

**Is the separation between cash flow and control rights a good proxy for minority shareholder expropriation?**

YAOHUA QIN

BNU-HKBU United International College

ARIS STOURAITIS \*

Hong Kong Baptist University

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\* Corresponding author. Qin: Division of Business and Management, BNU-HKBU United International College, 2000 Jintong Road, Tangjiawan, Zhuhai, People's Republic of China (yaohuaqin@uic.edu.cn); Stouraitis: School of Business, Hong Kong Baptist University, Renfrew Road, Kowloon Tong, Hong Kong, People's Republic of China (stoura@hkbu.edu.hk). We would like to thank Gang Li, Hong Zou, Bingbing Hu, and Byron Song for comments on earlier drafts.

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## **Abstract**

Numerous studies have used the wedge between cash flow and control rights as a proxy for the unobservable risk of controlling shareholders expropriating minority shareholders. They interpret the negative relationship between the wedge and firm value, found in previous studies, as a relationship between the risk of expropriation and firm value. However, the results of this paper suggest that the wedge is endogenous and related to firm characteristics which drive the position of the firm within the pyramid. Based on a sample of 1,202 public firms listed in the Hong Kong stock market from 2009-2013, we show that the significance of the wedge disappears when it is included alongside these firm characteristics. So, any power of the wedge to explain firm value can be attributed to the effect of firm characteristics that endogenously determine the position of the firm within the pyramid, and not on the risk of expropriation. We conclude that the widely used wedge is not a good proxy for the expropriation of minority shareholders (tunneling).

Keywords: control rights, cash flow rights, expropriation, ownership concentration, wedge

JEL classification: G14; G34; F23; K42; M14

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## 1. Introduction

In most countries worldwide, ownership is concentrated among large shareholders.<sup>1</sup> When large shareholders have more control rights over cash flow rights, they may have incentives to expropriate minority shareholders.<sup>2</sup> Previous studies commonly use this divergence (wedge) between cash flow and control rights as an indirect measure of the unobservable risk of expropriation of minority shareholders (tunneling). They attribute the negative relationship between the wedge and firm value to the likelihood of expropriation. They conjecture that controlling shareholders transfer resources from firms in which they own low cash flow rights to firms in which they own high cash flow rights.

However, when used alongside direct data on tunneling (based on related party transactions in Hong Kong), the wedge between cash flow and control rights showed absolutely no explanatory power for actual expropriation (Cheung, et al., 2006). In addition, Siegel and Choudhury (2012) replicate one of the seminal studies that used the wedge to proxy for expropriation (Bertrand et al., 2002). After controlling for differences in the business models between firms with high and low wedge they found no evidence of tunneling. Extant literature on business groups (see, for example, Almeida and Wolfenzon, 2006) has shown that the position of a firm within a pyramid is endogenously determined based on firm characteristics. The insights of this literature have not been taken into consideration by the studies that use the wedge as a proxy for expropriation, although the wedge should be related to the position of the firm inside a pyramid.

Could the same firm characteristics be correlated with both the wedge between cash flow and control rights and firm value, so that the relationship that previous studies attribute to expropriation is actually driven by the endogeneity of the wedge? This is the question that we examine in this study. Alternatively, is this wedge a good proxy for expropriation or is it driven by other factors (e.g. firm characteristics) that are correlated with both the wedge and firm value? We argue that (i) the wedge is endogenous in regressions of firm value, and (ii) after controlling for the determinants of the wedge, common conclusions in prior work are invalidated.

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<sup>1</sup> See, for example, La Porta et al. (1999); Claessens et al. (2000).

<sup>2</sup> Bertrand et al. (2002), Baek et al. (2004); Claessens et al. (2002); Faccio and Lang (2002); Joh (2003)

There are two separate streams of literature associated with these questions. The first stream measures the separation between cash flow and control rights and its impact on firm value. This separation is prevalent in most countries, especially in Asia (Claessens et al., 2006) and Europe (Faccio and Lang, 2002), and is commonly achieved through pyramidal structures (Almeida and Wolfenzon, 2006). Large shareholders may expropriate minority shareholders by tunneling resources from firms where they own low cash flow rights to firms where they own high cash flow rights (Baek et al., 2006; Mitton, 2002). Numerous studies use this deviation between cash flow and control as a proxy for unobservable expropriation, thus interpreting any negative relationship between the wedge and firm value as a relationship between expropriation and firm value (Claessens et al., 2002; Lemmon and Lins, 2003; Lins, 2003; Maury and Pajuste, 2005; Hong et al., 2017).

