Legal regime, Size, and Liquidity factors in Asset Pricing

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Abstract

This study introduces a new legal regime factor into the international valuation literature which exploits the differences between civil and common law origin countries. This builds directly on the concept that institutions both build and shape culture and economic outcomes and takes account of the pervasive differences between civil and common law countries worldwide La Porta et al (1998, 2002). This study contrasts the abilities of three prominent liquidity constructs, namely Amihud (2002) price-impact, Liu (2006) trading speed and volume-based turnover, in explaining the total trading costs in a sample of 62 equity markets spanning developed and developing countries as well as aggregated worldwide civil and common law universes. The evidence reveals that differences in legal origin of markets exert a pervasive effect on the liquidity generating process that transcends institutions across markets. Furthermore a world market universe is created from the constituent stocks of the top tier equity market indices from 60 countries worldwide leading to the construction of size and liquidity returns-based factors and a new legal regime factor. The results indicate that the four-factor legal regime CAPM outperform both other pricing models.

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1. INTRODUCTION

The origin of country's legal and regulatory systems has well documented effects on the institutional design and cultural makeup of that nation (La Porta et al (2002, 2008)). While common law tradition traces it's origins back to the English system of establishing legal precedent on a case-by-case basis the civil codes of France, Germany and to a much lesser extent Scandinavia trace their origins to Roman Law where law was established through a codified system or principles and emphasis was placed on courts interpretation of these guidelines (La Porta et al, 2008). This is particularly prevalent in Napoleonic French civil code where the judiciary were relegated to a largely administrative role in the interpretation of codified statutes and through centuries of colonisation, conquest and influence this spread both throughout France's colonial empire as well as to Spain and Portugal and by virtue of their empires on to Latin America and parts of Asia (La Porta et al, 2008). However while there has been much intermixing between the systems with characteristically common law country's such as US enacting essentially civil law codified legislative measures, an example being the recent Sarbanes-Oxley Act, and a considerable uptake of corporate governance regulations in civil code country's that is more common law in nature the institutional differences between the two systems are largely distinct leading to fundamentally very different development outcomes (La Porta et al, 2008). Consequently I ask whether the differences between civil and common law regimes exert a pervasive effect on both the liquidity and returns generating processes across country's adhering to their principles.

The application of standard asset pricing theory dictates that the cross-section of expected stock returns are related to returns sensitivities to state variables that are themselves linked to investors overall welfare (Pastor and Stambaugh, 2003). Assets whose lowest returns accompany unfavourable shifts in that welfare must compensate investors for the loss of value while holding the asset. While Fama and French (1993) originally proposed that variations in size as well as accounting book to market value of stocks across a universe constitute state variables there is considerable evidence in the literature of liquidity being such a variable (Pastor and Stambaugh (2003); Liu (2006)). However the existence of persistent differences between civil as opposed to common law institutions and the ability of these to be propagated on an inter generational basis once transplanted to nations thus forming a pervasive constituent of national culture is also likely to be such a state variable. Differences in legal origin transcend institutional features through affecting the design of corporate bankruptcy laws, shareholder activism, information disclosure and principles of governance in a systematic way across the world between civil and common law legal origin country's. As such I ask whether differences in cross sectional expected returns can be better explained by fluctuations in aggregate market size, liquidity and legal regime effects as opposed to size and liquidity factors alone.

Liquidity as a concept is very hard to define largely because its representative characteristics transcend a number of transactional properties of markets including tightness, depth, resiliency (Lesmond, 2005) and information (O'Hara, 2003). The literature has traditionally been limited in only employing constructs capturing only one dimension of a multidimensional phenomenon. This typically centres on variants of the bid-ask spread (quoted or effective) in Amihud and Mendelsen (1986), the turnover measure of Datar et al. (1998), or measures relating to the price impact arising from traded volume such as Amihud (2002) and Pastor and Stambaugh (2003). However there is very little published research concerning measures capturing the trading speed dimension of liquidity, defined as the ability to transact large quantities quickly with little price impact (Liu (2006) and Pastor and Stambaugh (2003)). Furthermore there are serious concerns over existing one-dimensional constructs ability to fully capture liquidity risk and over their inaccurate estimation of the dimension they are intended to model Pastor and Stambaugh (2003) and Amihud (2002). Equally deficiencies in the application of the bid-ask spread construct have been highlighted in Lee (1993) where evidence reveals that many large trades occur outside the bid-ask spread while many small trades are undertaken within it leading to potential bias. Further concerns over the application of one-dimensional measures focus on their being undefined in the presence of extremes of illiquidity as is a frequent occurrence in smaller regional markets (Lesmond, 2005). A more recent measure developed in Liu (2006) captures the trading speed dimension of liquidity which is defined as the standardized turnover-adjusted number of zero trading volumes over the past twelve months. It is multi-dimensional in nature, capturing effects relating to trading speed, trading quantity and trading cost, with an emphasis on trading speed, outlined as the continuity of trading and the potential delay in executing an order (Liu, 2006).

The literature concerning the inclusion of liquidity as a priced state variable within a valuation framework is very recent. Pastor and Stambaugh (2003) find strong evidence from US stock data that market-wide liquidity is a priced state variable and that the liquidity premium should be positive. The study applied the innovations of a price impact measure of liquidity to sort stocks within a universe into decile portfolios with the market aggregate premium being formed in the difference between returns of the highest and lowest liquidity deciles. The explanatory power arising from inclusion of the liquidity factor were studied through the contrast of a four factor capital asset pricing model (CAPM) including market, size, price-to-book value and the new liquidity factor against the Fama and French (1993) three factor model and the CAPM. Stocks with higher sensitivity to aggregate liquidity stocks compensate investors with higher expected returns. Evidence is also found that small stocks have greater sensitivities to liquidity innovations than large stocks. Pastor and Stambaugh (2003) note that intuitively it could be expected that small and illiquid stocks are those most

affected by market aggregate drops in liquidity thereby precipitating investors to "flee" to assets with higher liquidity. However their findings also show that size and liquidity are not the sole determinants of liquidity betas. This finding is reinforced by the argument explaining why stocks with a high liquidity beta are not necessarily illiquid. Investor preferences when there are market aggregate falls in liquidity are also likely to focus on rival bonds markets. In order to increase portfolio holdings in bonds investors may seek to sell liquid stocks in order to save on transactions costs. Consequently in this scenario the price reaction to aggregate liquidity changes is stronger for more liquid stocks. Equally prices of liquid stocks could have greater sensitivity to aggregate liquidity shocks if such stocks are held in greater proportions within the portfolios of liquidity-conscious investors. As such Pastor and Stambaugh (2003) find little basis for liquidity betas to bear a simple relation to stock size and liquidity. Liu (2006) builds on this background in first using a new liquidity construct to estimate stock liquidity and then including this factor within a two factor augmented capital asset pricing model (CAPM). While the additional liquidity factor offers strong performance in explaining the cross section of US stock returns the findings are in contradiction to the earlier findings of Pastor and Stambaugh as the liquidity premium solely subsumes the documented anomalies such as size and the book-to-market effects from Fama and French (1993).

The literature regarding liquidity and its effects on stock returns is itself very recent with very little focus on the comparison between the relative robustness of measures in capturing effects. Lesmond (2005) provides a comparative study of the relative robustness of five well established metrics across 23 emerging market countries and Hearn and Piesse (2010) undertake a similar exercise for the smaller West African region. However while no worldwide study has been undertaken there has been no focus on the differences in liquidity within the context of differences between civil and common law markets. As such a shortfall in the literature is in the direct contrasting of these measures in explaining the total trading costs, defined as the bid-ask spread plus the trading commission levied by exchange for both buy and sell sides of a trade. Consequently I ask which of these measures best explains total trading costs and use the most robust construct in forming liquidity valuation factor to further assess the relationship between liquidity and stock returns.

In this paper I present evidence that the ubiquitous turnover ratio is the most consistently robust measure across civil code markets while that of Liu is preferable for common law markets. I also find substantial evidence that size and liquidity returns-based factors are fundamentally important in valuation while the new proposed legal regime factor is important to a lesser degree. Furthermore the legal regime valuation factor is especially prevalent in markets with well documented very strong or very weak investor protection

legislation. It also adds credibility to the continued use of the mean-variance paradigm in valuation.

The paper is structured as follows. Section 2 reviews the institutional features of common and civil law equity markets and documents the construction of liquidity measures. Section 3 contrasts the different liquidity metrics through regression and maximum likelihood analysis and then details the construction of the four valuation returns-based factors: market, size, liquidity and legal regime. Section 4 outlines the CAPM methodology and the four factor augmented CAPM valuation model while section 5 details the results, first from the differentiation tests between the various measures and then for the application of the valuation model. The final section concludes.

2. MARKET INSTITUTIONS AND LIQUIDITY MEASUREMENT

This section documents the construction of measures used to capture liquidity effects of stocks. All measures were applied to all stocks across the market universe, itself made up from the constituents of the top tier blue chip indices in each market which conforms to the concept of these stocks being most likely to feature on menus of international portfolio managers for diversification. These are also the most likely candidate stocks to conform with the assumption of international asset market integration which is critical to the application of CAPM valuation model.

2.1 Liquidity constructs

The Bid Ask spread and commission cost

The Bid Ask spread and commission cost: The data on the end of month bid and ask quotes were collected from Datastream. The bid-ask spread is calculated using the average of the available monthly quotes and incorporates at a minimum a single month's quote for that month. The average bid-ask spread spanning the quarter is used for the estimate of the spread. This procedure minimizes outlier problems and averages out the recording of either highs or lows in quotes resulting from monthly sampling. Following Lesmond (2005) bid-ask spreads that exceed 80% are trimmed as these are potentially errors. The monthly quoted spread is defined as:

$$Quoted\ spread_M = 1/2\left[\left(\frac{Ask_M - Bid_M}{(Ask_M + Bid_M)/2}\right) + \left(\frac{Ask_{M-1} - Bid_{M-1}}{(Ask_{M-1} + Bid_{M-1})/2}\right)\right] \quad (1)$$

In order to estimate the total trading transaction costs, the costs associated with a round trade (both buy and sell legs) are added to the quoted spread for each month. Brokerage and Exchange fees are calculated from the fee schedules detailed in Appendix Table 1. When a percentage commission fee is not provided the maximum fixed cost is applied to the aggregate daily traded value data.

Turnover

Daily trading volume data and shares outstanding data was obtained from Datastream. At first glance it is apparent that there is considerable variation in this measure on an intra-market basis. This reflects the substantial differences in both liquidity and turnover for many of the companies within each market. Any turnover statistics that exceed 100% of the shares outstanding in any month are trimmed from the sample. The shares-outstanding is determined at the start of the year and remains constant for the 12 months thereafter. The daily turnover measure is defined as:

$$1/D_M \sum_{t=1}^{M} (volume_t / \text{shares - outstanding}) \quad (2)$$

where D_M is the number of days in the month, M.

Amihud (2002) measure

Daily price and volume data are sourced from Datastream. The daily security prices are scanned for data errors, omissions and delistings. Following the procedure outlined in Lesmond (2005) the prices are used calculate daily returns. To control for return outliers, a data error filter eliminates daily prices that are +/- 50% of the prior day's price and that day's price as well as previous day's price are deleted from sample. Equally if zero volume occurs on day t, then that day is deleted from average. Finally the measure is multiplied by 10^6 as undertaken in Amihud (2002) in order to provide a common representation of measures and facilitate comparison. The Amihud measure is defined as:

$$1/D_M \sum_{t=1}^{M} (|R_t| / \text{Price}_t \times Volume_t) \quad (3)$$

Liu (2006) measure

Daily price and volume data are collected from Datastream. The measure is derived from the recent work of Liu (2006) and is defined as LM_x which is the standardized turnover-adjusted number of zero daily trading volumes over the prior x months (x = 1, 6, 12) i.e.

$$LM_x = \left[(\text{Number of zero daily volumes in prior x months}) + \frac{\text{1/x month turnover}}{\text{Deflator}} \right] * \frac{21x}{NoTD} \quad (4)$$

where x month turnover is the turnover over the prior x months, calculated as the sum of the daily turnover over the prior x months, daily turnover is the ratio of the number of shares traded on a day to the number of shares outstanding at the end of the day, NoTD is the total number of trading days in the market over the prior x months, and Deflator is chosen such that,

$$0 < \left(\frac{1}{x \text{ month turnover}}{\text{Deflator}}\right) < 1 \qquad (5)$$

for all sample stocks[1]. Given the turnover adjustment (the second term in brackets in first expression), two stocks with the same integer number of zero daily trading volumes can be distinguished: the one with the larger turnover is more liquid. As such the turnover adjustment acts as a tie-breaker when sorting stocks based on the number of zero daily trading volumes over the prior x months. Because the number of trading days can vary from 15 to 23, multiplication by the factor (21x/ NoTD) standardizes the number of trading days in a month to 21 which makes the liquidity measure comparable over time. LM1 can be interpreted as the turnover-adjusted number of zero daily trading volumes over the prior 21 trading days, which is the approximate average number of trading days in a month. The liquidity measure, LM_x is calculated at the end of each month for each individual stock based on daily data. Daily data is available for all markets across entire sample period.

2.2 Data: Sources

Daily stock closing, bid and ask prices, total number of shares outstanding, traded volumes, dividend per share in local currency and converted into UK£ were obtained for all markets from Datastream. These data were supplemented by bid and ask price data sourced from Bloomberg for the markets of Bulgaria, Jamaica and Russia where data was unavailable from Datastream. These data formed the basis of calculation of the daily return variance, or volatility, market capitalization, defined as total number of shares outstanding multiplied by daily closing price, and various liquidity constructs. The total returns series for each stock were sourced direct from Datastream for all markets. Exchange rate and UK- Gilt/Treasury yield data are sourced from Datastream. The one-month UK-Gilt/Treasury Bill yield rate represents the risk free rate although this is adjusted to take account of monthly excess returns as opposed to the quoted equivalent annualised rates. The conversion of the total returns series and prices into sterling and the use of UK - Gilt/Treasury yield rate assumes long term parity between the local currency and sterling. This is reasonable given many of the developing countries within the sample have experienced periods of severe macroeconomic instability and hyperinflation during the sample period. The conversion to UK£ sterling also facilitates international comparison given the sizeable role of the London financial market in emerging market investment (Froot et al, 2001).

2.3 Data: Summary statistics relating to liquidity measures

[1] In line with Liu (2006) a deflator of 1,000 is used in constructing estimates for LM1

The descriptive statistics across the constituent stocks of the top tier blue chip indices of each of the world markets considered in this paper are given in Table 1. The most striking difference is between developed and emerging markets with the former having much less price-rigidity (lower percentage daily zero returns), lower bid-ask spreads and larger traded volumes. This is exemplified by the markets within the Developed Europe category having percentage daily zero returns values generally between 10 and 20%, with prominent exceptions of Ireland and Iceland, while those within the Emerging Europe category are as high as 80.44% (Russia) and 77.51% (Slovakia). Similarly the emerging market regions of Africa, where the very top tier elite indices have been used given the well documented extremes of illiquidity in this region (Hearn and Piesse (2009); Hearn (2009) and Hearn and Piesse (2010)), and Latin America have very high bid-ask spreads and daily percentage zero returns. The very recently established markets within the Middle Eastern region also have very high illiquidity although prominent exceptions are Israel and Saudi Arabia where liquidity is considerably higher than the surrounding region. Overall the evidence would infer that civil code markets are smaller and more illiquid than their common law counterparts.

Table 1

3. LIQUIDITY MEASURE CONTRASTS AND FACTOR GENERATION

This section contrasts the three Liquidity metrics in their relative ability to explain the total trading costs (bid-ask spread plus commissions) dependent variable through regressions. This is further extended by an application of maximum likelihood analysis techniques in their comparative ability to explain the total trading costs data generating process. Following this justification of the measure that is to be used to sort stocks into portfolios based on their relative illiquidity the returns-based valuation factors are constructed.

3.1. Spearman's rank correlation

Given the variables have different measurement scales a non-probability distribution limited correlation, the Spearman's rank, is used for the measurement of association. In addition to the bid-ask spread and the three liquidity measurement constructs, turnover, Liu and Amihud variables, price, daily price return volatility, traded volume, and market capitalization measures are introduced as control variables in line with those used in the investigations for price of trading immediacy undertaken by Stoll (2000). The rationale for the inclusion of these variables is based on order processing and inventory considerations of traders, albeit in a study undertaken by Stoll (2000) in the US equity market. Increases in volume and firm size increase the probability of locating a counterparty, thereby mitigating the risk of accepting and holding inventory risk. The stock price volatility, in local currency terms, provides an indication of the risk of adverse price changes of a stock placed on a trader's

inventory, while the price measure itself controls for the effect of discreteness and is an additional proxy for risk in that low price stocks tend to be riskier.

The Spearman's Rank correlations were estimated between variables across individual universes for each separate market in turn (results reported in Appendix 2) and in aggregate for the World civil code and World common law universes (results in Table 2). The evidence from Table 2 reveals that there are subtle differences in the inter-relationships between the variables between the civil and common law universes. While the size, sign and direction of relationships between variables tends to be similar those in the common law universe are noticeably larger in absolute size. An additional significant difference is the size and significance of the large negative relationship between bid-ask spread and price as well as the Liu measure which while being in line with theory is discernable in the common law but not civil code universe. Similarly the minimal relationship between firm size and bid-ask spread in civil code as opposed to common law universe is counter-intuitive. Equally the markedly lower level of relationship between bid-ask spread and all the other variables in the civil code as opposed to common law universe is likely indicative of very different structure of the two types of markets and different data generating processes for aggregate liquidity.

Table 2

3.2. An assessment of liquidity measures ability in explaining total trading costs

A direct measure of association between the total trading costs and the market control variables, which Stoll (2000) defines as price, traded volume, volatility, and firm size or market capitalization, as well as the various liquidity measures are provided in this section. Following Stoll (2000) price is defined as a proxy for risk, as lower priced stocks tend to be riskier, and controls for the effects of price discreteness. Volume and firm size proxy for order processing and inventory considerations. Increases in volume and firm size increase the probability of locating a trade counter party, which reduces risk. Volatility measures the risk of adverse price changes because of stock put into inventory (see Lesmond, 2005). Three sets of multivariate fixed effects regressions were estimated for each of the individual markets in turn as well as for the aggregated World Civil, Common and overall universe with the dependent variable in each cases being the stock's total trading costs. The first set concerns the relationship between total trading costs and the Stoll market control variables only. The second set concerns total costs and the Stoll control group as well as each of the three individual liquidity measurement variables (turnover, Amihud and Liu) in turn so as to differentiate between the liquidity variables through any incremental benefits with the inclusion of one as opposed to another. The third set of regressions (or grand regression) concerns the relationship between total costs and the combination of the Stoll control variables in addition to all three liquidity measures. Differentiation can be made through the

level of explanatory power, or R^2 terms, and to a lesser extent the statistical significance of variables assessed by confidence levels of t-statistics. In every case price, volume and firm size are natural-log scaled in line with Stoll (2000).

3.3. Vuong likelihood ratio test

The maximum likelihood method of Vuong (1989) (see Appendix 3 for description of empirical methods employed) offers a robust alternative to regression-based methods that merely test the level of association between the Stoll market control variables and the various liquidity constructs against the total trading costs with relative strength being assessed on the basis of statistical significance and explanatory power. The tests proposed in Vuong (1989) use a one-sided Z-probability distribution to assess the confidence levels arising from the study of which liquidity measures better explain the data generating process behind the total trading costs.

3.4. Valuation Factor construction

Four returns-based valuation factors are constructed which form the inputs to the CAPM modelling methodology. The first, the market premium or factor, is simply the average excess returns across all stocks within the world sample group universe. I have used the simple equally weighted mean as opposed to a market capitalization weighted average as this would induce a source of potential bias through the market factor being dominated towards the larger markets such as US, Singapore, Japan and Australia as well as Europe thus failing to truly represent the effects of the smaller emerging markets such as Chile, Jamaica, Argentina, Morocco and South Africa.

The size and liquidity factors are formed through the sequential sorting of stocks first into three capitalization portfolios, namely "small", "medium" and "big", which are then sorted in turn into three illiquidity portfolios, namely "high", "medium", "low". Portfolio rebalancing is undertaken each December for the duration of the sample period, i.e. January 2000 to June 2009. The size ("SMB") valuation factor is formed from the equally weighted mean excess returns from the three small size portfolios minus the mean of the three big size portfolios. The liquidity ("ILLIQ") valuation factor is formed from the equally weighted mean of the three high illiquidity portfolios, one being in each of the original size sorted portfolios, minus the mean of the three low illiquidity portfolios. Stocks are ranked in accordance to their annual mean of liquidity measure, which has been chosen on the basis of the results from the regression-based and maximum likelihood tests. Stocks ranked and sorted into portfolios each December are held for a further twelve months until portfolio rebalancing the following year.

The third valuation factor, attributed to differences between the legal origins of the various individual markets regulatory regimes, i.e. "LEGAL REGIME", is simply the equally weighted mean of excess returns across common law countries minus the mean of returns from across civil law markets. As such it captures the simple differences in effects caused by the very different nature of institutions within civil and common law markets. It is calculated on a monthly basis across the entire sample group market universe.

4. EMPIRICAL VALUATION MODELS

The size and liquidity augmented three factor CAPM model of Pastor and Stambaugh (2003) follows in the spirit of Fama and French (1993) in augmenting the traditional CAPM with extra size and liquidity returns-based factors which mimic the effects of the hypothesized underlying state variables. I extend this by adding the extra returns-based factor to the size-illiquidity CAPM and form a four factor (size – illiquidity – legal regime) augmented CAPM. Therefore, the expected excess returns on a portfolio p of emerging market stocks can be written as

$$E(r_{pt}) - r_{ft} = \beta_p \left[E(r_{mt}) - r_{ft} \right] + s_i E(SMB) + h_i E(ILLIQ) + z_i (LEGAL) \qquad (6)$$

In line with the above this can be transformed in order to test historical data into the following equation:

$$r_{it} - r_{ft} = \alpha_i + \beta_i (r_{mt} - r_{ft}) + s_i SMB_t + h_i ILLIQ_t + z_i LEGAL + \varepsilon_{it} \qquad (7)$$

where the variables are described above and ε_{it} is an independently identically distributed (iid) disturbance term. The model is estimated on a time series basis using standard Ordinary Least Squares (OLS) techniques, as opposed to the Fama and Macbeth (1973) rolling cross section approach, with the expectation that the Jensen alpha, or regression intercept, should not be statistically different from zero given the theoretical relationship between an individual portfolios expected returns and those of the market (Markowitz (1959); Sharpe (1964) and Lintner (1965)). However Scholes and Williams (1977) provide evidence against the employment of standard OLS techniques with findings that beta estimations are biased downwards for securities infrequently trading and upwards for those traded more often. Dimson (1979) builds on this evidence in the inefficiency of beta estimation in thinly traded stocks and proposes a correction technique based on the aggregation of betas from lagged and leading regression coefficients. Dimson and Marsh (1983) propose a second correction technique which uses a trade-to-trade method measuring and matching returns between individual stocks or portfolios and the market index between the times of the last trades in successive months. I justify the use of standard OLS techniques here in order to closely follow the literature of Pastor and Stambaugh (2003), Liu (2006) and Martinez (2005) who use these techniques extensively in their studies involving multifactor CAPM models

capturing liquidity effects. The limitations of standard OLS techniques should be taken into account particularly when they are applied to a very diverse universe of stocks, such as this, as is necessarily used in cross-country comparative studies.

5. RESULTS

Essential to the understanding that the differences between common and civil law institutions are both pervasive across and between markets I apply the regression based and maximum likelihood techniques both on an individual market-by-market basis as well as to aggregate World common, civil and overall universes.

5.1 An assessment of liquidity measures ability in explaining total costs

The evidence from Table 3 reveals that the explanatory power of the Stoll market control variables and liquidity measurement metrics across individual markets is generally high, although this is subject to considerable variation from adjusted R^2 ranging from just over 15% for Taiwan to over 89% in Qatar. However there are some significant outliers, where explanatory power is negligible, such as China's Shenzen and Shanghai exchanges and Colombia, where only a very limited period of bid and ask data was available. There is also considerable variation between individual markets in the amount of statistical significance of the various liquidity measures. However these issues notwithstanding the evidence from the three World regressions, namely common law, civil law and overall in the final section of the Table reveals that while the addition of the Liu metric to the regression containing the Stoll control variables causes the largest increase in explanatory power for the World common law market the addition of the turnover measure on it's own is sufficient for the World civil law market. The results for the aggregated World overall universe are similar to those of the World civil law universe where the turnover measure on its own is both significant and causes greatest increase in explanatory power.

