

# The impact of internationalization on performance and innovation: The moderating effects of ownership concentration

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**Abstract** Researchers in international business have long been interested in understanding the impact of internationalization on performance and innovation. However, prior studies of this research stream offer mixed results. This study contributes to this research stream by employing agency theory to investigate how ownership concentration affects the performance and innovation implications of internationalization. Specifically, we examine two primary effects of ownership concentration: the incentive alignment effect, proxied by the controlling shareholder's cash flow rights, and the entrenchment effect, proxied by the divergence between control rights and cash flow rights of the controlling shareholder. Based on a sample of Taiwan's publicly listed firms, we find that the incentive alignment effect moderates the relation between internationalization and performance and innovation positively and the entrenchment effect moderates the relation negatively. These findings shed light on the mixed results of the literature. In addition, most countries outside the United States and the United Kingdom have high ownership concentration; therefore, our results may be generalizable to other settings, providing insight into the role of corporate governance in internationalization.

**Keywords** Ownership concentration · Internationalization · Performance · Innovation · Taiwan

Researchers in the international business field have long been interested in understanding the influence of internationalization on firm performance (e.g., Contractor, Kundu, & Hsu, 2003; Gomes & Ramaswamy, 1999; Hennart, 2007)

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and innovation (e.g., Cantwell, 1992, 1993; Hitt, Hoskisson, & Ireland, 1994). Previous studies have found that internationalization allows firms to achieve economies of scale and scope (Tallman & Li, 1996), to exploit foreign market opportunities and imperfections (Rugman, 1981), and to maximize location economies by configuring value-chain activities (Porter, 1985, 1990). However, other studies show that internationalization also creates higher uncertainty and complexity of tasks. The resulting increase in information asymmetry and conflicts of interest between managers and investors can lead to greater agency problems and thus higher agency costs (Burgman, 1996; Gomez-Mejia & Balkin, 1992). The literature provides no clear consensus on how these costs interact with the benefits of internationalization to affect firm performance and innovation. In fact, most previous research fails even to account for these agency costs. Therefore, we employ agency theory to investigate how agency costs moderate internationalization's impact on performance and innovation.

The genesis of agency problems is dependent on the distribution of ownership rights. When the ownership of capital is dispersed among small shareholders as is common in the United States and United Kingdom, agency problems result from the conflicts of interest between managers and shareholders (Jensen & Meckling, 1976). However, in areas outside the United States and United Kingdom, such as East Asia, where ownership is sufficiently concentrated in the hand of a controlling shareholder,<sup>1</sup> the agency problem shifts away from the manager-shareholder relationship to conflicts between the controlling owner and minority shareholders (Claessens, Djankov, & Lang, 2000; Jiang & Peng, 2010; La Porta, Lopez-de-Silanes, & Shleifer, 1999; Young, Peng, Ahlstrom, Bruton, & Jiang, 2008).

Concentrated ownership induces two effects: incentive alignment and entrenchment effects. First, according to the incentive alignment effect, when cash flow rights are concentrated in the hands of a single shareholder, that controlling shareholder has an incentive to optimize firm performance, as increases in firm wealth translate into increases in personal wealth. According to the entrenchment effect, as ownership rights become more concentrated in the hands of a single shareholder, that controlling shareholder becomes more entrenched; that is, he or she is better able to extract private benefits of control at the expense of minority shareholders. The entrenchment effect is especially pronounced when a significant separation exists between control (voting) rights and cash flow rights, because the willingness to extract private benefits is less restrained by the controlling shareholder's cash flow stake. Thus, this study specifically examines the moderating role of incentive alignment and entrenchment effects of ownership concentration on the impact of internationalization on performance and innovation. Following Claessens, Djankov, Fan, and Lang (2002), we use the controlling shareholder's cash flow rights and the divergence between cash flow and control rights to proxy for the degree of incentive alignment and entrenchment effects, respectively.

We posit that the incentive alignment and entrenchment effects of concentrated ownership have important implications on performance and innovation as they relate to firms' internationalization efforts. In particular, we expect that due to an incentive

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<sup>1</sup> In these countries with high ownership concentration, a controlling owner is defined as the shareholder who has the most control rights and is not controlled by anyone else.

alignment effect, the cash flow rights held by the controlling shareholder positively moderate the internationalization-performance relations, for three reasons. First, the controlling shareholder is strongly incentivized to collect information and monitor managers due to his or her large, undiversified equity position in the firm (Heugens, van Essen, & van Oosterhout, 2009; Shleifer & Vishny, 1997). The controlling shareholder is thus able to reduce managerial discretionary behavior otherwise associated with internationalization. Second, along with a larger stake in the firm, controlling shareholders also tend to have a longer tenure, which leads them to adopt longer investment horizons. This long-horizon disposition can mitigate the incentives for myopia investment decisions and thus lead to greater investment efficiency (Stein, 1988). Finally, controlling shareholders' lengthy tenure permits them to travel farther along the firm's learning curve (Jensen & Meckling, 1976). Consequently, they are better able (i.e., have greater information-processing capacity) to deal with the complexity of internationalization. However, we expect a negative relation between the performance effect of internationalization and the degree of control-cash flow rights divergence of the controlling shareholders (i.e., entrenchment effect) for two reasons. First, the complexity of international operations may provide the controlling shareholders with more opportunities to take risky investments in the international arena for their self-regarding interests (Claessens & Fan, 2002). Second, controlling shareholders may squander free cash flows in unprofitable foreign investments rather than redistribute excess cash to the minority shareholders (Jensen, 1986) by causing negative influences on firm performance.

Regarding the effect of internationalization on innovation, we expect that due to the incentive alignment effect, cash flow rights in the hands of controlling shareholders will positively moderate the internationalization-innovation relationship, for two reasons. First, because managers may be opportunistically motivated to reduce innovation investments, large shareholders have greater incentives to gather information about their firms' innovation activities (Lee & O'Neill, 2003) to monitor managerial behavior closely. Second, controlling shareholders' wealth is largely tied up in their concentrated equity holdings (Shleifer & Vishny, 1997). Thus, because innovation provides competitive advantage in many international and global markets (Asakawa & Som, 2008), innovation investments are a critical means through which they can grow their wealth. As a result, multinational firms with large shareholders are more likely to invest in strategic orientation innovation investments to promote the advantages of internationalization. On the other hand, the entrenchment effect suggests a negative relation between the level of innovation investments and the degree of divergence of control-cash flow rights of controlling shareholders. Controlling shareholders with a higher degree of control-cash flow rights divergence may forgo long-term innovative investment to expropriate wealth from minority shareholders (Morck, Wolfenzon, & Yeung, 2005). In addition, the ability of controlling shareholders to expropriate wealth from minority shareholders is amplified by the complexity of internationalization, which further exacerbates the conflicts of interest between controlling and minority shareholders. Thus, the controlling owners of multinational firms may have strong incentives to cut innovation investments to mask firm performance and conceal their private control benefits.

Using data from Taiwanese listed firms from 2000 to 2007, we find that the effects of internationalization on the firm performance and innovation is positively

moderated by the controlling shareholder's cash flow rights and negatively moderated by the divergence in the controlling shareholder's control-cash flow rights. Our results are generally consistent with a positive incentive alignment effect for internationalization related to increased cash flow rights and a negative entrenchment effect for internationalization, associated with the disparity between the controlling shareholder's cash flow rights and control rights.