A second stream shows that the placement of a firm inside a pyramidal structure is endogenously related to the firm's characteristics. Large shareholders prefer to control firms with low pledgeability of cash flows and assets indirectly within a group, and this leads to a separation between cash flow and control rights (Almeida and Wolfenzon, 2006). Similarly, low profitability firms are typically placed at the bottom of the pyramid (Almeida et al., 2011; Masulis et al., 2011). Previous studies have identified a long list of characteristics that determine the firm's position inside a pyramid.<sup>3</sup>

However, there are no studies that connect these two streams of literature. This raises the possibility that the relationship between the wedge and firm value may be driven by firm characteristics that endogenously determine the position of the company within the pyramid, and may be unrelated to expropriation.

We hand-collect panel data for Hong Kong publicly listed firms during 2009-2013 to examine this question. The Hong Kong market is dominated by firms with pyramid structures and is included in Claessens et al. (2002), one of the earliest studies that established the wedge between cash flow and control rights as a measure of expropriation. So, it is a good benchmark to compare our results against. For better comparability, we prefer to analyze an earlier sample.

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<sup>3</sup> Almeida and Wolfenzon (2006); Almeida et al. (2011); Masulis et al. (2011); Bena and Ortiz-Molina (2013); Demsetz and Lehn (1985); Richter and Weiss (2013); Villalonga and Amit (2006).

We find that high wedge firms are older, larger, have large dividend payouts and analyst coverage, low leverage, asset tangibility and collateral, and lower systematic and unsystematic risk. We first replicate the valuation discount associated with the separation of cash flow and control rights (which previous studies attribute to the likelihood of expropriation) using the model of Claessens et al. (2002). However, after controlling for the firm characteristics that determine the firm's position inside a pyramid, the significance of the wedge for firm value disappears. These results hold for the full sample, for family-controlled, business group, and Mainland Chinese firms.

Our results suggest that the wedge between cash flow and control rights is endogenously determined by firm characteristics that affect the firm's position within the pyramidal structure but are unrelated to expropriation. Consequently, it is not a good proxy for the risk of tunneling. Studies that fail to control for these characteristics may obtain a spurious relationship between the wedge and firm value or performance, which is wrongly attributed to expropriation.

The remainder of this study is organized as follows. Section 2 describes the data, the sample, and the variables. Section 3 reports our empirical findings. Section 4 concludes.

## 2. Data and variables

We obtain data for Hong Kong publicly listed firms for years 2009-2013 at fiscal year-end. Ownership data are hand-collected from company annual reports, and supplemented with data from the Osiris database. Financial data are obtained from Datastream and Bloomberg. We identify the largest shareholder owning more than 10% of the company's shares. If this shareholder is a company, we conduct a backwards search for this company's largest shareholder until a company owned by an individual, by a company with no substantial holdings larger than 10%, or by the government is identified. We exclude firms whose ultimate shareholders cannot be traced and firms with cross-shareholding structures. To illustrate the calculation of cash flow and control rights, consider the ownership structure of Power Assets Holdings Limited (HK Stock Code: 6) in 2013 in Figure 1.

[INSERT FIGURE 1 HERE]

Li Ka-Shing is the ultimate owner of Power Assets Holdings Limited. Based on Claessens et al. (2000), whose approach is commonly used in most studies, the control right is calculated as the weakest link and the cash-flow right as the product of ownership along the pyramid chain, counting both direct and indirect ownerships, as follows:

$$\text{Cash - flow Right} = [(43.41\% \times 49.95\% + 2.53\%) \times 76.39 + 0.22] \times 38.87\% = 7.28\% \quad (1)$$

$$\text{Control Right} = \min(43.41\%, 43.41\% + 2.53\%, 43.41\% + 0.22\%, 38.87\%) = 38.87\% \quad (2)$$

$$\text{Wedge} = 38.87\% - 7.28\% = 31.59\% \quad (3)$$

We exclude firms in the financial/real estate industry (SIC 60-69) and regulated utilities (SIC 49), and firms with missing financial variables, in line with previous studies. Based on previous studies we identify a set of firm characteristics that have been shown to influence the positioning of a firm within a pyramid. The definition and the rationale behind these variables appears in Table 1. All continuous variables are winsorized at the 1% and 99% levels.

