# BID-ASK SPREAD, ASYMMETRIC INFORMATION AND ULTIMATE OWNERSHIP

**Abstract:**

We collect the ultimate ownership data for the 1,167 Canadian traded corporations, for the 1994-1996 period, to examine the relationship between stock liquidity and ultimate ownership structure. Our results suggest that the presence of family increases the bid-ask spread. In addition, the magnitude of the deviation between ultimate ownership and ultimate control at the presence of families is important in determining the bid-ask spread. Furthermore, we document that mechanisms of enhancing control, say pyramid at the presence of families, significantly affect bid-ask spreads.

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## 1. Introduction

It is documented by La Porta et al. (1998) that Common laws and the "Anglo-Saxon" model of corporate governance, like that of the US, effectively protect diffuse shareholders and further stimulate a more developed and more liquid capital market. However, La Porta et al. (1999), Claessens et al. (2000), and Faccio and Lang (2002), trace back the ownership chain to the ultimate owner, and they show that (ultimate) corporate ownership, around the world, is largely concentrated and controlled by families. As a consequence, and as argued by Shleifer and Vishny (1997) "… as ownership gets beyond a certain point, large owners gain nearly full control of the company and are wealthy enough to prefer to use firms, to generate private benefits of control that are not shared by minority shareholders…" (p.759).[1] An interesting question thus arises as to how investors interpret the occurrence of potential costs in the presence of large controlling owners under the "Anglo-Saxon" model, like that of the US. As argued by Morck, Stangeland and Yeung (2001), similar to the US, Canada also has a Common Law heritage, an 'excellent' legal system strongly protective of basic shareholder rights, and law enforcement, yet it is crippled with corporate ownership concentration.[2] The Canadian model thus provides an ideal model to answer this question.

To do so, we investigate the relationship between stock liquidity and the ultimate ownership structure. Stock liquidity refers to the extent to which buyers and sellers are willing to continuously and quickly trade at the prevailing price. Stock liquidity is usually measured by the bid-ask spread. Since bid-ask spread is set by market makers (dealers) or limit orders[3], it is an important component of transaction costs faced by investors. Current literature suggests that bid-ask spreads are driven by costs

[1] Empirically, Morck, shleifer and Vishny (1988) and McConnell and Servaes (1990) document an inverse U-shaped relationship between firm valuation and managerial equity ownership for a sample of US firms. The interpretation is that higher managerial ownership improves performance, however managers become entrenched after a point and pursue private benefits at the expense of minority shareholders. The literature (e.g. Stulz (1988)) indicates that the positive incentive effect relates to the share of cash-flow rights held by large shareholders and that the negative entrenchment effect relates to the share of control rights held by large shareholders. Using a sample of corporations in East Asia, Claessens, Djankov, Fan and Lang (2002) successfully disentangle the incentive and entrenchment effects of large ownership that are so difficult to tell apart in US data.

[2] Morck, Stangeland, and Yeung (2001) argue that Canadian and US economies have broadly "similar factors endowments, and employ virtually identical technology and human capital in similar institutional frameworks" except for their ownership structure. See also La Porta et al. (1998).

[3] Market makers or specialists quote the bid and ask prices in "quote-driven market" (e.g. NASDAQ). Market makers play the role of both dealers and investors. In "limit-order-driven market" (e.g. Tokyo Stock exchange), prevailing prices are set by limit orders. More precisely, market makers buy (sell) a fixed number of shares at current prices. Conversely, limit orders refer to requests to buy (sell) a fixed number of shares at a limit prices, set by limit-order traders. It is worth mentionning that stock markets might be hybrid, where both specialists and limit-order traders set prices (e.g. NYSE, TSX). See Chung et al. (1999), Brown and Holden (2002), among others.

faced by dealers; mainly inventory holding costs, order-processing costs, and adverse information costs[4]. Inventory holding costs are related to the costs faced by dealers who are forced to carry stock positions (long or short) that are different from their optimal holding. Order processing costs refer to the costs of maintaining the limit order book, and "enforcing price and time priority rules" for order execution[5]. Adverse or asymmetric information costs are driven by transactions with informed traders [6], who may have information that the market maker does not have.

The influential role of the controlling shareholders generates information asymmetry, caused by their incentives to obtain the necessary information to effectively control corporate policies, that reduces the liquidity of the equity markets. Consistent with this view, Bhide (1993) writes that stock liquidity can be enhanced by having a more diffuse ownership and argues that the success of the US market regulation may be ascribed to its emphasis on disclosure requirement and one-share-one-vote rules. Sanctions against inside trading protect small stockholders and reduce the risks of diffuse stockholding. In addition, Beny (1999) reports that weaker insider trading regimes (laws) have, at least, less liquid equity markets. Thus, under the assumption that controlling ultimate owners are better informed than others, bid-ask spreads are increased to reflect the costs of information asymmetry conveyed by their transactions.[7]

La Porta et al. (1999) report that ultimate control in 27 countries around the world is highly concentrated and that it is sharply separated from ultimate ownership (except in Anglo-Saxon countries). This separation is achieved through the use of different means of enhancing control, such as pyramidal, multiple control chains, cross holdings, multiple class shares, the appointment of family related managers, etc. Their finding is consistent with the facts that agency problems and information

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[4] Other factors, such as trading volume and frequency, influence the bid-ask spread. In addition, recent work of Chordia, Roll, and Subrahmanyam (2001), suggests that market direction movement affects bid-ask spread. Namely, they report a significant asymmetric response of spreads to up and down markets. That is, spreads sharply increase in down markets and weakly decrease in up markets.

[5] Stoll (1989), Madhavan and Smidt (1993), among others.

[6] Easley, Kiefer, O'Hara, and Paperman (1996) find that large spreads, for stocks with higher information based trading, are not merely the result of market power by market makers, or difficulties in risk-bearing due to inventory, rather the result of private information. In fact, unequal costs of obtaining and processing information may lead to trading of securities and wealth distribution effectsamong investors (Morse 1980). Van Ness, Van Ness, and Warr (2001) show that the adverse selection components perform like spreads as a proxy for information asymmetry.

[7] As in liquid stock market the benefits of informed trading might offset the costs of monitoring (see, Glosten and Milgrom (1985), Amihud and Mendelson (1986), Stoll (1989), Bhide (1993), Beny (1999), among others).

asymmetry are entrenched in the corporate marketplace, and that the ultimate owner uses such mechanisms to overarch his control. Hence, this opportunistic behavior should increase information asymmetry, and consequently reduce stock liquidity. Evidently, a positive relation is expected between spreads set by market dealers, and separation of ownership from control and means used by the ultimate owner to enhance control and overarch private benefits.

But, in all fairness, prior literature on market liquidity uses either market microstructure variables or direct ownership stakes to explain bid-ask spreads[8]. That is, prior studies ignore the effect of ultimate ownership, its deviation from ultimate control, and the means of enhancing control on stock liquidity.

We pioneer to collect the ultimate ownership data for the 1,167 Canadian traded corporations, for the 1994-1996 period, to examine the relationship between stock liquidity and ultimate ownership structure. We find that in Canada corporate ownership is concentrated. In addition, the ultimate owner, generally a family, uses different pyramidal, cross holdings and other mechanisms to overarch his control, to enhance the deviation between his ultimate ownership and his ultimate voting power. Our results suggest that the presence of a family increases the bid-ask spread. In addition, the magnitude of the deviation between ultimate ownership and ultimate control in the presence of families is important in determining the bid-ask spread. Furthermore, we document that mechanisms of enhancing control, say pyramid in the presence of families, significantly affect bid-ask spreads.

Our evidence shows that bid-ask spreads only relate to the presence of families but not to other types of controlling owners. This is consistent with the evidence documented by Bhattacharya and Ravikumar (2001) that family business may lead to an increased probability of mediocre management with each successive generation. It is also consistent with Morck, Stangeland and Yeung (2001) that

[8] Empirical evidence on the trade-off between market liquidity and ownership structure is rather rare. Demsetz (1968) has shown that the number of shareholders affects the transaction rate. Benston and Hagerman (1974) report a relation between a proxy for insider holdings and bid-ask spread. Chiang and Venkatesh (1988) investigate this relationship for a limited sample of 56 American listed firms on New York Stock Exchange for 1973 period, and report a positive relationship between insider ownership and spreads. In contrast, Glosten and Harris (1988) report an insignificant relationship between spreads and insider ownership, for a larger sample of 250 American listed firms over the 1981-1983 period. More recently, Sarin et al. (1997) document that higher insider and institutional ownership are both associated with wider spreads and smaller quoted depth. They suggest that the loss of liquidity is a consequence of adverse selection costs for insiders while for institutional holdings it is a result of higher inventory carrying costs. Their sample covers 786 stocks, listed on the American Exchange (AMEX) or New York Exchange (NYSE), over the 1984 period. Heflin and Shaw (2000) examine the association between block ownership and market liquidity, and report thatstocks with block holder ownership have larger spreads.

influential families may shape prices in capital markets and lobby politicians to engage in political rent seeking and expropriate minority shareholders[9].

Finally, we would like to check (1) the robustness of our results, (2) the sources of information asymmetry, and (3) the causality issue. First of all, Easley, Kiefer, O'Hara, and Paperman (1996) argue that high volume stocks tend to have a higher arrival rate of informed traders as well as uninformed traders, hence they are less risky. In contrast, less active stocks face a greater risk of informed trading, and so their larger spreads are a reflection of a smaller number of uninformed traders. In other words, our evidence may be merely a reflection of the fact that the presence of a large shareholder implies a smaller number of uninformed traders or a lower uninformed trading volume, hence we observe larger spreads which have little to do with the information asymmetry resulting from the presence of families. However, after we control for uninformed holding or trading, similar results are still obtained. This suggests that our results are robust and not driven by uninformed holding or trading.