This study makes two contributions to the literature in terms of corporate governance and internationalization. First, although the intersection of top management teams, governance, and internationalization has received some attention in recent years (Hitt, Tihanyi, Miller, & Connelly, 2006), the existing literature on the relation between agency cost and internationalization is primarily based on US data, which focus on agency problems arising between shareholders and managers. Thus, very little is known about the effects of concentrated ownership (the dominant organizational form outside of the US), where agency problems arise between the controlling shareholder and minority shareholders (Jiang & Peng, 2010; Su, Xu, & Phan, 2008; Young et al., 2008). Therefore, we examine how the controlling shareholder's voting rights and cash flow rights (i.e., control and ownership, respectively) moderate the effects of internationalization on performance and innovation. Our empirical findings on Taiwanese firms may be generalizable to other countries with concentrated share ownership. Second, whereas the primary focus of prior research has been on the moderating effect of firm heterogeneity or agency cost on firm performance of internationalization, this study contributes to the literature by considering the moderating role of agency cost on both performance and innovation associated with internationalization.

## Theoretical foundations and prior empirical evidence

### Performance implication of internationalization

Internationalization is perceived as a crucial element in corporate strategy and as a means for sustenance and growth. Because of its importance, researchers have devoted substantial efforts to investigating its performance implications (Contractor, 2007; Hitt et al., 2006). International business research has largely employed mainstream theories (e.g., research-based, organizational learning theory, internationalization theory, and transaction cost economies) to decipher the links between internationalization and performance, and many arguments have been set forth to explain how international diversity can improve corporate performance. For example, previous studies have found that internationalization can create risk diversification and augmented risk-return characteristics (Kim, Hwang, & Burgers, 1993) and lower costs through economies of scale in production (Cantwell, 1989; Tallman & Li, 1996) and economies of scope in business functions such as research and development (R&D) and marketing (Helpman, Melitz, & Yeaple, 2004; Tybout, 2003). Firms with strong core competences in their home country operations can apply such competences in international markets (Bartlett & Ghoshal, 1989). That is, international expansion allows firms to transfer rent-yielding resources into foreign markets to generate economies of scales and scope and, consequently, achieve better

firm performance. In addition, firms that pursue internationalization can exploit both foreign market opportunities and imperfections (Rugman, 1981) as well as relationships among business segments and geographic areas (Porter, 1985), take advantage of differences in factors markets (Porter, 1990), and benefit from the expanded learning environment provided by the international experience (Zahra, Ireland, & Hitt, 2000).

However, expansion into diverse foreign markets also creates additional costs. For firms operating across many and diverse national environments, complexity increases greatly and imposes additional costs on the organization due to liabilities related to dealing with foreign environments (Hymer, 1976). In addition, operations in multiple countries with varied institutional contexts are likely to experience increased transaction costs as well as costs related to information collection, processing, and dissemination (Hitt et al., 1994). In other words, multinational firms encounter incremental costs of acquiring knowledge of unfamiliar market environments and of handling differentiated customer needs (Gomes & Ramaswamy, 1999). In addition, multinationals are also faced with greater agency costs stemming from information asymmetry due to the complexity of information-processing requirements (Gomez-Mejia & Balkin, 1992) and the increased difficulty of monitoring managers in international markets (Burgman, 1996). Finally, extended cross-border trade and foreign investments may introduce increased financial exposures (Lee & Kwok, 1988) and new political risks (Burgman, 1996).

Accordingly, internationalization affects performance both positively and negatively, as firms encounter both benefits and costs when they diversify into international markets. Empirical evidence is quite mixed. Some studies find a positive linear relation (e.g., Grant, 1987; Grant, Jammie, & Thomas, 1988), while others find a negative linear relation (e.g., Michel & Shaked, 1986; Morck & Yeung, 1991), an inverted U-shaped relation (e.g., Gomes & Ramaswamy, 1999; Ramaswamy, 1995), a U-shaped relation (e.g., Qian, 1997; Ruijgrok & Wagner, 2003), a S-shaped relation (e.g., Contractor et al., 2003; Lu & Beamish, 2004), or no empirical relation (Collins, 1990; Wan, 1998) between internationalization and firm performance. In light of the contradictory evidence, Hennart (2007) points out that conventional transaction cost or internalization theory implies that internationalization is an outcome of the firm's endowment with resources: if the firm has international competitive resources, internationalization helps performance, else it may be harmful. Hence, performance depends on the antecedents of internationalization, and we should not expect a positive relation—or, indeed, any other systematic relation—between a firm's international diversity and its performance. Conversely, Contractor (2007), in response to Hennart's arguments, asserts sound theoretical grounds for predicting a positive relation between internationalization and firm performance. In addition, he claims that that distinguishing three stages of internationalization can reconcile the seemingly contradictory results of prior empirical research.

### Innovation implication of internationalization

Considerable prior research also investigates the implications of internationalization on innovation. The literature generally supports a positive relation

between internationalization and firm innovation (Cantwell, 1992; 1993; Hitt, Hoskisson, & Kim, 1997; Kogut & Chang, 1991). When firms expand internationally, they are commonly exposed to learning opportunities that stimulate innovation activities (Bartlett & Ghoshal, 1989). Although these innovation investments require a significant outlay of resources, international diversity itself often generates the resources necessary to undertake and sustain new R&D operations (Kobrin, 1991). Moreover, firms with research facilities in foreign locations are more capable of transcending limitations in the technological specializations of their home country and taking advantage of different specializations abroad (Asakawa & Som, 2008; Cantwell, 1992, 1993). Thus, multinationals can obtain competitive advantages by strategically integrating complementary streams of innovation across geographically widespread facilities (Cantwell, 1989; Porter, 1990; Zahra et al., 2000).

Other studies support a non-linear relation between innovation and internationalization (Hitt et al., 1994). Specifically, the non-linear theory argues that internationalization benefits innovation at first but, as the process continues, firm size may increase. This larger firm size is associated with the tendency to become more formalized, which can slow the rate of innovation (Collier, 1983). Furthermore, top executives, who lose strategic control as the result of internationalization, may resort to financial controls, which can include cutting investments in innovation to boost short-term performance (Hitt & Keats, 1992). Therefore, firm innovation benefits from internationalization early on as firms gain new knowledge, revenues, and available technologies. However, later in the internationalization process, innovation may suffer from size-related formalization and managerial manipulation.

#### Incentive alignment and entrenchment effects of concentrated ownership

Evidence suggests that countries with poor investor protection typically exhibit more concentrated control of firms than countries with good investor protection (La Porta et al., 1999; Shleifer & Vishny, 1997). Relative to the United States, the United Kingdom, and other well-developed economies, Claessens and colleagues (2000), La Porta and colleagues (1999), and Lins (2003) found that firms in emerging economies tend to be owned by the dominant shareholders (i.e., controlling owners) who possess a substantial ownership stake and enjoy almost total control over the firm's operations. The controlling owners are often associated with a family or business group (Claessens et al., 2000; Cuervo-Cazurra, 2006; Jiang & Peng, 2010; Liu, Ahlstrom, & Yeh, 2006). In addition, the ownership arrangements of firms are further complicated by pyramidal and cross-holding structures (Claessens et al., 2000; Lu & Yao, 2006). These ownership arrangements allow the controlling owners to maintain tight control of the firm with a relatively small ownership stake. Thus, within these firms, agency problems do not stem from the traditional conflict between outside shareholders and managers but rather from between the controlling owner and minority shareholders (Jiang & Peng, 2010; Su et al., 2008; Young et al., 2008).

