Investor protection and market liquidity revisited

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Abstract

Purpose – *This paper aims to establish the relation between corporate governance – as represented by investor protection at both the legal and firm levels – and stock market liquidity.*

Design/methodology/approach – *This paper avails of the unique features of Hong Kong- and China-based stocks that are traded on the Hong Kong Stock Exchange so as to test whether differences between "common law" and "civil law" legal environments contribute to differences in stock liquidity. In addition, by constructing an internal corporate governance index score for each firm based on board size, board independence and information on the audit and remuneration committee, we document whether firms with better corporate governance scores have narrower spreads, greater depth and higher trading volumes.*

Findings – *Overall, results provide support for a linkage between corporate governance issues – as investor rights protection at both the environment and firm protection levels – and stock market liquidity.*

Research limitations/implications – *This paper recognizes that investor protection constitutes a single component of the desirability of investing in a firm's stock. Nevertheless, it does appear to constitute an important component of a stock's attractiveness.*

Practical implications – *The practical implications are clear, namely, that good corporate governance of firms leads to their attractiveness as investment vehicles (for both the shorter and the longer terms).*

Social implications – *The paper has clear social implications. In particular, the paper serves to highlight that prospects for enduring wealth creation are contingent on the safeguards accorded to the equity ownership of a firm's stock.*

Originality/value – *The originality lies in taking advantage of the unique features of the Chinese and Hong Kong firms on the Hong Kong Exchange, so as to examine the contrasting influences of common law and civil law on stock liquidity. Thus, the authors allow for the effects of corporate governance across the two legal environments (China and Hong Kong) to be compared and contrasted while maintaining other influences unchanged across Chinese and Hong Kong shares.*

Keywords *Governance, Investors, Business environment, Shareholders*

Paper type *Research paper*

1. Introduction

Although corporate governance at the firm level, the legally enforcing statutes of individual protection and stock market liquidity are recognized as elements of an efficient market mechanism, the linkages between these remain largely unexplored. In response, we consider corporate governance, as it relates to investor protection at both the firm level – the specific corporate governance mechanisms that safeguard the interests of firm shareholders in relation to the interests of management and other stakeholders – and the environment level of the political and protective legal systems within which the firm operates – as having a direct impact on a firm's stock price liquidity. As an outcome, the paper considers how firms can be guided to develop the kind of corporate governance systems that enhance shareholder protection and thereby market liquidity.

This work follows a line of research from, notably, La Porta *et al.* (1997, 1998) who argue that legal protection of the firm's investors limits the extent of expropriation of such investors

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by corporate insiders, thereby promoting financial development. The authors proceed to show that legal rules protecting investors vary systematically among legal traditions, and argue that the laws of "common law" countries (originating in common English law) are more protective of outside investors than the laws of "civil law" (originating in Roman law). They view that civil law is associated with a heavier hand of government ownership and regulation than common law. They contend that many of the indicators of such government ownership and regulation are associated with adverse impacts such as corruption, unofficial economies and higher unemployment. Following such thinking, whereas common law stands for a philosophy of supporting private market outcomes, civil law seeks to replace such outcomes with state-desired outcomes. Additionally, the authors find that investor protection enhances both capital market development and corporate valuations. Finally, they argue that the source of legal tradition is typically that of a country's colonization.

Supporting the importance of such contentions, Giannetti and Koskinen (2010) report that portfolio investors are less likely to invest in companies or countries that display weak corporate governance, while Bris and Cabolis (2008), in a survey of 506 acquisitions from 39 countries, relate higher merger premiums to the level of shareholder protection and accounting standards. Foley and Greenwood (2009) find that higher investor protection in countries with higher investor protection are more likely to raise capital and growth in a study across 34 countries, with the consequence that block holdings of ownership within the firm are diluted. Wu *et al.* (2009) report such a relation for non-state-owned firms but not for state-owned firms in China.

Lombardo and Pagano (2001) find that investors are willing to accept lower required rates of return when participating in markets with higher levels of investor protection, while McLean *et al.* (2012) in a study across 44 countries find that in environments that enforce greater levels of investor protection, stock prices are more likely to reflect the firm's fundamentals. Goyenko *et al.* (2009) stresses that liquidity in tandem with price discovery represents a determining feature of efficient markets.

Thus, both investor protection and liquidity have significant impact on asset pricing, risk and return (Gompers *et al.*, 2003; O'Hara, 2003; Pastor and Stambaugh, 2003; Acharya and Pedersen, 2005; Cremers and Nair, 2005). Brockman and Chung (2003) report that blue chip shares listed on the Hong Kong Exchanges and Clearing Limited (HKEx) have generally narrower spreads and greater depths than China-based shares listed on the HKEx, and attribute the higher liquidity for blue chip shares to better investor protection at the environment level for these firms over China-based firms. Chung *et al.* (2010) confirm that firms with better corporate governance at the firm's own firm level also have narrower spreads and a lower trade impact on prices.