[INSERT TABLE 1 HERE]

As reported in Table 2, of the 1,202 firms in the final sample (4,185 firm-year observations), 40 have dispersed ownership where no shareholder owns more than 10% of the company's shares, 28 are owned by other widely held companies, 950 have family owners, and 184 are state-owned. Family control rights are on average 46.75%, while those by widely held companies and the state are 47.45% and 50.8% respectively. Families own the smallest cash-flow rights (42.47%). The deviation between cash flow and control rights for family and state-owned firms is larger than that for widely-held company-controlled firms. State owned firms are larger on average, with average total assets of HKD65.8 billion (USD8.4 billion), while family controlled firms are smaller (HKD12.7 billion; USD1.6 billion). Widely-held company-owned firms have the highest Tobin's Q.

[INSERT TABLE 2 HERE]

### 3. Empirical results

#### 3.1 Firm characteristics and the endogeneity of the wedge

We first examine whether firm characteristics that have been shown to determine the position of a firm within a pyramid are also significant in explaining the wedge between cash flow and control rights. Since the dependent variable has a minimum value of 0, we estimate a Tobit model.<sup>4</sup> Table 3 shows that firm age, size and analyst coverage are significantly positively related to the wedge. This suggests that mature and large firms tend to be owned through pyramidal structures, and is consistent with Khanna and Palepu (2000), who show that group-affiliated firms are older and larger than standalone firms. They are also followed by more analysts, potentially to alleviate reputation concerns (Faccio, Lang, and Young, 2001; Gomes, 2000; Masulis et al., 2011). Larger analyst following is also in line with Palas et al. (2023), who show that firms with large wedge exhibit higher reporting quality.

Capital expenditures and leverage are negatively related to the wedge, consistent with Faccio et al. (2009) and Paligorova and Xu (2012). Larger wedge is associated with lower systematic and non-systematic risk, in line with Villalonga and Amit (2006) and Masulis et al. (2011), who show that high-risk firms tend to be controlled through pyramids and firms at the bottom of pyramids exhibit lower systematic risk compared to firms at the top. Group-affiliated firms may also benefit from risk-sharing within the group (Khanna and Yafeh, 2005). We note that if the wedge, beta, and idiosyncratic risk were proxies for the risk of expropriation, we would expect them to be *positively* correlated. However, the risk coefficients are significantly *negative* in Table 3. In line with Almeida et al. (2011), and Bena and Ortiz-Molina (2013), we find no negative relationship between the wedge and profitability but the wedge is negatively related to the pledgeability of assets. Finally, in contrast to Bena and Ortiz-Molina (2013), we find a negative relationship between the wedge and wage expenses, which suggests that high wedge firms may be financially constrained, and thus may benefit from group affiliation.

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<sup>4</sup> A logit model, where the dependent variable equals 1 when wedge>0 produces qualitatively similar results.

Overall, our results suggest that firm characteristics that have been shown to drive the position of the firm inside a pyramid, but are not related to the expropriation of minority shareholders, have explanatory power for the wedge between cash flow and control rights. They are in line with previous studies which suggest that the position of a firm inside a pyramid is endogenously determined by firm characteristics, and cast doubt on the idea that this wedge is a clean exogenous measure of minority shareholder expropriation.

[INSERT TABLE 3 HERE]

### *3.2 Wedge between ownership and control, firm characteristics, and firm value*

In this section we examine whether the characteristics that determine the position of the firm within the pyramid also affect firm value, and whether the wedge has any incremental explanatory power for firm value after controlling for these characteristics. In Table 4, Column 1 we first replicate the results of Claessens et al. (2002) for Hong Kong. Our results show that the separation between cash flow and control rights is negatively and significantly related to Tobin's Q, which is consistent with the regression results of Claessens et al. (2002), Table 4. Previous studies consider this result, replicated numerous times in many emerging markets, as driven by the risk of expropriation, with high wedge firms allegedly subject to more tunneling compared to low wedge firms. Estimating the same specification we obtain the same result for a different time period.