Concentrated ownership induces two effects: an incentive alignment effect, which makes the monitoring of management more efficient, and an entrenchment effect,

which makes it easier for opportunistic owners to pursue private benefits at the expense of outside investors. Given concentrated ownership, the controlling owners have strong incentive to collect information and oversee managers (Claessens et al., 2002). In addition, to protect their large ownership share, controlling owners will work to limit managerial expropriation (Gomes, 2000). Therefore, the higher the cash flow rights of a controlling owner, the more closely his or her interests are aligned with those of the minority owners. However, although incentive alignment effects are associated with concentrated ownership, costs may also be involved. When ownership is concentrated in the hands of controlling owners, they have dominant control of a firm and consequently determine how profits are shared. Research shows that controlling owners prefer to use firms to generate private benefits of control (e.g., appropriation of the firm's opportunities and assets, outright theft, excessive managerial pay, perquisite consumption), which are not shared by minority shareholders in proportion to the shares owned (Carney, 2008; Chen, Li, & Shapiro, 2010; Shleifer & Vishny, 1997; Sun, Mellahi, & Liu, 2010). The problem of expropriation by the controlling owners becomes significant when the owners possess more control rights than their cash flow rights. That is, these owners have power to expropriate wealth from their companies due to their large control rights, while, at the same time, they incur a smaller share of losses from the extraction of wealth due to their smaller proportion of cash flow rights.

## Research hypotheses

Ownership concentration is more pronounced, especially in emerging economies and countries with weaker legal environments. We posit that the ownership characteristics of multinationals in less developed or emerging economies might play an essential moderator associated with the performance and innovation impact of internationalization. In the following discussion, we develop several hypotheses pertaining to how the controlling shareholder's level of control and ownership moderates the agency problem of international operations and the relation of internationalization to performance and innovation.

### Internationalization and performance

Due to the complexity of information and the difficulty of monitoring foreign operations, multinational firms frequently encounter greater conflicts of interest between insiders and outsiders (Burgman, 1996; Gomez-Mejia & Balkin, 1992; Lee & Kwok, 1988). This higher rate of conflict may lead to a greater agency problem between the controlling owner and outside minority shareholders and, therefore, result in firm value loss (Shleifer & Vishny, 1997). We argue that the level of cash flow rights of the controlling shareholder may alleviate this agency problem and the disadvantages associated with internationalization. First, because significant cash flow rights are in the hands of the controlling shareholder, his or her wealth is closely linked to the firm's welfare. Therefore, he or she has strong incentives to collect information and monitor managers (Claessens et al., 2002; Heugens et al., 2009), which, in turn, reduces managerial discretionary behavior associated with

internationalization. Second, controlling owners not only have a significant ownership stake but also commonly have a long-term presence in the firm. Thus, they tend to suffer less myopia in their investment decision making and to operate their firms to maximize firm value over the longer horizon (Stein, 1988). Third, controlling shareholders' longer tenure permits them to travel farther along the firm's learning curve (Jensen & Meckling, 1976). In other words, they acquire skills and abilities that lead to greater information-process capacity, which allow them to solve the complex problems of internationalization. Thus, controlling owners of multinational firms with higher cash flow rights may be more inclined or capable of maximizing the gains of international expansion while minimizing the relevant costs. This argument leads to the following hypothesis:

**Hypothesis 1a** The level of the controlling owner's cash flow rights positively moderates the relation between internationalization and firm performance.

Internationalization provides the opportunity for large shareholders to expropriate value from the minority shareholders due to the complexity of international operations which enlarge the agency costs stemming from the monitoring and bonding activities of multinational firms (Lee & Kwok, 1988). In addition, the controlling shareholders' incentives to expropriate minority shareholders through internationalization increase with the degree of the separation between their control and cash flow rights. That is, when control rights are high and cash flow rights are low, controlling shareholders have greater incentive to take on opportunistically risky investments (e.g., overexpansion through mergers and acquisitions) because they can benefit significantly from the success of an investment while the other investors bear the majority of the cost of failure (Claessens & Fan, 2002). They also might be motivated to use free cash flows for non-optimal projects rather than redistributing them to the minority shareholders (Jensen, 1986). In other words, given free cash flow, controlling shareholders can choose to redirect firm resources away from minority shareholders and toward international investments, even when those investments do not improve firm value. Based on this discussion, we posit that the performance related to internationalization will be negatively affected by a large separation between voting rights and cash flow rights of the controlling shareholder. This logic leads to the following hypothesis:

**Hypothesis 1b** The level of divergence between the controlling owner's cash flow rights and voting rights negatively moderates the relation between internationalization and firm performance.

#### Internationalization and innovation

Innovative activities (e.g., R&D investments) are typically long term, high risk, unpredictable, intensive, and idiosyncratic (Holmstrom, 1989). These costly characteristics hinder the design and implementation of incentive contracts, which are effective at spurring innovative activities (Francis & Smith, 1995). Moreover, outside investors of diffusely held firms may not easily recognize the value of



innovation investments due to their high-complexity, high-risk nature. The information asymmetry between managers and outside investors with respect to innovative activities can lead to shorter horizons for managers who may forgo innovation investments to boost short-term earnings performance to appease outside investors (Dechow & Sloan, 1991). We argue that in multinational firms the level of equity or cash flow rights of the controlling shareholders can alleviate such managerial myopia behavior. First, large shareholders have more at stake and a greater incentive to gather information and monitor management (Shleifer & Vishny, 1997), including highly uncertain innovative activities. That is, we suggest that large shareholders monitor managers more closely to avoid underinvestment in innovation. Second, due to the longer tenure and thus investment horizon of controlling shareholders, we posit that they are more likely to undertake R&D investments of strategy orientation that reduce short-term earnings but potentially boost the long-term value of the firm (Hansen & Hill, 1991; Lee & O'Neill, 2003). In particular, Cantwell (1989) and Porter (1990), among others, argued that the innovative capability of a multinational corporation is a specific advantage that provides a key success factor in the global market. Thus, when controlling owners of multinational firms have higher cash flow rights, they are more likely to promote the benefits of internationalization through innovative activities and to mitigate the adverse effects (including the agency problems that stem from international operation). Therefore, we posit that the degree to which controlling shareholders hold cash flow rights influences their incentive to engage in innovation activities to create long-term firm value. In other words, the controlling shareholder's cash flow rights positively affects the innovation implication of internationalization. Stated formally:

**Hypothesis 2a** The level of the controlling owner's cash flow rights positively moderates the relation between internationalization and innovation.

When the controlling shareholders have control rights in excess of their cash flow rights, they have greater incentive to make investment decisions aimed at growing personal wealth rather than firm value (Carney, 2008; Lu & Yao, 2006; Shleifer & Vishny, 1997). They are likely to forgo risky innovation investments to meet short-term earnings goals, thus capitalizing on short-term gain rather than maximizing long-term value (Morck et al., 2005). Thus, controlling shareholders may ignore potential opportunities or resources that arise from international diversification even when those opportunities or resources may benefit innovation activities because they focus on expropriating wealth from minority investors. In addition, the expropriation of the controlling shareholders arising from the divergence between cash flow and voting rights is larger for multinational firms because the high uncertainty and complexity of tasks arising from internationalization may increase the information asymmetry between the controlling and minority shareholders. As a result, the controlling shareholders of multinational firms have incentives to hide private benefits from expropriation because, if detected, outside investors will likely take disciplinary action against them (Claessens & Fan, 2002; Shleifer & Vishny, 1997). Accordingly, the controlling owners of multinational firms have strong incentives to cut innovation investments to mark firm performance and conceal their private control benefits from outside

minority shareholders. Based on the foregoing discussion, we develop the following hypothesis:

**Hypothesis 2b** The level of divergence between the controlling owner's cash flow rights and voting rights negatively moderates the relation between internationalization and innovation.