Second, we document that the deviation of ultimate ownership from ultimate control affects bid-ask spreads. However, both variables are highly correlated**,** it is virtually impossible to distinguish their respective effects in the OLS regression. For these reasons, we examine the endogeneity between stock liquidity, ultimate ownership, ultimate control and the deviation between ultimate control and ultimate ownership. Simultaneous regression results indicate that the bid-ask spread reflects the asymmetric information costs contained in the ultimate control variable but not in the ultimate ownership variable. As a result, the separation of ownership from control captures the effect of ultimate control and further affects the bid-ask spread.

Third, the empirical investigation should be structured to avoid misleading inferences of causality when considering stock liquidity and ultimate ownership stakes, as exogenously determined. Our evidence is also consistent with the reverse causality in that controlling shareholders also look for stocks that display less liquidity to avoid monitoring from outside investors.

The remainder of this paper is organized as follows. Data construction and methodology are portrayed in section 2. Results and discussions are presented in section 3. Section 4 concludes the paper.

[9] Jaffe (1974) show that insiders do possess special information. Giammarino, Heinkel, and Hollifield (1992) show that corporate insiders manipulate corporate actions in an opportunistic fashion. Daniels and Morck (1995) argue that there is

## 2. Data construction, methodology, and variables description

### 2.1. Data construction

We collected the 1,167 Canadian firms listed on the Toronto Stock Exchange from Stock Guide. There is no electronic database on Canadian firm ownership (for the 1996 period, except Stock Guide data). Data on the identity and size of the five largest shareholder holdings was collected manually from 2 sources: 1) *The Financial Post* (FP) "Survey of Industrials" and "Survey of Mines and Energy Resources" for 1996, 2) Statistics Canada *Intercorporate Ownership in Canada* (LP, 1996), 1989 and 1991. The information was processed in two stages. In the first one, an observation was kept if the two information sources concurred about both the principal shareholder's identity and the size of each block of shares that he owns or controls. Cases where the sources had contradictory information on identity or block size were treated in a second stage. The objective, in this second stage, was to reconcile disagreements among information sources through additional research. The source of verification is Stock Guide, TSE-Western and DataStream.

These sources provide information on all major shareholders, and on their stakes, as well as directors' ownership for all listed firms. We imposed two restrictions on our sample. In particular, we excluded all affiliates of foreign companies, (i.e., when a foreign company controls at least 50 percent of the votes) since we could not follow their ownership chain. Also, in several cases we were not able to trace back the ultimate owners because of the use of street accounts. Thus, after this screening, we are left with 1121 companies. In analyzing cash flow and control rights[10], we look at all shareholders who control at least 5 percent of voting rights. In many cases the controlling shareholders are corporate entities or financial institutions. In these cases we identify their owners, as well as the owners' respective chain of ownership. If the controlling shareholder is an unlisted company, then we consider the company to be family controlled[11] (with the exception of companies controlled by unlisted financial institutions). Finally, when we encounter individual shareholders, we do not distinguish between family

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little if any opportunity for managers to ignore the large shareholders' wishes. This evidence further amplifies the power of controlling families.

[10] We follow the methodology of La Porta *et al*. (1999) and Faccio and Lang (2002) to construct our ultimate ownership database.

[11] This happens because we generally cannot identify the owners of unlisted companies. We recognize that this procedure biases our measure of ultimate ownership. However, as argued by Faccio and Lang (2002) that this bias tends to be small because majority (more than 90 percentile) of unlisted/private companies are controlled by families in Italy and Germany.

members, and use the family group as a unit of analysis. Following previous studies, we look at shareholders who control over 10 percent and 20 percent of the votes.

Our definition of a widely held corporation is a corporation, which does not have any owner with control rights above the 10 percent or the 20 percent threshold limits. Following La Porta *et al.* (1999), we allow for five types of ultimate owners: 1) a family or an individual 2) the State 3) a widely-held financial institution 4) a widely-held corporation or 5) a miscellaneous investor (i.e., a charity, a voting trust, a cooperative, a minority foreign investor). However, to save space, we report statistics on the first three ultimate owners.

We identify three types of ultimate owner (family: FAMC, widely held financial institution: FINC, or the government: GOVC)[12]. Family: A family or individual, or a firm that is unlisted on any stock exchange. A widely held financial institution: a financial firm with a controlling shareholder widely held at either the 10 or 20 percent threshold. Government: a domestic federal or provincial government or a foreign national government, a local authority including county, a municipality, etc. or a government agency.

We claim that a corporation has an ultimate owner, at the 20 percent threshold, if this shareholder's direct and indirect control rights reach at least 20 percent. From our definition, a company may have more than one significant owner. If, for example, a firm has two owners, each having 12 percent control rights, we would say that the firm is ½ controlled by each type of owner at the 10 percent level. At the 20 percent level, however, that firm is widely held. Now, consider a company with two owners, a family with 20 percent control rights, and a widely held corporation, with 19 percent of control rights. Once again, at the 10 percent cut-off level we say that the company is ½ controlled by each type of owner. However, at the 20 percent level, the firm has only one relevant owner, and in particular, it is family-controlled.

[12] We also distinguish firms that are controlled by a widely held corporation and those controlled by a miscellaneous investor (i.e., a charity, a voting trust, a cooperative, a minority foreign investor). However, as their related results are less significant, we do not report them in the text.

### 2.2. Variables description

We collect daily closing bid and closing ask prices from 01/01/1996 to 31/12/1996 to compute the mean value of the daily percentage spread (BASP), measured as follow:

$$BASP = (Ask - Bid)/[(Ask + Bid)/2]*100$$

The commonly used control variables to explain cross-sectional bid-ask spread variation are: trading frequency, closing price, risk, and firm size. In fact, Anderson and Fraser (2000) argue that stock-trading frequency is a proxy for the speed with which new information is captured in stock prices. This frequency should be correlated with the variance of corporate assets and liabilities. Stoll (1978) argues that trading volume and risk affect the dealer's holding costs, and stock price is a proxy for the minimum unobservable cost. His theoretical and empirical evidence show that spreads are negatively related to trading volume and stock price, and positively related to returns variability. Besides, as proposed by Amihud and Mendelson (1986), liquidity affects asset prices because investors require a compensation for bearing transaction costs. In addition, Chiang and Venkatesh (1988) suggest that firm size is a significant determinant of the bid-ask spread. They argue that the well-known small-firm anomaly might be attributed to their illiquidity, which is reflected in a larger bid-ask spread. On the other hand, market dealers being faced with higher adverse selection problems when trading small firms stocks, might explain the negative expected relationship between firm size and the bid-ask spread. Demsetz (1986) argues that smaller firms might have a smaller number of insiders and hence retain more inside information, thus higher spreads.

Accordingly, we collect daily transactions, daily closing price, daily returns from the 1996 trading days to compute the average of daily trading transactions (MDTR) as a proxy for stock frequency trading[13], the average of daily closing price (CLSP) as a proxy for stock price, the variance of

[13] Previous research uses also trading volume (VOLM) as a proxy for trading frequency. However, since VOLM and MDTR are highly correlated at 86%, if we replace MDTR by VOLM (volume/shares outstanding), results remain the same. Furthermore, we consider the mean ratio of quote changes over quotes (QCOQ) as a proxy for information trading. Quote changes refer to the number of times the valid market quoted prices changed throughout the day for the security and quotes refer to the number of valid market quotes posted throughout the day for the security. Since prices do not always change when a new quote is posted, quote changes will always be less than or equal to quotes. This ratio might be compared to the turnover ratio (shares traded to shares outstanding), used by Stoll (1978) and Benston and Hagerman (1974) as a proxy for information trading. However the ratio of quote changes over quotes is inversely related to the turnover ratio. If we include this variable into the regressions, overall results remain similar. However, we will design a variable of uninformed trading in Table 6, hence there is little need to use the proxy for information trading.

stock daily returns as a proxy for return variability (RISK). Finally, we consider total assets (TASS) at the year-end 1996 as a proxy for firm size.

On the other hand, for corporate ownership structure, we control for ultimate control stakes (UCOS)[14] and the ultimate ownership stakes (UOWS). We measure ultimate ownership and control in terms of cash flow and voting rights. For example, if a family owns 25 percent of Firm X that owns 20 percent of Firm Y, then this family owns 5 percent of the cash flow rights of Firm Y – the product of the ownership stakes along the chain – and controls 20 percent of Firm Y – the weakest link along the control chain.

We check for the presence of means to enhance control, such as pyramidal holding (PYRA), multiple control chain (MUCC), cross holding (CRHO), the use of multiple class shares (MCOS), non-voting shares (NVOS), the required minimum capital to control 20% of the votes (MROV)[15] and whether managers are from the controlling family (MFCF)[16].

Firm Y is said to be controlled through "pyramiding" if it has an ultimate owner, who controls Y indirectly through another corporation that it does not wholly control. For example, if a family owns 15 percent of Firm X, that owns 20 percent of Firm Y, and then Y is controlled through a pyramid at the 10 percent threshold. However, at the 20 percent threshold, we would say that Firm Y is directly controlled by Firm X (which is widely-held at the 20 percent threshold) and no pyramiding would be recorded. If Firm X holds 100 percent of Firm Y, then again there is no pyramid. Pyramiding implies a discrepancy between the ultimate owner's ownership and control rights. In the above example, the family owns 3 percent of the cash flow rights of Firm Y – the product of its ownership stakes along the control chain — but its control rights are measured by the weakest link in its control chain, i.e., 15 percent.

[14] We use UCOS_1 and UCOS_2 to distinguish the first and second ultimate control stakes (similarly for UOWS_1 and UOWS_2).

[15] For example, a firm has 1000-type A shares (three voting rights per share), 5000-type B shares (two voting rights per share), 70 000-type C shares (one-share-one-vote). The total number of outstanding shares is 76000 = (1000 + 5000 + 70000), the total number of voting rights is 83000 = (1000x3 + 5000x2 + 70000x1). The controlling shareholder needs to hold 16600 = (0.2 x 83000) voting rights to control 20% of total voting rights, but needs to hold, for example, 1000-type A shares, 5000-type B shares, and 3600-type C shares. That is, the controlling shareholder needs 12.63% = (1000 + 5000 + 3600)/76000 of the total cash flow rights to control 20% of voting rights.