In Columns 2-5, we estimate the same model after replacing the wedge between cash flow and control rights with the residual from regressions of the wedge on the firm characteristics from Table 3, Columns 1-4 respectively. This residual captures the portion of the wedge that is unrelated to the firm characteristics that determine the position of the firm inside the pyramid. In these models, the relationship between the residual wedge and firm value disappears, so the residual separation between cash flow and control rights has no explanatory power for firm value. This suggests that the negative relationship between the separation of cash flow and control and firm value in the model by Claessens et al. (2002) is likely driven by the firm characteristics that determine the position of the firm within the pyramid.

[INSERT TABLE 4 HERE]

In Table 5, we regress firm value on the wedge between cash flow and control rights and the firm characteristics from Table 3. We observe that most firm characteristics, except for tangibility and collateral, are significantly related to firm value. More importantly, however, the relationship between the wedge and firm value again disappears. Effectively, the impact of the wedge is absorbed by firm characteristics such as capital expenditures, leverage, beta, idiosyncratic risk, tangibility, and staff costs. Moreover, these factors are not related to the expropriation of minority shareholders. This evidence shows that the negative relationship between the wedge and firm value, documented in previous studies, is likely the result of omitted variables that endogenously determine the position of the firm inside the pyramid.

[INSERT TABLE 5 HERE]

In robustness tests, we examine separately family-controlled firms, firms belonging to business groups, firms with Mainland Chinese ownership, and firms listed in the smaller Growth Enterprise Market (GEM), and we replicate the analysis using 25% as the critical cutoff value to determine ownership (not reported in tables for brevity). Our results are qualitatively similar in these tests.

#### 4. Conclusions

Previous studies interpret a negative relationship between the separation of cash flow from control rights and firm value as suggestive of the presence of expropriation of minority shareholders by controlling shareholders. Using insights from the literature that examines how firm characteristics determine the position of a firm within a pyramidal structure, we show that the wedge may be endogenously determined by these firm characteristics. As the magnitude of the wedge is directly determined by the position of the firm in the pyramid, failing to control for these characteristics would cause an endogeneity problem. We find that the relationship between the wedge and firm value identified in previous studies disappears when controlling for firm characteristics that determine endogenously the position of the firm inside the pyramid but are unrelated to potential expropriation. In summary, the separation between cash flow and control rights is not a good proxy for the risk of expropriation or tunneling.

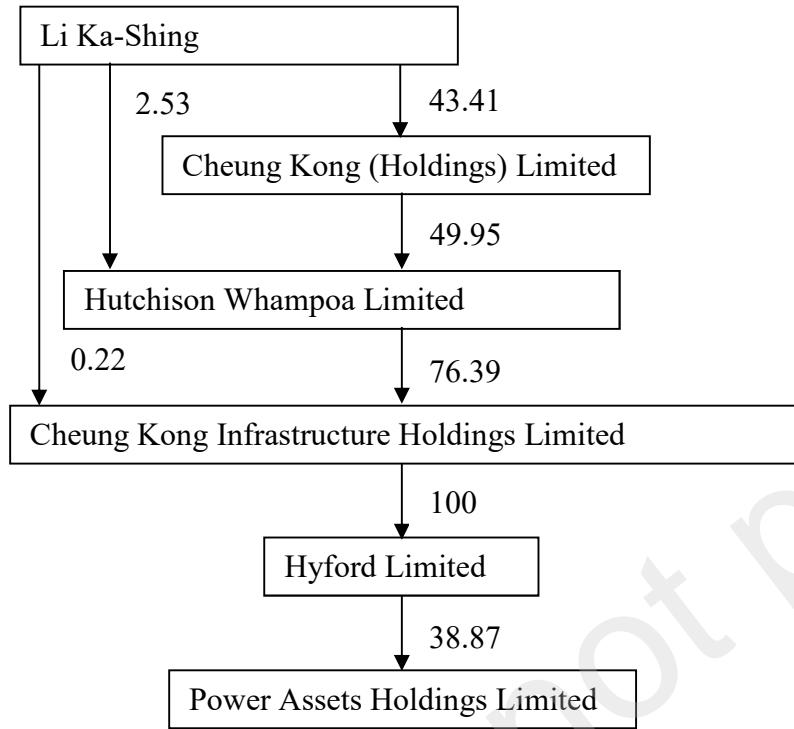
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**Figure 1**  
**Ownership Structure of Power Assets Holdings Limited**