## Research design

### Sample

This study is based on the publicly listed firms on the Taiwan Stock Exchange.<sup>2</sup> Because of the availability of information on international operations beginning in 2000, we use the seven-year period from 2000 to 2007. Data on internationalization, financial data, and ultimate ownership data were acquired from the Taiwan Economic Journal database. We supplement corporate ownership information with company prospectuses and *Business Groups in Taiwan*, a book published annually by China Credit Information Services LTD. Patent data are taken from the *Patent Database of Taiwan*, maintained by the Intellectual Property Office, Ministry of Economic Affairs. We select firms engaged in international operation (i.e., multinational firms).<sup>3</sup> For the purposes of this research, the following criteria are followed in selecting sample firms: We exclude (1) firms in financial and insurance industries because their relevant policies and accounting systems are different from others firms; and (2) firms in which the voting rights of the largest shareholders are less than 5%, as prior studies assume that above that level the largest shareholders have effective control over firms (Claessens et al., 2000).<sup>4</sup> The final data set consists of 3,278 firm-year observations for 790 firms.

### Model

To test Hypotheses 1a and 1b, we employ a model that examines the relations between firm performance and the interaction of internationalization and controlling shareholder's control and ownership and other control variables:

$$\text{Firm performance} = f(\text{Internationalization, control and ownership, control and ownership} \times \text{internationalization, firm size, firm leverage, growth opportunities, firm risk, firm age, year and industry dummies}) \quad (1)$$

<sup>2</sup> Claessens and colleagues (2000, 2002) reported that Taiwanese listed firms are characterized by a separation of control and ownership, which is analogous to the other East Asia countries.

<sup>3</sup> Our sample is restricted to multinational firms because they are likely to provide the most complex managerial contexts, which tend to produce the most severe agency problems.

<sup>4</sup> Our results are qualitatively the same when we use alternative control cutoffs, such as 10% and 20%, as employed by La Porta and colleagues (1999).

To test Hypotheses 2a and 2b, we employ a model that examines the relations between innovation and the interaction of internationalization and controlling shareholder's control and ownership and other control variables:

$$\text{Firm innovation} = f(\text{Internationalization, control and ownership, control and ownership} \times \text{internationalization, firm size, competition, competition squared, internal funds, firm age, prior innovation, year and industry dummies}) \quad (2)$$

### Dependent variables

*Firm performance* We measure firm performance in two ways: return on assets (ROA), defined as the ratio of operating income over total assets, and Tobin's Q, defined as the sum of the market value of equity and the book value of debt, divided by the book value of total assets. Originally, the denominator of Tobin's Q was the replacement cost of assets. Because the value of replacement costs is often unavailable, they are generally substituted by the book value of assets (Claessens et al., 2002; Lins, 2003). Lehn, Netter, and Poulsen (1990) supported the substitution by providing a high correlation between the resulting two Q ratios.

*Firm innovation* Innovation is proxied by R&D intensity, defined as R&D expenditures divided by total assets and patent intensity, defined as the number of patents divided by total assets (in millions). R&D expenditures capture organizational innovation efforts and have been extensively used in studies of innovation (Hitt, Hoskisson, Ireland, & Harrison, 1991). However, investment in R&D does not always result in immediate product innovation, and R&D expenditure may not be efficient at capturing the effectiveness of the innovation process (Canibano, Garcia-Ayuso, & Sanchez, 2000). Patent count is one of the most direct measures of innovative output available (Hitt et al., 1991). Previous research has shown that patent-related measures are useful to determine a firm's technological competitiveness and a good indicator of its progress in technical knowledge (e.g., Pegels & Thirumurthy, 1996). Thus, we use both R&D and patent intensity as our measure of innovation.

### Independent variables

*Internationalization* There is no generally accepted measure of firms' degree of internationalization (Burgman, 1996). Preferably, a measure of firm internationalization should contain structural and attitudinal as well as performance-related measures that are based on objective observations. Previous researchers have argued that internationalization, as a multifaceted construct, is best measured as a composite index (Gomes & Ramaswamy, 1999; Sullivan, 1994). Therefore, we measure internationalization by combining three widely used measures: (1) foreign sales to total sales, (2) foreign assets to total assets, and (3) number of countries in which a firm operates (e.g., Sullivan, 1994; Tallman & Li, 1996). The first measure represents a firm's dependence on sales to foreign markets (performance), the second

represents a firm's reliance on owned foreign stocks (structure), and the third measure represents the geographical spread of firms' activities abroad (attitude).

Following prior work, we apply a principal component factor analysis to construct a composite index measure of firm internationalization, which allows us to reduce the three measures into a single index. All three variables are standardized before engaging in factor analysis. The results indicate that these three individual variables are loaded on the same factor with a high eigenvalue and high explained variance; in addition, Cronbach's alpha for the three variables is 0.791, indicating that our composite measure is valid. Additional details concerning the factor analysis used to create this composite measure of internationalization are provided in the [Appendix](#).

*Ownership definition* We compile our ownership data following the same method as previous work (La Porta et al., 1999; Claessens et al., 2000). An ultimate owner is a shareholder who has ultimate controlling power over the company and is not controlled by anyone else. Although a company can have more than one ultimate owner, we focus on the largest ultimate owner.<sup>5</sup> We use the cash flow rights and control-cash flow rights divergence to measure the controller's incentive alignment and entrenchment effects, respectively.

The ultimate owner's cash flow rights and voting rights are defined as in the following example. Suppose that a family holds 20% of the shares of publicly traded firm X, which, in turn, holds 10% of the shares of publicly traded firm Y. The same family holds 30% of the shares of publicly traded firm Z, which, in turn, holds 20% of the shares of Firm Y. In this case, the family is identified as the largest ultimate shareholder. The family controls 30% of the voting rights of Y (i.e., the sum of the weakest shares over the chains of voting rights) and 8% of the cash flow rights in Y (i.e., the sum of the product of the ownership shares over these two chains). Following Lins (2003), the measure of control divergence is defined as a ratio of voting rights to cash flow rights. In this case, the ratio of control divergences is 3.75, which represents that the ultimate owner's voting rights are separated from the cash flow rights. Thus, when the ratio of control divergence exceeds (equals) 1, there is (is not) a divergence between the dominant shareholder's voting rights and cash flow rights.

### Control variables

Internationalization is an outcome of firm resources and other antecedents (Hennart, 2007), as has been shown, among other sets, for Taiwanese firms (Li & Meyer, 2009; Tan & Meyer, 2010). Therefore, it is important that we carefully control for the characteristics of the firms in our sample. Hence, Eq. (1) includes firm size, firm

<sup>5</sup> For instance, if a company is controlled by a family, the definition of the largest ultimate owner contains those individuals with blood and marriage ties to the immediate family and all of the legal entities controlled by those family members. Their individual voting rights are summed to find the total family voting rights. In the most cases, the immediate shareholders of a company are themselves corporate entities or investment corporations and other legal entities (e.g., nonprofit foundations). We then identify their owners, the owners of their owners, and so on. For each family group, the total ownership is defined as a group of people related via blood or marriage as the unit of analysis.

leverage, growth opportunities, firm risk, and firm age. Eq. (2) contains firm size, competition, internal funds, prior innovation, and firm age.

Firm size is measured as the logarithmic transformation of total assets. Previous research shows that larger firms tend to have more resources to leverage when entering global markets. These larger firms thus derive more benefits from internationalization, which, hence, has a positive effect on performance (Lu & Beamish, 2004; Zahra et al., 2000). However, Holmstrom (1989) analytically showed that small firms are more innovative, owing to their simpler task structure and dissimilar attitudes toward risk. Therefore, we include firm size to control for these size effects.