[16] A member of the controlling family is said to be in "management" if he/she is the CEO, Honorary Chairman, Chairman, or Vice-Chairman. We assumed that individuals are in the same family if they have the same last names, a convention that understates family affiliation.

Firm Y is said to be controlled through a "multiple control chain" if it has an ultimate owner who controls it via *a multitude* of control chains, each of which includes at least 5 percent of the voting rights at each link. In the previous example, suppose that the family also owns 7 percent of Firm Y directly. Then the family owns 10 percent of the cash flow rights of Firm Y (0.15 * 0.20 + 0.07) and controls 22 percent of its voting rights (min (0.15, 0.20) + 0.07)[17,18]. Finally, firm Y is said to be controlled by a "reciprocal-holding" at the 20 percent threshold if Firm X holds a stake in Firm Y of at least 20 percent, and Y holds a stake in Firm X of at least 20 percent.

## 3. Results

### 3.1. Descriptive statistics

Results in Table I show that that only 18.75 (36.77) percent of companies are widely held at the 10 percent (20 percent) cut-off level. These figures are similar to the results of Faccio and Lang (2002) who reported that 15.13 (38.34) percent of Western European companies are widely held. Figures are more dramatic in East Asian countries (excluding Japan)[19], where 3.0 (15.37) percent of firms are widely held at the 10 (20) percent cut-off. However, results for US firms, as reported in La Porta et al (1999), suggest that more than 80 percent of the large US firms are widely held. Besides, we note that 81.60 percent of firms in our sample have ultimate ownership at the 10 percent cut-off, and this proportion decreases to 62.30 percent when we increase the threshold to 20 percent. We report that this ultimate owner is the single controller in 63.32 percent of the cases, at the 10 percent cut-off, and he is the only ultimate controller in 83.98 percent of the cases, when we increase the threshold to 20 percent. Claessens et al. (2000), report that the ultimate owner is the single controller (at the 10 percent cut-off) in 67.8 percent of the listed corporations, in their nine East Asian countries and 53.99 percent in Western countries, as reported by Faccio and Lang (2002).

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[17] A firm can be controlled by holdings through multiple control chains, even though it is not controlled by pyramiding. For example, suppose that Firm A controls 10 percent of B and 100 percent of C, which controls 15 percent of B. Since C is fully controlled by A in the control chain A-C-B, there is no pyramiding. However, Firm A controls Firm B directly and indirectly through Firm C, with control rights of 25 percent. We conclude that Firm A controls Firm B through multiple control chains because; (1) Firm B has a controlling owner at the 20 percent level, (2) B is controlled via multiple control chains, and (3) all links in each chain involve at least 5 percent of the control rights.

[18] Claessens et al. (2000) defined "holdings through multiple control chains" as "cross-holdings".

[19] When including Japan, the proportion of firms that are widely held becomes 7.4 (22.54) percent at 10 (20) percent cut-off.

[Insert Table I about here]

Moreover, family control is equal to 55.36 (40.97) percent at the 10 (20) percent threshold. Likewise, Faccio and Lang (2002) documented that families, in Western European corporations, control 55.87 (44.29) percent at the 10 (20) percent cut-off. Claessens and al. (2000), report that around 60 (58) percent of the listed firms, in East Asia (excluding Japan), are family controlled at the 10 (20) percent cut-off. However, families in the U.S., control only 20 percent (see La Porta et al. (1999)). Furthermore, in Canada, financial institutions control 17.12 percent of publicly traded companies at the 10 percent cut-off, this proportion becomes 10.71 at 20 percent cut-off. This result is close to that of Western European countries (18.34 and 8.73 percent at the 10 and 20 percent cut-off respectively). However, the highest level of ownership by widely held financial institutions (27.40 percent) is in the UK. Financial institutions play only a minor role in the US In East Asian countries widely held financial institutions control 13 percent at the 10 percent cut-off and 4.7 percent at the 20 percent cut-off. Government control is equal to 4.30 (1.92) percent at the 10 (20) percent cut-off. In comparison with Canada, the State usually plays a more important role as the controlling shareholder in continental Europe. This is especially true for Italy, where the State controls more than 10 percent of the votes in almost 10 percent of listed firms. Similarly, the Government in East Asian countries (excluding Japan), as reported in Claessens et al. (2000), controls 9.4 (7.6) percent at the 10 (20) percent[20]. However, the US government corporate control is rather nonexistent.

Overall, the differences in control in Canadian firms compared to US, Western European and East Asia firms, may be related to differences in regulations across countries, i.e., differences in the percentages of shares required to entitle shareholders to call an extraordinary meeting, and to caps on ownership of financial companies. Also, Canadian banks have historically faced very stringent limits on their ownership of non-financial corporations. Thus, it is not surprising to find the role of widely held financial institutions greatly diminishes, at the 20 percent level.

What is surprising is that Canada, despite his common law heritage and 'excellent' investor protection and law enforcement, displays corporate ownership structure crippled with mechanisms allowing ultimate owners to enhance their control. For instance, the presence of an insider (top management position for controlling family) is pronounced in Canadian firms. Therefore, we note that at the 10 percent cut-off, 43.81 percent of cases have insiders and this rate decreases to 33.91 percent, at

[20] When including Japan the results become 8.5 (7.0) percent at 10 (20) percent.

the 20 percent threshold. We report also that the first ultimate owner has 25.72 percent of the cash flow rights and 31.60 percent of the control rights. These proportions decrease sharply for the second ultimate owner, who owns 5.91 percent of cash flow rights and 8.00 of control rights. Overall, the ratio of the largest ultimate ownership over the largest ultimate control is equal to 0.8619, which is lower than the reported ratio for Western European corporations (0.868), but larger than the ratio of East Asian corporations (0.746).

As a matter of fact, we report that pyramidal holding is used to control 34.92 percent of Canadian corporations in our sample. On the other hand, multiple control chains are used to control only 8.05 percent of Canadian corporations in our sample. These figures are significantly higher than those of the US firms, where the use of pyramid and multiple control chains are next to nonexistent. Also the use of pyramidal holding in Canada is higher than that in Western European countries (19.13 percent), but lower than in the East Asian one (38.7 percent). For the multiple control chains, the proportion is equal to 5.52 percent for Western European firms, and 10.1 percent for East Asian corporations. On the other hand, we report that cross-holdings is present in 2.47 percent of these cases" This is comparable to Germany where German Corporations display cross-holdings in 2.69 percent of the cases. The use of cross-holdings is very marginal in the other European countries, and is close to non-existent for US firms.

In addition, we find that, in Canada, firms use dual class shares. In particular, 17.21 percent of the firms have multiple class shares and 6.50 percent have non-voting shares. Consequently, we report that the minimum required capital to control 20% of voting rights is equal to 18.33 percent. This is lower than the ratio for US firms (19.19 percent), East Asian countries (19.76 percent), but closer to the ratio for Western European countries (18.74 percent). Our finding shows a lot of discrepancies between Canadian and US corporate structures, where the concentration of control is relatively weak.

The above evidence suggests that Canadian corporate ownership is concentrated and entrenched with mechanisms to enhance control, used by the ultimate owner to overarch his control. Accordingly, information asymmetry and agency costs should be higher within such structure of corporate governance. Therefore, it is interesting to examine, as a first step, the effect of ultimate ownership structure on stock liquidity. Thus, Table II documents the distribution of the bid-ask spread according to the existence of an ultimate owner at the two cut-off levels (10 and 20 percent), and to the type of the ultimate owner.

Panel A in Table II documents that the bid-ask spread for firms that have an ultimate owner is significantly larger than its counterpart for firms without an ultimate owner. This is consistent with the notion that asymmetry costs are worsened by the presence of an ultimate owner, who may exert his opportunistic behavior to maximize his own interests, at the expense of shareholders. More importantly, we find that the presence of a second ultimate owner increases the asymmetry costs and agency problems. More precisely, Panel A reports that the bid-ask spread, for firms without a second ultimate owner, is lower than for firms with a second ultimate owner. The tests in means and in medians are statistically significant. Our interpretation is that the presence of a second ultimate owner does not reduce information asymmetry, within the Canadian corporate marketplace.

[Insert Table II about here]

In light of the above evidence, we report in Panel B of Table II, the descriptive statistics by the types of ultimate owner. Here we consider only the family, financial institution and the government.[21] Results show that the bid-ask spread for firms that are ultimately controlled by families is significantly larger than its counterpart for firms that are not controlled by families. These results, associated with the rent-seeking behavior of the "capitalistic" families and their political connections, are a noteworthy finding, in as such as they provide some motivation to argue that information asymmetry and agency costs are worsened in the presence of family control.

We find weak evidence that government control is associated with a lower bid-ask spread. Consistent with the finding in East Asia (Claessens et al. 2002), the presence of government is not associated with a value discount[22]. In addition, we report an indistinguishable difference between firms controlled by a widely held financial institution, and those that are not, for the bid-ask spread, at both the 10 and 20 percent cut-offs. These results suggest that financial institution control is not necessarily associated with a lower asymmetry of information. This is consistent with the finding by Sarin et al. (1997)[23], who argues "the loss of liquidity for institutional holdings is a result of higher inventory carrying costs".

[21] Results for the two other categories of ultimate owner (widely-held corporation, or a miscellaneous investor: i.e., a charity, a voting trust, a cooperative, a minority foreign investor) are available on request from the authors.

[22] This might be a "strong" inference! As our results show that transactions costs are not increased under Government control, and not that the price is not low.

[23] Sarin et al. (1997) report that institutional ownership are associated with wider spreads and smaller quoted depth.

To sum up, results in Table II show that ownership concentration, particularly the presence of an ultimate owner and family control increases the information asymmetry costs, as inferred from a higher bid-ask spread is observed.