Table 3

5.2 Vuong maximum likelihood ratio test

The evidence from the Vuong maximum likelihood ratio analysis in Table 4 provide statistics that are one-sided and directional in their nature. As such a positive statistic that is larger in absolute terms to the test statistic (at a given confidence level) of the one-sided Z-probability distribution indicates that the liquidity measure in the first row of the table is preferable to the variable or measure (shown in second row) for each individual market. Generally the results in this table favour the choice of the Liu estimator as opposed to the price-impact measure of Amihud. Both outperform the ubiquitous turnover measure. This evidence is strengthened from the final World section, where Liu outperforms the Amihud measure, where the latter

actually performs poorly in contrast to the turnover measure. The turnover metric is especially strong over and above the Amihud and Liu measures for World civil law universe while it is less strong in the case of the World common law universe. At this stage the Liu estimator is preferable in contrast to either turnover or Amihud measures although the evidence is not so clear cut.

Table 4

5.3 Summary statistics relating to size-liquidity sorted portfolios and factors

There is generally little distinguishable difference in either mean returns or standard deviations between size-illiquidity sorted portfolios in Table 5. However there is a slight increase in mean returns of the three small size in contrast to the three large size portfolios indicating the possible presence of a reverse size effect where returns increase as firm size decreases although this is not pronounced. The levels of skewness and kurtosis are minimal across portfolios indicating portfolio returns have little deviation from Normality in their probability distributions lending support to the later application of regression techniques in their modelling. Overall there is little difference in numbers of stocks between the nine size-illiquidity sorted portfolios with each portfolio having approximately between 470 and 485 stocks each. The differences are most prevalent on the study of the regional makeup of the stocks falling within the portfolios. While there is little difference between world regions in terms of size sorted portfolios it is noticeable that developed markets dominate the low illiquidity portfolios while their emerging counterparts fall largely within the high illiquidity portfolios in each of the three size categories.

Table 5

The evidence from Table 6 reveals that while mean returns of the market portfolio are positive they are negative for the size (SMB), Illiquidity (HML) and Legal Regime (LEGAL) valuation factors. This provides stronger support for the presence of a reverse size effect where returns decrease as firm size increases. However the negative value of the illiquidity factor is in accordance to theory where returns decrease as illiquidity increases. Equally the very high skewness statistic for the illiquidity factor is rationalised as small highly illiquid stocks are also commonly skewed and leptokurtic (fat tailed probability distributions). The negative sign of the LEGAL factor is harder to interpret. Given the nature of the factor's design, where the returns attributable to civil law markets are deducted from common law markets, the sign would be expected to be positive if indicating a general trend in legal and regulatory regimes towards the markets-orientated common law regulatory system. However the negative sign would indicate that there is a general trend towards the civil law regulatory regimes. Levels of skewness and kurtosis indicate that returns attributable to this factor fit

within a Normal probability distribution while levels of standard deviation are extremely high in contrast to all other factors.

Correlations between factors are very low, as seen in second section of Table 6, indicating that the factors properly proxy underlying state variables present within the sample market universe. This is further confirmed with the study of the significance in the difference of the time series of mean returns for each factor, denoted by a high and statistically significant t-statistic in the lower portion of Table 6. This provides strong evidence that factors genuinely proxy or mimic underlying state variables and are properly constructed zero cost portfolios. The returns-based factors are shown in Figures 1 to 4.

Table 6

Figures 1 - 4

The evidence from the individual market, or country, portfolios in Table 7 reveals that as would be expected standard deviations are generally higher for emerging market regions as compared to developed markets. However the most striking feature is that the most highly illiquid markets have by far the highest values of skewness and to a lesser extent kurtosis. Russia is one such example with skewness of 23.492 and Venezuela is another example in Latin America with value of 33.328. This reflects the evidence from the descriptive statistics earlier in Table 1 where these two individual markets had excessively high percentage zero daily returns and minimal trading volumes.

Table 7

5.4 Performance of traditional CAPM against three-factor CAPM

There is mixed evidence from Table 8 regarding the benefits arising from the inclusion of the additional legal regime factor in CAPM models that already are augmented with size and liquidity factors. The results for the traditional CAPM model indicate that the Jensen alpha term is not significant in the majority of cases. Explanatory power of the one-factor model is also generally high at over 85%. The addition of the size and liquidity factors does increase explanatory power, i.e. the adjusted R^2, with the largest of the minimal increases arising from the small size portfolios and the high illiquidity portfolios where the size and liquidity factors have increased statistical significance in relation to the increases in explanatory power. The results from panel C indicate that the LEGAL factor is only statistically significant for small size – high illiquidity and medium size – high illiquidity portfolios with little general increase in explanatory power over and above that obtained in the three factor size – illiquidity augmented model from panel B. However despite the less than expected performance associated from the inclusion of the legal regime factor the importance of capturing the

effects of comparative civil versus common law institutions on returns merits its inclusion in the next step of modelling individual market, or country, returns.

Table 8

5.5 Modelling market portfolios

Portfolios representing individual markets were formed on an equally weighted basis and modelled using the traditional CAPM, size-liquidity three-factor CAPM and finally the size-liquidity-legal regime four factor CAPM with results in Table 9. In contrast to the previous section, where simple size-illiquidity sorted portfolios were used, the evidence supports the inclusion of the LEGAL factor in valuation. Across all 60 individual market portfolios the Jensen alpha terms are generally not statistically significant following the addition of the LEGAL factor and explanatory power is increased, albeit marginally. Prominent exceptions where only the three-factor size and liquidity model is only sufficient are Denmark, Germany and Iceland where explanatory power between three factor model and its four factor counterpart, fractionally decreases. However the sign (or direction) of the LEGAL factor is generally as expected across the individual market portfolios where it is statistically significant. The negative and significant value for the Italian portfolio, in panel 9, is as expected given the civil code nature of this country's legal origins and the poor levels of external shareholder protection leading to dominant block-holders (see La Porta et al (2008) for detail concerning this country). Equally the strong civil code regimes (with substantially weaker shareholder protection and dominant block-holders) of Russia, Bulgaria, Cyprus, Portugal, Egypt, Peru, Venezuela, Philippines and in both Chinese exchanges (Shenzen and Shanghai) have large negative values of LEGAL beta. This is reflective of particularly poor investor protection and regimes where civil code origins are strongly evident. Contrastingly the evidence for individual markets with very strong investor protection and strong common law origins are shown from large positive LEGAL betas. These include US, Canada, New Zealand, Malaysia, Hong Kong, and Thailand with the UK only being significant at a lower level. The contrasting results (in terms of direction and sign) between Hong Kong and the two Chinese markets of Shenzen and Shanghai is interesting and reflects the anomaly that exists in China, where following the demise of British rule in the Hong Kong protectorate in 1997, a "one country two economic systems" regime was installed and the territory's markets continued largely unhindered from central government interference which dominates in Shenzen and Shanghai (da Veiga et al (2008); Tan et al (2008)).

Table 9

5.6 Cost of equity estimation

The evidence regarding estimates of costs of equity (see Jagannathan et al (2002) and Harris et al (2003) for full review of estimation techniques) in Table 10 are largely as expected with developed markets generally having the lowest discount rates and emerging markets having the highest. However the extremely low explanatory power of the model when applied to the very small, highly illiquid individual market portfolios of Pakistan, Bangladesh and Jamaica questions the effectiveness of this methodology in such small and illiquid markets where there is considerable segmentation with world markets and world universe. As such these markets were omitted from costs of equity estimation. Russia has the highest cost of equity in Emerging Europe (68.15%) while Turkey has the highest in the Middle East region (50.49%).

Table 10

6. CONCLUSIONS

In this paper I contrast the performance of three liquidity measures, namely the turnover ratio, the Amihud price-impact measure, and the trading speed measure of Liu in explaining total trading costs (bid-ask spread plus trading commissions) across a sample of sixty two countries worldwide. The difference between civil and common law countries is particularly evidence with the Liu estimator prevailing in common law and turnover ratio sufficing in civil law markets.

While the differences in liquidity are largely reflective of institutional development between common and civil law countries the more pervasive differences on returns generating processes between each bracket of countries is assessed through the construction of a unique Legal Regime variable accounting for the differences between markets on the basis of their legal origins. This is found to be statistically significant and increasing explanatory power for markets with either very strong common law qualities, such as stringent investor protection laws and rigorously enforced financial reporting and corporate governance standards, such as US, Canada and Hong Kong or very strong civil law characteristics, namely weakened financial reporting and the dominance of block-shareholders, such as China, Bulgaria, Russia and Italy. As such I find evidence that differences between civil and common law regulatory and legal regimes and pervasive across and within markets and their contrasting institutions and institutional development is reflective of these differences in the returns generating process of stocks. Returns are likely to be greater in common law as opposed to civil law markets where there is less uncertainty and greater share-holder activism inferring potentially higher levels of turnover and activity.

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Table 1 Summary Statistics

This table presents summary statistics for the sample group markets. Datastream provides the daily prices, volume and market capitalization information. Start refers to the beginning date of the daily security return data up to the final year 2009. Price is the average of daily prices over each month and is stated in domestic currency and converted to £UK using the average exchange rate for each month and country. Volume is the average of the daily trading volume over each month and is stated in thousands. Market capitalization is measured as of 1 January for each country and is equity market value for each firm expressed in millions of local currency or £UK. The £UK market capitalization is derived using the end of month exchange rate for each country and month. Square parentheses indicate median values for each variable.

			Local market				£UK equivalent		
Country	**Start**	**Zero Return (%)**	**Price**	**Volume (thousands)**	**Std. Dev. (%)**	**Mkt. Cap. (m)**	**Price**	**Mkt. Cap. (m)**	**Bid-Ask spread (%)**
Europe Developed									
Austria	1994M12	32.96 [19.05]	40.28 [17.19]	2586.4 [320.5]	0.0192 [0.0146]	753.3 [161.58]	27.44 [12.16]	524.75 [102.89]	0.0559 [0.0126]
Belgium	1994M12	11.77 [4.55]	65.51 [42.4]	8833.49 [1862.3]	0.018 [0.0148]	5369.3 [2029.66]	45.86 [27.19]	3721.33 [1329.66]	0.0047 [0.0039]
Denmark	1994M12	28.90 [19.05]	1980.63 [117.34]	5276.26 [1145.1]	0.0202 [0.016]	11343.69 [1233.87]	184.51 [9.96]	1064.51 [104.41]	0.0177 [0.0109]
Finland	1994M12	20.09 [15.00]	9.73 [7.68]	19609.32 [2577]	0.0214 [0.0177]	2436.6 [283.63]	6.79 [5.22]	1659.66 [187.76]	0.0162 [0.0075]
France	1994M12	5.91 [4.35]	41.86 [36.04]	47295.92 [25613.4]	0.0213 [0.0184]	15341.07 [10173.23]	28.76 [24.77]	10573.83 [7190.9]	0.0039 [0.0025]
Germany	1994M12	12.90 [4.76]	32.28 [23.74]	6551.87 [330.3]	0.0211 [0.0183]	5731.55 [1115.69]	22.56 [15.81]	3934.15 [706.64]	0.0103 [0.0071]
Iceland	2000M12	49.49 [42.86]	70.18 [26.93]	35231.66 [4818.4]	0.0195 [0.0158]	16591.75 [7168.89]	4.80 [0.21]	139.88 [92.21]	0.0449 [0.0106]
Ireland	1994M12	45.98 [36.36]	5.61 [2.42]	11740.65 [2836.1]	0.0293 [0.0184]	1435.02 [173.79]	3.28 [1.48]	829.28 [116.48]	0.0532 [0.0229]
Italy	1994M12	14.98 [8.7]	7.57 [3.78]	2614.81 [784]	0.0218 [0.018]	187.41 [104.05]	5.12 [2.61]	129.92 [74.42]	0.0168 [0.0099]
Luxembourg	1994M12	28.91 [22.73]	70.16 [48.41]	639.63 [8.4]	0.0195 [0.0147]	4787.94 [401.36]	48.8 [35.66]	3366.06 [278.01]	0.0131 [0.0106]
Netherlands	1994M12	19.98 [13.04]	56.43 [13.8]	21320.92 [1124.9]	0.0229 [0.0174]	7231.63 [206.02]	25.64 [9.38]	3944.65 [133.41]	0.0200 [0.0083]
Norway	1994M12	20.64 [14.29]	70.37 [36.6]	36182.82 [6513.3]	0.0289 [0.0223]	13055.52 [2788.61]	5.93 [2.98]	1115.41 [243.8]	0.0198 [0.0096]
Portugal	1994M12	27.55 [20]	4.02 [2.76]	33687.49 [2140.9]	0.0207 [0.0156]	1630.01 [119.75]	2.78 [1.92]	1123.29 [81.95]	0.022 [0.0103]
Slovenia	1996M04	10.74 [8.7]	76.73 [23.3]	1749.73 [63.2]	0.016 [0.0125]	306.34 [174.86]	53.92 [18.08]	218.96 [116.66]	0.0126 [0.012]

			Local market				£UK equivalent		
Country	**Start**	**Zero Return (%)**	**Price**	**Volume (thousands)**	**Std. Dev. (%)**	**Mkt. Cap. (m)**	**Price**	**Mkt. Cap. (m)**	**Bid-Ask spread (%)**
Spain	1994M12	28.21 [14.29]	12.75 [8.66]	35680.76 [3101.1]	0.0188 [0.0159]	2630.87 [451.73]	8.93 [5.62]	1828.2 [284.87]	0.0095 [0.0066]
Sweden	1994M12	16.12 [13.04]	98.98 [50.55]	36190.07 [7572.8]	0.0235 [0.0183]	39001.66 [5361.62]	7.43 [3.63]	2890.23 [397.91]	0.0106 [0.0048]
Switzerland	1994M12	9.25 [5.00]	136.66 [62.28]	43263.62 [7976.5]	0.0193 [0.0159]	14252.7 [3821.38]	60.37 [26.89]	6374.91 [1653.59]	0.0049 [0.003]
UK	1994M12	8.90 [4.76]	612.25 [441.83]	232617.66 [98940.9]	0.0193 [0.0162]	1086072.37 [391273.5]	612.25 [441.83]	1086072.37 [391273.5]	0.0072 [0.006]
Europe Emerging									
Cyprus	1994M12	64.06 [76.19]	1.17 [0.5]	1458.33 [198]	0.0384 [0.0309]	75.39 [7.57]	0.80 [0.31]	51.13 [5.89]	0.0964 [0.0669]
Greece	1994M12	18.20 [13.04]	7.70 [5.06]	5921.06 [2497.5]	0.0245 [0.0203]	1062.36 [253.93]	5.29 [3.54]	734.53 [165.65]	-- --
Bulgaria	2000M10	53.96 [47.62]	10.7 [3.04]	304.08 [29.10]	0.0403 [0.0273]	69.48 [7.88]	2.96 [0.32]	22.10 [1.85]	0.1158 [0.0296]
Czech Rep.	1994M12	49.78 [59.09]	1635.04 [579.15]	5224.78 [491]	0.0223 [0.0195]	31421.8 [3086.14]	36.94 [13.01]	754.37 [61.49]	0.0882 [0.0376]
Estonia	1996M06	52.54 [50.00]	4.43 [1.68]	1913.74 [199.1]	0.0308 [0.0221]	151.41 [22.99]	1.79 [0.94]	103.56 [8.87]	0.0314 [0.0147]
Hungary	1994M12	14.31 [9.09]	5180.24 [1483.14]	9362.9 [1586.9]	0.0247 [0.0198]	267268.14 [32982.86]	14.8 [4.19]	741.59 [95.06]	0.0365 [0.0298]
Poland	1996M09	15.68 [10.00]	55.83 [32.37]	13861.87 [2613.2]	0.0256 [0.0218]	8.51 [3.17]	9.99 [5.52]	1.52 [0.53]	0.0068 [0.0054]
Romania	1996M01	38.88 [36.36]	3.37 [0.20]	31308.75 [2346.7]	0.0382 [0.0275]	2129.3 [77.76]	0.74 [0.07]	427.29 [13.94]	-- --
Russia	1994M12	80.44 [90.91]	11.64 [0.50]	56906.88 [657.7]	0.0904 [0.03]	1679.69 [78.22]	6.53 [0.3]	930.1 [48.69]	0.3270 [0.0868]
Slovakia	1998M01	77.51 [90.48]	442.7 [7.70]	15.04 [0.7]	0.0376 [0.0219]	137 [17.7]	389.27 [5.76]	96.56 [11.78]	0.1329 [0.0518]
Africa									
Morocco	1994M12	46.67 [42.86]	839.98 [544.83]	378.97 [19.2]	0.0149 [0.0126]	5725.49 [2502.03]	54.42 [33.76]	375.71 [157.66]	0.0061 [0.0000]
Egypt	1996M01	35.32 [25]	34.64 [6.83]	14296.05 [1436.6]	0.0311 [0.0232]	2308.49 [87.4]	4.33 [1.12]	250.56 [13.59]	0.0251 [0.0192]

			Local market				£UK equivalent		
Country	**Start**	**Zero Return (%)**	**Price**	**Volume (thousands)**	**Std. Dev. (%)**	**Mkt. Cap. (m)**	**Price**	**Mkt. Cap. (m)**	**Bid-Ask spread (%)**
South Africa	1994M12	16.82 [9.52]	62.9 [30.44]	40466.08 [19627]	0.0219 [0.0183]	35025 [13125.28]	5.44 [3.34]	2837.43 [1009.92]	0.0105 [0.0064]
North America									
Canada	1994M12	15.28 [9.52]	17.83 [10.92]	11420.29 [2710.9]	0.0275 [0.0186]	3052.55 [579.84]	8.15 [4.64]	1419.07 [247]	0.0061 [0.0046]
United States	1994M12	11.44 [4.76]	36.27 [29.53]	89424.57 [38350.05]	0.0224 [0.0168]	26319.79 [7287.91]	21.67 [17.92]	15650.34 [4628.67]	0.0016 [0.0012]
Australasia									
Australia	1994M12	15.32 [9.52]	8.00 [4.16]	59547.76 [28767.2]	0.0197 [0.0153]	6454.47 [2004.41]	3.33 [1.70]	2675.02 [724.07]	0.0092 [0.0062]
New Zealand	1994M12	35.59 [28.57]	3.38 [2.35]	11504.29 [3534.4]	0.0162 [0.0133]	1264.6 [313.1]	1.23 [0.89]	463.51 [96.22]	0.0129 [0.0108]
Latin America									
Argentina	1994M12	74.64 [100.00]	834.88 [2.05]	3144.8 [340]	0.0278 [0.0219]	3314.5 [24.98]	275.2 [0.61]	766.34 [12.32]	0.0990 [0.0296]
Brazil	1994M12	25.44 [13.64]	15.66 [5.26]	14586610.82 [11112.5]	0.0301 [0.0243]	4850.06 [541.63]	4.97 [1.81]	1488.85 [158.2]	0.0266 [0.0124]
Chile	1994M12	62.23 [72.73]	213105.07 [294.86]	60301.44 [931.1]	0.0168 [0.0133]	354685.71 [61655.46]	248.69 [0.37]	386.16 [78.48]	0.1251 [0.0664]
Colombia	1994M12	69.23 [82.61]	5130.05 [2069.26]	110949.87 [861.8]	0.0331 [0.0163]	1154355.62 [217336.63]	1.55 [1.02]	330.69 [96.89]	0.1012 [0.0205]
Jamaica	1994M12	67.66 [68.18]	13.1 [4.36]	4334.16 [780.84]	0.0442 [0.0235]	5450.06 [1476.66]	0.13 [0.06]	53.66 [18.99]	0.125 [0.0549]
Mexico	1994M12	24.07 [13.04]	19.53 [10.02]	91601.75 [14518.6]	0.0236 [0.0198]	19444.72 [5352.81]	1.16 [0.69]	1055.16 [334.4]	0.0311 [0.0148]
Peru	1994M12	78.48 [95.24]	2112.56 [1.04]	3025.97 [213.2]	0.0451 [0.0218]	65361.12 [28.32]	520.9 [0.22]	17859.35 [5.42]	0.2746 [0.0874]
Venezuela	1994M12	84.65 [100.00]	299.94 [0.33]	7239.52 [115.5]	0.0434 [0.0265]	26771.6 [46]	76.87 [0.20]	8384.93 [15.01]	-- --
Asia Developed									
Japan	1994M12	10.02 [9.09]	40141.48 [1930.25]	121.87 [46.07]	0.023 [0.0212]	20446.51 [993.24]	209.91 [10.66]	104.23 [5.39]	0.1650 [0.0979]
Singapore	1994M12	40.57 [38.1]	1.42 [0.34]	27842.9 [4024.5]	0.036 [0.0273]	697.77 [86.48]	0.58 [0.12]	289.73 [30.44]	0.0534 [0.0275]

			Local market				£UK equivalent		
Country	**Start**	**Zero Return (%)**	**Price**	**Volume (thousands)**	**Std. Dev. (%)**	**Mkt. Cap. (m)**	**Price**	**Mkt. Cap. (m)**	**Bid-Ask spread (%)**
Asia Emerging									
Bangladesh	1994M12	49.67 [43.48]	214.82 [87.75]	659.26 [18.80]	0.0305 [0.0204]	807262.89 [80180.36]	2.39 [0.98]	7347.38 [916.09]	-- --
China Shenzen	1994M12	16.81 [9.09]	6.61 [4.60]	182985.16 [77766.1]	0.0265 [0.0218]	4901.64 [2071.19]	0.49 [0.33]	367.37 [154.08]	0.0058 [0.0017]
China Shanghai	1994M12	15.38 [9.09]	7.13 [4.92]	228292.23 [72542.8]	0.0263 [0.0223]	15952.13 [2250.52]	0.53 [0.35]	1185.95 [154.32]	0.0025 [0.0018]
Hong Kong	1994M12	20.27 [17.39]	13.66 [5.16]	241630.95 [69572.3]	0.0288 [0.0237]	49376.34 [5310.49]	1.04 [0.4]	3794.01 [445.19]	0.0121 [0.0086]
India	1994M12	12.98 [4.76]	269.7 [78.39]	22353.54 [5506.4]	0.0287 [0.0246]	95279.18 [12342.96]	3.57 [1.36]	1232.4 [174.37]	-- --
Indonesia	1994M12	43.79 [40.91]	1525.86 [369.2]	196184 [42013.4]	0.0398 [0.0285]	13508863.02 [232473.85]	0.21 [0.03]	1101.5 [27.69]	0.0737 [0.0102]
Kazakhstan	2009M03	90.67 [100]	14552.11 [1857.08]	1233.97 [137.7]	0.0826 [0.0591]	70169.19 [8766.74]	64.2 [8.38]	308.86 [39.56]	0.1345 [0.0950]
Malaysia	1994M12	33.00 [30.00]	3.90 [2.41]	26665.55 [7146.6]	0.0240 [0.0182]	3174.79 [1095.7]	0.70 [0.39]	544.62 [167.14]	0.0154 [0.0105]
Pakistan	1994M12	43.23 [31.82]	86.62 [18.94]	48839.84 [728.5]	0.0280 [0.0234]	11420.99 [961.11]	0.87 [0.31]	110.61 [15.41]	0.4615 [0.0440]
Philippines	1994M12	67.04 [69.57]	30.43 [1.46]	200120.83 [3985.9]	0.0575 [0.0305]	22770.46 [844.27]	0.42 [0.02]	318.78 [11.02]	0.1496 [0.0682]
South Korea	1994M12	13.86 [9.52]	57331.39 [13526.19]	10126.69 [3677.2]	0.0328 [0.0269]	2368313.65 [206692.76]	35.30 [8.14]	1393.68 [114.17]	0.0066 [0.0043]
Sri Lanka	1994M12	48.83 [42.86]	106.53 [31.44]	3345.32 [604.40]	0.0232 [0.0175]	6964.17 [1322.34]	0.71 [0.27]	37.95 [10.09]	0.025 [0.0184]
Taiwan	1994M12	15.74 [13.04]	34.25 [22.18]	312421.86 [148541.60]	0.0243 [0.0224]	61650.5 [19667.87]	0.63 [0.42]	1107.46 [392.57]	0.0029 [0.0024]
Thailand	1994M12	30.12 [23.81]	26.72 [10.56]	248308.32 [42030.10]	0.0312 [0.0241]	24404.83 [2283.63]	0.49 [0.17]	408.55 [55.53]	0.0105 [0.0074]
Vietnam	2009M03	17.15 [14.29]	21683.6 [16291.93]	3804.56 [1161.40]	0.0319 [0.0337]	988143.6 [200637.5]	0.82 [0.62]	37.56 [7.66]	0.0195 [0.0177]
Middle East									
Abu Dhabi	2007M11	46.07 [33.33]	8.82 [4.58]	65378.40 [4070.8]	0.0337 [0.0301]	5359.87 [1782.95]	1.41 [0.65]	811.38 [270.92]	0.103 [0.0698]