Following Tallman and Li (1996), we include firm leverage, measured as the ratio of book value of long-term debt over total assets, because the constraints associated with debt repayment frequently oblige managers to abandon profitable investment. We control for growth opportunities, measured as capital expenditures scaled by the book value of total assets because previous research suggests that potential investment opportunities positively affect firm valuation (Lins, 2003). Following Anderson and Reeb (2003), we include firm risk, measured as the standard deviation of monthly stock returns for the prior 60 months, because higher risk profiles are harmful to firm performance.

Because prior research suggests that product market competition has an important impact on innovation (Khan & Manopichetwattana, 1989), we control for competition, measured as the Herfindahl-Hirschman Index of concentration,<sup>6</sup> which is calculated as the sum of the squared market shares (sales over total industry sales) of firms in the industry. We also include the square term of competition to consider a possible non-linear relation between product market competition and innovation as in Aghion, Bloom, Blundell, Griffith, and Howitt (2005). Following Berger (1993), who suggested that internal funds are positively associated with investments in R&D projects, we control for internal funds, which is defined as sum of the earnings before extraordinary items, R&D expenditures, and depreciation, scaled by total assets. We include prior innovation to control for innovation persistence based on previous studies that find that firms with a strong history of innovation tend to continue producing innovations (Berger, 1993; Tsai, 2001).

Anderson and Reeb (2003) provide evidence that younger firms perform better than older firms in terms of financial performance. Furthermore, Francis and Smith (1995) showed that younger firms are more active in innovation activities than older firms. We thus control for firm age, measured as the number of year since the firm's inception. Finally, we include year and industry dummy variables to control for possible time and industry effects. The definitions of all our variables are detailed in Table 1.

### The estimate technique

We examine our hypotheses using a firm-year unit of analysis. Because our data are structured as a pooled cross-sectional (across firms) and time series (over years), we

<sup>6</sup> Strictly speaking, the Lerner index is the theoretically valid measure of product market competition. In practice, however, market share, or the Herfindahl concentration index, is widely used because obtaining the necessary data to calculate the Lerner index is difficult (see Goldberg & Knetter, 1999, among others).

**Table 1** Variables and definitions.

| Variable               | Definition   |
|------------------------|--|
| Return on assets (ROA) | Operating income / total assets  |
| Tobin's Q              | (Market value of equity + book value of total debt) / total assets   |
| R&D intensity          | R&D expenditures / total assets  |
| Patent intensity       | Number of patents / total assets   |
| Internationalization   | The factor score obtained from a principal component factor analysis of foreign sales to total sales, foreign assets to total assets, and the number of countries in which the firm operates |
| Cash flow rights       | Cash flow rights level of the largest ultimate owner   |
| Voting rights          | Voting rights level of the largest ultimate owner  |
| Control divergence     | Ratio of voting rights to cash flow rights   |
| Firm size              | Natural logarithm of total assets  |
| Firm leverage          | Ratio of long-term debt to total assets  |
| Growth opportunities   | Total capital expenditures / total assets  |
| Firm risk              | Standard deviation of monthly stock returns for the prior 60 months  |
| Internal funds         | (Earnings before extraordinary items + R&D expenditures + depreciation) / total assets   |
| Competition            | Herfindahl index of concentration of sales measured as:<br>$\sum_{i=1}^N (\text{market share of firm } i)^2$   |
| Firm age               | Number of years since incorporation of the firm  |

use a panel data method. To take advantage of the panel data feature of our sample data, we use the appropriate models based strictly on the results of the Hausman specification test and Breusch and Pagan Lagrangian multiplier test for random effects. The Lagrangian multiplier test is used to discriminate between a pooled ordinary least squares and a random effects model, and the Hausman test is applied to examine the appropriateness of the estimated specification to be used, namely, either the fixed effects or random effects model. Both tests indicate that a generalized least squares random effects model is appropriate for our analysis. Further, to avoid possible biases from reverse causality, we lag all the independent variables by 1 year.

## Results

Table 2 displays means, standard deviations, and correlation coefficients for the key variables<sup>7</sup> in our sample. Because many of correlations between independent and control variables are significant, we estimate the variance inflation factors (VIFs) to assess the problem of multicollinearity. All VIFs are below 2.0, indicating that multicollinearity is not a major factor driving our results (Aiken & West, 1991).

<sup>7</sup> To deal with outliers, we winsorize the data at the 1 and 99 percentiles. That is, the top and bottom 1 percentages are replaced with 99th and 1st percentile values, respectively. Our results are qualitatively the same when outliers are truncated.

**Table 2** Descriptive statistics and correlations.

| Variable                 | Mean   | SD     | 1        | 2        | 3        | 4        | 5        | 6        | 7        | 8        | 9        | 10       | 11       | 12       | 13      |
|--------------------------|--------|--------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|---------|
| 1. ROA                   | 0.045  | 0.093  |          |          |          |          |          |          |          |          |          |          |          |          |         |
| 2. Tobin's Q             | 1.320  | 0.619  | 0.583**  |          |          |          |          |          |          |          |          |          |          |          |         |
| 3. R&D intensity         | 0.022  | 0.028  | 0.177**  | 0.405**  |          |          |          |          |          |          |          |          |          |          |         |
| 4. Patent intensity      | 0.007  | 0.013  | 0.050**  | 0.121**  | 0.326**  |          |          |          |          |          |          |          |          |          |         |
| 5. Internationalization  | -0.001 | 0.996  | 0.122**  | 0.096**  | 0.124**  | 0.162**  |          |          |          |          |          |          |          |          |         |
| 6. Cash flow rights      | 0.236  | 0.157  | 0.064**  | 0.045**  | 0.099**  | 0.070**  | 0.049**  |          |          |          |          |          |          |          |         |
| 7. Control divergence    | 2.350  | 5.278  | -0.080** | -0.066** | -0.069** | -0.066** | -0.097** | -0.316** |          |          |          |          |          |          |         |
| 8. Firm size             | 15.327 | 1.295  | 0.041*   | 0.037*   | -0.202** | -0.129** | 0.154**  | -0.194** | 0.137**  |          |          |          |          |          |         |
| 9. Firm leverage         | 0.088  | 0.095  | -0.161** | -0.169** | -0.194** | -0.112** | 0.031    | -0.067** | 0.042*   | 0.290**  |          |          |          |          |         |
| 10. Growth opportunities | 0.011  | 0.153  | 0.030*   | 0.139**  | 0.125**  | 0.238**  | 0.026    | -0.106** | 0.046**  | -0.035*  | 0.203**  |          |          |          |         |
| 11. Firm risk            | 0.164  | 0.074  | -0.136** | -0.050** | -0.059** | -0.118** | -0.017   | -0.127** | 0.042*   | -0.089** | 0.069**  | 0.145**  |          |          |         |
| 12. Internal funds       | 0.101  | 0.108  | 0.662**  | 0.595**  | 0.440**  | 0.063**  | 0.047**  | -0.031   | 0.104**  | 0.002    | -0.129** | 0.143**  | -0.034*  |          |         |
| 13. Competition          | 0.059  | 0.075  | -0.030   | -0.214** | 0.251**  | 0.146**  | 0.058**  | 0.183**  | -0.043*  | 0.260**  | 0.144**  | -0.304** | -0.179** | -0.163** |         |
| 14. Firm age             | 24.309 | 11.563 | -0.051** | -0.295** | -0.396** | -0.125** | 0.064**  | 0.181**  | -0.138** | 0.280**  | 0.087**  | -0.312** | -0.208** | -0.237** | 0.478** |

See Table 1 for variable definitions. \*  $p < 0.05$ ; \*\*  $p < 0.01$ .