### 3.2. Regression analysis

We rely on prior research to consider stock price, return volatility, firm size, and trading activity as significant determinants of the bid-ask spreads. In Table III, we report regression results of the effects of ownership structure on the bid-ask spread. Panel A displays regressions results for the whole sample. We find negative and statistically significant effects of the number of transactions, stock price and firm size, and a positive and statistically significant effect of risk on the bid-ask spread. The estimated coefficients of these variables are statistically significant (at the one percent level) across different model specifications. These findings are consistent with the theoretical predictions of Stoll (1978), and the empirical evidence reported in Stoll (1978), Chiang and Venkatesh (1988), Glosten and Harris (1988), Sarin et al. (1997), and Heflin and Shaw (2000), among others. In addition, we report a relatively high degree of explanatory power. For instance, the adjusted R-square is at least, equal to 0.6735. In model 1 (Table III) we control for the ultimate ownership stakes, we report that its estimated coefficient of the ultimate ownership stakes is significant at the 1 percent level. Note that both ultimate ownership and control variables are highly correlated at 0.8593 level**,** we adopt the practice of Claessens et al. (2002) to use ultimate ownership as the controlled variable. The estimated coefficient is significant across the different model specifications in Table III.

[Insert Table III about here]

Recall, that our objective is to examine the effect of the deviation between ultimate control and ultimate ownership on the bid-ask spread. In that, we control for the ratio of the largest ultimate block of ownership over the largest ultimate block of control (model 3). Claessens et al. (2002), argue that such ratio would be low if the ultimate owner controls the corporation via a 'long chain' of intermediate corporations[24]. That is, the affiliated corporation is at the bottom of the pyramidal ownership structure,

[24] For example, a family owns 51 per cent of company A, which owns 51 per cent of company B, which owns 51 per cent of company C, which owns 50 per cent of company D. The family controls 50 per cent of D via the A-B-C chain (the smallest ownership along the chain) but its ownership stake is only 7 per cent (51 per cent of 51 per cent of 51 per cent of 50 per cent).

which entails a set of channels through which the ultimate owners orchestrates corporate behavior, within the layers of his pyramidal holding so as to extract and secure control benefits. In fact, such layers of equity holdings create a veil opaque enough for the ultimate owners to engage in value destruction and worsening effects on information asymmetry. A negative and significant relationship is reported between this ratio and the bid-ask spread. The higher the separation between ownership and control the higher the bid-ask spread, and thus the more acute the asymmetry problems.

As a robustness check, we proxy the deviation between ultimate control and ultimate ownership by three other variables. Namely, we consider a continuous variable measuring the difference between ultimate control and ultimate ownership (*UCOS minus UOWS*), a dummy variable equal to 1 when ultimate control is higher than ultimate ownership (*Dummy for UCOS>UOWS*) otherwise it is 0. Finally, we consider a dummy variable equal to 1 if ultimate control is higher than ultimate ownership and the separation is higher than the mean separation in corporations where control and ownership differ (*Dummy for high UCOS>UOWS*), otherwise it is 0. The estimated coefficients of these variables, respectively reported in models 4, 5, and 6 in Panel A, show that the deviation between ultimate control and ultimate ownership positively and significantly affects the bid-ask spread, hence reducing stock market liquidity.

In Panel B-Table IV, we re-run the same regressions but for firms that are family controlled. Results are qualitatively similar to those reported for the whole sample. Specifically, the bid-ask spreads are larger for firms where family ultimate control exceeds family ultimate ownership. We infer that information asymmetry costs are associated with the separation between ultimate control and ultimate ownership. To shed more light on this issue we re-run the same regressions for firms that are not controlled by families. Results are reported in Panel C. It seems that the separation between ultimate ownership and ultimate control for non-family firms does not affect the bid-ask spread. More precisely, we note that the sign of the estimated coefficient of the ratio of ultimate ownership over ultimate control becomes positive, and more importantly, neither coefficient of variables measuring the separation between ultimate control and ultimate ownership is statistically significant. Indeed, the results of the separation between control and cash flow rights on the bid-ask spread appear to be driven by family control.

Overall, we might infer that the risk of opportunistic behavior at the expense of the minority shareholders (e.g. sharp separation between ultimate control and ultimate ownership) is higher with

family controlled firms. The upshot is that this risk increases the asymmetric information costs, the bid-ask spread, and, hence, the firm cost of capital[25].

It is worth noting that families, in most countries, control large conglomerates through pyramidal holdings. For example outside Canada, Toyota Motor, Samsung Electronics, Levi Strauss, Dupont, etc., are all controlled via pyramidal structure, and still have family as the main shareholders. In Canada, families like Bombardier, Bronfman, Desmarais, Iving, McCain, Molson, Péladeau, etc. all evoke enormous financial clout, and contribute to the fact that the stock market in Canada is much less liquid than the one in the US Thus, it is interesting to discuss the effects of ultimate owner's type on stock liquidity, and the means that are used to enhance his control.

We document in Table IV that the existence of an ultimate owner, as represented by a dummy variable, both at the two cut-off levels (10 and 20 percent), significantly and positively affects the bid ask spread. The presence of a second ultimate owner does not influence significantly the bid-ask spread[26].

[Insert Table IV about here]

In addition, we find that family control, at the two cut-off levels, has a positive significant effect on the bid-ask spread. We find that government control, negatively and significantly, affects the bid-ask spread only at the 10 percent but not 20 percent cutoff. Financial institution control (at the 10 percent cut-off), negatively affects the bid-ask spread, but at the 20 percent cut-off level, the estimated coefficient becomes positive. However, the estimated coefficient is not statistically significant, neither at the 10 nor at the 20 percent cut-off control levels. Nevertheless, these estimated coefficients suggest that financial institution control is not necessarily associated with lower asymmetry of information. Especially, stock liquidity of firms closely controlled by financial institutions, should be weakened as result of higher inventory carrying costs (Sarin et al., 1997). Our results are consistent with those

[25] Amihud and Mendelson (1986) argue that by increasing liquidity, firms reduce their cost of capital and increase their value.

[26] However, the estimated coefficient is positive We might infer that the presence of a second ultimate owner does not alleviate information about asymmetry problems and information concerning trading costs. We argue, that the presence of a second ultimate owner does not decreases the probability of conspiracy between the first and second ultimate owner, to exert an opportunistic behavior at the expense of minority interests. This evidence is consistent with what Faccio, Lang and Young (2001) have documented, i.e. second ultimate owners collude with first owners to expropriate minority shareholders, in East Asia, by paying low dividends.

reported by Chiang and Venkatesh (1988), who documented that financial institutions are not regarded as informed traders, because they might hold a relatively small fraction of the firms' stocks (Demsetz, 1986), and thus, cannot efficiently spread the costs of information acquisition over their investment, especially if financial institutions are subject to regulatory or fiduciary constraints, like in Canada.

Even, when we control simultaneously for the three dummy variables related to family, financial institution and government control, the estimated coefficients do not change signs and significance levels. Overall, our regression results are consistent with those reported in the descriptive statistics section.

Next, we investigate which channels drive such information asymmetry, by studying the effect of means of enhancing control. Mainly, pyramidal holding, multiple control chains, cross-holding, multiple class shares, non-voting shares[27], and management by controlling family members at the10 and 20 percent cut-off levels. Results are reported in Table V.

[Insert Table V about here]

When we use a dummy variable to control for the affiliation to a pyramidal holding, we find a non-significant result. However, when we control for the interaction between family control and pyramidal holding, we find a positive and statistically significant coefficient. We infer that the presence of a family, at the apex of the pyramidal holding increases the asymmetry costs and stock illiquidity. Supportive of this evidence is the work of Gosnell et al. (1992), who show that insiders use monopolistic information to generate abnormal return from trading in their firms' shares[28].

The other dummy variables for multiple control chains, cross holdings, multiple class shares, and non-voting shares, and interaction between family control and these variables are not significant. The variable of required minimum capital to control 20% of the votes (MROV) has a negative and significant estimated coefficient. A plausible interpretation of this result is that the higher the ratio, the

[27] Firstly, we use dummy variable for the presence of multiple class shares and non-voting shares. Secondly, we use the minimum required capital to control 20% of voting rights as continuous variable that reflects the use of multiple class of shares and non-voting shares.

[28] Gosnell et al (1992) have shown that insiders get ride of their stakes two-year period prior to a bankruptcy announcement.

lower the probability of opportunistic behavior of the controlling shareholder. Because, an increase in this ratio implies that the controlling shareholder should be damaged by mismanagement, as his personal invested wealth is proportional to his voting power. Finally, we find a (weak) positive and significant effect of management from the controlling families both at the 10 and 20 percent cut-off levels. These results may suggest that the means of enhancing control increase the asymmetry costs and, thus, positively affects the bid-ask spread.

Overall, our results show a significant effect of the (ultimate) ownership structure on the bid-ask spread. Particularly, we find that the presence of a family, both at the 10 and the 20 percent cut-off levels, increases the bid-ask spread to reflect the asymmetric information costs and the potential opportunistic behavior. Moreover, we document that the type of ultimate owner affects information asymmetry. We find that family control increases the bid-ask spread to reflect a higher level of information asymmetry, especially, when the families exert their control through pyramidal holding. We also report a positive effect of the presence of management by the controlling family on the bid-ask spread.

### 3.3. An analysis of uninformed trading

Previous analysis documented that the presence of a family is associated with a larger bid-ask spread. However, Easley, Kiefer, O'Hara, and Paperman (1996) show that high volume stocks tend to have a higher probability of information events and higher arrival rates of informed traders, but that these are "more than offset by higher arrival rates of uninformed traders". In contrast, less active stocks face a greater risk of informed trading, and so their larger spreads are consistent with this information-based explanation. It is possible that our evidence is merely a reflection of the fact that the presence of a large shareholder implies a smaller number of uninformed traders or a lower uninformed trading volume, therefore the larger spreads we observed may have little to do with information asymmetry due to the presence of families.