			Local market				£UK equivalent		
Country	**Start**	**Zero Return (%)**	**Price**	**Volume (thousands)**	**Std. Dev. (%)**	**Mkt. Cap. (m)**	**Price**	**Mkt. Cap. (m)**	**Bid-Ask spread (%)**
Dubai	2007M12	82.18 [95.65]	27.18 [6.64]	107541.53 [3240.6]	0.0277 [0.0241]	2724.58 [1152.19]	4.10 [0.89]	406.5 [186.55]	0.0461 [0.0152]
Israel	1994M12	23.35 [13.64]	424.22 [18.12]	19054.71 [572.8]	0.0355 [0.0197]	32912.58 [744.88]	79.89 [2.84]	6175.16 [120.67]	0.0168 [0.0069]
Jordan	2009M01	27.4 [23.81]	2.63 [1.52]	4097.45 [569.4]	0.0236 [0.0234]	204.98 [28.49]	2.54 [1.48]	197.71 [28.38]	0.0342 [0.0251]
Kuwait	2009M01	93.38 [100.00]	0.58 [0.33]	6968.8 [100]	0.0469 [0.0182]	28.16 [0.00]	1.08 [0.71]	21.76 [0.00]	0.0388 [0.0388]
Oman	2009M01	49.19 [50.00]	0.69 [0.27]	13892.73 [9317.9]	0.0433 [0.0424]	135.42 [58.91]	1.23 [0.49]	240.45 [104.45]	0.0156 [0.0099]
Qatar	2008M09	51.34 [75.00]	86.54 [166.21]	3323.33 [87.70]	0.0306 [0.0316]	10218.14 [20826.22]	12.93 [23.98]	1549.46 [2753]	0.0870 [0.1687]
Saudi Arabia	2009M01	7.77 [4.76]	31.77 [24.06]	42267.8 [21145.7]	0.0331 [0.0313]	7374.88 [1444.79]	5.77 [4.45]	1340.36 [267.31]	0.0054 [0.0044]
Turkey	1994M12	36.65 [26.09]	2.77 [1.17]	165575.86 [46907.7]	0.0465 [0.0346]	1025.06 [104.52]	1.71 [0.73]	429.36 [54.28]	0.0083 [0.0074]

Table 2 Spearman's Rank Correlations

This table presents the non-parameterized Spearman rank correlation between the Stoll (2000) market control variables and the liquidity measures on a market by market basis. In line with Stoll (2000) the natural logarithms are taken of the variables for price, market capitalisation and volume, while volatility remains untransformed and is the monthly average of daily price variance. Price is the average of daily prices over each month and is stated in local currency units. Volume is the average of the daily trading volume over each month and is stated in thousands. MV or market capitalization is measured as of 1 January for each country and is equity market value for each firm expressed in millions of local currency units. Four liquidity measurement variables are presented. Amihud is the liquidity measure of Amihud (2002), which is defined as the daily ratio of the absolute return on a day to the UK£ trading volume for that particular day averaged over the past 1 month and provides a measure of the price impact. Liu is the measure of Liu (2006) and represents a standardized turnover-adjusted number of zero returns over the prior month. Turnover is a ratio of the traded volume of shares in relation to total number of shares outstanding and is scaled by the number of trading days in the month of measurement. It provides a measure of trading frequency. The final measure is the Bid Ask spread which is the average daily relative bid ask spread over the prior 1 month, where daily relative spread is the UK£ denominated spread divided by average of Bid and Ask prices. At the end of each month for the maximum period of data availability for each country cross sectional averages for each variable are calculated over the stocks in each respective market. Likewise at the end of each month the cross sectional Spearman's rank correlation are computed and the time series average of those correlations are reported.

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Panel 1: Results for Common Law sub-set of World universe (2009M01 – 2009M05)								
Price	1.00000							
Volatility	-0.35220	1.00000						
Volume	0.20891	0.08519	1.00000					
MV	**0.76001**	-0.33501	**0.58414**	1.00000				
Amihud	**-0.73324**	0.27310	**-0.74805**	**-0.86701**	1.00000			
Liu	-0.32886	-0.02350	**-0.55034**	-0.34103	**0.52714**	1.00000		
Turnover	0.34061	0.16292	**0.74756**	0.30684	**-0.65689**	**-0.60697**	1.00000	
Bid Ask Spread	**-0.66828**	0.27636	**-0.63459**	**-0.70098**	**0.87382**	**0.53509**	**-0.65538**	1.00000
Panel 2: Results for Civil Law sub-set of World universe (2009M01 – 2009M05)								
Price	1.00000							
Volatility	-0.14426	1.00000						
Volume	0.08630	0.09378	1.00000					
MV	**0.76535**	-0.13239	0.49792	1.00000				
Amihud	**-0.69284**	0.11109	**-0.69317**	**-0.87111**	1.00000			
Liu	-0.23967	-0.12418	**-0.53026**	-0.25492	**0.51767**	1.00000		
Turnover	0.20606	0.18453	**0.72349**	0.27633	**-0.63670**	**-0.64591**	1.00000	
Bid Ask Spread	-0.38980	0.09714	**-0.58780**	-0.48867	**0.66984**	0.48993	**-0.56515**	1.00000

Table 3 Total costs on liquidity proxies and measures

This table presents the panel cross section regression results on a firm-monthly basis using total trading costs as the dependent variable. Three liquidity measurement variables are presented. Amihud is the liquidity measure of Amihud (2002), which is defined as the daily ratio of the absolute return on a day to the UK£ trading volume for that particular day averaged over the past 1 month and provides a measure of the price impact. Liu is the measure of Liu (2006) and represents a standardized turnover-adjusted number of zero returns over the prior month. Turnover is a ratio of the traded volume of shares in relation to total number of shares outstanding and is scaled by the number of trading days in the month of measurement. It provides a measure of trading frequency. The final measure is the Bid Ask spread which is the average daily relative bid ask spread over the prior 1 month, where daily relative spread is the UK£ denominated spread divided by average of Bid and Ask prices. Firm size is determined from the first day of each month. Volatility is the average daily stock return variance and price and volume measure the average price (local currency units) and trading volume over an annual trading period. Turnover, price, volume, and market capitalisation are all log scaled in line with Stoll (2000). The White (1980) t-statistics are in parentheses.

Market	N	Intercept	Price	Volatility	Size	Amihud	Liu	Turnover	Adj-R^2
Austria	2,798	0.1160 (2.04)	-0.0025 (-0.34)	0.7120 (4.88)	-0.0048 (-1.27)				0.3553
		0.1170 (2.09)	-0.0006 (-0.08)	0.6651 (4.77)	-0.0051 (-1.37)	**8.80E-06 (5.02)**			0.3655
		0.1011 (1.84)	0.0018 (0.23)	0.7423 (5.08)	-0.0054 (-1.46)		**0.0030 (3.84)**		0.3770
		0.2454 (3.56)	0.0021 (0.26)	0.7573 (4.95)	-0.0098 (-2.35)			**-0.0076 (-2.99)**	0.3599
		0.0750 (1.11)	0.0027 (0.35)	0.6895 (4.87)	-0.0047 (-1.23)	**8.21E-06 (4.90)**	**0.0030 (3.25)**	0.0015 (0.54)	0.3856
Belgium	873	0.0098 (3.71)	-0.0016 (-7.63)	0.0028 (0.47)	-4.16E-05 (-0.28)				0.6463
		0.0058 (2.49)	-0.0011 (-5.49)	0.0083 (1.51)	3.98E-05 (0.29)	**0.0256 (4.65)**			0.7565
		0.0105 (3.91)	-0.0016 (-6.96)	0.0023 (0.39)	-9.00E-05 (-0.58)		**0.0001 (2.30)**		0.6509
		0.0299 (7.57)	-0.0008 (-3.38)	0.0188 (2.69)	-0.0008 (-4.33)			**-0.0008 (-8.47)**	0.6851
		0.0191 (5.40)	-0.0006 (-2.76)	0.0178 (2.75)	-0.0004 (-2.79)	**0.0237 (4.38)**	8.84E-05 (1.48)	**-0.0005 (-5.90)**	0.7748
Denmark	3,916	0.0601 (2.54)	-0.0083 (-4.72)	0.2422 (3.42)	-0.0004 (-0.27)				0.4988
		0.0491 (2.11)	-0.0092 (-5.30)	0.2173 (3.21)	0.0002 (0.19)	0.0011 (1.40)			0.5197
		0.0082 (0.33)	-0.0074 (-4.28)	0.2616 (3.91)	0.0014 (0.98)		**0.0021 (9.24)**		0.5570
		0.1804 (9.09)	-0.0012 (-0.86)	0.2908 (4.49)	-0.0051 (-4.39)			**-0.0069 (-6.73)**	0.5457
		0.1012 (5.78)	-0.0026 (-2.04)	0.2792 (4.61)	-0.0020 (-1.76)	0.0007 (1.24)	**0.0018 (9.00)**	**-0.0052 (-6.06)**	0.5966
Finland	336	0.0164 (0.20)	-0.0074 (-1.16)	0.1773 (1.91)	0.0002 (0.04)				0.8653
		0.0165 (0.21)	-0.0072 (-1.24)	0.1704 (2.06)	0.0001 (0.04)	0.0002 (0.33)			0.8658
		0.0173 (0.22)	-0.0082 (-1.15)	0.1773 (1.81)	0.0002 (0.04)		0.0003 (0.75)		0.8669
		0.0199 (0.24)	-0.0077 (-1.24)	0.1827 (1.93)	0.0004 (0.09)			-0.0009 (-1.17)	0.8660
		0.0190 (0.23)	-0.0081 (-1.35)	0.1773 (2.07)	0.0003 (0.07)	0.0001 (0.15)	0.0002 (0.87)	-0.0005 (-0.89)	0.8664

Market	N	Intercept	Price	Volatility	Size	Amihud	Liu	Turnover	Adj-R^2
France	3,375	0.0791 (6.79)	-0.0010 (-1.11)	0.0239 (1.09)	-0.0031 (-5.18)				0.4584
		0.0487 (4.69)	-0.0010 (-1.36)	0.0229 (1.11)	-0.0018 (-3.51(	**0.0020 (3.35)**			0.6111
		0.0713 (6.74)	-0.0008 (-0.88)	0.0317 (1.38)	-0.0029 (-4.94)		**0.0017 (3.90)**		0.5112
		0.1258 (9.03)	0.0014 (1.72)	0.0941 (4.30)	-0.0040 (-6.98)			**-0.0043 (-10.04)**	0.5694
		0.0843 (6.97)	0.0007 (1.03)	0.0757 (3.69)	-0.0026 (-4.97)	**0.0015 (3.03)**	**0.0008 (3.15)**	**-0.0030 (-9.86)**	0.6783
Germany	494	0.0184 (0.13)	-0.0080 (-1.08)	0.0132 (0.56)	0.0007 (0.10)				0.9136
		0.0179 (0.13)	-0.0074 (-0.92)	0.0195 (0.60)	0.0006 (0.09)	0.0001 (0.60)			0.9158
		0.0154 (0.11)	-0.0083 (-1.10)	0.0171 (0.71)	0.0009 (0.12)		**5.01E-05 (2.04)**		0.9137
		0.0449 (0.31)	-0.0064 (-0.83)	0.0271 (0.97)	-0.0005 (-0.06)			-0.0008 (-1.41)	0.9140
		0.0313 (0.24)	-0.0067 (-0.84)	0.0294 (0.99)	4.45E-05 (0.01)	0.0001 (0.56)	**2.98E-05 (2.01)**	-0.0004 (-1.36)	0.9158
Iceland	228	0.3242 (2.44)	0.0049 (0.60)	0.4712 (2.37)	-0.0144 (-2.16)				0.1641
		0.1915 (2.73)	0.0007 (0.11)	0.2049 (1.38)	-0.0079 (-2.38)	**0.0341 (3.50)**			0.4223
		-0.2153 (-0.84)	-0.0125 (-0.74)	0.4652 (2.86)	0.0108 (0.79)		**0.0040 (2.21)**		0.2866
		0.3222 (2.66)	0.0061 (0.50)	0.5040 (1.58)	-0.0137 (-2.74)			-0.0028 (-0.23)	0.1637
		-0.2171 (-0.89)	-0.0169 (-0.94)	0.0931 (0.38)	0.0089 (0.76)	**0.0321 (2.72)**	0.0031 (1.68)	0.0104 (0.96)	0.4883
Ireland	2,423	-0.4946 (-5.56)	-0.0575 (-8.81)	0.2763 (2.22)	0.0291 (6.14)				0.7224
		-0.4961 (-5.66)	-0.0571 (-8.96)	0.2714 (2.23)	0.0292 (6.25)	**6.59E-06 (3.10)**			0.7252
		-0.4937 (-5.38)	-0.0497 (-6.76)	0.3493 (2.37)	0.0278 (5.78)		**0.0034 (4.95)**		0.7441
		-0.3263 (-3.62)	-0.0499 (-7.26)	0.2976 (2.32)	0.0222 (4.65)			**-0.0054 (-6.64)**	0.7272
		-0.4525 (-4.19)	-0.0479 (-6.39)	0.3464 (2.39)	0.0262 (4.87)	**5.77E-06 (3.11)**	**0.0032 (4.30)**	-0.0013 (-1.32)	0.7464
Italy	2,976	0.0051 (0.35)	-0.0230 (-5.72)	0.1218 (1.73)	0.0023 (2.16)				0.3847
		-0.0139 (-1.00)	-0.0209 (-5.72)	0.1073 (1.61)	0.0030 (3.03)	**0.0042 (4.74)**			0.4350
		0.0145 (0.96)	-0.0209 (-5.85)	0.1507 (2.45)	0.0014 (1.37)		**0.0029 (1.94)**		0.4212
		0.1452 (3.65)	-0.0113 (-4.33)	0.2881 (2.94)	-0.0039 (-2.47)			**-0.0058 (-3.43)**	0.4351
		0.1003 (3.19)	-0.0115 (-5.36)	0.2537 (2.91)	-0.0023 (-1.85)	**0.0029 (4.18)**	0.0022 (1.60)	**-0.0042 (-2.99)**	0.4832
Luxembourg	161	0.0174 (1.41)	-0.0002 (-0.27)	0.3146 (3.16)	-0.0004 (-0.74)				0.1083
		0.0234 (1.92)	-0.0002 (-0.33)	0.2493 (2.56)	-0.0007 (-1.25)	**0.0014 (3.09)**			0.1410
		0.0194 (1.33)	-0.0001 (-0.23)	0.3139 (3.15)	-0.0005 (-0.75)		1.90E-06 (0.29)		0.1029
		0.0436 (2.35)	-0.0002 (-0.34)	0.3053 (2.96)	-0.0015 (-1.89)			-0.0009 (-1.55)	0.1176
		0.0328 (1.72)	-0.0003 (-0.42)	0.2531 (2.49)	-0.0010 (-1.33)	**0.0013 (2.11)**	-3.34E-06 (-0.41)	-0.0004 (-0.55)	0.1322

Market	N	Intercept	Price	Volatility	Size	Amihud	Liu	Turnover	Adj-R^2
Netherlands	5,766	-0.2017 (-7.11)	-0.0212 (-7.31)	0.2677 (4.71)	0.0133 (7.52)				0.4311
		-0.1952 (-6.91)	-0.0174 (-5.97)	0.2477 (4.86)	0.0124 (7.22)	**0.0006 (2.56)**			0.4561
		-0.1501 (-6.51)	-0.0164 (-7.05)	0.2819 (5.29)	0.0097 (7.01)		**0.0032 (5.12)**		0.4724
		0.0286 (1.20)	-0.0098 (-3.63)	0.3864 (6.08)	0.0041 (3.01)			**-0.0103 (-7.49)**	0.4639
		-0.0226 (-0.98)	-0.0079 (-2.89)	0.3323 (6.10)	0.0046 (3.36)	**0.0004 (2.24)**	**0.0023 (4.51)**	**-0.0061 (-8.45)**	0.5005
Norway	2,647	0.0385 (4.60)	-0.0037 (-5.35)	0.0622 (5.96)	-0.0007 (-1.70)				0.4795
		0.0338 (4.87)	-0.0031 (-5.74)	0.0540 (6.41)	-0.0006 (-1.85)	**0.0167 (5.27)**			0.5500
		0.0356 (3.64)	-0.0031 (-3.96)	0.0740 (5.64)	-0.0007 (-1.56)		**0.0014 (5.68)**		0.5141
		0.1536 (8.05)	0.0012 (1.48)	0.1140 (8.77)	-0.0050 (-6.38)			**-0.0045 (-9.62)**	0.5280
		0.1216 (7.22)	0.0007 (1.26)	0.1013 (9.89)	-0.0039 (-5.92)	**0.0128 (5.25)**	**0.0007 (3.36)**	**-0.0034 (-8.12)**	0.5874
Portugal	2,437	0.0172 (0.34)	-0.0084 (-1.59)	0.6997 (3.46)	3.96E-06 (0.01)				0.3462
		0.0121 (0.23)	-0.0083 (-1.59)	0.6856 (3.36)	0.0002 (0.08)	**6.71E-06 (2.21)**			0.3484
		0.0068 (0.13)	-0.0037 (-0.75)	0.5756 (3.15)	-0.0002 (-0.09)		**0.0050 (7.30)**		0.4321
		0.2618 (4.45)	0.0044 (0.80)	0.8629 (4.29)	-0.0087 (-2.93)			**-0.0127 (-5.92)**	0.3816
		0.0857 (1.41)	-0.0001 (-0.01)	0.6392 (3.36)	-0.0030 (-0.96)	6.61E-07 (0.26)	**0.0045 (6.14)**	**-0.0040 (-2.59)**	0.4345
Slovenia	522	0.0236 (5.28)	-0.0035 (-5.07)	0.2261 (6.29)	3.32E-05 (0.11)				0.6153
		0.0155 (4.86)	-0.0016 (-2.52)	0.1662 (5.91)	2.99E-06 (0.01)	**0.0028 (6.31)**			0.6856
		0.0238 (5.25)	-0.0021 (-4.83)	0.2381 (7.40)	-0.0002 (-0.86)		**0.0010 (9.90)**		0.6964
		0.0923 (12.83	0.0010 (1.72)	0.2261 (7.71)	-0.0035 (-9.31)			**-0.0029 (-12.03)**	0.7311
		0.0641 (10.42)	0.0008 (1.48)	0.1997 (7.45)	-0.0024 (-8.00)	**0.0015 (3.62)**	**0.0005 (5.92)**	**-0.0019 (-9.06)**	0.7686
Spain	464	-0.1623 (-0.84)	0.0089 (0.67)	0.2872 (1.67)	0.0076 (0.74)				0.6186
		-0.1628 (-0.83)	0.0088 (0.62)	0.2901 (2.65)	0.0077 (0.73)	-0.0002 (-0.03)			0.6176
		-0.1720 (-0.60)	0.0083 (0.50)	0.2926 (1.50)	0.0081 (0.58)		0.0001 (0.12)		0.6177
		-0.1618 (-0.82)	0.0089 (0.65)	0.2843 (1.90)	0.0075 (0.60)			0.0003 (0.03)	0.6176
		-0.1711 (-0.63)	0.0083 (0.50)	0.2905 (2.17)	0.0080 (0.52)	-0.0001 (-0.02)	0.0001 (0.08)	0.0004 (0.04)	0.6157
Sweden	7,023	0.1213 (7.22)	-0.0033 (-3.10)	0.4363 (5.84)	-0.0047 (-5.34)				0.3563
		0.0993 (5.83)	-0.0036 (-3.46)	0.2670 (5.09)	-0.0035 (-4.35)	**0.0069 (2.92)**			0.5123
		0.0850 (6.27)	-0.0013 (-1.08)	0.3953 (6.96)	-0.0037 (-4.87)		**0.0057 (6.28)**		0.5019
		0.2991 (10.10)	0.0052 (3.72)	0.4513 (6.98)	-0.0105 (-8.63)			**-0.0098 (-10.61)**	0.4240
		0.1735 (8.99)	0.0021 (1.89)	0.3058 (6.82)	-0.0063 (-7.34)	**0.0046 (2.12)**	**0.0036 (4.45)**	**-0.0049 (-8.82)**	0.5871

Market	N	Intercept	Price	Volatility	Size	Amihud	Liu	Turnover	Adj-R^2
Switzerland	900	0.0084 (9.76)	-1.58E-05 (-0.15)	0.0038 (1.68)	-0.0003 (-8.42)				0.5172
		0.0072 (7.87)	0.0001 (1.17)	0.0046 (1.94)	-0.0002 (-7.79)	**0.0758 (4.62)**			0.5228
		0.0081 (8.73)	7.07E-06 (0.07)	0.0048 (2.10)	-0.0002 (-7.69)		3.24E-05 (1.27)		0.5185
		0.0201 (9.36)	0.0005 (4.97)	0.0101 (4.70)	-0.0007 (-9.74)			**-0.0004 (-6.30)**	0.5341
		0.0178 (7.44)	0.0005 (5.55)	0.0108 (5.16)	-0.0006 (-8.12)	**0.0593 (4.35)**	2.37E-05 (1.10)	**-0.0004 (-5.34)**	0.5373
UK	6,714	0.0231 (2.84)	-0.0050 (-8.95)	-0.0439 (-6.37)	0.0004 (1.19)				0.4262
		0.0216 (2.64)	-0.0050 (-8.86)	-0.0441 (-6.47)	0.0005 (1.33)	**0.7650 (1.84)**			0.4321
		0.0231 (2.85)	-0.0050 (-8.96)	-0.0441 (-6.37)	0.0004 (1.21)		-3.87E-05 (-0.36)		0.4262
		0.0531 (5.60)	-0.0039 (-7.27)	-0.0371 (-5.27)	-0.0005 (-1.23)			**-0.0012 (-7.53)**	0.4379
		0.0504 (5.07)	-0.0039 (-7.29)	-0.0383 (-5.52)	-0.0004 (-0.98)	0.6569 (1.72)	-0.0001 (-0.95)	**-0.0011 (-6.86)**	0.4425
Cyprus	4,450	-0.3897 (-7.97)	-0.0508 (-7.21)	0.8289 (8.73)	0.0228 (9.05)				0.5405
		-0.3906 (-7.94)	-0.0514 (-7.31)	0.7916 (7.63)	0.0229 (9.06)	3.05E-07 (1.26)			0.5423
		-0.3455 (-7.80)	-0.0397 (-6.51)	0.8756 (9.34)	0.0188 (8.34)		**0.0036 (9.07)**		0.5788
		-0.1382 (-2.70)	-0.0330 (-4.93)	0.8680 (9.19)	0.0123 (4.72)			**-0.0096 (-8.32)**	0.5534
		-0.3295 (-6.28)	-0.0389 (-6.35)	0.8690 (8.38)	0.0182 (7.26)	6.49E-08 (0.30)	**0.0035 (7.44)**	-0.0006 (-0.59)	0.5788
Bulgaria	682	-0.0075 (-0.36)	-0.0233 (-3.64)	0.3905 (1.82)	0.0076 (2.52)				0.3460
		-0.0032 (-0.13)	-0.0219 (-3.42)	0.5483 (1.61)	0.0066 (1.85)	-2.91E-08 (-0.71)			0.3481
		-0.0174 (-0.91)	-0.0140 (-2.45)	0.3278 (1.70)	0.0051 (1.87)		**0.0037 (5.85)**		0.3855
		0.0632 (1.33)	-0.0170 (-3.44)	0.3815 (1.76)	0.0024 (0.63)			**-0.0041 (-1.86)**	0.3486
		-0.0675 (-1.14)	-0.0162 (-2.67)	0.4977 (1.62)	0.0076 (1.55)	-3.14E-08 (-0.91)	**0.0042 (4.92)**	0.0031 (1.12)	0.3890
Czech Rep.	402	-7.7994 (-1.34)	-0.4496 (-1.32)	0.1009 (0.43)	0.4530 (1.34)				0.1373
		-7.7976 (-1.34)	-0.4482 (-1.32)	0.1101 (0.47)	0.4526 (1.34)	0.0003 (0.35)			0.1351
		-7.8149 (-1.35)	-0.4495 (-1.32)	0.1156 (0.45)	0.4536 (1.34)		0.0006 (0.24)		0.1352
		-8.6992 (-1.46)	-0.4967 (-1.43)	0.3625 (1.57)	0.5093 (1.47)			**-0.0173 (-2.72)**	0.1439
		-8.7497 (-1.45)	-0.5004 (-1.42)	0.3592 (1.52)	0.5132 (1.46)	0.0002 (0.32)	-0.0015 (-0.55)	**-0.0190 (-2.77)**	0.1401
Estonia	759	0.2054 (3.29)	-0.0140 (-1.79)	0.7246 (2.94)	-0.0098 (-2.73)				0.3146
		0.1438 (3.25)	-0.0082 (-1.31)	0.6347 (2.56)	-0.0069 (-2.62)	**0.0002 (2.73)**			0.3865
		0.0740 (1.35)	-0.0169 (-2.57)	0.6161 (2.96)	-0.0032 (-0.99)		**0.0044 (8.52)**		0.3926
		0.3423 (3.90)	-0.0117 (-1.68)	0.7278 (3.20)	-0.0136 (-3.18)			**-0.0108 (-4.63)**	0.3638
		0.1496 (1.84)	-0.0103 (-2.06)	0.5978 (2.77)	-0.0057 (-1.52)	**0.0001 (2.04)**	**0.0025 (3.21)**	**-0.0051 (-2.02)**	0.4346