Such findings provide support for the impact of investor protection at the firm level on market liquidity. Thus, we conjecture that increased investor protection at both the firm and environment levels leads to an increase in a firm's stock price liquidity. Nevertheless, the issue of the effect of investor protection on liquidity has received relatively sparse attention in the literature.

The Hong Kong stock market provides a unique setting on which to investigate the relation between investor protection and liquidity. For both historical and geographical reasons, Hong Kong is a Special Administrative Region of the People's Republic of China in which the HKEx lists both Hong Kong- and China-based firms, which are represented by blue chip shares (Hong Kong based) and red chip shares together with H-shares (China based). Blue chip firms are ruled by Special Administrative Region basic law, which derives from UK's framework of common law, whereas China-based firms are generally governed by Chinese civil law. Notwithstanding, HKEx-listed firms – both Hong Kong- and China-based – are treated equally, with, for example, the same reporting standards under HKEx listing rules. The Hong Kong market, therefore, provides a unique structure within

which to investigate investor protection differences across firms operating within distinct investor protective environments, while retaining a common stock exchange regulation.

Following La Porta *et al.*'s (1998) contention that "common law" countries generally provide stronger legal protection than "civil law" countries, our first hypothesis is:

H1. Blue chip firms – that are subject to "common law" – provide a higher level of investor protection at the environment level than do red chip firms – that are subject to "civil law" – and consequently have a higher liquidity than red chip firms.

The paper combines an investigation into the importance of investor protection at the environment level with an investigation into the importance of investor protection at the firm level. Thus, our second hypothesis is:

H2. Higher investor protection at the level of the individual firm leads to superior liquidity for that firm's shares.

In summary, our findings are as follows. We establish that sock liquidity is positively related to investor protection at the protective environment level. Thus, Hong Kong-based stocks are more liquid than China-based stocks. Constructing an internal corporate governance index (ICGI) score of corporate governance for each firm based on board size, board independence and information on audit and remuneration committees, we also establish that firms with better ICGI scores have narrower spreads, greater depth and higher trading volume. This finding supports the importance of investor protection at the firm level in explaining liquidity. Thus, we argue that firms can enhance their stock's liquidity by establishing boards that are of sufficient size and sufficiently represent independent non-executive directors, as well as establishing audit and remuneration committees that meet frequently.

The rest of this paper is organized as follow. Section 2 provides the background literature for this study. Section 3 describes the data. Section 4 outlines the methodology. Section 5 discusses the results and Section 6 concludes the paper.

2. Background literature

The need for investors' rights protection arises from the agency problem due to the separation of ownership and control (Jensen and Meckling, 1976). Fama and Jensen (1983a, 1983b) argue that the agency problem is caused by the separation of the firm's risk-bearing, decision-making and control functions. The outcome is that management may wish to make self-interested decisions to the detriment of their investors. In addition, minority shareholders require protection to mitigate the risk of being expropriated by large block holders; for example, "tunneling" allows block shareholders to transfer firm assets and benefits out of the reach of both creditors and minority shareholders and can be either legal or illegal (Johnson *et al.*, 2000). Lombardo and Pagano (2001) document that improvement to investors' protections effectively reduces agency and monitoring costs and, consequently, lowers the cost of equity. Additionally, as liquidity providers, investors are encouraged to trade on narrower bid–ask spreads (Chung, 2006).

Internal corporate governance provisions are fundamental to investor protection (Chung *et al.*, 2010). In the context of the Sao Paulo Stock Exchange adoption of special listing segments in 2000, Chavez and Silva (2009) observe that improved corporate governance enhances protection, leads to a reduction of the asymmetric information costs and, consequently, increases liquidity. Chung *et al.* (2010) show that firms with better corporate governance have narrower spreads, a smaller price impact of trades and a lower probability of information-based trading. The authors interpret their result as supporting the effect of internal corporate governance on market liquidity. The relation between internal corporate governance and improved liquidity has also received attention from large block shareholders who wish to unload their stocks without loss (Coffee, 1991).

As we have observed, at the protective environment level, La Porta *et al.* (1997, 1998) argue that the legal and regulatory environment is a major determinant of investor protection. The authors find that differences between legal systems based on common law and those based on civil law, among other regulatory characteristics, are important determinants of investor protection. Studies show that the first prosecution of insider trading laws in each country effectively improves protection and leads to a lower cost of equity (Bhattacharya and Daouk, 2002). Brockman and Chung (2003) provide empirical evidence to confirm that the quality of investor protection at the environment level has a favorable impact on liquidity (narrower bid–ask spread, greater depth and higher volume), as well as reduces adverse selection costs as a component of agency costs. Thus, the quality of investor protection is an outcome of both internal corporate governance mechanisms and external corporate governance mechanisms (Boubakri *et al.*, 2005).