Since we do not have access to trading records by uninformed traders or ultimate owners like families, we need to construct uninformed holding (UINH) as the ratio of minority interests' direct block (total holding minus five largest direct blocks) over total holding. Then we multiply this variable by trading volume over total share outstanding to proxy for uninformed trading (UINT). Similarly, we proxy for trading by families by using family holding over total holding multiplied by trading volume

over total share outstanding. By design, these two variables are highly correlated; hence we only report uninformed trading results. When we construct these uninformed trading variable we implicitly assume that trading is in proportion to the ratio of its holding. This strong assumption would bias our results towards finding significant results similar to uninformed holding.

[Insert Table VI about here]

As shown in Table VI, the bid-ask spread is negatively related to uninformed holding (UINH). The estimated coefficient is significant for the whole sample, family and non-family controlled firms. If the variable uninformed holding can proxy for the number of uninformed traders, then the evidence is consistent with Easley, et al. (1996) that if the number of uninformed traders increases, marker-makers will set lower spreads and stocks tend to be more liquid[29].

However, contrary to the expectation that the result for uninformed trading (UINT) would be similar to that of uninformed holding (UINH), the estimated coefficients of uninformed trading are not significant across the different model specifications as shown in Table VI[30]. This evidence is inconsistent with Easley, et al. (1996).

Once we control for either uninformed holding or uninformed trading variables (not reported), we still obtain similar results for the divergence of cash flow and control rights for family control, the presence of a family and the interaction between pyramid and family. It demonstrates that our previous results are robust and are not statistical artifacts driven by uninformed holding or trading.

### 3.4. Simultaneous equation analysis

We documented in the previous section that the deviation of ultimate ownership from ultimate control affects the bid-ask spread. Hence it is important to further document how the ultimate

[29] This result is no surprising in that the uninformed holding variable is highly correlated with the ultimate ownership variable but with opposite sign as shown in Table VI.

[30] Similarly, the result for family trading variable (not reported) is also insignificant across different models. Besides, when we consider the mean ratio of quote changes over quotes (QCOQ) which is, as previously stated, a proxy for information trading (but with an opposite sign) we find a consistent negative and significant effect of QCOQ on BASP. That is, larger bid-ask spreads are set when there is an increase of informed trading.

ownership and control variables affect bid-ask spreads respectively. But the major problem remains: as ownership and control variables are highly correlated**,** it is virtually impossible to distinguish their respective effects in the OLS regression. For these reasons, we examine the endogeneity between stock liquidity, ultimate ownership, ultimate control and the deviation between ultimate control and ultimate ownership as measured by UCOS minus UOWS[31]. Furthermore, the ultimate owner's decision to enhance his voting power, or capital rights, might be influenced by stock liquidity; the ultimate owner may select less liquid stocks to avoid being monitored by outside investors. The empirical investigation should be structured to avoid misleading inferences of causality when considering stock liquidity and ultimate ownership stakes, as exogenously determined. To address these concerns, we use two-stage least square methods, to avoid ordinary least squares violation and obtain unbiased and consistent estimators. Results are presented in Table VII.

[Insert Table VII about here]

From the simultaneous analysis of the largest ultimate block of ownership (UOWS) and the bid-ask spread (BASP), we report that the bid-ask spread positively and significantly affects the ultimate ownership stakes. That is, the ultimate owner tends to increase his block of cash flow rights through less liquid stocks. Other surprising result comes from the sign of the family binary variable. In fact, we find an insignificant coefficient for the dummy family control variable on the ultimate ownership stakes. This suggests that our previous conclusion that bid-ask spread is higher for family controlled firms does not relate to the ultimate ownership variable. For the bid-ask spread equation, we find the same results for the usual determinants of the bid-ask spread (trading activity, closing price, return variability and firm size). However, and more importantly, we find an insignificant effect of the ultimate ownership stakes on the bid-ask spread. Indeed, asymmetry costs does not necessarily increase when ultimate ownership increases.

The simultaneous analysis of the largest ultimate block of control (UCOS) and the bid-ask spread (BASP) shows that BASP and UCOS are significantly interrelated. Therefore, asymmetry costs increase as ultimate control stakes increase, and thus stock liquidity declines. This finding corroborates the theoretical work of Maug (1998). In addition, we note that, for the equation of ultimate control, that the coefficients of family control and pyramidal holdings are economically significant and positive. We might infer that families, in Canada, are concerned much more with corporate control than with cash

[31] Results are similar when we use other measures of deviation of ownership from control.

flow rights to make pervasive use of opportunistic practices through pyramidal structure aimed at stripping corporate wealth in fitting `

These results show that the positive effect of family control on the bid-ask spread is driven from the asymmetry information costs caused by the ultimate control variable. The ultimate control variable determines the separation of ownership from control, which in turn affects the bid-ask spread.

To clear this issue, we examine the simultaneous relationship of stock liquidity measured by the bid-ask spread (BASP) and the deviation between ownership from control. We report that deviation between ultimate control and ultimate ownership positively and economically influences the bid-ask spread, and vice-versa. More importantly, this deviation variable subsumes the effect of pyramidal structures (as the coefficient is not significant), which was significant in our prior OLS regressions. This evidence adds to our previous findings that the deviation of ownership from control affects bid-ask spread through the channel of pyramid, however this deviation variable fully subsumes all information contained in pyramid.

To sum up, these results are a noteworthy finding in as much as they provide some motivation to argue that bid-ask spread reflects the asymmetric information costs contained in the ultimate control variable but not in the ultimate ownership variable. As a result, the separation of ownership from control captures the effect of ultimate control and further affects the bid-ask spread. Moreover, the firms that display less liquid stocks create an opportunist veil for the ultimate owner to engage in opportunistic behavior, mainly to avoid monitoring from outside investors.

## 4. Conclusion

We raised the issue of corporate governance in the context of market microstructure. According to our univariate and multivariate analysis, we documented that the deviation of ownership from control increases information asymmetry, by increasing the bid-ask spread. Moreover, family ownership and the means of enhancing control significantly affect the bid-ask spread.

The upshot is that the risk of the opportunistic behavior positively affects the bid-ask spread and hence increases the asymmetry and agency costs. For instance, ultimate control concentration and the separation between voting power and corporate ownership should decrease both investor confidence in

the financial market and economic growth. Maintaining an undamaged reputation should help the controlling shareholders to easily access needed capital, and eventually, adjusts his portfolio. However, the influential role of the controlling shareholders generates information asymmetry, caused by their incentives to obtain the necessary information to effectively control corporate policies that reduce the liquidity of the equity markets.

The evidence reported in here is important for many reasons. Firstly, it provides additional insight into the determinants of the firm's costs of capital. Secondly, our findings may be of use for regulators and law-setters (enhancing corporate governance effectiveness and market efficiency, reducing externalities, etc.). Thirdly, our findings should suggest a future research agenda for empirical and theoretical finance, to address the question of corporate ownership, and its separation from control and their effect on market microstructure in greater depth. Finally, and more generally, our findings should improve market microstructure, regulation and investment management by the knowledge of factors that influence liquidity and trading activity. A better understanding of these determinants should increase investor confidence in financial markets, and reduce the risk of being expropriated by the controlling shareholders (e.g. enhancing the efficiency of corporate policies) and lower the firm's cost of capital.

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# Tables

**Table I: Descriptive statistics for ownership structure and firm specific variables**
The Table below reports means of different variables related to ownership structure. The full sample includes observations on 1121 corporations for the 1994-1996 period. The data are gathered from the *Financial Post* (FP) "Survey of Industrials" (1996) and Statistics Canada *Intercorporate Ownership in Canada* (LP, 1996). We control for ultimate control stakes (UCOS), the ultimate ownership stakes (UOWS) of the first and second ultimate owner, the type of the ultimate owner (: binary variables related to family, financial institution, and government control), whether his is alone or not (binary variable), the presence of managers related to the controlling families (binary variable), the minimum required capital to control 20 percent of the votes, and the means of enhancing control (binary variables related to the use of multiple class shares, non-voting shares, pyramidal, multiple control chains and reciprocal holding structures).

| **Panel A: Ownership structure** | | | |
|---|---|---|---|
| 10 percent cut-off | | | |
| Widely held firms (N=1093) | Family controlled firms (N=1093) | State controlled firms (N=1093) | Widely-held financial institution controlled firms (N=1093) |
| 18.75 | 55.36 | 4.30 | 17.12 |
| Ultimate Owner (N=1093) | Controlling Owner Alone (N=1093) | Second Ultimate Owner (N=1093) | Manager (s) from controlling family (N=1093) |
| 80.60 | 63.32 | 36.68 | 43.81 |
| 20 percent cut-off | | | |
| Widely held firms (N=1093) | Family controlled firms (N=1093) | State controlled firms (N=1093) | Widely-held financial institution controlled firms (N=1093) |
| 36.77 | 40.97 | 1.92 | 10.71 |
| Ultimate Owner (N=1093) | Controlling Owner Alone (N=1093) | Second Ultimate Owner (N=1093) | Manager (s) from controlling family (N=1093) |
| 62.30 | 83.98 | 16.02 | 33.91 |
| UOWS_1 (N=1093) | UCOS_1 (N=1093) | UOWS_2 (N=1093) | UCOS_2 (N=1093) |
| 25.72 | 31.60 | 5.91 | 8.00 |
| Minimum required capital to control 20% voting right (N=1093) | UOWS_1/ UCOS_1 (N=1093) | Pyramidal holding (N=1093) | Cross Holding (N=1093) |
| 0.1833 | 0.8619 | 34.92 | 2.47 |
| **Panel B: Means of enhancing control** | | | |
| Multiple Control Chains (N=1093) | Multiple classes Shares (N=1093) | Non-voting shares (N=1093) | |
| 8.05 | 17.21 | 6.50 | |