Market	N	Intercept	Price	Volatility	Size	Amihud	Liu	Turnover	Adj-R^2
Hungary	1,218	0.9719 (3.23)	0.0597 (2.84)	1.5357 (2.71)	-0.0575 (-3.11)				0.3418
		0.5671 (1.95)	0.0306 (1.59)	1.0232 (1.93)	-0.0319 (-1.83)	**0.1332 (8.53)**			0.5510
		0.8336 (3.56)	0.0555 (3.04)	1.4815 (2.75)	-0.0512 (-3.39)		**0.0090 (3.03)**		0.4050
		1.3263 (3.94)	0.0811 (3.47)	1.7970 (3.31)	-0.0708 (-3.68)			**-0.0247 (-4.73)**	0.4434
		0.7834 (2.56)	0.0460 (2.12)	1.2343 (2.43)	-0.0412 (-2.30)	**0.1120 (4.91)**	0.0033 (1.47)	**-0.0141 (-3.56)**	0.5986
Poland	1,268	0.0147 (5.97)	-0.0009 (-1.58)	0.0738 (3.58)	-0.0004 (-1.97)				0.2086
		0.0142 (5.93)	-0.0008 (-1.61)	0.0748 (3.67)	-0.0004 (-1.94)	1.09E-07 (0.43)			0.2109
		0.0142 (5.85)	-0.0008 (-1.42)	0.0788 (3.94)	-0.0005 (-2.33)		**0.0006 (2.22)**		0.2226
		0.0482 (3.77)	0.0012 (2.01)	0.1232 (5.83)	-0.0021 (-3.55)			**-0.0021 (-2.92)**	0.2448
		0.0468 (4.16)	0.0012 (2.08)	0.1255 (6.19)	-0.0021 (-3.84)	-3.09E-08 (-0.14)	**0.0005 (2.18)**	**-0.0020 (-3.25)**	0.2541
Russia	5,667	-0.1928 (-2.77)	-0.0623 (-4.52)	0.2917 (1.41)	0.0165 (3.90)				0.3296
		-0.1944 (-2.81)	-0.0626 (-4.63)	0.2861 (1.41)	0.0166 (3.94)	**2.69E-06 (6.26)**			0.3570
		-0.1407 (-1.94)	-0.0551 (-4.08)	0.3059 (1.52)	0.0106 (2.33)		**0.0041 (4.10)**		0.3821
		0.6832 (4.73)	-0.0387 (-2.75)	0.3000 (1.49)	-0.0191 (-2.82)			**-0.0352 (-7.48)**	0.3613
		0.2919 (2.58)	-0.0453 (-3.49)	0.3020 (1.54)	-0.0060 (-1.12)	**2.00E-06 (4.31)**	**0.0029 (3.68)**	**-0.0180(-4.70)**	0.4042
Morocco	1,261	-0.0050 (-0.42)	0.0134 (7.23)	0.3927 (3.17)	-0.0032 (-4.68)				0.4856
		-0.0108 (-0.93)	0.0138 (7.35)	0.3486 (3.05)	-0.0030 (-4.42)	**0.0079 (4.67)**			0.4995
		-0.0085 (-0.70)	0.0136 (7.69)	0.4260 (3.13)	-0.0033 (-4.73)		**0.0006 (3.44)**		0.5072
		0.0192 (0.76)	0.0145 (6.70)	0.4161 (3.06)	-0.0042 (-3.65)			-0.0008 (-1.02)	0.4877
		-0.0307 (-1.46)	0.0131 (6.27)	0.3744 (2.87)	-0.0023 (-2.04)	**0.0066 (3.99)**	**0.0006 (3.23)**	0.0006 (0.88)	0.5172
Egypt	1,620	0.0731 (1.86)	-0.0130 (-2.75)	0.3001 (2.83)	-0.0012 (-0.50)				0.2625
		0.0712 (1.81)	-0.0130 (-2.73)	0.2992 (2.84)	-0.0011 (-0.47)	0.0001 (0.38)			0.2621
		0.0524 (1.45)	-0.0143 (-3.00)	0.2966 (2.66)	-0.0001 (-0.08)		**0.0015 (2.07)**		0.2780
		0.1020 (2.20)	-0.0116 (-2.34)	0.3209 (2.79)	-0.0021 (-0.84)			-0.0015 (-1.16)	0.2644
		0.0641 (1.56)	-0.0139 (-2.89)	0.3043 (2.61)	-0.0006 (-0.28)	-0.0001 (-0.55)	**0.0014 (1.92)**	-0.0004 (-0.34)	0.2775
South Africa	3,070	0.0156 (1.37)	-0.0044 (-6.86)	0.0557 (3.03)	0.0003 (0.62)				0.4237
		0.0134 (1.20)	-0.0045 (-7.02)	0.0534 (3.03)	0.0004 (0.81)	0.0018 (1.22)			0.4306
		0.0128 (1.18)	-0.0043 (-6.56)	0.0749 (2.95)	0.0003 (0.65)		**0.0018 (3.79)**		0.5101
		0.0908 (5.21)	-0.0016 (-1.92)	0.1178 (5.41)	-0.0020 (-2.81)			**-0.0038 (-6.13)**	0.4722
		0.0690 (4.24)	-0.0022 (-2.71)	0.1185 (4.98)	-0.0014 (-2.06)	0.0005 (0.67)	**0.0016 (3.51)**	**-0.0028 (-6.14)**	0.5382

Market	N	Intercept	Price	Volatility	Size	Amihud	Liu	Turnover	Adj-R^2
Canada	832	0.0431 (16.74)	-0.0006 (-1.51)	0.0867 (6.93)	-0.0017 (-13.50)				0.8801
		0.0396 (28.97)	-0.0006 (-1.73)	0.0829 (7.54)	-0.0015 (-16.32)	0.0315 (1.74)			0.8842
		0.0431 (16.06)	-0.0006 (-1.52)	0.0866 (6.48)	-0.0017 (-12.13)		-1.94E-05 (-0.11)		0.8799
		0.0537 (8.93)	-0.0007 (-1.73)	0.1030 (7.88)	-0.0016 (-8.24)			**-0.0014 (-6.64)**	0.8885
		0.0504 (14.97)	-0.0007 (-1.93)	0.0982 (8.00)	-0.0015 (-9.03)	0.0165 (0.92)	-0.0001 (-0.92)	**-0.0012 (-8.25)**	0.8893
United States	7,658	0.0006 (0.12)	-0.0039 (-8.45)	0.0163 (2.35)	0.0006 (2.25)				0.5667
		-0.0131 (-2.28)	-0.0043 (-8.39)	0.0170 (2.57)	0.0012 (4.11)	**0.0384 (2.47)**			0.5913
		0.0006 (0.11)	-0.0039 (-8.44)	0.0165 (2.32)	0.0006 (2.25)		4.17E-05 (0.63)		0.5668
		0.0203 (2.10)	-0.0033 (-6.31)	0.0289 (3.78)	-3.60E-06 (-0.01)			**-0.0008 (-3.14)**	0.5759
		0.0032 (0.36)	-0.0038 (-6.82)	0.0270 (3.34)	0.0007 (1.88)	**0.0356 (2.29)**	7.02E-05 (0.97)	**-0.0006 (-2.54)**	0.5969
Australia	8,734	0.1225 (8.50)	-0.0028 (-3.31)	0.3499 (7.75)	-0.0052 (-7.31)				0.5391
		0.1106 (7.44)	-0.0019 (-2.37)	0.3309 (8.15)	-0.0048 (-6.52)	**0.0002 (2.97)**			0.5986
		0.0934 (7.89)	-0.0021 (-2.57)	0.3501 (9.50)	-0.0041 (-6.77)		**0.0036 (7.38)**		0.6316
		0.1389 (9.64)	-0.0020 (-2.36)	0.3742 (7.77)	-0.0055 (-7.72)			**-0.0016 (-3.54)**	0.5422
		0.0939 (8.12)	-0.0013 (-1.69)	0.3431 (9.93)	-0.0040 (-6.74)	**0.0002 (2.57)**	**0.0030 (5.96)**	-0.0004 (-1.10)	0.6609
New Zealand	3,705	-0.0306 (-2.52)	-0.0092 (-9.26)	0.2723 (4.49)	0.0023 (3.46)				0.4457
		-0.0347 (-3.09)	-0.0093 (-9.78)	0.2530 (4.58)	0.0025 (4.11)	**4.13E-05 (6.67)**			0.4728
		-0.0396 (-3.75)	-0.0087 (-8.90)	0.2698 (4.66)	0.0026 (4.39)		**0.0016 (4.68)**		0.4930
		0.0535 (2.68)	-0.0061 (-6.06)	0.3007 (4.92)	-0.0006 (-0.72)			**-0.0040 (-8.21)**	0.5067
		0.0265 (1.74)	-0.0063 (-6.84)	0.2762 (5.10)	0.0003 (0.51)	**3.70E-05 (6.69)**	**0.0012 (4.13)**	**-0.0032 (-8.93)**	0.5541
Argentina	5,181	0.1723 (4.49)	-0.0219 (-4.60)	0.6029 (4.29)	-0.0064 (-3.18)				0.2952
		0.1074 (2.18)	-0.0216 (-4.01)	0.4954 (3.68)	-0.0031 (-1.19)	**0.0010 (2.90)**			0.3376
		0.1771 (4.64)	-0.0194 (-4.15)	0.6577 (4.52)	-0.0071 (-3.56)		**0.0008 (5.09)**		0.3103
		0.3400 (7.71)	-0.0158 (-2.88)	0.7056 (4.48)	-0.0128 (-5.84)			**-0.0091 (-4.82)**	0.3066
		0.1793 (3.42)	-0.0175 (-2.99)	0.5817 (3.95)	-0.0063 (-2.39)	**0.0009 (2.69)**	**0.0005 (3.74)**	-0.0034 (-1.79)	0.3487
Brazil	7,271	0.0646 (1.23)	-0.0091 (-1.75)	0.2918 (1.60)	-0.0014 (-0.46)				0.2073
		0.0448 (0.85)	-0.0073 (-1.37)	0.2772 (1.54)	-0.0008 (-0.25)	**0.000945 (3.53)**			0.1976
		0.0414 (0.79)	-0.0074 (-1.40)	0.3627 (2.05)	-0.0009 (-0.29)		**0.0029 (3.42)**		0.2907
		0.3416 (3.44)	0.0038 (0.52)	0.4445 (2.51)	-0.0105 (-2.25)			**-0.0147 (-5.90)**	0.2849
		0.1448 (1.29)	-0.0020 (-0.26)	0.4107 (2.33)	-0.0041 (-0.81)	8.47E-05 (0.55)	**0.0032 (6.27)**	**-0.0062 (-2.07)**	0.2822

Market	N	Intercept	Price	Volatility	Size	Amihud	Liu	Turnover	Adj-R^2
Chile	6,051	-0.1234 (-1.55)	-0.0034 (-0.45)	0.4854 (1.92)	0.0086 (2.15)				0.3016
		-0.1267 (-1.58)	-0.0035 (-0.46)	0.4811 (1.90)	0.0088 (2.17)	0.0041 (0.55)			0.3015
		-0.1031 (-1.32)	0.0016 (0.22)	0.5688 (2.29)	0.0063 (1.62)		**0.0012 (2.72)**		0.3045
		-0.0523 (-0.61)	0.0007 (0.09)	0.5596 (2.16)	0.0060 (1.41)			**-0.0046 (-2.46)**	0.3027
		-0.0687 (-0.78)	0.0032 (0.41)	0.5982 (2.35)	0.0052 (1.23)	-0.0014 (-0.20)	**0.0011 (2.38)**	-0.0023 (-1.21)	0.3045
Colombia	281	-0.2204 (-1.07)	0.0461 (1.49)	0.0170 (1.21)	-5.12E-14 (-2.02)				0.0541
		-0.2834 (-1.19)	0.0553 (1.53)	-0.1187 (-0.85)	-5.54E-14 (-2.26)	1.8055 (0.94)			0.0592
		-0.4032 (-1.41)	0.0596 (1.59)	0.0164 (1.06)	-1.68E-14 (-0.29)		0.0078 (1.55)		0.0263
		-0.0536 (-0.29)	0.0447 (1.45)	0.0048 (0.36)	-5.44E-14 (-2.13)			-0.0667 (-1.70)	0.0141
		-0.2918 (-1.06)	0.0581 (1.51)	-0.0239 (-0.26)	-2.72E-14 (-0.57)	0.4547 (0.36)	0.0061 (1.41)	-0.0345 (-1.65)	0.0249
Jamaica	1,744	0.2169 (1.56)	-0.0759 (-7.71)	-0.0095 (-1.92)	0.0021 (0.31)				0.5410
		0.2123 (1.53)	-0.0761 (-7.70)	0.0040 (0.27)	0.0023 (0.34)	-2.12E-07 (-0.95)			0.5409
		0.4867 (3.48)	-0.0467 (-5.59)	-0.0083 (-1.67)	-0.0144 (-2.17)		**0.0042 (14.26)**		0.6501
		0.5718 (3.84)	-0.0576 (-7.85)	-0.0117 (-2.24)	-0.0119 (-1.84)			**-0.0162 (-3.71)**	0.5683
		0.5222 (3.81)	-0.0452 (-5.88)	0.0120 (0.72)	-0.0155 (-2.46)	-3.25E-07 (-1.31)	**0.0041 (13.13)**	-0.0023 (-0.85)	0.6505
Mexico	3,885	0.1523 (5.82)	-0.0060 (-2.17)	0.1967 (3.58)	-0.0049 (-3.59)				0.3973
		0.1509 (5.72)	-0.0056 (-2.05)	0.1990 (3.68)	-0.0050 (-3.57)	**0.0004 (2.41)**			0.4101
		0.1250 (4.74)	-0.0007 (-0.38)	0.2678 (5.05)	-0.0049 (-3.70)		**0.0044 (9.91)**		0.5431
		0.4163 (11.12)	0.0057 (2.19)	0.3112 (6.27)	-0.0143 (-8.72)			**-0.0120 (-12.53)**	0.4636
		0.2206 (6.25)	0.0027 (1.14)	0.2991 (5.84)	-0.0082 (-5.21)	0.0001 (0.77)	**0.0038 (7.79)**	**-0.0042 (-4.11)**	0.5512
Peru	772	0.1158 (2.36)	-0.0311 (-2.89)	1.2215 (3.45)	-0.0016 (-0.62)				0.4954
		0.1257 (2.37)	-0.0286 (-2.68)	0.9972 (3.04)	-0.0022 (-0.80)	**0.0011 (2.14)**			0.5037
		0.1929 (2.13)	-0.0271 (-2.41)	1.2278 (3.48)	-0.0058 (-1.21)		**3.43E-05 (1.99)**		0.4950
		0.2247 (2.57)	-0.0262 (-2.13)	1.2694 (3.42)	-0.0060 (-1.47)			-0.0049 (-1.25)	0.4964
		0.2212 (1.91)	-0.0238 (-2.02)	1.0160 (2.94)	-0.0073 (-1.25)	**0.0011 (2.05)**	3.49E-05 (1.65)	-0.0007 (-0.20)	0.5027
Japan	44,928	-0.3649 (-10.72)	-0.0156 (-2.06)	-0.0013 (-0.02)	0.0397 (9.03)				0.9312
		-0.3606 (-10.35)	-0.0158 (-2.11)	0.0034 (0.05)	0.0397 (9.01)	-0.8376 (-0.71)			0.9312
		-0.3669 (-10.63)	-0.0153 (-2.02)	-0.0083 (-0.14)	0.0395 (8.99)		**0.0009 (2.10)**		0.9312
		-0.3769 (-11.24)	-0.0173 (-2.31)	-0.0021 (-0.03)	0.0415 (9.70)			**0.0040 (4.50)**	0.9312
		-0.3740 (-10.94)	-0.0172 (-2.33)	-0.0036 (-0.06)	0.0413 (9.64)	-0.9405 (-0.79)	**0.0009 (2.14)**	**0.0039 (4.49)**	0.9312

Market	N	Intercept	Price	Volatility	Size	Amihud	Liu	Turnover	Adj-R^2
Singapore	14,217	-0.2030 (-3.39)	-0.0616 (-10.56)	1.1058 (17.76)	0.0086 (2.94)				0.6546
		-0.2431 (-4.01)	-0.0638 (-10.84)	1.0330 (16.80)	0.0107 (3.62)	**1.32E-05 (3.09)**			0.6593
		-0.2410 (-5.61)	-0.0405 (-12.83)	1.0262 (19.68)	0.0101 (4.86)		**0.0080 (12.81)**		0.7521
		0.0969 (2.13)	-0.0389 (-8.46)	1.1637 (18.99)	-0.0001 (-0.04)			**-0.0169 (-14.81)**	0.6854
		-0.2386 (-4.31)	-0.0407 (-10.81)	0.9865 (19.04)	0.0106 (4.42)	**8.70E-06 (3.15)**	**0.0077 (10.82)**	-0.0015 (-1.58)	0.7544
China Shenzen	5,958	-0.0052 (-1.63)	-0.0011 (-4.76)	0.0401 (4.38)	0.0003 (2.34)				0.0560
		-0.0080 (-2.53)	-0.0010 (-4.36)	0.0442 (4.44)	0.0004 (3.01)	**0.1333 (2.64)**			0.0712
		-0.0051 (-1.56)	-0.0011 (-4.57)	0.0415 (4.47)	0.0003 (2.17)		**7.27E-05 (1.95)**		0.0601
		-0.0016 (-0.49)	-0.0010 (-4.31)	0.0507 (5.75)	0.0002 (1.72)			**-0.0002 (-2.99)**	0.0578
		-0.0096 (-1.75)	-0.0010 (-4.32)	0.0422 (4.08)	0.0005 (2.46)	**0.1482 (2.09)**	**8.08E-05 (2.15)**	7.48E-05 (0.40)	0.0766
China Shanghai	2,444	0.0381 (2.56)	7.64E-05 (0.12)	0.0568 (4.10)	-0.0016 (-2.37)				0.0794
		0.0361 (2.40)	0.0001 (0.20)	0.0539 (3.53)	-0.0015 (-2.23)	0.3018 (0.90)			0.0800
		0.0365 (2.48)	0.0001 (0.18)	0.0653 (4.55)	-0.0015 (-2.36)		0.0001 (1.36)		0.0823
		0.0329 (2.37)	0.0001 (0.23)	0.0551 (4.14)	-0.0016 (-2.35)			**0.0005 (1.93)**	0.0839
		0.0214 (1.67)	0.0003 (0.63)	0.0527 (3.60)	-0.0013 (-2.07)	**0.9240 (2.52)**	0.0001 (1.30)	**0.0010 (2.74)**	0.0926
Hong Kong	4,144	0.0135 (8.65)	-0.0030 (-6.71)	0.0315 (4.65)	-6.87E-05 (-0.91)				0.6612
		0.0125 (7.80)	-0.0027 (-6.57)	0.0295 (4.53)	-5.07E-05 (-0.66)	**0.0129 (4.53)**			0.7251
		0.0132 (8.06)	-0.0030 (-6.52)	0.0316 (4.38)	-7.06E-05 (-0.94)		0.0002 (1.60)		0.6630
		0.0552 (5.50)	-0.0015 (-3.14)	0.0486 (5.12)	-0.0014 (-4.20)			**-0.0014 (-5.03)**	0.6776
		0.0474 (5.39)	-0.0015 (-3.25)	0.0440 (5.18)	-0.0012 (-3.94)	**0.0124 (4.23)**	6.41E-05 (0.44)	**-0.0012 (-4.87)**	0.7366
Indonesia	1,743	0.5941 (3.34)	-0.0426 (-4.51)	0.0608 (0.42)	-0.0096 (-1.71)				0.2340
		0.5038 (3.30)	-0.0389 (-4.57)	-0.1764 (-0.83)	-0.0072 (-1.42)	**0.7853 (3.49)**			0.2849
		0.5676 (3.25)	-0.0386 (-4.22)	-0.0272 (-0.16)	-0.0098 (-1.72)		**0.0030 (3.08)**		0.2510
		0.8960 (4.08)	-0.0179 (-2.40)	0.2525 (1.73)	-0.0230 (-3.17)			**-0.0126 (-6.32)**	0.2474
		0.5912 (3.83)	-0.0316 (-4.00)	-0.1169 (-0.51)	-0.0112 (-2.35)	**0.7041 (2.65)**	0.0006 (0.48)	-0.0035 (-1.35)	0.2861
Malaysia	7,456	0.0040 (0.17)	-0.0155 (-2.91)	0.6964 (2.24)	0.0004 (0.40)				0.2393
		-0.0124 (-0.76)	-0.0093 (-5.37)	0.2262 (1.63)	0.0014 (1.64)	**0.0002 (53.06)**			0.6893
		0.0046 (0.19)	-0.0130 (-2.84)	0.6796 (2.22)	9.53E-05 (0.07)		**0.0027 (5.07)**		0.2804
		0.1314 (3.94)	-0.0048 (-1.07)	0.7981 (2.48)	-0.0043 (-2.82)			**-0.0056 (-6.28)**	0.2610
		0.0495 (2.54)	-0.0026 (-1.58)	0.2700 (1.93)	-0.0012 (-1.28)	**0.0002 (48.69)**	**0.0019 (4.55)**	**-0.0027 (-6.27)**	0.7225