Table 3 presents the regression results of the controlling shareholder's control and ownership on the internationalization-firm performance relation. We use ROA as the dependent variable for the prior two models and Tobin's Q as the dependent variable for the latter two models. The results from these models indicate that international expansion has a significant positive impact on the firm performance ( $p < 0.01$ ). Models 1 and 3 show that cash flow rights are positive and significantly related to firm performance ( $p < 0.01$ ); further, the interaction term of cash flow rights and internationalization is positive and significant ( $p < 0.01$ ), supporting Hypothesis 1a and suggesting that the controlling owners' cash flows facilitate the performance of internationalization. An addition, as shown in Models 2 and 4, control divergence is significant and negatively related with performance ( $p < 0.01$ ). The interaction term between control divergence and internationalization is negative and significant ( $p < 0.01$ ), supporting Hypothesis 1b and indicating that the separation of control rights and cash flow rights of the controlling owners is detrimental to the performance of internationalization.

**Table 3** Regression analysis results for firm performance.

| Variable                                  | ROA              |                  | Tobin's Q        |                  |
|---|------------------|------------------|------------------|------------------|
|   | Model 1          | Model 2          | Model 3          | Model 4          |
| Intercept                                 | 0.113* (2.26)    | 0.145** (3.14)   | 2.285** (6.89)   | 2.503** (7.90)   |
| Internationalization                      | 0.023** (4.39)   | 0.016** (4.74)   | 0.076** (4.83)   | 0.062** (3.72)   |
| Cash flow rights                          | 0.051** (2.59)   |                  | 0.314** (2.62)   |                  |
| Control divergence                        |                  | -0.002** (-2.60) |                  | -0.010** (-2.74) |
| Cash flow rights × Internationalization   | 0.056** (3.19)   |                  | 0.278** (2.65)   |                  |
| Control divergence × Internationalization |                  | -0.003** (-3.27) |                  | -0.022** (-3.96) |
| Firm size                                 | 0.007** (2.60)   | 0.008** (3.03)   | 0.055** (2.95)   | 0.066** (3.59)   |
| Firm leverage                             | -0.094** (-4.54) | -0.099** (-4.78) | -0.274** (-2.60) | -0.266* (-2.54)  |
| Growth opportunities                      | 0.035* (2.08)    | 0.036* (2.42)    | 0.385** (3.64)   | 0.391** (3.66)   |
| Firm risk                                 | -0.086** (-3.44) | -0.093** (-3.81) | -0.441** (-3.08) | -0.439** (-2.91) |
| Firm age                                  | -0.001** (-2.92) | -0.001* (-2.46)  | -0.011** (-5.00) | -0.010** (-4.74) |
| Year dummies                              | Included         | Included         | Included         | Included         |
| Industry dummies                          | Included         | Included         | Included         | Included         |
| Hausman test ( $\chi^2$ )                 | 13.96            | 13.38            | 17.81            | 18.28            |
| BP LM test ( $\chi^2$ )                   | 1,419.91**       | 1,384.41**       | 1,797.48**       | 1,719.93**       |
| Wald $\chi^2$                             | 160.09**         | 167.56**         | 568.09**         | 601.33**         |
| Adjusted $R^2$                            | 0.1098           | 0.1131           | 0.2029           | 0.2128           |
| Observations                              | 3,278            | 3,278            | 3,278            | 3,278            |

See Table 1 for variable definitions. The numbers in parentheses are  $z$  statistics. Year dummies and industry dummies are included in all models, and for the sake of brevity, the results for these dummies are not reported. The Hausman specification test is used to test the fixed-effect model versus random effect model. The Lagrangian multiplier (LM) test is used to test the random effect model versus the pooling regression. \*  $p < 0.05$ ; \*\*  $p < 0.01$ .



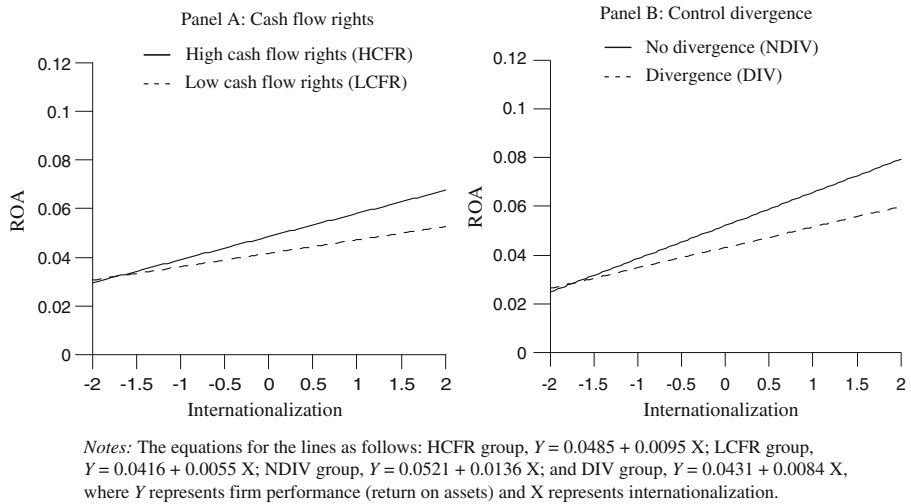
Following prior research (Contractor et al., 2003; Gomes & Ramaswamy, 1999; Ruigrok & Wagner, 2003), we also test our hypothesis under the framework of a U-shaped relation and an inverted U- or S-shaped relation by adding the squared term and the squared and cubic terms, respectively, of internationalization. In unreported results, we find that the squared and cubic terms are not of the expected signs or are insignificant. We graph the internationalization-performance relation and find that the U- and inverted U- or S-shaped relations are not supported within the relevant range of internationalization;<sup>8</sup> hence, the curvilinear relation between internationalization and financial performance is not evident in our sample. Most important, the moderating effect of cash flow rights and control divergence is still significant. Thus, Hypotheses 1a and 1b are still supported.

We find the results of the control variables are generally consistent with the findings of previous studies. Firm size and growth opportunities are positively related to performance, whereas firm leverage, firm risk, and firm age are negatively related to performance.

To facilitate interpretations, we partition sample firms based on the cash flow rights and control divergence levels. Firms above and below the median of cash flow rights (0.206) are classified into high cash flow rights (HCFR) and low cash flow rights (LCFR) groups, respectively. Firms with a value of control divergence greater than 1 and equal to 1 are classified into the divergence (DIV) and no divergence (NDIV) groups, respectively. The simple slopes associated with these four groups are calculated and graphed in Figure 1. Simple slopes refer to the simple regression coefficients of performance (ROAs) on internationalization. As shown in Panels A and B, the results suggest that as internationalization increases, HCFR and NDIV groups perform better than LCFR and DIV groups. In other words, the strength of the effects of internationalization on financial performance is greater for firms with higher cash flow rights but lacking control divergence. Therefore, our graphic results support Hypotheses 1a and 1b, which argue that the performance of internationalization is associated with incentive alignment and entrenchment effects of large shareholdings as captured by cash flow rights and control-cash flow rights divergence. In unreported results, we follow a similar procedure to construct the figure by using Tobin's Q as the dependent variable and find that our inference remains unchanged.