**Table II: Ultimate ownership structure and stock liquidity**

The Table below reports mean and median comparison differences in the mean of daily percentage of bid-ask spread (BASP) (as a proxy for stock liquidity and information asymmetry) between group of firms ranked according to their ultimate ownership structure (Panel A) and to the type of the ultimate owner (Panel B). We distinguish firms that are widely held, firms that have an ultimate owner and firms that have a second ultimate owner. The analysis is conducted for both cut-offs: 10 and 20 percent. The P-value of the mean and median comparison tests are represented in the two last columns. The full sample includes observations on 1121 corporations for the 1994-1996 period

| **Panel A: Ultimate ownership structure at the 10 and 20 percent cut-off levels** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Existence of ultimate owner | | | | | | | | | | | | |
| | 10 percent cut-off | | | | | | 20 percent cut-off | | | | | |
| | Non-Existence | | Existence | | | | Non-Existence | | Existence | | | |
| | Mean | Median | Mean | Median | P-value of tests in differences in: | | Mean | Median | Mean | Median | P-value of tests in differences in: | |
| | | | | | means | medians | | | | | means | medians |
| BASP | 3.3792 | 2.0478 | 4.5067 | 3.0816 | 0.0026 | 0.0001 | 4.0200 | 2..3375 | 4.4380 | 3.2087 | 0.2276 | 0.0001 |
| Existence of second ultimate owner | | | | | | | | | | | | |
| BASP | 3.8760 | 2.5815 | 5.0049 | 3.2822 | 0.0013 | 0.0094 | 4.1739 | 2.6398 | 4.8377 | 3.3560 | 0.1501 | 0.0312 |
| **Panel B: Type of the ultimate owner at the 10 and 20 percent cut-off levels** | | | | | | | | | | | | |
| | 10 percent cut-off | | | | | | 20 percent cut-off | | | | | |
| | Non-Existence | | Existence | | | | Non-Existence | | Existence | | | |
| | Mean | Median | Mean | Median | P-value of tests in differences in: | | Mean | Median | Mean | Median | P-value of tests in differences in: | |
| | | | | | means | medians | | | | | means | medians |
| Family controlled firms | | | | | | | | | | | | |
| BASP | 3.5393 | 2.3735 | 4.8810 | 3.0334 | 0.0001 | 0.0001 | 3.9384 | 2.4958 | 4.7867 | 3.2251 | 0.0127 | 0.0001 |
| Sate controlled firms | | | | | | | | | | | | |
| BASP | 4.3096 | 2.8171 | 3.3019 | 2.0816 | 0.2046 | 0.1016 | 4.2817 | 2.7923 | 3.9060 | 2.7412 | 0.7903 | 0.7216 |
| Widely held financial institution controlled firms | | | | | | | | | | | | |
| BASP | 4.3237 | 2.8129 | 4.0530 | 2.6794 | 0.5317 | 0.5224 | 4.2323 | 2.7601 | 4.6854 | 3.3642 | 0.4319 | 0.4231 |

**Table III: Regression analysis of the effect of ultimate ownership structure on stock liquidity**

This Table reports results of regression analysis of the bid-ask spread (BASP). The full sample includes observations on 1121 corporations for the 1994-1996 period. We control for ultimate control stakes (UCOS), ultimate ownership stakes (UOWS) and the ratio of the largest ultimate ownership over the largest ultimate control (UOWS over UCOS). As robustness check, we proxy the deviation between ultimate control and ultimate ownership by three other variables. Namely, we consider a continuous variable measuring the difference between ultimate control and ultimate ownership (UCOS minus UOWS), a dummy variable equal to 1 when ultimate control is higher than ultimate ownership (Dummy for UCOS>UOWS) otherwise it is 0. Finally, we consider dummy variable equal to 1 if ultimate control is higher than ultimate ownership and the separation is higher than the mean separation in corporations where the control and ownership differ, otherwise it is 0. Besides, we use explanatory variables that are related to the firm size (log(TASS)), the average of daily trading transactions (MDTR), the average of daily closing price (CLSP), and the variance of daily returns (RISK) as a proxy for return volatility. The P-value of the *heteroscedasticity-consistent* t-statistics are between parentheses below the estimated coefficients.

| Model | Intercept | MDTR | CLSP | RISK | Log(TASS) | UOWS | UNIT | UOWS over UOCS | UCOS minus UOWS | Dummy for (UCOS>UOWS) | Dummy for high (UCOS>UOWS) | N | Adj-$R^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Whole sample | | | | | | | |
| (1) | 3.2079 | -0.0042 | -0.017 | 3.9149 | -0.1771 | 0.0043 | | | | | | 619 | 0.6735 |
| | (0.0001) | (0.0001) | (0.0044) | (0.0045) | (0.0001) | (0.0001) | | | | | | | |
| (2) | 3.0880 | -0.0043 | -0.0179 | 4.3549 | -0.1673 | 0.0046 | 8.4038E-7 | | | | | 593 | 0.6753 |
| | (0.0001) | (0.0001) | (0.0044) | (0.0027) | (0.0001) | (0.0001) | (0.7296) | | | | | | |
| (3) | 3.4138 | -0.0040 | -0.0175 | 3.9467 | -0.1841 | 0.0050 | | -0.1659 | | | | 619 | 0.6753 |
| | (0.0001) | (0.0001) | (0.0035) | (0.0044) | (0.0001) | (0.0001) | | (0.0388) | | | | | |
| (4) | 3.2737 | -0.0039 | -0.0175 | 3.9786 | -0.1865 | 0.0049 | | | 0.0041 | | | 619 | 0.6763 |
| | (0.0001) | (0.0001) | (0.0028) | (0.0041) | (0.0001) | (0.0001) | | | (0.0331) | | | | |
| (5) | 3.2840 | -0.0039 | -0.0172 | 3.8624 | -0.1886 | 0.0049 | | | | 0.1624 | | 619 | 0.6767 |
| | (0.0001) | (0.0001) | (0.0039) | (0.0054) | (0.0001) | (0.0001) | | | | (0.0048) | | | |
| (6) | 3.2734 | -0.0039 | -0.0172 | 3.9845 | -0.1881 | 0.0050 | | | | | 0.1786 | 619 | 0.6780 |
| | (0.0001) | (0.0001) | (0.0037) | (0.0045) | (0.0001) | (0.0001) | | | | | (0.0042) | | |
| | | | | | | Family controlled firms | | | | | | | |
| (1) | 3.3996 | -0.0086 | -0.0136 | 3.3700 | -0.1803 | 0.0032 | | | | | | 343 | 0.6715 |
| | (0.0001) | (0.0001) | (0.0422) | (0.0287) | (0.0001) | (0.0317) | | | | | | | |
| (2) | 3.1993 | -0.0088 | -0.0136 | 4.4779 | -0.1649 | 0.0031 | -0.0002 | | | | | 328 | 0.6712 |
| | (0.0001) | (0.0001) | (0.0393) | (0.0242) | (0.0001) | (0.0682) | (0.7951) | | | | | | |
| (3) | 3.5973 | -0.0083 | -0.0136 | 3.5276 | -0.1908 | 0.0044 | | -0.1471 | | | | 343 | 0.6726 |
| | (0.0001) | (0.0001) | (0.0394) | (0.0221) | (0.0001) | (0.0095) | | (0.1311) | | | | | |
| (4) | 3.4554 | -0.0083 | -0.0136 | 3.4470 | -0.1890 | 0.0038 | | | 0.0021 | | | 343 | 0.6717 |
| | (0.0001) | (0.0001) | (0.0370) | (0.0629) | (0.0001) | (0.0372) | | | (0.2560) | | | | |
| (5) | 3.4872 | -0.0082 | -0.0134 | 3.4731 | -0.1956 | 0.0043 | | | | 0.1405 | | 343 | 0.6746 |
| | (0.0001) | (0.0001) | (0.0417) | (0.0645) | (0.0001) | (0.0169) | | | | (0.0446) | | | |
| (6) | 3.5004 | -0.0082 | -0.0134 | 3.4492 | -0.1962 | 0.0043 | | | | | 0.1442 | 343 | 0.6742 |
| | (0.0001) | (0.0001) | (0.0411) | (0.0674) | (0.0001) | (0.0202) | | | | | (0.0639) | | |
| | | | | | | Firms not controlled by a family | | | | | | | |
| (1) | 2.6760 | -0.0030 | -0.0232 | 5.5684 | -0.1416 | 0.0052 | | | | | | 275 | 0.7046 |
| | (0.0001) | (0.0001) | (0.0001) | (0.0015) | (0.0001) | (0.0001) | | | | | | | |
| (2) | 2.6576 | -0.0030 | -0.0248 | 5.0494 | -0.1378 | 0.0057 | -0.0000 | | | | | 264 | 0.7106 |
| | (0.0001) | (0.0001) | (0.0001) | (0.0057) | (0.0001) | (0.0001) | (0.1612) | | | | | | |
| (3) | 2.5967 | -0.0030 | -0.0232 | 5.6145 | -0.1408 | 0.0052 | | 0.0749 | | | | 275 | 0.7036 |
| | (0.0001) | (0.0001) | (0.0001) | (0.0014) | (0.0001) | (0.0001) | | (0.5993) | | | | | |
| (4) | 2.6852 | -0.0029 | -0.0230 | 5.5551 | -0.1428 | 0.0052 | | | 0.0020 | | | 275 | 0.7036 |
| | (0.0001) | (0.0001) | (0.0001) | (0.0016) | (0.0001) | (0.0001) | | | (0.6770) | | | | |
| (5) | 2.6888 | -0.0029 | -0.0230 | 5.5028 | -0.1430 | 0.0052 | | | | 0.0409 | | 275 | 0.7036 |
| | (0.0001) | (0.0001) | (0.0001) | (0.0019) | (0.0001) | (0.0001) | | | | (0.6657) | | | |
| (6) | 2.6768 | -0.0030 | -0.0232 | 5.5605 | -0.1417 | 0.00527 | | | | | 0.0062 | 275 | 0.7035 |
| | (0.0001) | (0.0001) | (0.0001) | (0.0017) | (0.0001) | (0.0001) | | | | | (0.9491) | | |