Market	N	Intercept	Price	Volatility	Size	Amihud	Liu	Turnover	Adj-R^2
Pakistan	1,036	-4.8256 (-3.61)	-0.6765 (-3.20)	0.1350 (0.30)	0.3447 (4.15)				0.2208
		-4.0054 (-3.08)	-0.5711 (-2.87)	-0.0078 (-0.02)	0.2886 (3.60)	**0.0887 (9.96)**			0.3536
		-4.1554 (-3.14)	-0.6290 (-3.07)	0.2124 (0.52)	0.3057 (3.79)		**0.0049 (4.69)**		0.3008
		0.3059 (0.17)	-0.3225 (-1.53)	0.9398 (1.53)	0.1021 (1.05)			**-0.1625 (-6.61)**	0.3912
		-0.2450 (-0.14)	-0.3271 (-1.53)	0.6653 (1.49)	0.1156 (1.16)	**0.0604 (6.52)**	0.0005 (0.49)	**-0.1251 (-5.63)**	0.4502
Philippines	3,169	0.4408 (3.84)	-0.0418 (-7.13)	0.3433 (4.15)	-0.0143 (-2.63)				0.6460
		0.4378 (3.86)	-0.0405 (-7.38)	0.2390 (3.05)	-0.0141 (-2.63)	**0.0005 (3.31)**			0.6499
		0.4532 (3.95)	-0.0401 (-6.78)	0.3408 (4.16)	-0.0150 (-2.76)		**6.86E-05 (2.21)**		0.6468
		0.8027 (6.88)	-0.0191 (-3.91)	0.4320 (4.99)	-0.0286 (-5.38)			**-0.0135 (-8.64)**	0.6576
		0.7700 (6.38)	-0.0195 (-4.02)	0.3508 (4.51)	-0.0275 (-5.01)	**0.0004 (2.21)**	**4.09E-05 (1.97)**	**-0.0121 (-7.14)**	0.6594
South Korea	14,656	0.0317 (11.55)	-6.40E-05 (-0.31)	0.0229 (3.64)	-0.0009 (-6.02				0.4893
		0.0279 (9.39)	-8.16E-05 (-0.41)	0.0224 (3.62)	-0.0008 (-5.08)	**0.9145 (2.02)**			0.5162
		0.0317 (9.34)	-1.75E-05 (-0.08)	0.0283 (4.00)	-0.0010 (-6.11)		**0.0007 (5.80)**		0.5262
		0.0647 (17.51)	0.0011 (5.29)	0.0650 (7.63)	-0.0021 (-12.20)			**-0.0016 (-12.32)**	0.5243
		0.0584 (12.03)	0.0010 (4.64)	0.0653 (7.37)	-0.0019 (-9.79)	**0.6976 (1.92)**	**0.0006 (5.80)**	**-0.0014 (-9.78)**	0.5754
Sri Lanka	365	0.3484 (7.55)	0.0015 (0.33)	0.3748 (2.86)	-0.0148 (-7.13)				0.6217
		0.3439 (7.44)	0.0022 (0.51)	0.3707 (2.79)	-0.0147 (-7.05)	0.0033 (0.98)			0.6217
		0.2342 (4.17)	0.0014 (0.36)	0.3880 (2.78)	-0.0101 (-4.05)		**0.0014 (4.57)**		0.6502
		0.3772 (7.88)	0.0035 (0.76)	0.3954 (3.23)	-0.0161 (-7.27)			-0.0013 (-1.92)	0.6260
		0.2294 (3.42)	0.0010 (0.24)	0.3882 (2.73)	-0.0098 (-3.29)	-0.0011 (-0.41)	**0.0015 (4.01)**	0.0001 (0.11)	0.6484
Taiwan	2,668	0.0313 (3.11)	0.0005 (1.31)	0.0229 (2.99)	-0.0012 (-2.70)				0.1563
		0.0264 (2.62)	0.0005 (1.25)	0.0221 (2.91)	-0.0010 (-2.26)	**0.2240 (4.33)**			0.1620
		0.0321 (3.22)	0.0006 (1.45)	0.0255 (3.22)	-0.0013 (-2.83)		**3.62E-05 (1.87)**		0.1576
		0.0393 (3.72)	0.0010 (2.16)	0.0353 (4.56)	-0.0015 (-3.16)			**-0.0003 (-4.00)**	0.1640
		0.0363 (3.53)	0.0010 (2.12)	0.0362 (4.42)	-0.0014 (-3.00)	**0.1357 (2.60)**	**4.21E-05 (1.90)**	**-0.0003 (-3.59)**	0.1679
Thailand	7,746	0.0764 (3.21)	-0.0031 (-1.97)	0.0990 (2.13)	-0.0026 (-2.26)				0.0637
		0.0739 (3.08)	-0.0029 (-1.87)	0.0983 (2.12)	-0.0025 (-2.17)	0.0033 (1.24)			0.0650
		0.0727 (3.00)	-0.0028 (-1.71)	0.1003 (2.16)	-0.0025 (-2.17)		**0.0009 (2.78)**		0.0655
		0.1505 (6.19)	0.0004 (0.33)	0.1875 (3.78)	-0.0053 (-4.78)			**-0.0027 (-5.00)**	0.0687
		0.1388 (5.41)	0.0004 (0.28)	0.1790 (3.65)	-0.0049 (-4.30)	0.0022 (0.90)	**0.0006 (2.05)**	**-0.0025 (-4.27)**	0.0702

Market	N	Intercept	Price	Volatility	Size	Amihud	Liu	Turnover	Adj-R^2
Vietnam	265	0.0518 (2.49)	0.0040 (6.24)	0.1847 (1.02)	-0.0029 (-3.60)				0.0458
		0.0328 (2.03)	0.0038 (9.87)	0.1863 (1.16)	-0.0022 (-3.79)	**3.5233 (112.56)**			0.1014
		0.0447 (2.68)	0.0041 (7.20)	0.2022 (1.20)	-0.0028 (-3.95)		**0.0009 (1.95)**		0.0461
		0.0802 (2.47)	0.0033 (11.38)	0.4459 (8.23)	-0.0030 (-3.50)			**-0.0032 (-2.37)**	0.0935
		0.0649 (1.85)	0.0032 (15.55)	0.3619 (7.79)	-0.0026 (-2.95)	**2.6817 (5.14)**	**-0.0008 (-3.60)**	-0.0024 (-1.65)	0.1145
Abu Dhabi	832	0.7921 (1.36)	0.0783 (1.87)	0.0822 (0.57)	-0.0373 (-1.29)				0.2846
		0.8060 (1.44)	0.0822 (1.97)	0.0163 (0.11)	-0.0382 (-1.37)	**0.0010 (7.62)**			0.3064
		0.7909 (1.36)	0.0795 (1.91)	0.0892 (0.62)	-0.0375 (-1.30)		0.0004 (0.79)		0.2845
		0.8813 (1.57)	0.0838 (2.02)	0.0837 (0.58)	-0.0410 (-1.46)			-0.0024 (-0.70)	0.2843
		0.8225 (1.50)	0.0831 (1.99)	0.0160 (0.11)	-0.0389 (-1.42)	**0.0010 (7.09)**	-4.28E-05 (-0.08)	-0.0004 (-0.12)	0.3046
Dubai	502	-0.0137 (-0.31)	-0.0112 (-4.53)	0.1964 (2.41)	0.0027 (1.32)				0.8133
		-0.0205 (-0.45)	-0.0105 (-4.04)	0.2115 (2.67)	0.0030 (1.39)	**0.0002 (3.21)**			0.8217
		0.0072 (0.16)	-0.0092 (-3.47)	0.2067 (2.97)	0.0013 (0.66)		**0.0010 (3.67)**		0.8268
		0.2424 (4.15)	1.09E-06 (0.01)	0.2592 (3.02)	-0.0069 (-2.70)			**-0.0086 (-5.87)**	0.8313
		0.1783 (3.78)	-0.0017 (-0.63)	0.2548 (3.23)	-0.0048 (-2.26)	0.0001 (1.59)	**0.0004 (1.85)**	**-0.0062 (-4.61)**	0.8366
Israel	4,692	0.3247 (6.75)	-0.0064 (-2.14)	0.0965 (1.59)	-0.0136 (-5.21)				0.3312
		0.2266 (8.72)	-0.0063 (-2.85)	0.0461 (1.76)	-0.0090 (-6.34)	**0.0042 (5.09)**			0.5330
		0.2171 (5.19)	-0.0048 (-1.74)	0.1197 (1.90)	-0.0092 (-3.96)		**0.0038 (4.85)**		0.4209
		0.3681 (8.49)	-0.0026 (-1.01)	0.1567 (2.17)	-0.0128 (-6.19)			**-0.0103 (-6.83)**	0.3741
		0.1921 (7.41)	-0.0038 (-1.87)	0.0900 (2.44)	-0.0067 (-5.00)	**0.0037 (4.91)**	**0.0022 (4.16)**	**-0.0040 (-4.37)**	0.5776
Jordan	384	-1.7732 (-2.85)	-0.0526 (-1.39)	0.7359 (8.17)	0.1034 (2.85)				0.4775
		-1.7751 (-2.87)	-0.0518 (-1.37)	0.7473 (8.42)	0.1034 (2.87)	**4.16E-05 (3.80)**			0.4767
		-1.7971 (-2.86)	-0.0539 (-1.41)	0.7821 (9.30)	0.1046 (2.85)		**0.0004 (3.11)**		0.4774
		-1.7929 (-2.79)	-0.0517 (-1.33)	0.7734 (22.32)	0.1048 (2.80)			-0.0009 (-0.74)	0.4764
		-1.8028 (-2.82)	-0.0528 (-1.35)	0.7964 (17.42)	0.1051 (2.81)	**1.95E-05 (2.88)**	0.0003 (1.78)	-0.0005 (-0.42)	0.4741
Kuwait	537	-0.1024 (-1.96)	-0.0138 (-1.03)	0.2293 (6.59)	0.0063 (3.24)				0.6462
		-0.0854 (-2.65)	-0.0065 (-0.79)	0.2024 (5.09)	0.0060 (4.33)	0.0004 (1.02)			0.6529
		-0.1380 (-5.28)	-0.0067 (-0.60)	0.3427 (32.39)	0.0082 (7.45)		**0.0017 (3.50)**		0.6689
		-0.0282 (-1.03)	-0.0036 (-0.46)	0.2623 (8.72)	0.0045 (3.38)			**-0.0033 (-2.00)**	0.6510
		-0.1374 (-3.15)	-0.0051 (-1.04)	0.3203 (6.85)	0.0081 (4.06)	0.0002 (0.50)	**0.0016 (2.55)**	0.0004 (0.27)	0.6683

Market	N	Intercept	Price	Volatility	Size	Amihud	Liu	Turnover	Adj-R^2
Oman	104	0.0485 (0.99)	-0.0086 (-3.21)	0.0246 (0.36)	-0.0025 (-0.93)				0.4972
		0.0505 (0.96)	-0.0084 (-2.77)	0.0239 (0.36)	-0.0026 (-0.90)	3.32E-06 (0.22)			0.4903
		0.1524 (4.74)	0.0079 (2.49)	0.0104 (0.72)	-0.0074 (-4.44)		**0.0031 (4.37)**		0.6968
		0.4771 (2.68)	0.0215 (1.99)	0.0365 (0.54)	-0.0225 (-2.65)			**-0.0048 (-2.08)**	0.5451
		0.2803 (2.21)	0.0165 (2.51)	0.0181 (1.15)	-0.0134 (-2.25)	**-1.51E-05 (-2.75)**	**0.0030 (4.53)**	-0.0015 (-0.88)	0.6988
Qatar	321	0.4224 (3.09)	0.0115 (1.32)	-0.0446 (-0.73)	-0.0203 (-2.64)				0.8907
		0.4203 (2.91)	0.0134 (1.45)	-0.0523 (-0.95)	-0.0206 (-2.52)	**0.0035 (2.39)**			0.8964
		0.3753 (2.74)	0.0081 (0.88)	-0.0102 (-0.15)	-0.0178 (-2.29)		**0.0005 (3.13)**		0.8961
		0.5105 (4.47)	0.0190 (2.81)	-0.0280 (-0.47)	-0.0247 (-3.79)			**-0.0030 (-2.45)**	0.8942
		0.4225 (3.77)	0.0136 (1.91)	-0.0192 (-0.32)	-0.0205 (-3.14)	**0.0027 (2.12)**	**0.0004 (3.42)**	-0.0012 (-1.01)	0.9001
Saudi Arabia	439	-0.0250 (-0.21)	0.0045 (0.83)	-0.0109 (-0.44)	0.0007 (0.12)				0.4415
		-0.0065 (-0.06)	0.0052 (0.98)	-0.0048 (-0.21)	-0.0002 (-0.03)	**-0.0248 (-2.49)**			0.4548
		0.0063 (0.06)	0.0052 (1.01)	0.0096 (0.47)	-0.0009 (-0.18)		**0.0004 (3.34)**		0.4559
		0.0069 (0.08)	0.0059 (1.41)	-0.0176 (-0.63)	-0.0011 (-0.26)			0.0004 (0.97)	0.4414
		0.0245 (0.32)	0.0061 (1.27)	0.0078 (0.36)	-0.0019 (-0.47)	**-0.0188 (-1.95)**	**0.0003 (2.43)**	0.0001 (0.53)	0.4611
Turkey	3,444	0.0092 (1.61)	-0.0016 (-4.83)	-0.0001 (-0.44)	2.31E-05 (0.07)				0.2427
		0.0092 (1.62)	-0.0016 (-4.99)	-0.0001 (-0.46)	2.32E-05 (0.08)	-0.0002 (-1.31)			0.2433
		0.0089 (1.59)	-0.0016 (-4.73)	-0.0001 (-0.35)	3.18E-05 (0.11)		0.0001 (0.84)		0.2453
		0.0266 (3.71)	-0.0012 (-3.31)	0.0007 (1.20)	-0.0005 (-1.73)			**-0.0006 (-4.18)**	0.2558
		0.0282 (3.88)	-0.0011 (-3.23)	0.0008 (1.34)	-0.0006 (-1.88)	**-0.0004 (-2.40)**	0.0001 (0.94)	**-0.0006 (-4.42)**	0.2612
World	11,166	0.2523 (5.83)	0.0003 (0.14)	1.1626 (22.32)	-0.0116 (-6.24)				0.1537
Common		0.2498 (5.73)	0.0004 (0.17)	1.0568 (15.47)	-0.0114 (-5.96)	**5.41E-05 (2.19)**			0.1665
Law		0.0568 (1.55)	0.0016 (0.41)	1.1955 (25.22)	-0.0043 (-2.30)		**0.0103 (10.02)**		0.3154
		0.4128 (7.18)	0.0075 (2.08)	1.5340 (19.33)	-0.0096 (-6.60)			**-0.0296 (-7.35)**	0.2748
		0.1921 (3.31)	0.0052 (1.15)	1.3286 (12.37)	-0.0050 (-2.98)	3.07E-05 (1.61)	**0.0077 (10.63)**	**-0.0161 (-4.29)**	0.3471

Market	N	Intercept	Price	Volatility	Size	Amihud	Liu	Turnover	Adj-R^2
World Civil	11,380	0.1328 (18.20)	-0.0049 (-11.61)	0.2777 (1.26)	-0.0038 (-22.22)				0.0950
Law		0.1320 (17.59)	-0.0049 (-11.67)	0.2754 (1.25)	-0.0037 (-21.78)	1.46E-08 (1.02)			0.0950
		0.1316 (19.61)	-0.0047 (-10.82)	0.2738 (1.25)	-0.0038 (-23.97)		**0.0003 (2.11)**		0.1100
		0.2124 (75.49)	-0.0037 (-8.14)	0.2867 (1.22)	-0.0030 (-16.24)			**-0.0138 (-10.22)**	0.1623
		0.2070 (69.51)	-0.0037 (-7.91)	0.2837 (1.21)	-0.0031 (-16.48)	2.00E-09 (0.16)	0.0002 (1.84)	**-0.0130 (-9.04)**	0.1664
World	22,546	0.1776 (20.70)	-0.0041 (-7.98)	0.4641 (1.58)	-0.0063 (-45.89)				0.1075
		0.1782 (20.59)	-0.0040 (-7.88)	0.4659 (1.58)	-0.0064 (-48.48)	-1.47E-08 (-1.12)			0.1075
		0.1723 (20.80)	-0.0040 (-7.41)	0.4589 (1.58)	-0.0062 (-35.59)		**0.0005 (2.02)**		0.1226
		0.2730 (45.87)	-0.0029 (-3.39)	0.5128 (1.52)	-0.0046 (-23.42)			**-0.0185 (-8.84)**	0.1879
		0.2671 (41.47)	-0.0029 (-3.31)	0.5120 (1.53)	-0.0047 (-26.87)	-3.43E-08 (-1.87)	0.0002 (1.70)	**-0.0176 (-7.99)**	0.1917

Table 4 Likelihood ratio tests

This table presents the results of the Vuong (1989) likelihood ratio test for non-nested model selection for each market. The models compared are based on the regressions of the bid-ask spread and Amihud measure, defined in Amihud (2002), Turnover, defined as a ratio of the traded volume of shares in relation to total number of shares outstanding and is scaled by the number of trading days in the month of measurement, Liu measure of liquidity, of Liu (2006) representing a standardized turnover-adjusted number of zero returns over the prior month. Natural logarithms are taken of Traded Volume, price, and market capitalisation variables which in addition to the volatility measure, defined as monthly average of daily stock returns, represent the underlying set of explanatory variables in Stoll (2000). A Z-statistic, using a one sided probability, is the basis of determining if the Amihud estimate or Turnover (the reference model) is better at explaining the true bid-ask spread data generating process than alternative liquidity proxies, or the comparison models tested either singularly or as a group. The group contains all the competing liquidity measures excluding the reference estimate. A positive and significant Z-statistic indicates that the comparison models are rejected in favour of the reference model. These cases are in bold type. N is sample size

Country	**N**	**Liu versus**				**Amihud versus**		
		Stoll	**Turnover**	**Amihud**	**Group**	**Stoll**	**Turnover**	**Group**
Europe Developed								
Austria	2,798	-1.64	**4.95***	**3.12***	**2.39***	-3.89*	0.87	-3.11*
Belgium	873	-11.15*	-3.29*	-6.33*	-7.09*	**3.12***	**5.58***	**5.55***
Denmark	3,916	0.21	**9.66***	**7.33***	**6.28***	-6.04*	0.87	-7.43*
Finland	336	0.48	-7.18*	-2.24†	-7.97*	**2.53***	-0.98	-2.22†
France	3,375	-1.14	-0.34	-3.12*	-4.14*	**2.30**†	**2.79***	**1.98**†
Germany	494	-18.23*	-2.65*	-5.17*	-5.11*	0.45	**5.16***	**5.04***
Iceland	228	**2.09**†	**3.30***	-0.46	-0.47	0.72	1.11	0.36
Ireland	2,423	-3.00*	**9.93***	**10.15***	**8.44***	-11.66*	-7.29*	-10.15*
Italy	2,976	-1.54	-0.52	-1.17	-1.84	-0.87	**2.08**†	0.18
Luxembourg	161	-2.21†	-0.82	-2.25†	-2.26†	-0.62	1.35	0.93
Netherlands	5,766	**4.52***	**6.42***	**3.47***	0.73	-1.08	-1.22	-3.78*
Norway	2,647	-2.37*	-2.11†	-2.10†	-6.74*	-0.35	0.02	-2.36*
Portugal	2,437	**3.25***	**7.11***	**8.45***	**7.77***	-5.14*	-6.65*	-8.46*
Slovenia	522	-2.68*	-3.09*	-3.66*	-8.16*	0.53	1.80	0.24
Spain	464	**2.46***	**2.17**†	-0.50	-0.56	**1.94**†	1.76	0.48
Sweden	7,023	0.70	**4.90***	-0.23	-0.45	0.68	**2.88***	0.11
Switzerland	900	-4.86*	-0.39	-5.24*	-5.27*	-3.19*	**5.11***	**4.98***
UK	6,714	-4.66*	-4.56*	-2.90*	-4.39*	-4.10*	-0.32	-0.33
Europe Emerging								
Cyprus	4,450	-4.56*	**9.20***	**7.40***	**7.41***	-8.81*	**3.02***	-7.69*
Bulgaria	682	1.90	**2.19**†	**2.09**†	**2.05**†	-1.44	0.40	-2.11†
Czech Rep.	402	1.30	0.09	1.25	0.06	-1.12	-1.66	-1.44
Estonia	759	-0.63	**2.42***	-0.25	-0.48	-0.10	**2.94***	0.20
Hungary	1,218	-1.28	**2.64***	-1.32	-1.32	1.02	1.58	1.30
Poland	1,268	-5.51*	0.82	-0.05	-0.24	-3.89*	0.47	-0.27
Russia	5,667	-1.45	**3.13***	1.08	1.01	-2.33*	**2.05**†	-1.09

Country	N	Liu versus				Amihud versus		
		Stoll	Turnover	Amihud	Group	Stoll	Turnover	Group
Africa								
Morocco	1,261	0.51	**5.39***	**3.44***	**3.12***	-3.51*	**3.52***	-3.52*
Egypt	1,620	-0.61	**2.00†**	1.72	1.68	-3.39*	1.84	-1.68
South Africa	3,070	0.74	0.38	**3.48***	0.25	-5.94*	-5.77*	-6.90*
North America								
Canada	832	-29.24*	-0.27	-8.96*	-8.85*	-6.80*	**9.48***	**8.92***
United States	7,658	-8.71*	-3.59*	-3.49*	-5.13*	-4.04*	**2.12†**	**2.13†**
Australasia								
Australia	8,734	-2.87*	**4.51***	1.18	1.18	-4.50*	**3.50***	-1.19
New Zealand	3,705	-3.76*	-0.17	1.76	-1.42	-5.14*	-1.58	-3.74*
Latin America								
Argentina	5,181	-2.33*	**5.32***	-1.71	-1.85	0.79	**2.57***	1.64
Brazil	7,276	**3.18***	**3.82***	0.87	0.56	0.32	0.61	-0.94
Chile	6,051	0.94	**4.61***	**5.98***	**4.60***	-7.25*	-4.96*	-6.04*
Colombia	281	0.47	1.67	1.13	1.10	-1.18	0.79	-1.14
Jamaica	1,744	-0.10	**6.07***	**5.52***	**6.00***	-9.08*	-0.41	-6.32*
Mexico	3,885	**7.32***	**9.87***	**10.38***	**8.14***	-6.68*	-2.98*	-5.84*
Peru	772	-5.12*	-0.51	-2.51*	-2.64*	-1.34	**2.36***	**2.36***
Asia Developed								
Japan	44,928	-45.93*	-105.39*	**2.46***	-1.38	-45.44*	-105.37*	-5.19*
Singapore	14,217	-4.52*	**13.73***	**11.83***	**8.76***	-19.58*	-2.23	-11.87*
Asia Emerging								
China Shenzen	5,958	-2.14†	0.68	-1.51	-1.58	0.71	**1.96†**	1.50
China Shanghai	2,444	-1.79	-1.24	-1.18	-2.02†	-1.56	0.30	0.17
Hong Kong	4,144	-15.71*	-6.11*	-9.16*	-5.47*	-0.03	**2.93***	2.05
Indonesia	1,743	-1.32	-0.75	-1.42	-1.86	0.90	1.15	0.98
Malaysia	7,456	-1.91	**3.28***	-1.61	-1.71	1.46	1.75	1.60
Pakistan	1,036	**2.24†**	-0.24	-1.25	-1.74	1.85	1.79	0.34
Philippines	3,169	-10.45*	-11.86*	-4.49*	-7.16*	-3.08*	0.92	0.92
South Korea	14,656	-3.43*	-0.03	-0.16	-2.13†	-2.54*	0.15	-1.64
Sri Lanka	365	1.10	**5.00***	**5.16***	**4.63***	-7.43*	0.59	-5.75*
Taiwan	2,668	-7.97*	-1.70	-4.84*	-4.66*	0.09	**5.50***	**5.28***
Thailand	7,746	-3.17*	1.19	0.36	0.23	-3.34*	0.96	-0.54
Vietnam	265	-2.49*	-0.68	-2.02†	-1.58	1.55	**12.53***	12.85*

Country	N	Liu versus				Amihud versus		
		Stoll	Turnover	Amihud	Group	Stoll	Turnover	Group
Middle East								
Abu Dhabi	832	0.37	**2.44***	0.36	0.03	-0.18	1.60	-0.36
Dubai	502	**5.03***	-0.27	**7.25***	-0.99	-3.76*	-12.30*	-11.05*
Israel	4,692	**2.44***	**2.75***	-1.59	-3.11*	**3.21***	**3.14***	1.06
Jordan	384	-1.64	0.95	0.86	-0.01	-2.18†	0.92	-4.80*
Kuwait	537	**2.63***	**4.13***	1.78	1.54	0.01	**3.08***	-1.80
Oman	104	**4.49***	**4.16***	**5.13***	**4.13***	-1.29	-4.92*	-5.19*
Qatar	321	**4.47***	-0.06	-0.46	-3.22*	**3.20***	0.42	-0.46
Saudi Arabia	439	-1.64	-2.38*	**2.33***	-2.49*	-2.85*	-4.50*	-6.25*
Turkey	3,444	-5.18*	-1.66	0.50	-1.67	-5.62*	-3.13*	-2.02†
World								
World Common Law	11,166	**3.83***	**2.19†**	**4.43***	**2.59***	-2.65*	-18.11*	-4.84*
World Civil Code	11,380	-3.98*	-7.92*	**1.96†**	-7.59*	-5.64*	-11.95*	-11.85*
World Overall	22,546	-2.91*	-6.19*	**2.08†**	-6.12*	-3.85*	-9.56*	-9.65*

Notes: (1) * Denotes significance at the 1% level
(2) † Denotes significance at the 5% level
(3) Z critical values at 90%, 95% and 99% confidence levels are 1.28, 1.96 and 2.33

Table 5 Summary statistics for equally weighted monthly excess returns on 9 portfolios formed on size and illiquidity for period 2000 to 2009

This table presents the summary statistics for each of the nine size-illiquidity sorted portfolios. For each year, t, every stock is ranked by its market capitalisation of equity and the end of December in year t. Stocks are then classified into 3 portfolios based on market value, from the smallest to the largest. For each size portfolio, stocks are further sorted into 3 Illiquidity portfolios based on individual stocks Illiquidity ranking in ascending order. Nine size-illiquidity are so formed and rebalanced annually. The equally weighted monthly returns on portfolios are computed each month from January to the following December. Repeating this procedure for every year results in an overall sample set of 143 equally weighted monthly returns from January 2000 to June 2009. The terms B, M, S delineate Big, Medium and Small size and H, M, L delineate High, Medium and Low illiquidity terms. Additionally for each sample time period three zero cost portfolios, SMB (HML) representing long small size (high illiquidity) portfolios and short large size (low illiquidity) portfolios and LEGAL representing differences in value depending on whether stock is traded in a civil or common code legal regulatory regime. Annual rebalancing takes place annually every December.

