSION ANALYSES OF FACTORS AFFECTING ANNOUNCEMENT-PERIOD ABNORMAL RETURNS OF MEMBER FIRMS

	Model				
Variable	*1*	*2*	*3*	*4*	*5*
Intercept	0.19 (.19)	0.22 (.90)	1.13 (.55)	0.66 (.71)	0.90 (.63)
CAR_{focal}	0.12 (.00)***	0.12 (.00)***	0.12 (.00)***	0.12 (.00)***	0.12 (.00)***
Director ties		0.69 (.03)*	0.02 (.97)	1.10 (.00)***	0.68 (.33)
Equity ties		0.69 (.08)+	0.53 (.23)	2.26 (.00)***	2.08 (.00)***
Buyer–supplier ties		−1.35 (.21)	−1.30 (.23)	−1.34 (.22)	−1.37 (.20)
Family control			−0.83 (.02)*	−1.06 (.07)+	−0.87 (.07)+
Director ties × family control			−1.05 (.03)*		−0.57 (.08)+
Equity ties × family control				−2.47 (.00)***	−2.38 (.00)***
Tobin's Q_{member}		−0.28 (.05)+	−0.32 (.02)*	−0.39 (.00)***	−0.39 (.00)***
ROA_{member}		0.02 (.87)	0.01 (.93)	−0.04 (.68)	−0.05 (.64)
Firm $size_{member}$		0.01 (.49)	0.01 (.93)	−0.01 (.98)	−0.01 (.93)
Announcement frequency		0.13 (.00)***	0.10 (.04)*	0.07 (.13)	0.07 (.12)
Technological opportunity		−1.03 (.02)*	−1.03 (.02)*	−1.02 (.02)*	−0.94 (.04)*
Industry dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.02	0.03	0.03	0.04	0.04
F-Statistic	17.01**	4.46***	4.08***	5.04***	4.66***
N	1006	1006	1006	1006	1006

Note. ***$p < .001$; **$p < .01$; *$p < .05$; $^{+}p < .10$ (p-values in parentheses)

We now turn to the heart of our analysis: the effects of the focal firms' new product announcements on member firms. The evidence provided by the stock market reactions indicates that the member firms experience significant mean abnormal returns only on the announcement day (0.14%, two-tailed, $p < .07$) and 1 day after (0.19%, two-tailed, $p < .01$). For the (−1, 1) 3-day announcement period, the shareholders of member firms experience positive average cumulative abnormal returns of 0.32%, statistically significant at the 1% level using a two-tailed test, and 50.6% of the sample announcement effects are positive. We therefore use the 3-day (−1, 1) announcement-period abnormal returns of member firms as the dependent variable in the cross-sectional analysis. The results further suggest that network effects create strong and favorable changes in the performance of other member firms within the same business group, based on the new product announcements of their group peers.

Cross-sectional regression analysis

A multivariate analysis incorporates the interactions among the control variables and captures the intragroup effect of the various factors that influence the stock price reactions of member firms, as related to their group peers' new product announcements. To further examine the effects of these factors, we carry out a multivariate cross-sectional regression of the announcement-period abnormal returns for the member firms.

All regressions are estimated using weighted least squares, with the weights equal to the reciprocal of the standard deviation of the market-model residual. This procedure is used to obtain efficient estimates, since the variances of the market-model residuals vary across announcers (Lang, Stulz, & Walkling, 1991). All regression specifications in Table 3 include industry and year dummies, although their coefficients are not reported for the sake of brevity.

Table 3 presents the results of the cross-sectional regression analysis of the announcement-period abnormal returns for the sample of member firms. Model 1 shows that the market reactions for member firms are significantly and positively associated with the stock market responses to the announcing firms' announcements of new product introductions, as the value-added hypothesis predicts. This also lends strong support to the hypothesis that a business group can be regarded as an internal network in which all member firms share innovative outcomes, consistent with the results reported in Mahmood, Zhu, and Zajac (2011). Hypothesis 1 is thus supported.

Model 2 serves as a baseline model that includes all the potential explanatory variables. It shows that the coefficient on equity ties is positive and significant at the 8% level. The results indicate that the stock price reactions of non-announcing firms to the new product announcements of their group peers are positive when the former have equity ties with the announcing firm, consistent with Hypothesis 2. The coefficient on director ties is also positive and significant at the 3% level, supporting Hypothesis 3. This suggests that interlocking directors represent complementary relationships which can help deliver strategic benefits to the firms involved. Finally, the coefficient of buyer–supplier ties is negative but insignificant. This may be because buyer–supplier ties can lead to the development of imitation and substitution among member firms, and thus there are unfavorable market responses to new product announcements.

Model 2 shows that several control variables have significant explanatory power with regard to the wealth effect of member firms when new product announcements are made by the focal firms. The announcement frequency has a significantly positive effect on the market reactions toward member firms, while Tobin's Q and technological opportunity have significantly negative effects. Our findings on technological opportunity are consistent with the argument by Kelm, Narayanan, and Pinches (1995) and Cheung et al. (2014). Announcement frequency is associated with positive abnormal returns for member firms. Similar to Kelm, Narayanan, and Pinches (1995), frequent announcers are able to capitalize on follow-up investment projects and build a more innovative image.

In Model 3, we add an interaction term of family control and director ties. Consistent with our expectations, we find the director ties are less valuable when business groups are controlled by a family. When we add an interaction term of family control and equity ties in Model 4, the coefficient is negative and statistically significant, indicating that equity ties are less beneficial within family business groups. The results in Models 3 and 4 thus support Hypotheses 5a and 5b.