**Table 1**  
**Variable definitions**

Variable:	Definition:	Justification:
<b>A. Ownership and control variables</b>		
Ownership right (O)	The smallest of ownership percentages along the pyramid chain, counting both direct and indirect ownerships	Based on the standard method adopted by Claessens et al. (2000)
Cash flow right (C)	The product of ownership percentages along the pyramid chain, counting both direct and indirect ownerships	Based on the standard method adopted by Claessens et al. (2000)
Wedge (C-O)	The difference between cash-flow rights and ownership rights	Based on the standard method adopted by Claessens et al. (2000)
<b>B. Firm value</b>		
Tobin's Q	The ratio of the sum of market value of equity plus book value of debt plus book value of preferred stock divided by book value of assets	Based on the standard method adopted by Claessens et al. (2000)
<b>C. Firm characteristics that determine endogenous position within pyramid</b>		
Age	Number of years since the company's establishment	Small investors may prefer well-established companies, suggesting a negative relationship between firm age and concentrated control (Claessens et al., 2000).
Size	Natural log of total assets in thousands of HK dollars	Smaller firms have larger investment requirements and are more likely to be included in a business group structure (Bena and Ortiz-Molina, 2013).
Analyst Coverage	Number of analysts covering a firm	Analyst coverage reduces information asymmetry (Chang et al., 2006). Firms concerned with their reputation prefer higher visibility. Business

		group firms may be associated with more analyst coverage. High wedge firms exhibit higher quality of financial reporting (Palas et al., 2023)
Dividend Payout	Common dividends paid divided by EBIT	Dividends redistribute group capital resources from an internal capital markets perspective (Gopalan et al., 2014).
Capital Expenditure	Capital expenditure scaled by total assets	Optimal to place high capex firms under the direct control of the large shareholder to align investment with shareholders' interests (Almeida and Wolfenzon, 2006). Capital investment may affect managerial ownership structure (Cho, 1998).
Sales Growth	Annual change measured relative to the previous year	Group-affiliated firms can leverage internal funds and reputation to support growth (Khanna and Palepu, 2000). Hence, a firm's sales growth may be related to its ownership structure. Firms with better growth prospects may not need to be placed under the direct control of the controlling shareholder (Masulis et al., 2011).
Leverage	Ratio of total liabilities to total assets	Risk-sharing among group-affiliated firms reduces borrowing costs and provides access to debt financing (Khanna and Yafeh, 2005). Low wedge firms at the top of the pyramid may borrow to support high wedge subsidiaries at the bottom (Masulis et al., 2011). Faccio et al. (2009) and Paligorova and Xu (2012) document a negative relationship between the wedge and leverage. Pyramid structures and leverage may be substitute ways to achieve control (Ellul, 2008).
Systemic Risk (beta)	Obtained by regressing daily stock returns for one year on the returns of the Hang Seng Index	Firm owners have incentives to control risky firms directly to avoid managerial discretion (Demsetz and Lehn, 1985). But management would rather retain low ownership in high risk firms to enhance diversification for a manager's portfolio (Himmelberg et al., 1999).
Idiosyncratic Risk	The standard error of the same market model used to estimate beta	Same as above
Profitability	The ratio of EBIT to total assets (ROA)	Owners prefer to own directly firms with high pledgeability of cash flows and assets, and to own through pyramids firms with low pledgeability (Almeida and Wolfenzon, 2006). We measure pledgeability of cash flows using profitability.

Tangibility	Tangible assets scaled by total assets	Same as above. We measure pledgeability of assets using tangibility.
Collateral	The sum of tangible assets and inventory scaled by total assets	Same as above. We measure pledgeability assets using collateral assets.
Capital/labor	Fixed assets divided by total employment	Bena and Ortiz-Molina (2013) show that young firms with parents have high capital-labor ratios and pay higher wages. Such firms require funds to employ expensive labor, thus the controlling shareholder can use the parent company to support them (Almeida and Wolfenzon, 2006).
Wage/employees	Total staff costs divided by employment	Same as above.
R&D	R&D expenses scaled by total assets	Same as above.

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**Table 2**  
**Sample Descriptive Statistics**

The table reports descriptive statistics for our sample of 1,202 Hong Kong firms during 2009-2013, using a 10% ownership cutoff for identifying control, classified by type of ultimate controlling shareholder. Ownership data are from annual reports and the OSIRIS database, and financial data are DataStream and Bloomberg. Variable definitions appear in Table 1.