Portfolio	**S/L**	**S/M**	**S/H**	**M/L**	**M/M**	**M/H**	**B/L**	**B/M**	**B/H**
Panel A: Summary Statistics for portfolios during sample period: 01/2000 – 06/2009									
Mean	0.01313	0.01539	0.01351	0.01149	0.01273	0.01375	0.01111	0.01240	0.01014
Median	0.01889	0.02534	0.01805	0.01932	0.02080	0.01691	0.01562	0.02195	0.01941
Standard Deviation	0.05185	0.05228	0.05025	0.04947	0.05188	0.05300	0.05039	0.05215	0.05006
Kurtosis	-0.266	-0.481	-0.116	-0.692	-0.525	0.004	-0.471	-0.713	-0.724
Skewness	4.733	4.143	4.830	4.026	4.287	6.265	4.232	4.236	4.211
Panel B: Average number of stocks in each of the 9 size-illiquidity portfolios sorted by region by year in period: 2000-2009									
Europe Developed	97.655	92.566	88.770	86.425	81.080	87.212	108.805	87.212	93.088
- UK	***8.319***	***8.850***	***8.469***	***12.009***	***9.434***	***6.681***	***14.699***	***7.850***	***5.920***
- France	***4.212***	***4.407***	***4.637***	***3.053***	***3.531***	***3.814***	***3.115***	***2.619***	***3.363***
Europe Emerging	34.646	31.310	47.947	38.770	27.912	47.770	30.327	31.000	42.850
Africa	10.292	7.743	11.894	5.717	8.407	10.372	8.354	8.416	11.018
North America	75.274	72.097	62.752	69.239	65.717	60.478	79.336	70.044	60.425
- United States	***54.416***	***51.929***	***47.097***	***51.035***	***47.044***	***41.442***	***55.637***	***47.389***	***47.487***
Australasia	16.991	12.319	13.195	12.274	10.584	15.354	13.133	8.965	14.903
Latin America	61.885	51.062	72.310	71.867	54.310	15.354	65.690	52.540	73.876
Asia Developed	42.566	53.230	51.142	46.929	39.035	33.584	42.867	57.770	46.106
- Japan	***8.602***	***10.965***	***9.699***	***9.912***	***13.150***	***7.973***	***9.071***	***8.177***	***6.920***
Asia Emerging	119.336	148.035	129.619	132.274	187.690	152.885	120.159	159.796	133.080
Middle East	14.611	13.310	6.487	14.035	10.319	12.858	11.885	11.619	9.221
Overall	473.257	481.673	484.115	477.531	485.053	477.619	480.558	487.363	484.566

Table 6. Summary statistics for equally weighted monthly excess returns on 9 portfolios formed on size and illiquidity for period 2001 to 2009

Market	Mean	Standard Deviation	Kurtosis	Skewness
Summary statistics				
MARKET	0.01280	0.04922	-0.770	4.103
SMB	-0.00088	0.01151	1.544	9.921
HML	-0.00312	0.01297	1.058	17.725
LEGAL	-0.00675	0.02290	0.146	3.269
Correlations				
	MARKET	SMB	HML	LEGAL
MARKET	1.00000			
SMB	-0.12484	1.00000		
HML	-0.01932	0.00539	1.00000	
LEGAL	-0.15422	-0.08521	-0.16638	1.00000
T-Difference in Means				
	MARKET	SMB	HML	LEGAL
MARKET	-- --			
SMB	2.87602†	-- --		
HML	3.32364*	1.37199	-- --	
LEGAL	3.82752*	2.43450**	1.46733	

Notes: (1) * Denotes significance at the 1% level
(2) † Denotes significance at the 5% level
(3) ** Denotes significance at the 10% level
(4) t-critical values at 90%, 95% and 99% confidence levels are 1.65, 2.58 and 3.29

Table 7 Summary statistics for aggregate market portfolios and equally weighted monthly excess returns on 9 portfolios formed on size and illiquidity for period 2000 to 2009

This table presents the summary descriptive statistics and correlations between the market, size, liquidity and legal regime valuation factors. For each year, t, every company is ranked by its market capitalisation of equity and the end of December in year t. Stocks are then classified into 3 portfolios based on market value, from the smallest to the largest. For each size portfolio, stocks are further sorted into 3 Illiquidity portfolios based on individual stocks Illiquidity ranking in ascending order. Nine size-illiquidity are so formed and rebalanced annually. The equally weighted monthly returns on portfolios are computed each month from January to the following December. Repeating this procedure for every year results in an overall sample set of 143 equally weighted monthly returns from January 2000 to June 2009.

Market	Mean	Standard Deviation	Kurtosis	Skewness
Europe Developed				
Austria	0.00558	0.04716	-0.408	5.431
Belgium	0.00384	0.05852	-0.584	5.427
Denmark	0.01151	0.06157	-0.672	5.322
Finland	0.01160	0.05897	-0.317	4.349
France	0.00438	0.07056	-0.408	4.437
Germany	0.00588	0.06757	-0.275	5.769
Iceland	0.00089	0.07295	-0.153	3.969
Ireland	0.00882	0.07299	-0.010	7.341
Italy	0.00062	0.06922	-0.316	3.437
Luxembourg	0.00328	0.07698	-0.896	5.877
Netherlands	0.00356	0.06636	-0.457	3.878
Norway	0.01168	0.09051	-0.708	4.646
Portugal	0.00282	0.05385	-0.420	3.787
Slovenia	0.01249	0.06178	-0.650	4.870
Spain	0.00769	0.04629	-0.050	4.146
Sweden	0.01139	0.07848	-0.155	3.639
Switzerland	0.00456	0.06469	-0.138	4.247
UK	0.00498	0.04937	-0.793	4.339
Europe Emerging				
Cyprus	-0.00448	0.10023	-0.200	3.711
Greece	0.00072	0.09461	-0.054	3.638
Bulgaria	0.03851	0.13893	1.665	8.954
Czech Rep.	0.01590	0.05871	0.182	4.669
Estonia	0.01226	0.06183	-0.110	4.785
Hungary	0.01161	0.08571	-0.340	3.597
Poland	0.01622	0.10354	-0.017	3.398
Romania	0.02539	0.12792	0.219	5.240
Russia	0.07720	0.22955	4.196	23.492
Slovakia	0.00917	0.06099	-0.544	4.665
Africa				
Morocco	0.01049	0.05524	0.355	3.716
Egypt	0.02562	0.10687	0.537	3.847
South Africa	0.01346	0.07469	-0.352	2.793
North America				
Canada	0.01933	0.06036	-0.838	4.112
United States	0.00623	0.04419	0.017	3.159
Australasia				
Australia	0.01386	0.06437	-0.545	4.947
New Zealand	0.00629	0.05500	-0.449	3.960
Latin America				
Argentina	-0.00283	0.06515	-1.743	10.899
Brazil	0.02563	0.11951	0.313	6.295
Chile	0.01028	0.05300	-0.283	3.768
Colombia	0.01731	0.06787	-0.193	3.321
Jamaica	0.03798	0.18178	6.609	58.568
Mexico	0.01138	0.07785	-0.445	3.715
Peru	0.02678	0.05636	1.476	6.982
Venezuela	0.02338	0.11918	4.510	33.328

Asia Developed				
Japan	0.00062	0.05890	0.284	2.981
Singapore	0.00602	0.04806	-0.261	3.338
Asia Emerging				
Bangladesh	0.01619	0.06601	1.167	6.035
China Shenzen	0.01917	0.09344	0.264	3.572
China Shanghai	0.01731	0.09247	0.374	3.684
Hong Kong	0.01835	0.07927	-0.284	4.092
India	0.03011	0.10719	-0.107	3.686
Indonesia	-0.01092	0.09967	-0.873	5.126
Malaysia	0.00464	0.06133	0.014	3.276
Pakistan	0.02325	0.08404	0.164	4.036
Philippines	0.02714	0.11383	4.195	32.641
South Korea	0.02027	0.10475	0.470	3.740
Sri Lanka	0.01975	0.09911	2.591	16.158
Taiwan	0.00851	0.08731	0.220	3.211
Thailand	0.01723	0.09840	0.144	3.787
Middle East				
Israel	0.01158	0.07796	0.175	3.527
Turkey	0.02606	0.22446	3.917	32.487

Table 8 Time series regressions using equally weighted monthly contemporaneous market excess returns for 9 portfolios formed on size and illiquidity for period: 1996 – 2001, for all sample markets.

This table contrasts the performance of one factor CAPM with the four factor adjusted CAPM in modelling the nine size-illiquidity sorted portfolios. Stocks are sorted in ascending order on monthly basis in accordance to Amihud (2002) illiquidity measure. The size-liquidity portfolios are formed by first sorting stocks into three portfolios, Big, Medium and Small, depending on their market capitalisation and then further sorting stocks within each size portfolio into three further illiquidity portfolios, High, Medium and Low, on an annual basis. The SMB factor is formed through the difference between small and big size portfolios. Correspondingly the HML illiquidity factor portfolio is formed from the sum of the three high illiquidity portfolios less the sum of the three low illiquidity portfolios. The LEGAL factor is formed from the aggregate excess returns of civil code law markets less the aggregate excess returns of common law markets. Panel A presents parameter estimates of the capital asset pricing model, CAPM:

$$r_{it} - r_{ft} = \alpha_i + \beta_i (r_{mt} - r_{ft}) + \varepsilon_{it}$$

panel B presents parameter estimates of the three factor adjusted CAPM model:

$$r_{it} - r_{ft} = \alpha_i + \beta_i (r_{mt} - r_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

and panel C presents parameter estimates of the four factor adjusted CAPM model:

$$r_{it} - r_{ft} = \alpha_i + \beta_i (r_{mt} - r_{ft}) + s_i SMB_t + h_i HML_t + z_i LEGAL_t + \varepsilon_{it}$$

where r_{it} is the return of portfolio i in month t, r_{ft} is the one month T-bill risk free rate for month t, which is taken as the one month UK Gilt rate in this case. Numbers in parentheses are t-statistics.

Portfolio	**S/L**	**S/M**	**S/H**	**M/L**	**M/M**	**M/H**	**B/L**	**B/M**	**B/H**
Panel A: CAPM-adjusted performance									
$\hat{\alpha}$(%)	0.0003	0.0028	0.0013	-0.0011	-0.0002	0.0009	-0.0015	-0.0009	-0.0026
	(0.22)	(1.35)	(0.88)	(-1.34)	(-0.22)	(0.62)	(-1.65)	(-0.88)	(-4.71)
$\hat{\beta}$	1.0023	0.9813	0.9537	0.9871	1.0161	1.0013	0.9906	1.0402	1.0019
	(40.44)	(32.55)	(30.35)	(50.98)	(40.32)	(26.06)	(38.14)	(66.90)	(68.79)
Adj R^2 (1)	0.9044	0.8523	0.8715	0.9641	0.9286	0.8636	0.9357	0.9637	0.9699
Panel B: Three-factor CAPM performance									
$\hat{\alpha}$	-0.0015	0.0028	0.0037	-0.0018	-0.0015	0.0035	-0.0030	-0.0004	-0.0026
	(-1.54)	(1.40)	(2.32)	(-2.32)	(-1.37)	(1.91)	(-3.75)	(-0.41)	(-3.68)
$\hat{\beta}$	1.0157	1.0005	0.9698	0.9816	1.0192	0.9996	0.9695	1.0337	0.9901
	(41.69)	(27.89)	(38.58)	(56.48)	(37.28)	(34.47)	(59.38)	(60.80)	(75.49)
$\hat{s}$	0.5838	0.6768	0.4247	-0.1540	0.1819	-0.2142	-0.6570	-0.2548	-0.4202
	(1.97)	(1.32)	(1.70)	(-1.05)	(0.65)	(-0.98)	(-3.75)	(-1.83)	(-5.75)
$\hat{h}$	-0.7099	-0.1138	0.7204	-0.2014	-0.4565	0.8952	-0.3630	0.1860	0.0917
	(-2.65)	(-0.31)	(2.80)	(-1.43)	(-1.94)	(2.41)	(-2.64)	(1.20)	(1.05)
Adj R^2 (3)	0.9519	0.8729	0.9143	0.9676	0.9419	0.9124	0.9663	0.9684	0.9793

Panel C: Four-factor CAPM performance									
$\hat{\alpha}$	-0.0022	0.0036	0.0035	-0.0010	-0.0020	0.0030	-0.0033	-0.0002	-0.0023
	(-2.34)	(1.75)	(2.49)	(-1.30)	(-1.64)	(1.86)	(-3.96)	(-0.19)	(-3.43)
$\hat{\beta}$	1.0079	1.0099	0.9680	0.9908	1.0139	0.9941	0.9661	1.0367	0.9929
	(46.92)	(31.54)	(42.69)	(63.18)	(43.16)	(37.66)	(59.71)	(62.02)	(78.84)
$\hat{s}$	0.5632	0.7016	0.4201	-0.1295	0.1680	-0.2289	-0.6661	-0.2469	-0.4128
	(2.01)	(1.41)	(1.72)	(-1.00)	(0.63)	(-1.08)	(-3.74)	(-1.83)	(-5.71)
$\hat{h}$	-0.7393	-0.0784	0.7139	-0.1667	-0.4703	0.8743	-0.3760	0.1972	0.1022
	(-2.83)	(-0.22)	(2.85)	(-1.35)	(-1.96)	(2.43)	(-2.63)	(1.31)	(1.26)
$\hat{z}$	-0.0982	0.1183	-0.0218	0.1162	-0.0662	-0.0699	-0.0435	0.0373	0.0353
	(-2.09)	(1.48)	(-0.39)	(3.05)	(-1.09)	(-1.31)	(-0.76)	(0.85)	(1.03)
Adj R^2 (4)	0.9533	0.8743	0.9136	0.9702	0.9422	0.9125	0.9664	0.9684	0.9794

Table 9 Pooled cross-section regression for equally weighted monthly excess returns on country portfolios with size and illiquidity for 1996 to 2007

This table contrasts the performance of the one factor CAPM model with its multifactor counterparts augmented by each of the additional three factors, size, liquidity and legal regime in turn. Regression results are presented for aggregate market portfolios for each of the six sample group markets. The four factor CAPM:

$$r_{it} - r_{ft} = \alpha_i + \beta_i (r_{mt} - r_{ft}) + s_i SMB_t + h_i HML_t + z_i LEGAL_t + \varepsilon_{it}$$

where r_{it} is the return of portfolio i in month t, r_{ft} is the one month T-bill risk free rate for month t, which is taken as the one month UK Gilt rate in this case. Numbers in parentheses are Newey-West HAC covariance adjusted t-statistics.

Explanatory Variables	$\hat{\alpha}$	$\hat{\beta}$	$\hat{s}$	$\hat{h}$	$\hat{z}$	**Adj R^2**
Panel 1: Austria (ATX 50 constituents)						
CAPM	-0.0046 (-1.58)	0.7137 (7.60)				0.5580
CAPM and SMB and ILLIQ	-0.0046 (-1.55)	0.6990 (7.25)	**-0.5154 (-2.00)**	0.0761 (0.55)		0.5665
CAPM and SMB and ILLIQ and LEGAL	-0.0054 (-1.70)	0.6905 (7.23)	**-0.5380 (-2.01)**	0.0440 (0.27)	-0.1075 (-0.80)	0.5652
Panel 2: Belgium (BEL 20 constituents)						
CAPM	-0.0096 (-2.70)	0.9388 (9.24)				0.6016
CAPM and SMB and ILLIQ	-0.0111 (-2.91)	0.9343 (9.10)	-0.0755 (-0.24)	-0.4528 (-1.88)		0.6045
CAPM and SMB and ILLIQ and LEGAL	-0.0109 (-2.73)	0.9361 (9.41)	-0.0707 (-0.23)	-0.4460 (-1.74)	0.0227 (0.14)	0.6009
Panel 3: Denmark (OMX Copenhagen constituents)						
CAPM	0.0012 (0.26)	0.9595 (11.69)				0.6128
CAPM and SMB and ILLIQ	0.0013 (0.30)	0.9478 (11.19)	**-0.4241 (-2.05)**	0.1328 (1.02)		0.6132
CAPM and SMB and ILLIQ and LEGAL	0.0011 (0.22)	0.9450 (11.12)	**-0.4316 (-2.04)**	0.1222 (0.88)	-0.0354 (-0.27)	0.6098
Panel 4: Finland (OMX Helsinki constituents)						
CAPM	-0.0034 (-1.19)	0.9925 (19.73)				0.7146
CAPM and SMB and ILLIQ	-0.0032 (-1.13)	0.9866 (18.99)	-0.2201 (-1.20)	0.0963 (0.98)		0.7118
CAPM and SMB and ILLIQ and LEGAL	-0.0037 (-1.12)	0.9814 (17.92)	-0.2340 (-1.24)	0.0766 (0.66)	-0.0660 (-0.47)	0.7098
Panel 5: France (CAC 40 constituents)						
CAPM	-0.0114 (-3.75)	1.1970 (13.48)				0.7334
CAPM and SMB and ILLIQ	-0.0129 (-3.96)	1.1916 (14.55)	-0.1029 (-0.36)	**-0.4769 (-2.01)**		0.7372
CAPM and SMB and ILLIQ and LEGAL	-0.0129 (-3.50)	1.1919 (14.84)	-0.1020 (-0.35)	**-0.4757 (-1.89)**	0.0040 (0.02)	0.7347
Panel 6: Germany (DAX 100 constituents)						
CAPM	-0.0086 (-2.62)	1.1446 (11.69)				0.7331
CAPM and SMB and ILLIQ	-0.0095 (-2.61)	1.1331 (12.14)	-0.3540 (-1.26)	-0.2231 (-1.26)		0.7341
CAPM and SMB and ILLIQ and LEGAL	-0.0093 (-2.43)	1.1351 (12.48)	-0.3488 (-1.27)	-0.2157 (-1.14)	0.0247 (0.14)	0.7318
Panel 7: Iceland (OMX Iceland constituents)						
CAPM	-0.0034 (-1.19)	0.9925 (19.73)				0.7146
CAPM and SMB and ILLIQ	-0.0032 (-1.13)	0.9866 (18.99)	-0.2201 (-1.20)	0.0963 (0.98)		0.7118
CAPM and SMB and ILLIQ and LEGAL	-0.0037 (-1.12)	0.9814 (17.92)	-0.2340 (-1.24)	0.0766 (0.66)	-0.0660 (-0.47)	0.7098
Panel 8: Ireland (ISEQ Overall constituents)						
CAPM	-0.0056 (-0.96)	1.0913 (7.26)				0.5818
CAPM and SMB and ILLIQ	-0.0041 (-0.72)	1.0863 (7.33)	-0.2595 (-0.93)	**0.5094 (3.61)**		0.5850
CAPM and SMB and ILLIQ and LEGAL	-0.0037 (-0.60)	1.0918 (7.16)	-0.2450 (-0.91)	**0.5301 (3.50)**	0.0694 (0.45)	0.5817

Explanatory Variables	$\hat{\alpha}$	$\hat{\beta}$	$\hat{s}$	$\hat{h}$	$\hat{z}$	Adj R^2
Panel 9: Italy (FTSE STAR constituents)						
CAPM	-0.0127 (-3.23)	1.1470 (20.67)				0.6738
CAPM and SMB and ILLIQ	-0.0128 (-3.18)	1.1355 (20.53)	-0.3976 (-1.57)	0.0252 (0.12)		0.6724
CAPM and SMB and ILLIQ and LEGAL	-0.0146 (-3.29)	1.1152 (20.00)	-0.4513 (-1.80)	-0.0511 (-0.26)	**-0.2556 (-1.61)**	0.6764
Panel 10: Luxembourg (Luxembourg constituents)						
CAPM	-0.0124 (-2.72)	1.3006 (11.27)				0.6904
CAPM and SMB and ILLIQ	-0.0132 (-2.88)	1.2832 (11.32)	-0.5647 (-1.79)	-0.1827 (-1.03)		0.6930
CAPM and SMB and ILLIQ and LEGAL	-0.0145 (-2.98)	1.2684 (11.80)	-0.6036 (-1.86)	-0.2380 (-1.16)	-0.1852 (-1.43)	0.6931
Panel 11: Netherlands (Amsterdam All Share constituents)						
CAPM	-0.0117 (-3.92)	1.1558 (19.52)				0.7683
CAPM and SMB and ILLIQ	-0.0124 (-3.97)	1.1464 (19.89)	-0.2912 (-1.06)	-0.1811 (-1.13)		0.7681
CAPM and SMB and ILLIQ and LEGAL	-0.0125 (-3.95)	1.1446 (19.99)	-0.2960 (-1.05)	-0.1878 (-1.07)	-0.0226 (-0.19)	0.7660
Panel 12: Norway (Oslo constituents)						
CAPM	-0.0059 (-1.14)	1.5291 (14.69)				0.6938
CAPM and SMB and ILLIQ	-0.0058 (-1.15)	1.5086 (13.56)	**-0.7311 (-2.48)**	0.1617 (0.80)		0.6975
CAPM and SMB and ILLIQ and LEGAL	-0.0051 (-0.93)	1.5168 (13.59)	**-0.7094 (-2.34)**	0.1926 (0.94)	0.1034 (0.53)	0.6954
Panel 13: Portugal (Portugal PSI General constituents)						
CAPM	-0.0067 (-1.65)	0.8860 (13.54)				0.5500
CAPM and SMB and ILLIQ	-0.0072 (-1.74)	0.8636 (13.76)	**-0.7555 (-2.60)**	-0.0550 (-0.28)		0.5642
CAPM and SMB and ILLIQ and LEGAL	-0.0093 (-2.36)	0.8397 (13.95)	**-0.8188 (-2.69)**	-0.1449 (-0.75)	**-0.3012 (-2.19)**	0.5736
Panel 14: Slovenia (SBI20 Index constituents)						
CAPM	0.0018 (0.21)	0.5736 (3.81)				0.2072
CAPM and SMB and ILLIQ	0.0016 (0.20)	0.5592 (3.62)	-0.4991 (-1.43)	0.0258 (0.06)		0.2017
CAPM and SMB and ILLIQ and LEGAL	0.0011 (0.13)	0.5531 (3.76)	-0.5152 (-1.43)	0.0029 (0.01)	-0.0767 (-0.35)	0.1951
Panel 15: Spain (IGBM Index constituents)						
CAPM	-0.0028 (-1.12)	0.7649 (13.66)				0.6165
CAPM and SMB and ILLIQ	-0.0031 (-1.19)	0.7510 (13.68)	**-0.4687 (-2.25)**	-0.0319 (-0.19)		0.6225
CAPM and SMB and ILLIQ and LEGAL	-0.0040 (-1.50)	0.7402 (14.07)	**-0.4972 (-2.32)**	-0.0725 (-0.42)	-0.1360 (-1.24)	0.6231
Panel 16: Sweden (OMX Stockholm constituents)						
CAPM	-0.0083 (-2.77)	1.3660 (18.85)				0.7762
CAPM and SMB and ILLIQ	-0.0092 (-3.06)	1.3530 (18.76)	-0.4316 (-1.67)	-0.2306 (-0.92)		0.7780
CAPM and SMB and ILLIQ and LEGAL	-0.0107 (-3.29)	1.3351 (19.19)	-0.4788 (-1.70)	-0.2977 (-1.14)	-0.2245 (-1.54)	0.7804
Panel 17: Switzerland (Swiss Leadership Index constituents)						
CAPM	-0.0080 (-2.07)	1.0762 (11.34)				0.6958
CAPM and SMB and ILLIQ	-0.0095 (-2.44)	1.0734 (11.46)	-0.0141 (-0.06)	**-0.4824 (-2.70)**		0.7003
CAPM and SMB and ILLIQ and LEGAL	-0.0092 (-2.12)	1.0770 (12.11)	-0.0046 (-0.02)	**-0.4689 (-2.38)**	0.0450 (0.27)	0.6977
Panel 18: UK (FTSE100 constituents)						
CAPM	-0.0054 (-2.15)	0.8626 (16.71)				0.7587
CAPM and SMB and ILLIQ	-0.0057 (-2.13)	0.8588 (17.35)	-0.1157 (-0.50)	-0.0655 (-0.57)		0.7554
CAPM and SMB and ILLIQ and LEGAL	-0.0049 (-1.63)	0.8683 (17.93)	-0.0906 (-0.40)	-0.0298 (-0.22)	0.1194 (1.11)	0.7562