Table 4 reports the regression results of the controlling shareholder's control and ownership on the relation between internationalization and innovation. R&D intensity is the dependent variable for the prior two models, and patent intensity is the dependent variable for the latter two models. The results show that the internationalization is significantly and positively associated with the innovation ( $p < 0.01$ ). Cash flow rights are positively ( $p < 0.01$ ) related to innovation in Models 1 and 3, and the control divergence has a negative relation ( $p < 0.01$ ) with innovation in Models 2 and 4. In Models 1 and 3, the positive signs ( $p < 0.01$ ) on the interaction terms between cash flow rights and internationalization provide support for Hypothesis 2a, suggesting that the cash flow rights of the controlling owners promote the innovation of internationalization. Further, in Models 2 and 4, the interaction of control divergence and internationalization is negatively significant

<sup>8</sup> See Meyer (2009) for a discussion of the interpretation of the curvilinear effect.



**Figure 1** Simple regression lines for internationalization-performance relation for different levels of control and cash flow stakes of the controlling shareholder

( $p < 0.01$ ), supporting Hypothesis 2b and indicating that the control-cash flow rights divergence of controlling owners is harmful to innovation under internationalization.

We also examine the hypothesis under the framework of an inverted U-shaped relation, which adds the squared term of internationalization (e.g., Hitt et al., 1994). In untabulated results, we find that the squared term fails to achieve statistical significance and the graphic evidence does not support the inverted U-shaped relation over the relevant range of internationalization.<sup>9</sup> In addition, the primary results are similar to findings from the previous runs (Models 1 to 4). The moderating effect of cash flow rights and control divergence are still significant, thereby providing support for Hypotheses 2a and 2b.

The results of the control variables are generally consistent with previous research. Both firm size and firm age are negatively related to innovation, and internal funds and prior innovation are positively associated with innovation. We also find that the relation between competition and innovation is non-linear.

To facilitate interpretation, we plot the simple slopes, which we obtain from the simple regression estimate of innovation (R&D intensity) on internationalization by using the HCFR, LCFR, DIV, and NDIV groups. As indicated in Panels A and B of Figure 2, the relation between internationalization and innovation is significantly positive when firms have high cash flow rights (HCFR) and lack control divergence (NDIV) but neutral when firms are associated with low cash flow rights (LCFR) and control divergence (DIV). Therefore, the graphic results provide support for Hypotheses 2a and 2b, which argue that the influence of internationalization on firm innovation is associated with incentive alignment and entrenchment effects of

<sup>9</sup> We do not make predictions about the relation between internationalization and performance or internationalization and innovation, although the results seem to support both recent and prior work (e.g., Cantwell, 1989, 1992, 1993; Contractor, 2007; Grant et al., 1988; Helpman et al., 2004; Tybout, 2003) that internationalization definitely produces positive effects on firm performance and innovation.

**Table 4** Regression analysis results for innovation.

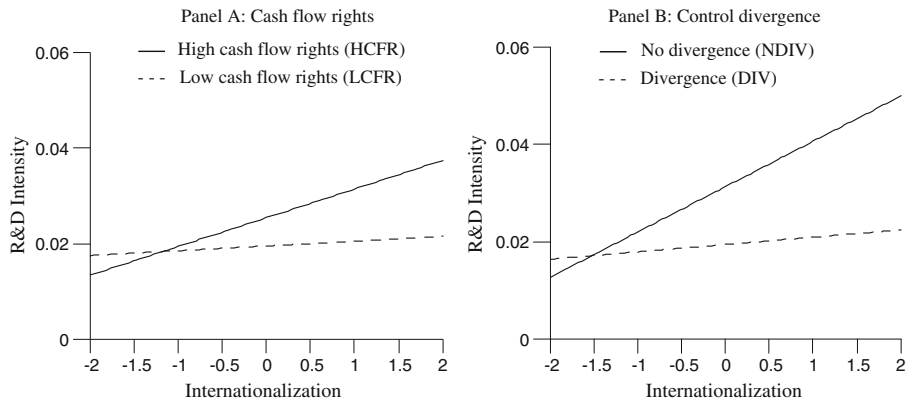
| Variable                                  | R&D intensity    |                  | Patent intensity |                  |
|---|------------------|------------------|------------------|------------------|
|   | Model 1          | Model 2          | Model 3          | Model 4          |
| Intercept                                 | 0.018** (4.16)   | 0.013** (3.35)   | 0.028** (3.68)   | 0.034** (4.64)   |
| Internationalization                      | 0.002** (2.82)   | 0.002** (3.89)   | 0.002** (4.82)   | 0.002** (5.66)   |
| Cash flow rights                          | 0.020** (4.81)   |                  | 0.006** (4.85)   |                  |
| Control divergence                        |                  | -0.001** (-4.64) |                  | -0.002** (3.73)  |
| Cash flow rights × Internationalization   | 0.004** (4.22)   |                  | 0.005** (5.49)   |                  |
| Control divergence × Internationalization |                  | -0.001** (-7.33) |                  | -0.003** (-3.38) |
| Firm size                                 | -0.001** (-3.13) | -0.002** (-4.04) | -0.001** (-3.75) | -0.001** (-3.92) |
| Competition                               | 0.075** (3.06)   | 0.088** (3.50)   | 0.107** (2.90)   | 0.107** (3.41)   |
| Competition squared                       | -0.130* (-2.55)  | -0.151** (-2.83) | -0.249** (-2.96) | -0.247** (-3.30) |
| Internal funds                            | 0.008** (2.78)   | 0.006* (2.38)    | 0.009** (3.90)   | 0.008** (3.18)   |
| Firm age                                  | -0.001** (-6.93) | -0.001** (-6.69) | -0.000** (-4.94) | -0.000** (-4.40) |
| Prior innovation                          | 0.875** (58.86)  | 0.882** (59.82)  | 1.058** (198.79) | 1.058** (198.71) |
| Year dummies                              | Included         | Included         | Included         | Included         |
| Industry dummies                          | Included         | Included         | Included         | Included         |
| Hausman test ( $\chi^2$ )                 | 9.81             | 9.24             | 12.32            | 11.57            |
| BP-LM test ( $\chi^2$ )                   | 3,536.46**       | 3,465.73**       | 5,034.43**       | 5,017.35**       |
| Wald $\chi^2$                             | 16,826.13**      | 16,828.32**      | 44,461.08**      | 44,335.31**      |
| Adjusted $R^2$                            | 0.7935           | 0.7933           | 0.8624           | 0.8624           |
| Observations                              | 3,278            | 3,278            | 3,278            | 3,278            |

See Table 1 for variable definitions. The numbers in parentheses are  $z$  statistics. Year dummies and industry dummies are included in all models, and for the sake of brevity, the results for these dummies are not reported. The Hausman specification test is used to test the fixed-effect model versus random effect model. The Lagrangian multiplier (LM) test is used to test the random effect model versus the pooling regression. \* $p < 0.05$ . \*\* $p < 0.01$ .

large shareholdings, as captured by the controlling owner's cash flow rights level and control-cash flow rights divergence. We also use patent intensity as the dependent variable (not reported) and obtain results similar to those reported.

In our reported analyses, we exclude non-internationalized firms (i.e., domestic firms) from the sample. Purely domestic firms should face less complexity and uncertainty and, thus, should suffer from fewer agency problems as compared to multinational firms. Consequently, they could potentially perform better in terms of financial results and innovation. Nevertheless, as purely domestic firms they do not experience any positive (or negative) effects associated with performance and innovation as a result of internationalization.

Following from these results, the question follows: Which effect is stronger—the positive effect of internationalization on performance/innovation or the negative effect of increased complexity and uncertainty of corporate governance on performance/innovation? In other words, internationalized firms with agency



Notes: The equations for the lines are as follows: HCFR group,  $Y = 0.0254 + 0.0060 X$ ; LCFR group,  $Y = 0.0195 + 0.0010 X$ ; NDIV group,  $Y = 0.0313 + 0.0093 X$ ; and DIV group,  $Y = 0.0194 + 0.0015 X$ , where  $Y$  represents firm innovation (R&D intensity) and  $X$  represents internationalization.