Model 5 includes all the variables. The results show that equity ties are strongly related to stock market reactions, while director ties have little effect on them. This can be attributed to the fact that any distribution or change in shareholder wealth is strongly influenced by equity ties, since equity ownership is directly linked with cash flow rights. Director ties, however, do not have such a direct impact as equity ties, and thus do not have a significant impact on the changes in share price of the group peer firms.

The results further suggest that family control has a significant negative effect. We also find the interaction effects of family control and equity ties, and of family control and director ties, are both negative. Our results thus corroborate the finding of Dyck and Zingales (2004) and Villalonga and Amit (2006) that the existence of a controlling family may destroy firm value.

We conduct several additional tests to assess the robustness of the results. We first test the regression results by substituting the cumulative abnormal returns in (–1, 1) for two other event windows, (–1, 2) and (–2, 2), and have similar results. Next, we examine if the results could be subject to the problem of multicollinearity, since some of the independent variables may be correlated. Aiken and West (1991) suggest centering variables to avoid this, and we do this by subtracting each variable from its mean value in the sample, and then undertake an ordinary least squares regression analysis using the centered variables. However, the results remain the same, and thus the conclusions of our analyses are not seriously biased by the problem of multicollinearity. Third, we test the regression results by

substituting the CAR in the All-Share index for an industry index, and the results do not change. Finally, the sample includes announcements of 'new products,' 'new services' and 'new processes.' To check if different types of product announcements change the conclusions, we repeat the regression analyses by adding dummy variables to control for the potential influences. Specifically, we add two dummy variables: the new product dummy is equal to one for new product introductions, and zero otherwise; the new process dummy is equal to one for new process introductions, and zero otherwise. The findings indicate that our conclusions remain the same after controlling the two dummies (results are not reported here, for brevity).

CONCLUSION

This paper examines two competing views of business groups in emerging markets, the value-added and principal–principal agency conflict perspectives. Specifically, we examine the effects of the intragroup ties of member firms on value creation, as measured by the stock price reactions of non-announcing member firms to the new product announcements made by other group members. We find a positive association between the stock price reactions of non-announcing and announcing member firms, and this supports the value-added hypothesis.

Moreover, we find that equity ties have significant, positive impacts on the market reactions of non-announcing member firms to the new product announcements released by their group peers. Our findings suggest that equity ties play an effective role in relationship governance by providing greater financial flexibility. In contrast, family control has negative moderating effects, implying the principal–principal agency conflicts between family owners and minority shareholders may facilitate value expropriation.

Bae, Kang, and Kim (2002) show that tunneling occurs within many business groups via acquisitions. Our study focuses on the role of intragroup ties in preventing tunneling activities, and thus contributes to the literature on the value-added and relational rents that exist within business groups. Such activities provide member firms with a long-term advantage through pooling and providing effective access to complementary resources and capabilities. This study also provides empirical evidence for the theoretical argument that family shareholders pursue higher levels of private benefits, giving rise to principal–principal agency conflicts. Emerging economies should thus adopt more effective public policies to improve corporate governance mechanisms in order to protect outside investors. One practical implication from this paper for top managers of business groups is that network ties need to be constantly adjusted and developed according to changes in the environment. Moreover, efforts to enhance business group effectiveness by the use of appropriate corporate governance strategies are increasingly important.

Taiwanese business groups are formed within a traditional Chinese cultural context, and their controlling families are actively involved in making strategic and resource allocation decisions among member firms. On this point, our findings may thus have applications in other countries and areas with similar backgrounds, such as Korea, Hong Kong, Singapore, and China (Whitley, 1991). Besides, this study highlights the fact that network ties facilitate the transfer of resources within a business organization, and thus the findings of this work may help to better understand ownership and control issues in such contexts (Carney, Gedajlovic, Heugens, van Essen, & van Oosterhout, 2011), and be extended in future work to organizations in other countries.

This paper has several limitations, as follows. First, we needed to make assumptions to develop the measures of the variables, and director ties, buyer–supplier ties and family control are measured as dummy variables. However, this dummy approach may not obtain the full information, and the empirical results may thus not be as comprehensive or accurate as possible. Second, when measuring the value-added effect of group networks, while we have done our best to include the variables from

prior studies that have important influences on the stock price responses to new product announcements, the low adjusted R^2 values still suggest that the models may have missed some important variables.[1]

Despite these limitations, our study suggests several potential avenues for future work. First, the finding that member firms within family-controlled business groups received significantly weaker market responses upon new product announcements may be related to the fact that the legal system in Taiwan provides relatively weak protection for minority shareholders. Prior research has shown that institutional investors and independent directors may play an important role in monitoring managerial decisions. Future research can add the factors of institutional investors and independent directors, as these can serve as external monitors that can help reduce conflicts of interest between controllers and minority shareholders, and so affect the valuation of member firms within family-controlled business groups. Second, this study is based on data from a single country. Future research may therefore investigate whether our results can be extended to other countries with different protections of investor rights. Finally, we have shown that intragroup ties may affect firm valuation. Future research can test other activities to further examine this issue.

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[1] It is not uncommon to see such low adjusted R^2 values when the dependent variable is stock market reactions. For example, Oxley, Sampson, and Silverman (2009) studied how alliance announcements affect the stock markets reactions of the announcing firms' rivals, and found adjusted R^2 values of around 0.03; Chang, Wu, and Wong (2010) studied family control and innovation, and the adjusted R^2 values were around 0.04. Chaney, Devinney, and Winer (1991) studied that the factors that explain stock market responses to new product introductions, and found adjusted R^2 values of around 0.03. Finally, Bae, Cheon, and Kang (2008) studied that effects of the announcement of increased earnings by a chaebol-affiliated firm, and reported adjusted R^2 values of around 0.04.

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