Explanatory Variables	$\hat{\alpha}$	$\hat{\beta}$	$\hat{s}$	$\hat{h}$	$\hat{z}$	Adj R^2
Panel 19: Cyprus (CSE General constituents)						
CAPM	-0.0185 (-1.99)	1.0970 (7.56)				0.2838
CAPM and SMB and ILLIQ	-0.0168 (-1.79)	1.0880 (7.74)	-0.4149 (-0.49)	0.6002 (1.37)		0.2791
CAPM and SMB and ILLIQ and LEGAL	-0.0221 (-2.37)	1.0266 (6.83)	-0.5772 (-0.68)	0.3694 (0.84)	**-0.7724 (-2.73)**	0.3027
Panel 20: Greece (Athens Composite constituents)						
CAPM	-0.0157 (-2.86)	1.2889 (9.11)				0.4446
CAPM and SMB and ILLIQ	-0.0146 (-2.79)	1.2571 (8.36)	**-1.1833 (-1.96)**	**0.5490 (2.00)**		0.4611
CAPM and SMB and ILLIQ and LEGAL	-0.0160 (-2.70)	1.2419 (7.62)	**-1.2235 (-1.95)**	0.4918 (1.69)	-0.1914 (-0.59)	0.4582
Panel 21: Bulgaria (BG40 constituents)						
CAPM	0.0243 (1.57)	1.1089 (4.36)				0.1467
CAPM and SMB and ILLIQ	0.0224 (1.38)	1.0755 (4.13)	-1.0682 (-1.23)	-0.4257 (-0.69)		0.1406
CAPM and SMB and ILLIQ and LEGAL	0.0141 (0.99)	0.9791 (4.38)	-1.3232 (-1.55)	-0.7883 (-1.03)	**-1.2139 (-2.14)**	0.1715
Panel 22: Czech (Prague SE PX constituents)						
CAPM	0.0072 (1.17)	0.6765 (4.94)				0.3155
CAPM and SMB and ILLIQ	0.0068 (1.07)	0.6522 (4.86)	**-0.8329 (-1.98)**	0.0083 (0.03)		0.3299
CAPM and SMB and ILLIQ and LEGAL	0.0050 (0.67)	0.6312 (4.99)	**-0.8883 (-2.07)**	-0.0704 (-0.25)	-0.2637 (-1.05)	0.3340
Panel 23: Estonia (All share constituents)						
CAPM	0.0041 (0.60)	0.6301 (3.71)				0.2448
CAPM and SMB and ILLIQ	0.0036 (0.51)	0.6290 (3.62)	-0.0050 (-0.01)	-0.1906 (-0.81)		0.2326
CAPM and SMB and ILLIQ and LEGAL	0.0021 (0.32)	0.6126 (3.63)	-0.04836 (-0.13)	-0.2522 (-0.97)	-0.2060 (-0.96)	0.2312
Panel 24: Hungary (BUX constituents)						
CAPM	-0.0021 (-0.31)	1.0767 (8.99)				0.3767
CAPM and SMB and ILLIQ	-0.0004 (-0.06)	1.0728 (8.88)	-0.2368 (-0.37)	0.5880 (1.15)		0.3744
CAPM and SMB and ILLIQ and LEGAL	-0.0034 (-0.43)	1.0382 (9.02)	-0.3282 (-0.48)	0.4581 (0.78)	-0.4349 (-1.48)	0.3817
Panel 25: Poland (Warsaw General constituents)						
CAPM	-0.0016 (-0.23)	1.3942 (11.49)				0.4342
CAPM and SMB and ILLIQ	-0.0019 (-0.26)	1.3443 (11.48)	**-1.7390 (-3.80)**	0.1698 (0.54)		0.4620
CAPM and SMB and ILLIQ and LEGAL	-0.0034 (-0.40)	1.3278 (10.13)	**-1.7827 (-3.63)**	0.1076 (0.31)	-0.2080 (-0.51)	0.4591
Panel 26: Romania (CECE ROX constituents)						
CAPM	0.0101 (0.71)	1.1930 (3.49)				0.2035
CAPM and SMB and ILLIQ	0.0137 (0.91)	1.2022 (3.56)	0.1110 (0.13)	1.1714 (1.02)		0.2035
CAPM and SMB and ILLIQ and LEGAL	0.0095 (0.61)	1.1540 (3.59)	-0.0165 (-0.01)	0.9901 (0.81)	-0.6070 (-1.49)	0.2076
Panel 27: Russia (MICEX All Companies constituents)						
CAPM	0.0564 (2.93)	1.6254 (3.92)				0.1135
CAPM and SMB and ILLIQ	0.0809 (3.99)	1.7321 (5.60)	2.3200 (1.30)	**7.6670 (3.16)**		0.3038
CAPM and SMB and ILLIQ and LEGAL	0.0707 (4.17)	1.6135 (6.03)	2.0062 (1.29)	**7.2208 (3.41)**	**-1.4938 (-1.76)**	0.3189
Panel 28: Morocco (CFG 25 constituents)						
CAPM	0.0058 (1.33)	0.3653 (3.821)				0.0979
CAPM and SMB and ILLIQ	0.0056 (1.27)	0.3617 (3.76)	-0.1209 (-0.36)	-0.0209 (-0.10)		0.0820
CAPM and SMB and ILLIQ and LEGAL	0.0056 (1.31)	0.3617 (3.70)	-0.1210 (-0.35)	-0.0209 (-0.10)	-0.0001 (-0.01)	0.0735

Explanatory Variables	$\hat{\alpha}$	$\hat{\beta}$	$\hat{s}$	$\hat{h}$	$\hat{z}$	Adj R^2
Panel 29: Egypt (Hermes Financial constituents)						
CAPM	0.0109 (1.02)	1.1448 (6.69)				0.2714
CAPM and SMB and ILLIQ	0.0131 (1.14)	1.1431 (6.71)	-0.1872 (-0.26)	0.7351 (1.03)		0.2666
CAPM and SMB and ILLIQ and LEGAL	0.0055 (0.55)	1.0549 (6.74)	-0.4205 (-0.51)	0.4034 (0.52)	**-1.1104 (-3.11)**	0.3148
Panel 30: South Africa (JSE Top 40 constituents)						
CAPM	-0.0010 (-0.20)	1.1298 (14.35)				0.5502
CAPM and SMB and ILLIQ	-0.0009 (-0.18)	1.1189 (14.58)	-0.3904 (-1.10)	0.0877 (0.33)		0.5459
CAPM and SMB and ILLIQ and LEGAL	0.0005 (0.10)	1.1360 (14.33)	-0.3450 (-0.97)	0.1523 (0.59)	0.2160 (1.27)	0.5459
Panel 31: Canada (S&P/TSX Composite constituents)						
CAPM	0.0060 (1.75)	1.0354 (15.06)				0.7102
CAPM and SMB and ILLIQ	0.0052 (1.47)	1.0277 (14.63)	-0.2223 (-1.19)	**-0.2379 (-2.04)**		0.7094
CAPM and SMB and ILLIQ and LEGAL	0.0069 (1.92)	1.0478 (14.29)	-0.1692 (-0.81)	-0.1624 (-1.22)	**0.2526 (2.14)**	0.7156
Panel 32: US (S&P 500 constituents)						
CAPM	-0.0019 (-0.50)	0.6390 (7.74)				0.5021
CAPM and SMB and ILLIQ	-0.0037 (-1.08)	0.6510 (8.04)	**0.5288 (4.37)**	**-0.6851 (-6.81)**		0.5535
CAPM and SMB and ILLIQ and LEGAL	-0.0016 (-0.41)	0.6755 (8.89)	**0.5937 (4.70)**	**-0.5928 (-4.20)**	**0.3091 (1.95)**	0.5743
Panel 33: Australia (S&P/ASX 100 constituents)						
CAPM	-0.0003 (-0.08)	1.1077 (11.71)				0.7148
CAPM and SMB and ILLIQ	-0.0012 (-0.33)	1.0957 (11.46)	-0.3678 (-1.74)	-0.2506 (-1.00)		0.7166
CAPM and SMB and ILLIQ and LEGAL	-6.98E-05 (-0.01)	1.1096 (11.63)	-0.3310 (-1.59)	-0.1983 (-0.86)	0.1753 (1.09)	0.7178
Panel 34: New Zealand (NZX 50 Index constituents)						
CAPM	-0.0035 (-0.82)	0.7673 (9.62)				0.4667
CAPM and SMB and ILLIQ	-0.0048 (-1.09)	0.7633 (9.48)	-0.0608 (-0.36)	-0.4235 (-1.74)		0.4674
CAPM and SMB and ILLIQ and LEGAL	-0.0023 (-0.54)	0.7919 (10.15)	0.0146 (0.07)	-0.3162 (-1.43)	**0.3593 (2.14)**	0.4842
Panel 35: Argentina (All share constituents)						
CAPM	-0.0083 (-1.05)	0.4293 (4.24)				0.0971
CAPM and SMB and ILLIQ	-0.0098 (-1.27)	0.4446 (4.71)	0.6307 (1.49)	**-0.6127 (-1.90)**		0.1083
CAPM and SMB and ILLIQ and LEGAL	-0.0163 (-1.67)	0.3692 (3.45)	0.4311 (1.10)	**-0.8965 (-2.11)**	**-0.9501 (-1.88)**	0.2084
Panel 36: Brazil (IBX Index constituents)						
CAPM	0.0036 (0.53)	1.7175 (9.05)				0.4958
CAPM and SMB and ILLIQ	0.0078 (0.93)	1.7262 (8.75)	0.0603 (0.05)	1.3595 (1.31)		0.5089
CAPM and SMB and ILLIQ and LEGAL	0.0042 (0.54)	1.6849 (8.74)	-0.0487 (-0.05)	1.2043 (1.24)	**-0.5194 (-1.61)**	0.5140
Panel 37: Chile (IGPA Index constituents)						
CAPM	0.0002 (0.07)	0.7818 (8.93)				0.5229
CAPM and SMB and ILLIQ	-0.0009 (-0.26)	0.7767 (9.17)	-0.1057 (-0.43)	**-0.3947 (-2.06)**		0.5243
CAPM and SMB and ILLIQ and LEGAL	-0.0015 (-0.38)	0.7707 (9.43)	-0.1215 (-0.49)	**-0.4172 (-2.07)**	-0.0751 (-0.45)	0.5209
Panel 38: Colombia (All share constituents)						
CAPM	0.0073 (1.12)	0.7812 (7.66)				0.3148
CAPM and SMB and ILLIQ	0.0074 (1.06)	0.7765 (7.67)	-0.1728 (-0.53)	0.0871 (0.26)		0.3034
CAPM and SMB and ILLIQ and LEGAL	0.0053 (0.83)	0.7511 (7.72)	-0.2400 (-0.64)	-0.0083 (-0.02)	**-0.3199 (-1.68)**	0.3082

Explanatory Variables	$\hat{\alpha}$	$\hat{\beta}$	$\hat{s}$	$\hat{h}$	$\hat{z}$	Adj R^2
Panel 39: Jamaica (All share constituents)						
CAPM	0.0343 (1.88)	0.2862 (1.93)				0.0060
CAPM and SMB and ILLIQ	0.0332 (1.82)	0.3340 (2.28)	1.7444 (1.60)	-0.6223 (-0.98)		0.0199
CAPM and SMB and ILLIQ and LEGAL	0.0404 (1.60)	0.4174 (2.01)	1.9650 (1.52)	-0.3085 (-0.55)	1.0503 (0.78)	0.0363
Panel 40: Mexico (IPC CompMx constituents)						
CAPM	-0.0049 (-0.98)	1.2778 (15.84)				0.6496
CAPM and SMB and ILLIQ	-0.0052 (-1.05)	1.2648 (15.62)	-0.4437 (-1.34)	-0.0191 (-0.06)		0.6475
CAPM and SMB and ILLIQ and LEGAL	-0.0044 (-0.78)	1.2745 (15.47)	-0.4181 (-1.35)	0.0172 (0.06)	0.1217 (0.55)	0.6455
Panel 41: Peru (All Share constituents)						
CAPM	0.0196 (3.92)	0.5601 (7.80)				0.2323
CAPM and SMB and ILLIQ	0.0197 (3.57)	0.5634 (7.32)	0.1103 (0.25)	0.0259 (0.07)		0.2188
CAPM and SMB and ILLIQ and LEGAL	0.0161 (3.22)	0.5216 (7.12)	-0.0003 (-0.01)	-0.1314 (-0.29)	**-0.5271 (-2.33)**	0.2561
Panel 42: Venezuela (All Share constituents)						
CAPM	0.0156 (1.61)	0.6047 (2.50)				0.0539
CAPM and SMB and ILLIQ	0.0064 (0.72)	0.5292 (2.48)	-2.1242 (-1.02)	-2.6559 (-1.50)		0.1652
CAPM and SMB and ILLIQ and LEGAL	-0.0010 (-0.11)	0.4421 (2.21)	-2.3545 (-1.15)	**-2.9835 (-1.73)**	**-1.0963 (-1.73)**	0.2006
Panel 43: Japan (TOPIX 100 constituents)						
CAPM	-0.0093 (-2.33)	0.7768 (10.97)				0.4162
CAPM and SMB and ILLIQ	-0.0085 (-2.08)	0.7914 (11.06)	0.4699 (1.31)	0.1767 (0.75)		0.4156
CAPM and SMB and ILLIQ and LEGAL	-0.0074 (-1.57)	0.8040 (11.00)	0.5031 (1.41)	0.2239 (1.01)	0.1578 (0.61)	0.4138
Panel 44: Singapore (SES Main board constituents)						
CAPM	-0.0051 (-1.95)	0.8734 (16.63)				0.7984
CAPM and SMB and ILLIQ	-0.0060 (-2.35)	0.8754 (16.70)	0.1251 (0.75)	**-0.3168 (-2.48)**		0.8031
CAPM and SMB and ILLIQ and LEGAL	-0.0016 (-0.66)	0.9272 (23.79)	**0.2619 (2.41)**	-0.1221 (-1.51)	**0.6515 (9.08)**	0.8949
Panel 45: Bangladesh (All share constituents)						
CAPM	0.0167 (2.14)	-0.0452 (-0.42)				0.0011
CAPM and SMB and ILLIQ	0.0154 (1.97)	-0.0382 (-0.37)	0.3254 (0.87)	**-0.4903 (-1.68)**		0.0135
CAPM and SMB and ILLIQ and LEGAL	0.0179 (2.03)	-0.0087 (-0.08)	0.4035 (0.91)	-0.3793 (-1.13)	0.3715 (1.30)	0.0291
Panel 46: China Shenzen (Shenzen 100 constituents)						
CAPM	0.0112 (1.01)	0.6205 (3.83)				0.0987
CAPM and SMB and ILLIQ	0.0128 (1.19)	0.5904 (3.55)	-1.1558 (-1.53)	0.7172 (1.52)		0.1128
CAPM and SMB and ILLIQ and LEGAL	0.0049 (0.50)	0.4992 (3.31)	-1.3971 (-1.53)	0.3741 (0.59)	**-1.1482 (-3.21)**	0.1815
Panel 47: China Shanghai (Shanghai 180 constituents)						
CAPM	0.0092 (0.86)	0.6266 (3.88)				0.1032
CAPM and SMB and ILLIQ	0.0106 (1.02)	0.5912 (3.61)	**-1.3314 (-1.86)**	0.6750 (1.50)		0.1236
CAPM and SMB and ILLIQ and LEGAL	0.0024 (0.25)	0.4954 (3.43)	**-1.5848 (-1.76)**	0.3148 (0.50)	**-1.2059 (-3.04)**	0.2022
Panel 48: Hong Kong (HS Composite constituents)						
CAPM	0.0011 (0.28)	1.3404 (15.21)				0.6898
CAPM and SMB and ILLIQ	0.0012 (0.32)	1.3072 (14.66)	**-1.1749 (-3.75)**	0.2242 (0.89)		0.7149
CAPM and SMB and ILLIQ and LEGAL	0.0061 (1.61)	1.3634 (14.79)	**-1.0263 (-3.92)**	**0.4356 (2.41)**	**0.7075 (4.63)**	0.7528

Explanatory Variables	$\hat{\alpha}$	$\hat{\beta}$	$\hat{s}$	$\hat{h}$	$\hat{z}$	Adj R^2
Panel 49: India (Bombay 100 constituents)						
CAPM	0.0093 (1.25)	1.6213 (11.79)				0.5502
CAPM and SMB and ILLIQ	0.0080 (1.02)	1.6031 (11.23)	-0.5672 (-1.42)	-0.3332 (-0.99)		0.5474
CAPM and SMB and ILLIQ and LEGAL	0.0118 (1.40)	1.6477 (10.66)	-0.4492 (-1.19)	-0.1654 (-0.47)	0.5618 (1.49)	0.5572
Panel 50: Indonesia (Jakarta Kompas 100 constituents)						
CAPM	-0.0267 (-3.38)	1.2340 (5.73)				0.3656
CAPM and SMB and ILLIQ	-0.0268 (-3.49)	1.2185 (5.73)	-0.5375 (-1.13)	0.0363 (0.12)		0.3579
CAPM and SMB and ILLIQ and LEGAL	-0.0278 (-3.50)	1.2069 (5.89)	-0.5680 (-1.19)	-0.0070 (-0.02)	-0.1451 (-0.40)	0.3530
Panel 51: Malaysia (Composite constituents)						
CAPM	-0.0053 (-1.13)	0.7831 (9.39)				0.3895
CAPM and SMB and ILLIQ	-0.0056 (-1.19)	0.7766 (8.78)	-0.2151 (-0.55)	-0.0378 (-0.15)		0.3800
CAPM and SMB and ILLIQ and LEGAL	-0.0025 (-0.54)	0.8125 (9.62)	-0.1201 (-0.32)	0.0973 (0.42)	**0.4524 (2.29)**	0.4020
Panel 52: Pakistan (Karachi 100 constituents)						
CAPM	0.0178 (2.23)	0.4245 (2.00)				0.0533
CAPM and SMB and ILLIQ	0.0187 (2.44)	0.4269 (1.97)	0.0279 (0.04)	0.3082 (0.54)		0.0383
CAPM and SMB and ILLIQ and LEGAL	0.0212 (2.38)	0.4562 (2.04)	0.1053 (0.17)	0.4182 (0.71)	0.3683 (0.74)	0.0392
Panel 53: Philippines (Manila All share constituents)						
CAPM	0.0138 (1.58)	1.0366 (6.55)				0.1937
CAPM and SMB and ILLIQ	0.0084 (1.15)	1.15 (7.20)	**4.4043 (2.45)**	**-2.4978 (-1.62)**		0.4620
CAPM and SMB and ILLIQ and LEGAL	0.0026 (0.35)	1.0853 (7.47)	**4.2265 (2.56)**	**-2.7506 (-1.78)**	**-0.8461 (-1.81)**	0.4852
Panel 54: South Korea (KOSPI 200 constituents)						
CAPM	-0.0014 (-0.24)	1.6980 (11.06)				0.6332
CAPM and SMB and ILLIQ	-0.0013 (-0.20)	1.6603 (11.29)	**-1.3367 (-2.82)**	0.2677 (0.50)		0.6494
CAPM and SMB and ILLIQ and LEGAL	-0.0016 (-0.22)	1.6564 (10.99)	**-1.3470 (-2.78)**	0.2530 (0.44)	-0.0491 (-0.13)	0.6463
Panel 55: Sri Lanka (Dow Jones Sri Lanka Titans 20 constituents)						
CAPM	0.0158 (1.85)	0.3085 (2.08)				0.0146
CAPM and SMB and ILLIQ	0.0156 (1.74)	0.3209 (2.12)	0.4444 (0.67)	-0.1292 (-0.18)		0.0263
CAPM and SMB and ILLIQ and LEGAL	0.0224 (2.16)	0.3998 (2.62)	0.6531 (0.83)	0.1675 (0.26)	**0.9936 (2.13)**	0.0415
Panel 56: Taiwan (Top 100 constituents)						
CAPM	-0.0053 (-0.89)	1.0831 (9.86)				0.3671
CAPM and SMB and ILLIQ	-0.0052 (-0.8)	1.0703 (9.81)	-0.4571 (-1.24)	0.1071 (0.43)		0.3594
CAPM and SMB and ILLIQ and LEGAL	-0.0008 (-0.12)	1.1216 (11.37)	-0.3213 (-0.82)	0.3001 (1.25)	**0.6461 (2.19)**	0.3814
Panel 57: Thailand (SET 100 constituents)						
CAPM	1.94E-05 (0.01)	1.3444 (11.30)				0.4473
CAPM and SMB and ILLIQ	0.0009 (0.11)	1.3519 (11.12)	0.2065 (0.36)	0.2792 (0.66)		0.4391
CAPM and SMB and ILLIQ and LEGAL	0.0078 (0.98)	1.4317 (11.95)	0.4177 (0.81)	0.5795 (1.74)	**1.0054 (3.59)**	0.4871
Panel 59: Israel (Dow Jones TA 100 constituents)						
CAPM	1.81E-05 (0.01)	0.9032 (7.60)				0.3191
CAPM and SMB and ILLIQ	-0.0009 (-0.17)	0.8837 (7.35)	-0.6329 (-1.00)	-0.2036 (-0.65)		0.3167
CAPM and SMB and ILLIQ and LEGAL	-0.0017 (-0.30)	0.8739 (7.12)	-0.6589 (-1.01)	-0.2407 (-0.66)	-0.1241 (-0.46)	0.3116

Panel 60: Turkey (ISE National 50 constituents)						
CAPM	-0.0045 (-0.31)	2.3948 (5.97)				0.2692
CAPM and SMB and ILLIQ	-0.0065 (-0.50)	2.5127 (5.25)	4.2714 (1.30)	-1.3453 (-0.67)		0.3104
CAPM and SMB and ILLIQ and LEGAL	-0.0129 (-0.94)	2.4379 (5.28)	4.0737 (1.25)	-1.6265 (-0.74)	-0.9413 (-1.37)	0.3130

* indicates models selected from which Cost of Equity are estimated

Table 10 Cost of Equity estimates

This table presents the annualized cost of equity estimates generated at 05/2009 from the total risk premium, which is the sum of the constant, market premium and all relevant additional premiums (size, illiquidity and/or legal regime). The UK Gilt/ Treasury rate is used in each case for risk free rate. Values are percentages.