Variables:	Ultimate controlling shareholder			
	None (Dispersed ownership)	Widely held company	Family	State
	(1)	(2)	(3)	(4)
Ownership right	7.976	46.164	42.474	45.856
Cash flow right	7.976	47.449	46.751	50.805
Wedge (C-O)	0.000	1.286	4.276	4.948
Age	14.329	10.506	13.388	14.962
Assets (millions HKD)	2381.4	49361.6	12656.8	65752.6
Analyst Coverage	0.060	1.345	0.412	0.756
Dividend Payout	5.330	34.398	26.995	23.036
Capital Expenditure	0.028	0.060	0.043	0.051
Sales Growth	0.646	0.231	0.282	0.257
Leverage	0.227	0.196	0.187	0.239
Systemic Risk (beta)	0.685	0.836	0.700	0.942
Idiosyncratic Risk	10.291	5.962	6.980	5.565
Profitability	-0.077	0.048	0.045	0.044
Tangibility	0.157	0.265	0.272	0.331
Collateral	0.206	0.354	0.405	0.458
Capital/labor (millions HKD)	0.405	0.699	1.671	1.859
Wage/employees (millions HKD)	0.144	0.104	0.118	0.118
R&D	0.001	0.008	0.004	0.005
Tobin's Q	1.177	1.467	1.235	1.034
No. of firms	40	28	950	184
No. of firm-year observations	70	87	3313	715

**Table 3**  
**Firm characteristics and the wedge**

The table reports results of Tobit regressions of the cash flow/control wedge on firm characteristics using panel data for 1,202 Hong Kong firms during 2009-2013. Variable definitions appear in Table 1. Intercepts, year and industry fixed effects are estimated but not reported. Industry classification follows Campbell (1996). Numbers in parentheses are robust standard errors clustered at firm level. \*\*\*, \*\*, \* indicate significance at the 1%, 5% and 10% levels respectively.

Dependent variable:	Cash flow/control wedge	Cash flow/control wedge	Cash flow/control wedge	Cash flow/control wedge
Explanatory variables:	(1)	(2)	(3)	(4)
Size	0.113 (3.06)***	0.109 (2.93)***	0.114 (3.09)***	0.11 (2.95)***
Age	1.035 (3.67)***	0.587 (2.09)**	1.085 (3.88)***	0.642 (2.31)**
Analyst coverage	0.347 (1.96)*	0.335 (1.89)*	0.334 (1.88)*	0.323 (1.82)*
Dividend payout	0.004 (0.39)	0.002 (0.22)	0.003 (0.31)	0.001 (0.13)
Capital Expenditure (t-1)	-18.935 (-1.94)*	-19.461 (-1.99)**	-22.609 (-2.4)**	-22.845 (-2.42)**
Sales Growth (t-1)	0.032 (0.08)	0.089 (0.22)	0.055 (0.14)	0.107 (0.26)
Leverage	-8.869 (-3.73)***	-8.631 (-3.62)***	-8.501 (-3.53)***	-8.166 (-3.39)***
Systemic Risk (Beta)	-2.404 (-2.55)**		-2.271 (-2.42)**	
Idiosyncratic Risk		-0.342 (-2.21)**		-0.349 (-2.26)**
Profitability (t-1)	2.163 (0.55)	0.801 (0.2)	2.913 (0.73)	1.547 (0.38)
Tangibility (t-1)	-6.644 (-2.73)***	-6.729 (-2.76)***		
Collateral (t-1)			-5.23 (-2.63)***	-5.646 (-2.82)***
Capital/labor	0.048 (0.14)	0.017 (0.05)	-0.099 (-0.31)	-0.11 (-0.34)
Wage/employees	-1.414 (-2.65)***	-1.395 (-2.61)***	-1.277 (-2.43)**	-1.265 (-2.4)**
R&D	5.928 (0.17)	-0.049 (0.00)	4.469 (0.13)	-1.246 (-0.04)
Intercept	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Number of Observations	4185	4185	4185	4185
Log Likelihood	-6876	-6877	-6877	-6877

**Table 4**  
**Residual wedge and firm value**

The table reports results of OLS regressions of Tobin's Q on the cash flow/control wedge using panel data for 1,202 Hong Kong firms during 2009-2013. Column 1 replicates the original model from Claessens et al. (2002), Table 4. In Columns 2-5, the main explanatory variable is the residual from a regression of the wedge on the explanatory variables from Table 3, Columns 1-4 respectively. Variable definitions appear in Table 1. Intercepts, year and industry fixed effects are estimated but not reported. Industry classification follows Campbell (1996). Numbers in parentheses are robust standard errors clustered at firm level. \*\*\*, \*\*, \* indicate significance at the 1%, 5% and 10% levels respectively.