3. Data

A four-year sample of 108 HKEx firms was drawn from Datastream for the period beginning in 2005 through the end of 2008. To avoid fluctuations caused by initial public offerings (IPOs), all stocks selected had to have been listed prior to 2002. Three different categories of stocks are identified:

1. the Hang Seng Index;
2. the Hang Seng China-Affiliated Corporations Index; and
3. the Hang Seng China Enterprises Index[1].

Ten companies were excluded from our empirical analysis because they are listed on both the HKEx and China Stock Exchanges[2]. We build two groups of firms. The first group consists of 26 blue chip Hong Kong-based firms. The second group comprises 43 red chip and 29 H-share China-based firms that are listed and traded on the HKEx only. Liquidity-related data (intraday bid and ask quotes and the total number of shares at the best bid and ask quotes) from Reuters are extracted from the Securities Industry Research Centre of Asia-Pacific database. Finally, all information required to generate the firm-level ICGI was manually collected from the annual reports available at the HKEx Web site.

4. Methodology

4.1 Methods of liquidity

We measure liquidity based on:

- the relative bid–ask spread;
- market depth; and
- trading volume.

The relative bid–ask spread is defined as the difference between the best ask and bid prices scaled by the average of the two prices. Brockman and Chung (2003) consider this measure to be a more relevant proxy for liquidity and information asymmetry than the absolute bid–ask spread. Market depth, which is the sum of the number of shares at the highest bid price and the number of shares at the lowest ask price, measures the maximum volume of shares that can be traded without moving prices. We derive the time-weighted daily relative spread and time-weighted daily market depth and average across days to obtain a yearly bid–ask spread and market depth. We derive daily trading volume as the total number of shares traded each day and average across days to obtain a yearly volume.

4.2 Measures of investor rights protection

4.2.1 Protective environment level proxies. We classify all shares in the sample into two main categories, blue chip shares and China-based shares. We argue that blue chip firms, which are generally controlled by investors outside mainland China, operate in an

environment with good protection. Red chip shares and H-shares are classified as China-based shares and are assumed to operate in an environment with less investor protection[3].

4.2.2 Firm-level proxy. We developed an ICGI as our proxy for firm-level investor protection. To this end, we manually collected data from the annual reports of all firms listed on the HKEx to construct an ICGI of firm-specific provisions or safeguards as they relate to investor protection. Although a number of ICGIs have been developed based on corporate governance provisions, they are inappropriate for our purposes[4]. First, the selection of corporate governance provisions is subjective. Second, equal weights are assigned to the provisions. Third, the provisions adopted are US based, so that the index lacks confirmation outside the USA. To overcome such weaknesses, using principal component analysis, we developed the ICGI used in this paper. Our approach allows different weights to be assigned to different corporate governance-related variables.

Our variable selection is based on two criteria:

1. There should be sufficient empirical evidence to support the significance of the variable.
2. Information for the variable should be disclosed by all HKEx-listed companies.

Thus, the corporate governance-related variables are selected such that they represent information that is mandatorily disclosed by all HKEx-listed companies. On this basis, we hand collected from the annual reports of firms listed on the HKEx those corporate governance provisions that related to safeguards for investor protection. Following the approach of Larcker *et al.* (2007), we then conducted a principal component analysis to identify the key corporate governance provisions that are able to capture the overall variation in the collected provisions. The principle component analysis approach seeks to maximize the variance around the independent factor provisions of corporate governance as supplied from our data collecting by detecting those provisions that are least correlated with each other. Thereafter, the approach clusters the chosen provisions insofar as they are most correlated with one another.

4.3 Univariate and regression analyses

We seek to examine the relation between liquidity and investor protection at the environment and firm levels. To this end, in the first stage of the analysis, we compare the liquidity of blue chip shares and China-based shares in a pooled cross-sectional regression analysis, with each measure of liquidity regressed against the two possible protective environments:

$$liquidity_{i,t} = \sum_{j=1}^{26} \alpha_j \, bluechip_{i,t}^{j} + \sum_{j=27}^{98} \beta_j \, china_{i,t}^{j} + \varepsilon_{i,t}, \quad (1)$$

where $liquidity_{i,t}$ is a measure of firm i's liquidity for year t – proxied by the monthly relative bid–ask spread, market depth and trading volume, the variable $bluechip_{i,t}^{j}$ is a dummy variable assigned a value of 1 if the firm is a blue chip firm, and 0 otherwise; similarly, $china_{i,t}^{j}$ is a dummy variable assigned a value of 1 if the firm is a China-based firm, and 0 otherwise, and $\varepsilon_{i,t}$ represents the error terms.