**Table IV: Regression analysis of the effect of the ultimate ownership type on stock liquidity**

This Table reports results of regression analysis of the bid-ask spread (BASP). The full sample includes observations on 1121 corporations for the 1994-1996 period. We control for the type of the ultimate owner: we use a dummy variable to distinguish widely held firms (WHEF), family controlled firms (FAMC), financial institution controlled firms (FINC), government controlled firms (GOVC), the firms that have an ultimate owner (UOWN), and those that have a second ultimate owner (SUOW). All the dummy variables are considered at two cut-off levels: 10 and 20 percent. Furthermore, we use explanatory variables that are related to the ultimate control stakes (UCOS), the ultimate ownership stakes (UOWS), the firm size (log(TASS)), the average of daily trading transactions (MDTR), the average of daily closing price (CLSP), and the variance of daily returns (RISK) as a proxy for return volatility. The P-value of the *heteroscedasticity-consistent* t-statistics are between parentheses below the estimated coefficients.

| Model | Intercept | MDTR | CLSP | RISK | Log(TASS) | UOWS | UOWN | SUOW | FAMC | FINC | GOVC | N | Adj-$R^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 10 percent cut-off | | | | | | | |
| (1a) | 3.2202 | -0.0044 | -0.0178 | 3.5350 | -0.1745 | | 0.1016 | | | | | 619 | 0.6644 |
| | (0.0001) | (0.0001) | (0.0033) | (0.0098) | (0.0001) | | (0.0560) | | | | | | |
| (2a) | 3.2647 | -0.0045 | -0.0176 | 3.6600 | -0.1729 | | | 0.0520 | | | | 619 | 0.6739 |
| | (0.0001) | (0.0001) | (0.0036) | (0.0069) | (0.0001) | | | (0.2691) | | | | | |
| (3a) | 3.1798 | -0.0044 | -0.0175 | 3.7918 | -0.1709 | | | | 0.1309 | | | 619 | 0.6671 |
| | (0.0001) | (0.0001) | (0.0030) | (0.0056) | (0.0001) | | | | (0.0041) | | | | |
| (4a) | 3.2800 | -0.0046 | -0.0177 | 3.7441 | -0.1724 | | | | | -0.0204 | | 619 | 0.6627 |
| | (0.0001) | (0.0001) | (0.0034) | (0.0056) | (0.0001) | | | | | (0.7340) | | | |
| (5a) | 3.2658 | -0.0046 | -0.0177 | 3.7868 | -0.1710 | | | | | | -02086 | 619 | 0.6640 |
| | (0.0001) | (0.0001) | (0.0033) | (0.0053) | (0.0001) | | | | | | (0.0286) | | |
| (6a) | 3.1645 | -0.0044 | -0.0176 | 3.8745 | -0.1688 | | | | 0.1279 | -0.0208 | -0.1888 | 619 | 0.6672 |
| | (0.0001) | (0.0001) | (0.0028) | (0.0046) | (0.0001) | | | | (0.0053) | (0.7316) | (0.0410) | | |
| (7a) | 3.093 | -0.0041 | -0.0174 | 4.0748 | -0.1730 | 0.0043 | | | 0.1278 | -0.0299 | -0.1759 | 619 | 0.6774 |
| | (0.0001) | (0.0001) | (0.0036) | (0.0034) | (0.0001) | (0.0001) | | | (0.0047) | (0.6085) | (0.0543) | | |
| | | | | | | 20 percent cut-off | | | | | | | |
| (1b) | 3.2545 | -0.0042 | -0.0174 | 3.7092 | -0.1789 | | 0.1417 | | | | | 619 | 0.6675 |
| | (0.0001) | (0.0001) | (0.0033) | (0.0071) | (0.0001) | | (0.0036) | | | | | | |
| (2b) | 3.2831 | -0.0045 | -0.0175 | 3.6203 | -0.1740 | | | 0.0779 | | | | 619 | 0.6637 |
| | (0.0001) | (0.0001) | (0.0037) | (0.0076) | (0.0001) | | | (0.1981) | | | | | |
| (3b) | 3.2382 | -0.0043 | -0.0173 | 3.9526 | -0.1754 | | | | 0.1439 | | | 619 | 0.6679 |
| | (0.0001) | (0.0001) | (0.0031) | (0.0048) | (0.0001) | | | | (0.0034) | | | | |
| (4b) | 3.2805 | -0.0046 | -0.0177 | 3.6567 | -0.1734 | | | | | 0.1047 | | 619 | 0.6637 |
| | (0.0001) | (0.0001) | (0.0036) | (0.0068) | (0.0001) | | | | | (0.1588) | | | |
| (5b) | 3.2768 | -0.0046 | -0.0177 | 3.7550 | -0.1723 | | | | | | -0.0974 | 619 | 0.6627 |
| | (0.0001) | (0.0001) | (0.0035) | (0.0054) | (0.0001) | | | | | | (0.6479) | | |
| (6b) | 3.2307 | -0.0043 | -0.0174 | 3.9124 | -0.1757 | | | | 0.1475 | 0.1210 | -0.0775 | 619 | 0.6683 |
| | (0.0001) | (0.0001) | (0.0033) | (0.0048) | (0.0001) | | | | (0.0030) | (0.1025) | (0.7077) | | |
| (7b) | 3.1801 | -0.0041 | -0.0174 | 4.0460 | -0.1782 | 0.0037 | | | 0.1059 | 0.0827 | -0.1068 | 619 | 0.6752 |
| | (0.0001) | (0.0001) | (0.0043) | (0.0040) | (0.0001) | (0.0003) | | | (0.0045) | (0.2717) | (0.6199) | | |

**Table V: Regression analysis of the effect of means of enhancing control on the bid-ask spread**

This Table reports results of regression analysis of the effects of means of enhancing control on the bid-ask spread (BASP). The full sample includes observations on 1121 corporations for the 1994-1996 period. We control for the ultimate control stakes (UCOS), the ultimate ownership stakes (UOWS), and the channels that drive the separation between ultimate control and ultimate ownership: we use a dummy variable to distinguish the use of pyramidal holding (PYRA), multiple control chains (MUCC), cross-holdings (CHOL), multiple class shares (MCOS), non-voting shares (NVOS), management from the controlling families (MFCF) at the 10 and 20 percent cut-off levels, and the minimum required capital to control 20 percent of votes (MROV). Besides, we use explanatory variables that are related to firm size (log(TASS)), the average of daily trading transactions (MDTR), the average of daily closing price (CLSP), and the variance of daily returns (RISK) as a proxy for return volatility. The P-value of the *heteroscedasticity-consistent* t-statistics are between parentheses below the estimated coefficients.

| Model | Intercept | MDTR | CLSP | RISK | Log(TASS) | UOWS | PYRA | FAMC | PYRA* FAMC | CHOL | MUCC | MCOS | NVOS | MROV | MFCF (at 10%) | MFCF (at 20%) | N | Adj-$R^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) | 3.2055 | -0.0042 | -0.0175 | 3.9237 | -0.1755 | 0.0048 | -0.0449 | | | | | | | | | | 619 | 0.6734 |
| | (0.0001) | (0.0001) | (0.0047) | (0.0041) | (0.0001) | (0.0001) | (0.3356) | | | | | | | | | | | |
| (2) | 3.0988 | -0.0041 | -0.0174 | 3.9995 | -0.1732 | 0.0045 | -0.0566 | 0.1350 | | | | | | | | | 619 | 0.6776 |
| | (0.0001) | (0.0001) | (0.0041) | (0.0037) | (0.0001) | (0.0001) | (0.2137) | (0.0023) | | | | | | | | | | |
| (3) | 3.1785 | -0.0041 | -0.0172 | 3.9289 | -0.1775 | 0.0051 | -0.1998 | 0.05101 | 0.2400 | | | | | | | | 619 | 0.6802 |
| | (0.0001) | (0.0001) | (0.0040) | (0.0044) | (0.0001) | (0.0001) | (0.0080) | (0.3648) | (0.0128) | | | | | | | | | |
| (4) | 3.2988 | -0.0045 | -0.0180 | 3.6150 | -0.1743 | | | | | 0.2511 | | | | | | | 619 | 0.66640 |
| | (0.0001) | (0.0001) | (0.0011) | (0.0060) | (0.0001) | | | | | (0.1133) | | | | | | | | |
| (5) | 3.2263 | -0.0041 | -0.0179 | 3.8091 | -0.1786 | 0.0043 | | | | 0.2525 | | | | | | | 619 | 0.6744 |
| | (0.0001) | (0.0001) | (0.0015) | (0.0044) | (0.0001) | (0.0001) | | | | (0.1057) | | | | | | | | |
| (6) | 3.2840 | -0.0046 | -0.0177 | 3.7239 | -0.1731 | | | | | | 0.0159 | | | | | | 619 | 0.6627 |
| | (0.0001) | (0.0001) | (0.0034) | (0.0060) | (0.0001) | | | | | | (0.8463) | | | | | | | |
| (7) | 3.2062 | -0.0042 | -0.0175 | 3.9105 | -0.1766 | 0.0044 | | | | | -0.0275 | | | | | | 619 | 0.6730 |
| | (0.0001) | (0.0001) | (0.0044) | (0.0046) | (0.0001) | (0.0001) | | | | | (0.7333) | | | | | | | |
| (8) | 3.3138 | -0.0045 | -0.0176 | 3.8534 | -0.1775 | | | | | | | 0.0988 | | | | | 619 | 0.6641 |
| | (0.0001) | (0.0001) | (0.0030) | (0.0051) | (0.0001) | | | | | | | (0.1014) | | | | | | |
| (9) | 3.2298 | -0.0041 | -0.0175 | 3.9824 | -0.1795 | 0.0042 | | | | | | 0.0551 | | | | | 619 | 0.6734 |
| | (0.0001) | (0.0001) | (0.0041) | (0.0043) | (0.0001) | (0.0001) | | | | | | (0.3601) | | | | | | |
| (10) | 3.2968 | -0.0045 | -0.0176 | 3.7835 | -0.1749 | | | | | | | | 0.1118 | | | | 619 | 0.6634 |
| | (0.0001) | (0.0001) | (0.0035) | (0.0056) | (0.0001) | | | | | | | | (0.2269) | | | | | |
| (11) | 3.2272 | -0.0041 | -0.0175 | 4.0131 | -0.1802 | 0.0045 | | | | | | | 0.1592 | | | | 619 | 0.6746 |
| | (0.0001) | (0.0001) | (0.0046) | (0.0039) | (0.0001) | (0.0001) | | | | | | | (0.0823) | | | | | |
| (12) | 3.4692 | -0.0044 | -0.0178 | 3.8112 | -0.1770 | | | | | | | | | -0.7824 | | | 619 | 0.6641 |
| | (0.0001) | (0.0001) | (0.0024) | (0.0053) | (0.0001) | | | | | | | | | (0.1015) | | | | |
| (13) | 3.4705 | -0.0040 | -0.0177 | 4.0592 | -0.1833 | 0.0047 | | | | | | | | -1.1154 | | | 619 | 0.6759 |
| | (0.0001) | (0.0001) | (0.0028) | (0.0035) | (0.0001) | (0.0001) | | | | | | | | (0.0189) | | | | |
| (14) | 3.2132 | -0.0044 | -0.0179 | 3.8045 | -0.1716 | | | | | | | | | | 0.1082 | | 619 | 0.6657 |
| | (0.0001) | (0.0001) | (0.0029) | (0.0057) | (0.0001) | | | | | | | | | | (0.0145) | | | |
| (15) | 3.1729 | -0.0041 | -0.0177 | 3.9520 | -0.1760 | 0.0040 | | | | | | | | | 0.0658 | | 619 | 0.6740 |
| | (0.0001) | (0.0001) | (0.0039) | (0.0045) | (0.0001) | (0.0001) | | | | | | | | | (0.1371) | | | |
| (16) | 3.2530 | -0.0044 | -0.0176 | 3.8485 | -0.1745 | | | | | | | | | | | 0.1108 | 619 | 0.6657 |
| | (0.0001) | (0.0001) | (0.0030) | (0.0056) | (0.0001) | | | | | | | | | | | (0.0180) | | |
| (17) | 3.2001 | -0.0041 | -0.0175 | 3.9660 | -0.1776 | 0.0040 | | | | | | | | | | 0.0568 | 619 | 0.6737 |
| | (0.0001) | (0.0001) | (0.0040) | (0.0046) | (0.0001) | (0.0001) | | | | | | | | | | (0.2336) | | |