Dependent variable:	Tobin's Q				
Explanatory variables:	(1)	(2)	(3)	(4)	(5)
Wedge	-0.008 (-2.17)**				
Residual Wedge		0.004 (0.96)	0.004 (1.01)	0.003 (0.68)	0.003 (0.76)
Ownership	0.001 (0.58)	0.003 (1.57)	0.003 (1.58)	0.003 (1.49)	0.003 (1.51)
Size	-0.222 (-6.56)***	-0.224 (-6.67)***	-0.224 (-6.65)***	-0.224 (-6.67)***	-0.224 (-6.65)***
Age	-0.01 (-3.35)***	-0.009 (-3.1)***	-0.009 (-3.11)***	-0.009 (-3.16)***	-0.009 (-3.16)***
Sales Growth(t-1)	0.06 (2.31)**	0.061 (2.37)**	0.061 (2.37)**	0.061 (2.36)**	0.061 (2.36)**
CapitalExpense/Sales(t-1)	0.166 (0.71)	0.166 (0.71)	0.166 (0.71)	0.17 (0.73)	0.169 (0.73)
Intercept	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Adjusted R-square	0.135	0.134	0.134	0.134	0.134
Number of Observations	4185	4185	4185	4185	4185

**Table 5**  
**Firm characteristics, wedge, and firm value**

The table reports results of OLS regressions of Tobin's Q on the cash flow/control wedge and characteristics that determine the position of the firm within a pyramid using panel data for 1,202 Hong Kong firms during 2009-2013. Variable definitions appear in Table 1. Intercepts, year and industry fixed effects are estimated but not reported. Industry classification follows Campbell (1996). Numbers in parentheses are robust standard errors clustered at firm level. \*\*\*, \*\*, \* indicate significance at the 1%, 5% and 10% levels respectively.

Dependent variable:	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q
Explanatory variables:	(1)	(2)	(3)	(4)	(5)
Wedge	-0.006 (-1.56)	-0.005 (-1.43)	-0.006 (-1.53)	-0.005 (-1.41)	-0.006 (-1.58)
Ownership	0.002 (0.84)	0.002 (0.93)	0.002 (0.97)	0.002 (1.02)	0.002 (0.93)
Size	-0.273 (-7.45)***	-0.228 (-6.62)***	-0.272 (-7.37)***	-0.229 (-6.5)***	-0.234 (-7.44)***
Age	-0.011 (-4.14)***	-0.01 (-3.99)***	-0.01 (-4.08)***	-0.01 (-3.97)***	-0.009 (-3.07)***
Sales Growth(t-1)	0.05 (1.97)**	0.046 (1.82)*	0.049 (1.92)*	0.045 (1.78)*	0.071 (2.54)**
Analyst coverage	0.077 (6.14)***	0.078 (6.12)***	0.077 (6.12)***	0.078 (6.11)***	0.072 (5.47)***
Capital expenditure(t-1)	2.027 (2.84)***	2.105 (2.93)***	2.21 (3.43)***	2.274 (3.51)***	2.224 (3.32)***
Leverage	0.918 (3.08)***	0.873 (2.78)***	0.963 (3.12)***	0.91 (2.79)***	1.109 (3.38)***
Systemic Risk (beta)	0.195 (2.72)***		0.194 (2.72)***		0.196 (2.92)***
Idiosyncratic Risk		0.034 (2.05)**		0.033 (1.99)**	
Tangibility(t-1)	0.046 (0.18)	0.07 (0.27)			
Collateral(t-1)			-0.096 (-0.48)	-0.053 (-0.27)	0.249 (1.19)
Wage/employees	0.196 (4.49)***	0.198 (4.52)***	0.199 (4.54)***	0.2 (4.56)***	0.289 (6.34)***
Dividend payout					0.001 (1.19)
Profitability(t-1)					-0.224 (-0.3)
Capital/labor					-0.14 (-5.29)***
R&D					12.276 (2.59)***
Intercept	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Adjusted R-square	0.19	0.19	0.19	0.19	0.22
Number of Observations	4185	4185	4185	4185	4185