We also add stock volatility and price as control variables to the regression of equation (1):

$$liquidity_{i,t} = \sum_{j=1}^{26} \alpha_j \, bluechip_{i,t}^{j} + \sum_{j=27}^{98} \beta_j \, china_{i,t}^{j} + \gamma_1 \, var_{i,t} + \gamma_2 \, price_{i,t} + \varepsilon_{i,t}, \quad (2)$$

where $var_{i,t}$ represents firm i's annual stock return volatility, which is measured as the variance of daily returns, and $price_{i,t}$ represents firm i's average share price for the year. In equations (1) and (2), following our assumption that blue chip shares operate within a better investor protection environment, we expect α_i to be more negative than β_i for the bid–ask

spread proxy and α_i to be more positive than β_i for the market depth and trading volume proxies for liquidity.

In the second stage of the analysis, we examine the liquidity–protection relation at the firm level. To this end, we estimate the pooled cross-sectional time-series regression as:

$$liquidity_{i,t} = \beta_0 + \beta_1 \, \text{ICGI}_{i,t} + \varepsilon_{i,t}, \quad (3)$$

where $\text{ICGI}_{i,t}$ is the index score calculated for firm i in year t. Including volatility ($var_{i,t}$) and price ($price_{i,t}$) as control variables, the regression becomes:

$$liquidity_{i,t} = \beta_0 + \beta_1 \, \text{ICGI}_{i,t} + \gamma_1 \, var_{i,t} + \gamma_2 \, price_{i,t} + \varepsilon_{i,t}, \quad (4)$$

Controlling for both firm and environment levels simultaneously, the regression becomes:

$$liquidity_{i,t} = \beta_0 + \beta_1 \, \text{ICGI}_{i,t} + \gamma_1 \, var_{i,t} + \gamma_2 \, price_{i,t} + \gamma_3 \, bluechip_{i,t} + \varepsilon_{i,t}, \quad (5)$$

where $bluechip_{i,t}$ is a dummy variable with value 1 if the firm is a Hong Kong blue chip, and 0 otherwise[5].

5. Results

5.1 Univariate analysis results

On the classification of shares as either blue chip or China-based, Table I compares the means of the three liquidity proxies and of the ICGI. Consistent with our hypothesis that blue chip shares operate within a better investor protection environment, we observe that such shares are associated with both higher liquidity (smaller relative bid–ask spread and higher volume) and higher ICGI scores. The significance of the differences is confirmed by independent *t*-test results.

5.2 Regression analysis results at the protective environment level

Table II presents the results for the relation between firm liquidity and investor protection at the protective environment level. When the relative bid–ask spread is the liquidity measure, the measure is more negatively sensitive to the blue chip dummy variable than to the *china* dummy variable, implying a smaller relative bid–ask spread for blue chip shares. With market depth as the liquidity measure, blue chip shares have a greater depth (higher liquidity) than China-based shares. With trading volume as the liquidity measure, blue chip shares show a higher volume than China-based shares. Thus, shares of blue chip firms have significantly smaller bid–ask spreads, greater market depth and higher trading volume than shares of China-based firms. The *F*-statistics of the Wald test (Panel B)

Table I Univariate analysis of blue chip and China-based firms

	Blue chip stocks (N = 104 firm-years)			*China-based stocks (N = 288 firm-years)*			
	Sample mean	*Minimum*	*Maximum*	*Sample mean*	*Minimum*	*Maximum*	*t*
RBA	0.003	0.0008	0.010	0.022	0.002	0.231	−10.20***
Depth	2,044,337	28,107	40,164,170	1,197,779	20,826	69,911,338	1.26
Vol	28,885,372	1,117,000	218,092,795	10,369,319	31,082	178,070,295	3.83***
ICGI	14.94	9.42	23.19	12.02	7.83	21.57	7.94***

Notes: Results from univariate analysis for a total of 98 companies, comprising 26 blue chip firms and 72 China-based firms listed on the HKEx through 2005-2008 are presented. The relative bid–ask spread (*RBA*), market depth (*Depth*) and trading volume (*Vol*) are the averages of the yearly relative bid–ask spread, yearly market depth and yearly trading volume for blue chip firms and China-based firms, respectively. The variable *RBA* is the yearly average of daily time-weighted spreads, which is weighted based on the number of intraday observations available for that day, and similarly for *Depth*; *Vol* is the yearly average of the daily trading volumes. Thus, market depth (*Depth*) is the sum of the number of shares at the highest bid price and the number of shares at the lowest ask price, thereby measuring the maximum volume of shares that can be traded without moving prices. We derive the time-weighted daily relative spread and time-weighted daily market depth and average across days so as to obtain a yearly bid–ask spread and market depth. We derive daily trading volume (*Vol*) as the total number of shares traded each day and average across days to obtain a yearly volume. The average *ICGI* is the average of ICGI scores for blue chip and China-based firms. Here Min (Max) is the smallest (largest) value for the sample and *t* is the *t*-statistic for the independent *t*-test of the equality of means. The superscript; ***denotes significance at the 1% level