**Figure 2** Simple regression lines for internationalization–innovation relation for different levels of control and cash flow stakes of the controlling shareholder

problems could perform better than purely domestic firms with no agency problems if the positive effect of internationalization on performance/innovation outweighs its negative effect on corporate governance.<sup>10</sup> To shed further light on the impact of internationalization and the agency problem on firm performance and innovation, we now include domestic firms in our sample. We also partition the combined sample based on high and low cash flow rights (HCFR and LCFR, respectively) and without and with control divergence (NDIV and DIV, respectively). We expect that among the HCFR and NDIV firm groups, multinational firm groups will perform better than domestic firms because their positive effects arise from internationalization and higher cash flow rights; a lack of separation between ownership and control will overcome the potential agency problem associated with internationalization. Conversely, among the LCFR and DIV firm groups, because multinational firms have a weaker incentive alignment effect in terms of ownership and a worse entrenchment effect and potential agency problems associated with internationalization yet enjoy the positive effects of internationalization, whether these firms will outperform domestic firms remains unclear.

The results of this analysis are provided in Table 5. There are 1,442 domestic firm-year observations in the combined sample, which account for approximately 31% of the sample.<sup>11</sup> The results show that HCFR and NDIV multinational firms perform significantly better in terms of financial performance and innovation as compared to domestic firms. Importantly, we find that LCFR and DIV multinational firms also perform significantly better than domestic firms. Taken together, these results suggest that the benefits of internationalization outweigh potential agency costs and that internationalization is, indeed, beneficial to firms.

<sup>10</sup> We thank an anonymous reviewer for pointing this out to us.

<sup>11</sup> Domestic firms are defined as firms with no foreign sales and no foreign assets.

**Table 5** Robustness test results: Comparison of multinational firms and domestic firms.

|                      | Multinational firms | Domestic firms | Difference in means | Multinational firms | Domestic firms | Difference in means |
|----------------------|---------------------|----------------|---------------------|---------------------|----------------|---------------------|
| Panel A: Performance |                     |                |                     |                     |                |                     |
|                      | Return on assets    |                |                     | Tobin's Q           |                |                     |
| HCFR group           | 0.048               | 0.023          | 0.025**             | 1.377               | 1.243          | 0.143**             |
| LCFR group           | 0.042               | 0.019          | 0.023**             | 1.268               | 1.187          | 0.081**             |
| NDIV group           | 0.052               | 0.025          | 0.027**             | 1.359               | 1.236          | 0.123**             |
| DIV group            | 0.043               | 0.020          | 0.023**             | 1.310               | 1.205          | 0.105**             |
| Observations         | 3,278               | 1,442          |                     | 3,278               | 1,442          |                     |
| Panel B: Innovation  |                     |                |                     |                     |                |                     |
|                      | R&D intensity       |                |                     | Patent intensity    |                |                     |
| HCFR group           | 0.025               | 0.016          | 0.009**             | 0.009               | 0.003          | 0.006**             |
| LCFR group           | 0.020               | 0.014          | 0.006**             | 0.005               | 0.001          | 0.004**             |
| NDIV group           | 0.031               | 0.017          | 0.014**             | 0.009               | 0.003          | 0.006**             |
| DIV group            | 0.019               | 0.014          | 0.005**             | 0.006               | 0.002          | 0.004**             |
| Observations         | 3,278               | 1,442          |                     | 3,278               | 1,442          |                     |

See Table 1 for variable definitions. HCFR = High cash flow rights. LCFR = Low cash flow rights. NDIV = No divergence. DIV = Divergence. \*  $p < 0.05$ ; \*\*  $p < 0.01$ .

## Discussion and conclusion

Prior attempts to understand the relation between internationalization and firm performance/innovation yielded mixed results. Building on agency theory, we suggest that multinational firms frequently suffer a greater complexity of corporate governance issues, compared to domestic firms, and thus produce more severe agency problems. We posit and find that the relation between internationalization and firm performance/innovation is moderated by the controlling shareholder's control and ownership. Our findings show that the performance and innovation impact of internationalization is a positive function of the level of cash flow rights held by the controlling owner and a negative function of the degree of divergence between the controlling owner's cash flow rights and voting rights. Our results are consistent with the incentive alignment effect, where greater cash flow rights provide controlling shareholders of multinational firms with the incentives and the ability to alleviate the agency problems associated with international operations. This effect, thus, leads to a positive impact of internationalization on firm performance and innovation. Our results are also consistent with the entrenchment effect, which is induced by the separation between control and cash flow rights thereby providing the controlling shareholders with more controlling power to divert the firm's resource for private benefits and further exacerbate the agency problem of international operation. The entrenchment effect deteriorates the performance and innovation impact of internationalization. Overall, our work points to a compelling explanation for the conflicting findings of previous studies on the performance and innovation implications of internationalization. Specifically, the conflicting results may stem from attempts to detect performance and innovation effects of internationalization

without considering the presence of dominant shareholders and the agency problem of multinational corporations.

These findings have policy implications for Taiwan and other countries in the Asian Pacific Basin region. Internationalization is a critical strategic option for East Asian corporations in pursuit of sustained growth. Moreover, corporate ownership is highly concentrated in East Asia, and higher ownership concentration frequently creates agency problems between minority shareholders and controlling owners. These controlling shareholders often plunder their businesses to the detriment of the interests of minority shareholders. This phenomenon also exists in Taiwan's international corporations, as shown in our results. Therefore, our findings are important for policymakers to understand how the ownership concentration is associated with certain consequences of internationalization. In addition, our findings suggest the need for increased investor protections in situations of divergence of cash flow rights and control rights.

One potential limitation of our study is rooted in the measurement of the control divergence variable, which is also noted by Claessens and colleagues (2000). Because the ownership and control data of the ultimate owners are compiled using only listed corporations, this method raises the possibility of measurement error for control divergence. If unlisted corporations have direct and indirect ownership links with listed corporations, the estimates of ultimate ownership and control may be underestimated. This type of measurement error is severe for firms in countries in which capital markets and legal and extra-legal infrastructures are not mature. Our hypotheses may be affected by this limitation. However, the effect of unmeasured variables must always be unpredictable, and it seems reasonable to conclude that only systematic variance is likely to yield support for a hypothesized statistical relation.

## Appendix

**Table 6** Factor analysis details.

| Panel A: Correlations             |                     |                      |                     |
|-----------------------------------|---------------------|----------------------|---------------------|
| Variable                          | Foreign sales ratio | Foreign assets ratio | Number of countries |
| Foreign sales ratio               | 1.000               |                      |                     |
| Foreign assets ratio              | 0.833**             | 1.000                |                     |
| Number of countries               | 0.421**             | 0.371**              | 1.000               |
| Panel B: Total variance explained |                     |                      |                     |
| Factor                            | Eigenvalue          | % of variance        | Cumulative %        |
| 1                                 | 2.114               | 70.48                | 70.48               |
| 2                                 | 0.720               | 24.01                | 94.49               |
| 3                                 | 0.165               | 5.51                 | 100.00              |
| Panel C: Factor loadings          |                     |                      |                     |
| Variable                          | Loading             |                      |                     |
| Foreign sales ratio               | 0.927               |                      |                     |
| Foreign assets ratio              | 0.910               |                      |                     |
| Number of countries               | 0.653               |                      |                     |

Extraction method: Principal component analysis. \*\*  $p < 0.01$ .

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