**Table VI: Regression analysis of the effect of ultimate ownership structure on stock liquidity**

This Table reports results of regression analysis of the bid-ask spread (BASP). The full sample includes observations on 1121 corporations for the 1994-1996 period. We control for ultimate ownership stakes (UOWS), the firm size (log(TASS)), the average of daily trading transactions (MDTR), the average of daily closing price (CLSP), and the variance of daily returns (RISK) as a proxy for return volatility. UNIH is the uninformed holding, and UNIT is uninformed trading. The P-value of the *heteroscedasticity-consistent* t-statistics are between parentheses below the estimated coefficients.

| Model | Intercept | MDTR | CLSP | RISK | Log(TASS) | UOWS | UNIH | UNIT | N | Adj-$R^2$ |
|---|---|---|---|---|---|---|---|---|---|---|
| Whole sample | | | | | | | | | | |
| (1) | 3.5879 | -0.0040 | -0.0179 | 4.1229 | -0.1797 | | -0.0041 | | 618 | 0.6754 |
| | (0.0001) | (0.0001) | (0.0027) | (0.0029) | (0.0001) | | (0.0001) | | | |
| (2) | 3.1502 | -0.0047 | -0.0181 | 4.1773 | -0.1615 | | | 7.6088E-7 | 593 | 0.6636 |
| | (0.0001) | (0.0001) | (0.0033) | (0.0032) | (0.0001) | | | (0.7656) | | |
| (3) | 3.0880 | -0.0043 | -0.0179 | 4.3549 | -0.1673 | 0.0046 | | 8.4038E-7 | 593 | 0.6753 |
| | (0.0001) | (0.0001) | (0.0044) | (0.0027) | (0.0001) | (0.0001) | | (0.7296) | | |
| (4) | 3.5464 | -0.0040 | -0.0180 | 4.4300 | -0.1760 | | -0.0042 | 0.0000 | 593 | 0.6801 |
| | (0.0001) | (0.0001) | (0.0029) | (0.0022) | (0.0001) | | (0.0001) | (0.6414) | | |
| Family controlled sample | | | | | | | | | | |
| (1) | 3.7817 | -0.0081 | -0.0138 | 3.7566 | -0.1926 | | -0.0034 | | 341 | 0.6761 |
| | (0.0001) | (0.0001) | (0.0373) | (0.0420) | (0.0001) | | (0.0027) | | | |
| (2) | 3.3033 | -0.0089 | -0.0139 | 4.1908 | -0.1657 | | | -0.0004 | 328 | 0.6681 |
| | (0.0001) | (0.0001) | (0.0348) | (0.0289) | (0.0001) | | | (0.5968) | | |
| (3) | 3.1993 | -0.0088 | -0.0136 | 4.4779 | -0.1649 | 0.0031 | | -0.0002 | 328 | 0.6712 |
| | (0.0001) | (0.0001) | (0.0393) | (0.0242) | (0.0001) | (0.0682) | | (0.7951) | | |
| (4) | 3.6633 | -0.0083 | -0.0137 | 4.7744 | -0.1827 | | -0.0038 | 0.0001 | 328 | 0.6778 |
| | (0.0001) | (0.0001) | (0.0358) | (0.0180) | (0.0001) | | (0.0015) | (0.8233) | | |
| Non-family controlled sample | | | | | | | | | | |
| (1) | 2.9851 | -0.0031 | -0.0242 | 5.3344 | -0.1316 | | -0.0039 | | 276 | 0.6946 |
| | (0.0001) | (0.0001) | (0.0001) | (0.0042) | (0.0001) | | (0.0001) | | | |
| (2) | 2.6255 | -0.0036 | -0.0244 | 5.2806 | -0.1224 | | | -0.0000 | 264 | 0.6869 |
| | (0.0001) | (0.0001) | (0.0001) | (0.0043) | (0.0001) | | | (0.2506) | | |
| (3) | 2.6576 | -0.0030 | -0.0248 | 5.0494 | -0.1378 | 0.0057 | | -0.0000 | 264 | 0.7106 |
| | (0.0001) | (0.0001) | (0.0001) | (0.0057) | (0.0001) | (0.0001) | | (0.1612) | | |
| (4) | 3.0704 | -0.0031 | -0.0248 | 4.6639 | -0.1366 | | -0.0040 | -0.0000 | 264 | 0.7031 |
| | (0.0001) | (0.0001) | (0.0001) | (0.0151) | (0.0001) | | (0.0001) | (0.7468) | | |

**Table VII: Simultaneous equation analysis of ownership structure and stock liquidity**

The Table below reports the estimation of simultaneous equations between ultimate ownership structure and stock liquidity. We estimate the simultaneous equation system between the largest ultimate ownership (UOWS) and the bid-ask spread (BASP), the largest ultimate control (UCOS) and the bid-ask spread (BASP), and the deviation between ultimate control and ultimate ownership measured by the difference between ultimate control and ultimate ownership (UCOS minus UOWS) and the bid-ask spread. The full sample includes observations on 1121 corporations for the 1994-1996 period. Results of two stage least square are reported. The P-value of the t-statistics are between parentheses. The explanatory variables are firm size (log(TASS)), pyramidal holding (PYRA), family control (FAMC), average of daily trading transactions (MDTR), average of daily closing price (CLSP), and variance of daily returns (RISK) as a proxy for return volatility.

| | Nonlinear 2SLS analysis of the UWOS and BASP equations | | Nonlinear 2SLS analysis of the UCOS and BASP equations | | Nonlinear 2SLS analysis of the difference (UCOS minus UOWS) and BASP equations | |
|---|---|---|---|---|---|---|
| | **UOWS** | **BASP** | **UCOS** | **BASP** | UCOS minus UOWS | BASP |
| Intercept | -26.2917 | 3.6393 | -68.488 | 3.6547 | -42.1963 | 3.9261 |
| | (0.1168) | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) |
| UOWS | | 0.0034 | | | | |
| | | (0.5143) | | | | |
| UCOS | | | | 0.0070 | | |
| | | | | (0.0421) | | |
| UCOS minus | | | | | | 0.0153 |
| UOWS | | | | | | (0.0148) |
| BASP | 10.6990 | | 15.5884 | | 4.8894 | |
| | (0.0005) | | (0.0001) | | (0.0060) | |
| MDTR | | -0.0041 | | -0.0034 | | -0.0038 |
| | | (0.0001) | | (0.0001) | | (0.0001) |
| CLSP | | -0.0226 | | -0.0220 | | -0.0217 |
| | | (0.0001) | | (0.0001) | | (0.0001) |
| RISK | | 1.3855 | | 2.0482 | | 1.7214 |
| | | (0.3217) | | (0.1426) | | (0.2362) |
| Log(TASS) | 3.1713 | -0.2050 | 6.4532 | -0.2204 | 3.2819 | -0.2319 |
| | (0.0093) | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) |
| FAMC | -0.9453 | | 6.3408 | | 7.2861 | |
| | (0.6784) | | (0.0090) | | (0.0001) | |
| PYRA | 9.2441 | | 10.8408 | | 1.5966 | |
| | (0.0001) | | (0.0001) | | (0.2361) | |
| Adj-R-Square | 0.1050 | 0.7459 | 0.1510 | 0.7431 | 0.1041 | 0.6940 |