Table II Stock market liquidity and investor protection at the protective environment level

Variable	$liquidity_{i,t} = RBA_{i,t}$ Average estimated coefficient	t-statistic	$liquidity_{i,t} = Depth_{i,t}$ Average estimated coefficient	t-statistic	$liquidity_{i,t} = Vol_{i,t}$ Average estimated coefficient	t-statistic
Panel A: Average liquidity coefficients and t-statistics						
Bluechip $1/26 \sum_{j=1}^{26} \alpha_j$	−7.22	−22.3***	9.21	12.5***	15.92	26.8***
China $1/72 \sum_{j=27}^{98} \beta_j$	−5.56	−16.9***	8.55	15.8***	15.81	32.0***
Panel B: Test for the equality of the average coefficients						
H_0: $1/26 \sum_{j=1}^{26} \hat{\alpha}_j = 1/72 \sum_{j=27}^{98} \hat{\beta}_j$						
Wald test – *F*-statistic		382.4***		535.2***		2,913.0***

Notes: This table presents the results for the relation between stock market liquidity and investor protection at the protective environment level. The data relate to blue chip and China-based firms listed on the HKEx during 2005-2008. The sample consists of 26 blue chip and 72 China-based shares. The following regressions are performed:

$$Liquidity_{i,t} = \sum_{j=1}^{26} \alpha_j \, bluechip_{i,t}^{j} + \sum_{j=27}^{98} \beta_j \, china_{i,t}^{j} + \gamma_1 \, var_{i,t} + \gamma_2 \, price_{i,t} + \varepsilon_{i,t},$$

where $liquidity_{i,t}$ is the liquidity measure for firm i for year t. The variable $liquidity_{i,t}$ is measured as the relative bid–ask spread ($RBA_{i,t}$), market depth ($Depth_{i,t}$) and trading volume ($Vol_{i,t}$). The natural logarithm form is taken for all liquidity proxies and control variables to improve distribution normality. The variable $bluechip_{i,t}^{j}$ is a dummy variable assigned a value of 1 if the firm is a blue chip firm, and 0 otherwise. Similarly, $china_{i,t}^{j}$ is a dummy variable assigned a value of one if the firm is a China-based firm, and zero otherwise. The control variables are $var_{i,t}$ and $price_{i,t}$, where $var_{i,t}$ is the standard deviation of daily returns calculated across each year and $price_{i,t}$ is the average price for each year ($price_{i,t}$ is omitted when the relative bid–ask spread is the liquidity proxy, as the denominator in the proxy is then also the price variable). The sample consists of 392 observations. Panel A shows the average estimated coefficients and the average *t*-statistics for the 26 blue chip variables and the 72 China-based variables. The estimated coefficients and *t*-statistics for each individual dummy variable are not reported. The sample means are also tested by a Wald test for the equality of average coefficients. The *F*-statistics for these tests are reported in Panel B. The superscript; ***denotes significance at the 1% level.

indicate that the differences are statistically significant at the 1 per cent level for all three measures of liquidity[6].

5.3 Regression analysis results at the firm level

The principle component analysis approach seeks to maximize the variance around the independent factor provisions of corporate governance that were observed to be least correlated with each other. In addition, the approach seeks to cluster the chosen provisions insofar as they are correlated with one another. Thus, the four provisions of Board Independence (Bindep), Board Size (Bsize), Frequency of Remuneration Committee Meetings (Rmeet) and Frequency of Audit Committee Meetings (Ameet), which we choose to class as "Board Independence and Activity" provisions, provided one cluster, whereas the provisions of Remuneration Committee Size (Rsize), Audit Committee Independence (Aindep) and Audit Committee Size (Asize) provided a second cluster, which we choose to call "Committee Structure" provisions. The relative bid–ask spread (*RBA*), market depth (*Depth*) and trading volume (*Vol*) are the averages of the yearly relative bid–ask spread, yearly market depth and yearly trading volume for blue chip firms and China-based firms, respectively. The variable *RBA* is the yearly average of daily time-weighted spreads, which is weighted based on the number of intraday observations available for that day, and similarly for *Depth*, and *Vol* is the yearly average of the daily trading volumes. Supporting evidence for the inclusion of these particular provisions from both prior research and their reference in the Code of Best Practice of the HKEx are provided in Table III. As revealed in Table IV, together, the two cluster groups account for 60.7 per cent of the variability of all provisions that were initially considered: specifically, "Board Independence and Activity" provisions accounted for 44.8 per cent and "Committee Structure" provisions accounted for 15.9 per cent.

Thus, the first component contributes 73.9 per cent and the second component 26.1 per cent of the two-component explanatory power. Within each component, the principal component analysis assigns each provision a non-normalized weighting that is consistent

Table III Corporate governance variables for principal component analysis

Characteristic	*Supporting evidence*	*Conclusion*
Board independence (Bindep)	Fama and Jensen (1983b), Dahya and McConnell (2005), Chen-Lung *et al.* (2006), Beasley (1996), Uzun *et al.* (2004)	A high proportion of independent non-executive directors on the board is favorable
Board size (Bsize)	Yermack (1996), Jensen (1993)	Either very large or very small boards are unfavorable
Frequency of remuneration committee meetings (Rmeet)	HKEx (2009) Code of Best Practice	More meetings held is favorable
Frequency of audit committee meetings (Ameet)	HKEx (2009) Code of Best Practice (2009)	More meetings held is favorable
Remuneration committee size (Rsize)	HKEx Code of Best Practice (2009)	A large size is favorable
Audit committee independence (Aindep)	Abbott *et al.* (2004), Agrawal and Chadha (2005), Klein (2002)	A high proportion of independent non-executive directors is favorable
Audit committee size (Asize)	Klein (2002)	A large size is favorable

Notes: Variables used in the principal component analysis are described. In total, seven variables are included: Bindep is board independence, which is measured as the number of independent non-executive directors on the board; Bsize is board size, which is measured as the total number of directors on the board; Rmeet is frequency of remuneration committee meetings, which is measured as the number of meetings held by the remuneration committee during the year; Ameet is frequency of audit committee meetings, which is measured as the number of meetings held by the audit committee during the year; Rsize is remuneration committee size, which is measured as the number of directors on the remuneration committee; Aindep is audit committee independence, which is measured as the number of independent non-executive directors on the audit committee; and Asize is audit committee size

Table IV Factor loadings from principal component analysis

	% of Variance (component load)	*Component weight % (out of 100%)*
Panel A: Relative weightings for components		
"Board independence and activity" component	44.8	73.9
"Committee structure" component combined:	15.9	26.1
	60.7	

	Board independence and activity		*Committee structure*	
Panel B: Relative weightings for constituents				
Bindep	0.84	(0.62 = 0.84*73.9) 22.9%	–	–
Bsize	0.77	(0.57 = 0.77*73.9) 21.1%	–	–
Rmeet	0.63	(0.47 = 0.63*73.9) 17.3%	–	–
Ameet	0.58	(0.43 = 0.58*73.9) 15.8%	–	–
		77.1%		
Rsize	–	–	0.83	(0.23 = 0.83*26.1) 8.1%
Aindep	–	–	0.76	(0.20 = 0.76*26.1) 7.4%
Asize	–	–	0.76	(0.20 = 0.76*26.1) 7.4%
				22.9%

Notes: Panel A summarizes the two key principal components of corporate governance provisions: "board independence and activity" and "committee structure" components. The four provisions, Bindep, Bsize, Rmeet and Ameet contribute to the first key component; the three provisions Rsize, Aindep and Asize, contribute to the second key component (the variables are explained in Table I). These two components, respectively, account for 44.8 and 15.9% of the variation of the corporate governance provisions. Panel B gives the initial non-normalized weights (second and fourth columns) assigned by the principal component analysis to each provision in accordance with its contribution within the component. The weightings are made relative to an index constituted on the two principal components by multiplying the weights by the relative contribution of the key component to which it belongs (the entries are in parenthesis in the third and fifth columns). The weights as they contribute to the ICHI index are then normalized as a percentage of 100%. Thus, for example, the proportionate contribution of the Bindep variable is 22.9% [= 0.62/(0.62 + 0.57 + 0.47 + 0.43 + 0.23 + 0.20 + 0.20)]

with the provision's contribution to the component (the second and fourth columns of Panel B in Table IV). These weightings are made relative to an index constituted on both components by multiplying the weight by the relative contribution of the key component to which it belongs (either 73.9 or 26.1 per cent) (these are the entries in parenthesis in the

third and fifth columns of Panel B in Table IV). The conditioned weight for each provision within the index is thereby normalized as a proportion of 100 per cent (the final entries in the third and fifth columns of Panel B in Table IV). These weightings are used to calculate an ICGI index for each firm in each year.

Table V reports the results of the regressions between liquidity and investor protection at the firm level. Investor protection at the firm level is measured on each firm's ICGI score. The results in Table V indicate that liquidity (on each proxy) is positively and statistically related at the 1 per cent level to a higher ICGI score. Controlling for investor protection at the firm level, we note that investor protection at the environment level remains significant at the 1 per cent level (final row, Table V).

5.4 Robustness tests

A size-matched robustness test was performed to test whether the liquidity differences are due to average size differences between China-based firms and blue chip firms. To this end, we succeed in matching 13 China-based shares with blue chip shares of similar firm size (within 20 per cent of the same total asset value). The regression analyses presented in Table V are then applied to the size-matched sample. The results presented in Table VI provide support that our empirical findings are not materially affected by firm size.

Additionally, to ensure that the results are robust to a change in the sample period, the regression analyses of Table V are segmented for each individual year of the study. Again, the results (available upon request) remain qualitatively the same as those presented in Table V.

6. Conclusion

Our paper has investigated the issues of investor protection – as investor protection at both the environment level and the firm level – and stock liquidity on the Hong Kong- and China-based firms traded on the HKEx. We have observed that rules and regulations may differ systematically between civil law – applicable to China-based firms – and common law – applicable to firms based in Hong Kong. Common law is held to be more market-supporting than civil law. This raises the question as what kind of capitalism is likely to prevail in the long run? Will it be the more market-focused Anglo-Saxon capitalism (common law) or the more state-centered capitalism (civil law)?

Table V Stock market liquidity and investor protection at the firm level: pooled cross-sectional data and panel data

Panel A				*Panel B*			*Panel C*			*Panel D*		
	Spread	*Depth*	*Volume*	*Spread*	*Depth*	*Volume*	*Spread*	*Depth*	*Volume*	*Spread*	*Depth*	*Volume*
Intercept	2.35***	11.08***	8.05***	3.49***	3.58***	9.41***	1.05*	4.52***	10.29***	2.42***	4.87***	8.56***
ICGI	−2.83***	0.62*	2.89***	−2.20***	1.98***	2.40***	−1.51***	1.74***	2.18***	−1.00***	1.81***	2.13***
bluechip	–	–	–	–	–	–	−0.96***	0.88***	0.82***	−0.70**	0.90***	0.92***

Notes: Results from the regression analysis for the liquidity–investor protection relation at the firm level are presented. The data relate to 26 blue chip and 72 China-based firms listed on the HKEx during 2005-2008. The following regressions are performed:
Panel A: $liquidity_{i,t} = \beta_0 + \beta_1 ICGI_t + \varepsilon_i$,
Panel B: $liquidity_{i,t} = \beta_0 + \beta_1 ICGI_t + \gamma_1 var_i + \gamma_2 price_t + \varepsilon_i$,
Panel C: $liquidity_{i,t} = \beta_0 + \beta_1 ICGI_t + \gamma_1 var_i + \gamma_2 price_t + \gamma_2 bluechip_i + \varepsilon_i$ (pooled cross-sectional time series data),
Panel D: $liquidity_{i,t} = \beta_0 + \beta_1 ICGI_{i,t} + \gamma_1 var_{i,t} + \gamma_2 price_{i,t} + \gamma_2 bluechip_{i,t} + \varepsilon_{i,t}$ (panel data),
where $liquidity_i$ denotes the liquidity measures (either the relative bid–ask spread, market depth or trading volume) for firm i; $ICGI_t$ is the ICGI score for firm i; var_i is the standard deviation of daily returns during the year; $price_i$ is the average of daily closing prices during the year (as in Table IV; $price_i$ is omitted when the bid–ask spread is the liquidity proxy); and $bluechip_t$ is a dummy variable that equals one for a blue chip firm, and zero for a China-based firm. The natural logarithm form is taken for all liquidity measures, $ICGI_i$, and $price_i$ to improve distribution normality. Panel A shows the results when the control variables ($price_i$ and var_i) are not included. Panel B shows the results with the control variables ($price_i$ and var_i). Panels C and D show the results when the control variables ($price_i$, var_i and $bluechip_i$) are included (based on pooled cross-sectional time series data and panel data, respectively). The superscripts ***, ** and * denote significance at the 1, 5, and 10% levels, respectively

Table VI Robustness tests: size-matched samples

	Panel A			Panel B			Panel C			Panel D		
	Spread	*Depth*	*Volume*	*Spread*	*Depth*	*Volume*	*Spread*	*Depth*	*Volume*	*Spread*	*Depth*	*Volume*
Intercept	−3.85***	6.79***	9.14***	−4.39***	4.57***	11.37***	−3.94***	4.39***	11.12***	−2.06***	4.72***	9.62***
ICGI	−0.62**	2.37***	2.70***	−0.67**	1.72***	2.78***	−0.91***	1.97***	3.12***	−0.52**	2.08***	2.82***
bluechip	–	–	–	–	–	–	−0.55***	0.65***	0.90***	−0.41***	0.65***	0.94***

Notes: Results from the robustness regression analyses based on size-matched samples are presented. The China-based shares in the sample have been matched with blue chip shares within a 20% tolerance of total assets. The sample consists of 13 firms for each of the blue chip and China-based shares. The following regressions are performed:
Panel A: $liquidity_{i,t} = \beta_0 + \beta_1 ICGI_t + \varepsilon_i$,
Panel B: $liquidity_{i,t} = \beta_0 + \beta_1 ICGI_t + \gamma_1 var_i + \gamma_2 price_t + \varepsilon_i$,
Panel C: $liquidity_{i,t} = \beta_0 + \beta_1 ICGI_t + \gamma_1 var_i + \gamma_2 price_t + \gamma_2 bluechip_i + \varepsilon_i$ (pooled cross-sectional time series data),
Panel D: $liquidity_{i,t} = \beta_0 + \beta_1 ICGI_{i,t} + \gamma_1 var_{i,t} + \gamma_2 price_{i,t} + \gamma_2 bluechip_{i,t} + \varepsilon_i$ (panel data),
where $liquidity_i$ denotes the liquidity measures (either the relative bid–ask spread, market depth or trading volume) for firm i; $ICGI_t$ is the ICGI score for firm i; var_i is the standard deviation of daily returns during the year; $price_i$ is the average of daily closing prices during the year (as in Table IV; $price_i$ is omitted when the bid–ask spread is the liquidity proxy); and $bluechip_i$ is a dummy variable that equals one for a blue chip firm, and zero for a China-based firm. The natural logarithm form is taken for all liquidity measures, $ICGI_i$, and $price_i$ to improve distribution normality. Panel A shows the results when the control variables ($price_i$ and var_i) are not included. Panel B shows the results with the control variables ($price_i$ and var_i). Panels C and D show the results when the control variables ($price_i$, var_i and $bluechip_i$) are included (based on pooled cross-sectional time series data and panel data, respectively). The superscripts ***, ** and * denote significance at the 1, 5, and 10% levels, respectively

A general belief persists that Asia's firms tend to engage themselves in large diversifications that hold important linkages with diverse business groups with generally opaque communication and a sense of strictly limited responsibility to stock holders. For example, Asian firms pay out just a third of their profits in dividends and buy-backs compared with three-quarters for European firms and 90 per cent for American firms. To its detractors, this breeds cronyism, whereas, for its advocates, it allows for long-term decision-making. While there is a case for advocating that Asian values are likely to become more powerful as the continent's economic weight as the world rises, it might also be noted that Western institutional investors are now investing in Asian enterprise while simultaneously pressurizing for shareholder performance.

In this context, we have illuminated the issue of stock liquidity from the perspective of corporate governance as the protection of investors' rights. We confirm that Hong Kong-based firms, which operate in what is generally considered to be a stronger legislative protective environment for investors, have greater liquidity than China-based firms. Additionally, with application of information on board size, board independence, and remuneration and audit committees, we have developed an index as a proxy for investor protection at the firm level. We document that firms with higher scores on this index have higher liquidity (as reflected by narrower spreads, greater depth and higher trading volume) confirming that stock liquidity is positively associated with higher investor protection at the firm level. Our findings thereby carry significant implications for corporate governance. In particular, managers who seek to enhance the market liquidity of their shares, must aim to establish an independent and representative board structure of directors, as well as maintain audit and remuneration committees that meet frequently.

Notes

1. The Hang Seng Index includes firms that constitute the top 90 per cent of market value and turnover, have strong and stable performance and are representative of the sub-sectors within the Hang Seng Index (Hang Seng Indexes, 2009a). The Hang Seng China-Affiliated Corporations Index includes firms that are mainland controlled but incorporated outside mainland China and listed on the HKEx (Hang Seng Indexes, 2009b). The Hang Seng China Enterprises Index includes firms that are incorporated and controlled by mainland China and listed on the HKEx with H-shares (Hang Seng Indexes, 2009c).

2. We remove cross-listed stocks from our sample to avoid the impact of cross-listing on market liquidity. For a more detailed discussion on this line of research, see, among others, Domowitz *et al*. (1998), Burns *et al*. (2007), Silva and Chavez (2008), and Berkman and Nguyen (2010).

3. The 2009 index of Economic Freedom World Rankings developed by Miller and Holmes (2009) ranks Hong Kong highest, with an overall score of 90 out of 100. On the same list, China is ranked 132nd (out of 183 countries), with an overall score of 53.2, behind Indonesia (53.4) and Bolivia (53.6). A similar ranking is reported by the Economic Freedom of the World Report.

4. For example, Gompers *et al*. (2003) develop a GIM (Gompers–Ishii–Metrick) index based on 24 firm-specific corporate governance provisions. Brown and Caylor (2006) propose a Gov-Score based on 51 corporate governance provisions. More recently, Bebchuk *et al*. (2009) have advanced an entrenchment index, which focuses on six key protection provisions.

5. When the relative bid–ask spread, which includes the market price (**Equation**) as a denominator, is the proxy for liquidity, we exclude the control variable **Equation** in the regressions.

6. We obtain qualitatively similar results when the control variables (return volatility and price) are excluded from the regression analyses.

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