Region	Market	Cost of Equity (%)	Market	Cost of Equity (%)
Europe Developed	Austria	13.87	Luxembourg	25.11
	Belgium	18.22	Netherlands	21.30
	Denmark	17.11	Norway	25.48
	Finland	17.91	Portugal	18.83
	France	22.72	Slovenia	11.50
	Germany	20.93	Spain	15.30
	Iceland	17.91	Sweden	26.61
	Ireland	17.02	Switzerland	20.38
	Italy	22.29	UK	14.84
Europe Emerging	Cyprus	23.45	Hungary	20.42
	Greece	22.69	Poland	26.24
	Bulgaria	31.15	Romania	21.39
	Czech Rep.	14.90	Russia	68.15
	Estonia	13.93	Slovakia	-- --
Middle East and Africa	Morocco	7.42	Israel	18.20
	Egypt	26.26	Turkey	50.49
	South Africa	18.09		
North America	Canada	17.33	United States	11.53
Australasia	Australia	19.25	New Zealand	12.65
Latin America	Argentina	17.59	Jamaica	17.25
	Brazil	28.70	Mexico	21.69
	Chile	16.20	Peru	14.45
	Colombia	16.41	Venezuela	30.53
Asia Developed	Japan	14.62	Singapore	11.62
Asia Emerging	Bangladesh	-- --	Malaysia	10.88
	China Shenzen	18.53	Pakistan	-- --
	China Shanghai	19.33	Philippines	31.42
	Hong Kong	17.68	South Korea	29.42
	India	25.11	Sri Lanka	-- --
	Indonesia	22.90	Taiwan	13.93
			Thailand	14.44

Figure 1. Market returns-based valuation factor

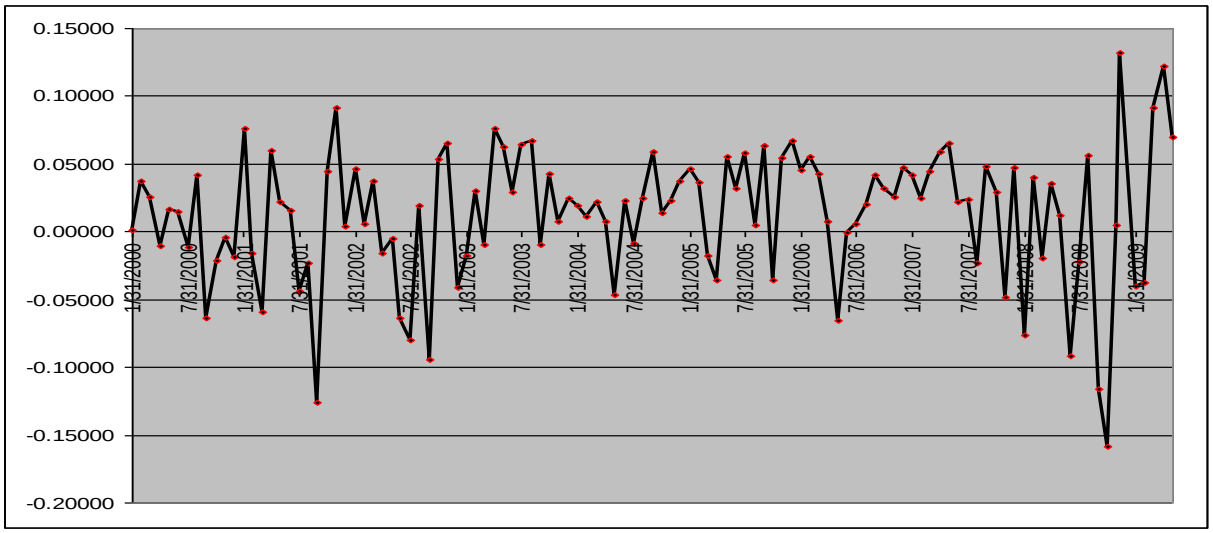


Figure 2. Size returns-based valuation factor

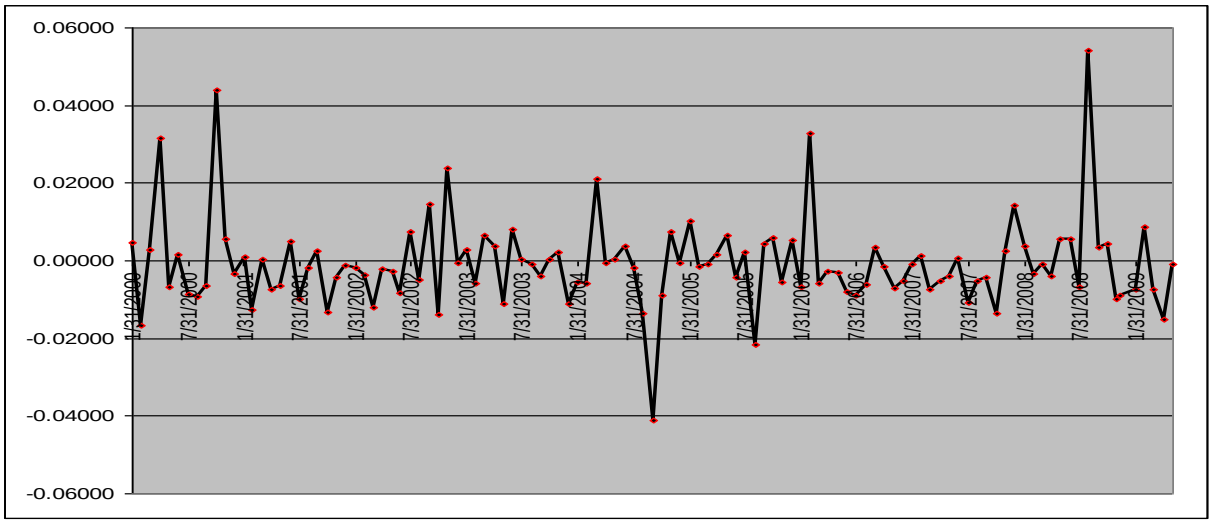


Figure 3. Illiquidity returns-based valuation factor

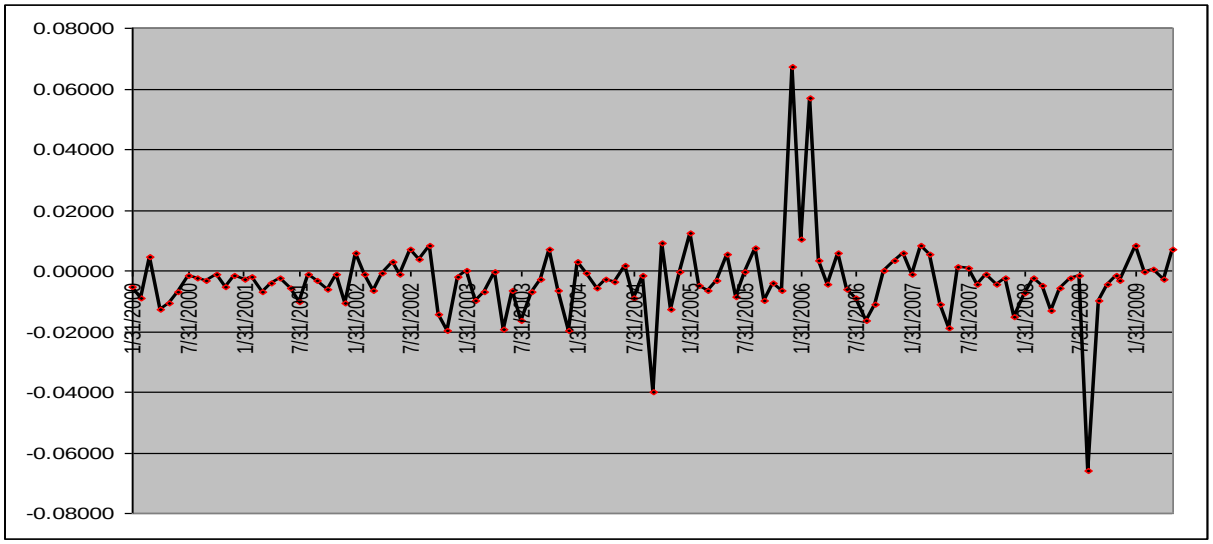
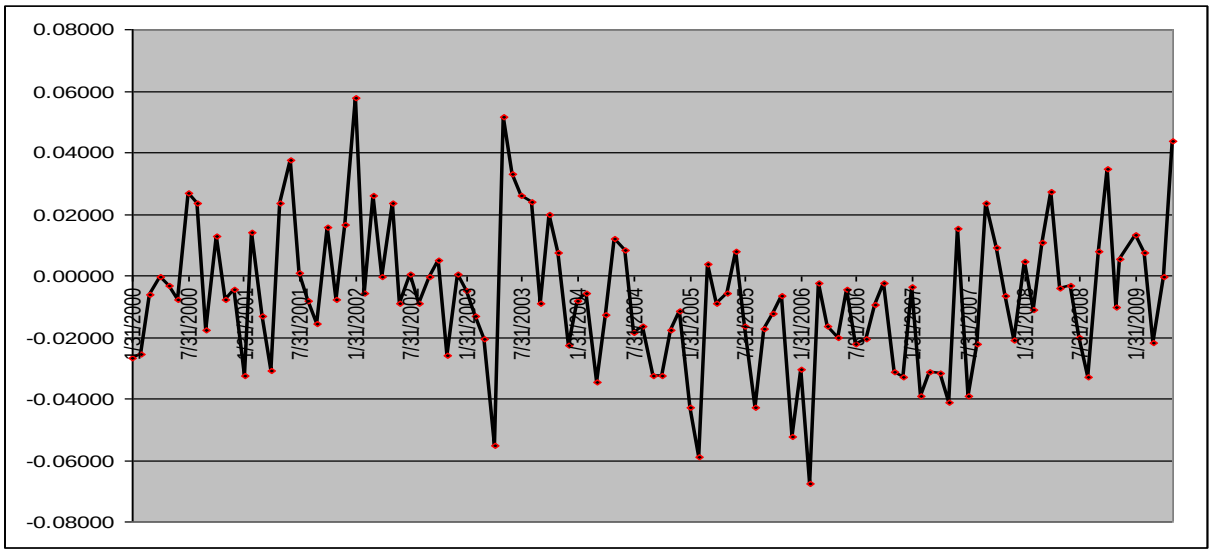


Figure 4. Legal Regime returns-based valuation factor



Appendix 1 Summary of Secondary Market regulations and fees for selected countries

Market	Legal Origin	Capital Gains Tax	Other Taxes and Fees	Commission
Europe Developed				
Austria	German Civil Code	Exempt	None	Transaction fee of 0.00045% as trading fee and exchange transaction fee
Belgium	French Civil Code	Exempt	Dividends: 15% or 25% Stamp duty: 0.17%	Euronext Belgium Trades are fee free. However order flow from agency is subject to 0.00012% levy and from principal members a 0.00006% levy.
Denmark	Scandinavian Civil Code	Capital gains on sales of shares held by individuals for less than 3 years are, for residents, taxable as capital income, with an income tax rate of between 50 and 56%. If the shares have been held for 3 years or more, a capital gain is treated as dividend income, i.e. taxed at a rate between 30-40%.	Dividends on shares are in general subject to a 30 % withholding tax on account. Dividends received by residents are taxed at rates between 30 and 40 %	OMX Nordic Total trading fee 0.0000613% including trading fixed fee, electronic trading fee, value based fees.
Finland	Scandinavian Civil Code	Exempt	Dividends 29 %	As OMX Nordic Denmark
France	French Civil Code	Capital gains above 50,000 are taxed at 26%	There is a tax credit on dividends ("avoir fiscal")	As Euronext Belgium
Germany	German Civil Code	Exempt	None	Xetra electronic trading fee of 0.0048% for trades over EUR 12,500. Broker fees subject to maximum of 0.8% per trade
Iceland	Scandinavian Civil Code	Exempt	None	As OMX Nordic Denmark
Ireland	Common Law	20% annual rate	VAT at commission rate 0.5% marketable security. 1.0% stamp duty Investor Protection fee: 0.0002%	Fixed membership annual fee of EUR 25,000 and reporting fee of EUR 1,000. Sliding scale of trade fees per number shares traded from EUR 1.50 for 0-1,000 shares to EUR 0.25 for 20,000+ shares.
Italy	French Civil Code	Exempt	None	Total trading costs approximately 0.000061% levied against members initiating small trades of low value. Figure includes clearing and settlement as well as trading fees.
Luxembourg	French Civil Code	Exempt	None	As Euronext Belgium
Netherlands	French Civil Code	Exempt	None	As Euronext Belgium
Norway	Scandinavian Civil Code	Exempt	28% on dividends to private investors	Value-based fee of 0.0060% and exchange reporting fee of 0.0024%

Market	Legal Origin	Capital Gains Tax	Other Taxes and Fees	Commission
Portugal	French Civil Code	Shares held for more than 12 months Residents 0% non-residents 25% Shares held for less than 12 months Residents 10% non Residents 25%	Witholding Tax Rates Received by investors Dividends Residents 20% Non Residents 20%	As Euronext Belgium
Slovenia	German Civil Code	Exempt	20% Witholding tax	LJSE transaction fee for shares is 0.03% of the value of the transaction
Spain	French Civil Code	Exempt	None	Sliding scale of fixed trading fees with maximum transaction fee of 0.00004%
Sweden	Scandinavian Civil Code	Exempt	0-30% witholding tax on dividends & interests paid on SEK denominated securities to non-residents. Tax reductions depend on bilateral tax treaties.	As OMX Nordic Denmark
Switzerland	German Civil Code	Exempt	None	The maximum fee levied is that for foreign equities in auction execution which is 0.000065%
UK	Common Law	Exempt	None	Total direct costs of trading (brokerage commission and fees): 0.0401% Total indirect trading costs: 0.0101% Total trading costs: 0.0502%
Europe Emerging				
Cyprus	French Civil Code	Exempt	Transaction Fees 0.01% on the total transaction value. Central Depository Fee for the clearing of transaction 0.03% on the total transaction value of shares/rights/warrants Government Sales tax : 0.15% on sales transaction value	Percentage variable charge 0.04% on the total transaction value of shares/rights/warrants. For the transactions in the CSE Main market the variable charge is 0.015% on the total transaction value
Greece	French Civil Code	Exempt	None	Transaction fee of 0.026% and settlement costs of 0.04%
Bulgaria	German Civil Code	Exempt	None	Tiered transaction fees: On amount up to BGN 25 million inclusive - 0.1%; On amount above BGN 25 million up to BGN 75 million inclusive - BGN 25 thousand plus 0.05% on the excess over BGN 25 million; On amount above BGN 75 million - BGN 50 thousand plus 0.01% on the excess over 75 million
Czech Rep.	German Civil Code	Exempt	None	Transaction fee for organising trade including settlement costs: 0.07% of trade value

Market	Legal Origin	Capital Gains Tax	Other Taxes and Fees	Commission
Estonia	German Civil Code	Exempt	None	Nasdaq OMX Baltic Exchange fee of 0.015% of the transaction value (i.e. transaction value in money (EEK), which is equal to price of traded securities multiplied by number of traded securities) but not less than EEK 5 (Minimum fee) for each automatically matched transaction
Hungary	German Civil Code	20%	10% dividend tax	0.015% of the transaction value expressed in forints, with a minimum of HUF 50 and a maximum of HUF 35,000
Poland	German Civil Code	19%	Dividends: 19 %	Transaction fee of between 0.033 % and 0.010% for shares
Romania	German Civil Code	Exempt	None	Trading fee of 0.3% to seller and 0.22% to buyer dropping to 0.2% and 0.12% for seller and buyer for traded value under USD 111,111.11. National Securities commission also levies 0.08% trade fee.
Russia	French Civil Code	Exempt	Dividends: 9% - residents, 15% - non-resident legal bodies, 30% - non-resident individuals	N/A
Slovakia	German Civil Code	Exempt	None	Exchange Transaction fee of 0.08%
Africa				
Morocco	French Civil Code	Exempt	VAT applied to the amount of commissions is 10%. No other tax/ fees.	Standard fee of 0.1% of trade value in Moroccan Dirhams (MAD) levied against buyers and sellers engaging in securities transfer or dealing. This fee, Negotiation des Titres, is applied to both buy and sell legs of trade.
Egypt	French Civil Code	Exempt	None	Listed securities, the Exchange service fees are levied at 0.012% of the value of each side of the transaction with a maximum amount of LE (Egyptian Pounds) 5000.
South Africa	Common Law	Exempt	VAT at commission rate 0.5% marketable security. 1.0% stamp duty Investor Protection fee: 0.0002%	Clearing fee: 0.125 per thousand of transaction value Main Market: 1.4%, trades < R1,500,000 and 0.21%, trades > R1,500,000 Equities main market minimum fee: R7.42 or R8.46(incl. VAT) on both buy and sell legs of a position Clearing and Settlement Fee: 0.0026% Subject to minimum of R2.33 (R2.66 incl. VAT) on buy leg and R9.43 (R10.75 incl. VAT) on sell side leg

Market	Legal Origin	Capital Gains Tax	Other Taxes and Fees	Commission
North America				
Canada	Common Law	Exempt	None	Toronto Stock Exchange: Charged using a value-based model: Active side is charged 1/60th of 1% of the value of the trade to a maximum of $50.
United States	Common Law	Capital gains are taxed as ordinary income (up to a 39.6 % marginal rate). Long term capital gains are taxed up to a 20 % marginal rate. Capital gains generally are not subject to income tax	US Citizens & Residents : Dividends, interest and short term assets (assets held less than 12 months). Non-Resident Aliens : Dividend and interest income is subject to a 30 % withholding tax. This tax may be reduced of eliminated if the non-resident is entitled to the benefit of a tax treaty.	As NYSE Euronext Belgium (integrated trading platform and fee structure reflects this)
Australasia				
Australia	Common Law	Capital Gains Tax - Shares held < 12 months, 0 – 47% - Shares held > 12 months, 0 - 23.5% Non-residents (Individuals) Income Tax Dividends : - 100 % franked – 0% - unfranked - Tax treaty, 0-15% Witholding Tax - No treaty, 30% Witholding Tax	Residents (Individuals) Income Tax Dividends: - franked 0 - 17 % - unfranked 0 - 47 %	None
New Zealand	Common Law	Residents : Dividend: 33% Non-Residents : Dividends : 30% or where double tax treaty exists 15%	None	None
Latin America				
Argentina	French Civil Code	Exempt	None	Stock Exchange Fee 0,0351 % Mercado de Valores de Buenos Aires (MV) Fee : 0,06 %
Brazil	French Civil Code	Exempt	None	Commission: 0.5-2% max. based on volume; fully negotiable Transaction Fee: 0.025% Clearing Fee: 0.025%
Chile	French Civil Code	15%	Value Added Tax: 18% on commission & Exchange fees	Commission: 0.35% - 1%; negotiable. Exchange Fees: Up to 0.5% based on volume

Market	Legal Origin	Capital Gains Tax	Other Taxes and Fees	Commission
Colombia	French Civil Code	Exempt	None	Transaction Fee (percentage on trading value): 0.0250% (0-500MM) 0.02500% (500.1-1000MM) 0.0150% (>1000.1MM)
Jamaica	Common Law	Exempt	None	
Mexico	French Civil Code	Exempt	None	Commission: 1-1.7% based on value; banks and institutions pay flat 0.85%; negotiable
Peru	French Civil Code	Exempt	Dividends: 4.1% . Domestic institutional investors are exempt from this tax VAT: 18%	Fees for exchange based transactions: 0.0825% trading fee, 0.0075% guaranty fund
Venezuela	French Civil Code	30%	None	Variable; determined by brokers
Asia Developed				
Japan	German Civil Code	Individual Capital Gain <Until Dec 31, 2009> 10% tax withheld at source (Declaration of tax not required) 7% Income Tax, 3% Inhabitant Tax	Dividend <Until March 31, 2010> 10% tax withheld at source (Declaration of tax not required) 7% Income Tax, 3% Inhabitant Tax Corporation 50% of the total amount of dividend received is not taxable	(1) Out of the total amount comprising the monthly sales value and purchase value within the market of auction trading and closing price trading ¥20 billion or less: 0 ¥20 billion < MTV*1 ≤ ¥200 billion: Standard rate*2 x 0.9 ¥200 billion < MTV ≤ ¥1 trillion: Standard rate ¥1 trillion < MTV ≤ ¥1.5 trillion: Standard rate x 0.8 More than ¥1.5 trillion: Standard rate x 0.7 *1 MTV:Monthly trading value *2 Standard rate is calculated using formula below: {¥20 trillion x 0.000029 + (MTV – ¥20 trillion) x 0.000020} ÷ MTV" (2) 0.04/10,000 of the total amount comprising the sales value and purchase value within the market of trading other than auction trading and closing price trading
Singapore	Common Law	Exempt	Prevailing Goods and Services tax (GST) on brokerage and clearing fees	Exchange levied Clearing Fees Cash : 4 basis pts (cap of S$600)
Asia Emerging				
China Shenzen	German Civil Code	Exempt	0.1% stamp duty (only for sell-side)	floating commission is imposed for both buyers and sellers, with maximum 0.3% of traded value
China Shanghai	German Civil Code	Exempt	0.3% stamp duty (levied on “A” shares) 0.1% Transfer fee	A-share: Handling fee of 0.011%, securities management fee of 0.004%,. B-share: 0.026% Handling fee, 0.004% securities management fee

Market	Legal Origin	Capital Gains Tax	Other Taxes and Fees	Commission
Hong Kong	Common Law	Exempt	Stamp duty at a rate of 0.1%	Trading fee of 0.005%, transaction fee of 0.004%, investor compensation guaranty fee of 0.002%
Indonesia	French Civil Code	Exempt	Stamp Duty: Rp. 1,000/transaction Value Added Tax: 10% on commission	Commission: 1%. Buyer and seller. Stock Exchange Levy: 0.1%
Malaysia	Common Law	Exempt	RM1.00 for RM1000.00 or fractional part of value of securities (payable by both buyer and seller), and effective 17 March 2003, the stamp duty shall be remitted to the maximum of RM200	Commission and Fees Commission: 1%; 5 ringgit minimum; buyer & seller Clearing Fee: 0.05% Deposit Fee: 10 ringgit per scrip (applies to investors using Central Depository System) Withdrawal Fee: 15 ringgit per 1,000 shares (applies to investors using Central Depository System) Transfer Fee: 10 ringgit (applies to investors using Central Depository System) Account Opening Fee: 10 ringgit (applies to investors using Central Depository System) Statement Fee: 1 ringgit (applies to investors using Central Depository System)
Pakistan	Common Law	Exempt		
Philippines	French Civil Code	Capital Gains Tax of - 5% - transactions < P100,000 10% - transactions > P100,000	Dividend withholding tax. Resident individuals: 10%; Resident corporations: None; Non-residents: 20% Stock Transaction Tax - 1/2 of 1% of the total transaction value	Regular trades : 0.00005% for every transaction executed Negotiated trades : 1/200 of 1% for every contract executed
South Korea	German Civil Code	10-25%		
Sri Lanka	Common Law	15%	None	Transactions < R 1M: 1.425% (Broker : 1.00% ; SEC: 0.09%; Exchange: 0.105%; CDS : 0.03% ; Gvmt Tax : 0.2%) Transactions > R 1M: 1.225% (Broker : 0.80% ; SEC: 0.09%; Exchange: 0.105%; CDS : 0.03% ; Gvmt Tax : 0.2%)
Taiwan	Common Law	Exempt	Non-residents, tax rate on dividends is 30 %, and 25 % for companies with no fixed business place in Taiwan, and 20 % for investments approved under the statute of investment for foreign nationals	TSEC levies 0.0065 % on the trading value of brokers for handling fee. As for the transaction tax, 0.3 % levied from the sales of shares

Market	Legal Origin	Capital Gains Tax	Other Taxes and Fees	Commission
Thailand	Common Law	Tax-free for individual investors, but 15% witholding tax for foreign juristic investors	10 % witholding tax	Admission fee: 0.040% of securities trading value every month, throughout the period of 3 years Trading fee: THB 50,000 plus 0.005% of monthly securities trading value
Vietnam	French Civil Code			
Middle East				
Abu Dhabi	Common Law	Exempt	None	Overall trading fee of 0.275%, made up from 0.15% brokers commission, 0.05% SEC fee, 0.05% CSD fee, 0.025% authority fee.
Dubai	Common Law	Exempt	None	
Israel	Common Law	Exempt	20% witholding tax	Trading fee: 0.0035%, minimum - 1.07 NIS, maximum - 107 NIS
Jordan	French Civil Code	Exempt	None	Floor-based trading: Total fee: 0.0014% (SEC:0.0005%; Exchange: 0.0005%; CSD: 0.0004%) Off Floor-based trading: Total fee: 0.002% (CSD: 0.002%) Brokerage fees for shares fall between 0.004% - 0.006%
Kuwait	Common Law	Exempt	None	Transactions fees calculated: 1. Less than 50,000 KD transactions, commission is 1.25 KD for each KD 1000. 2. More than 50,000 KD transactions , the commission is 0.001%
Oman	French Civil Code	Exempt	None	Trading fee of 0.1% for orders < RO 250,000 and 0.05% > RO 250,000. Broker commissions fixed between 0.4% and 0.75%, where exchange takes 20% of brokerage fees levied.
Qatar	Common Law	Exempt	None	
Saudi Arabia	Common Law	Exempt	None	Brokerage commission max is 0.0012% of the trade value. Min commission imposed will be SR 12.00 for any executed order equal or less than SR 10,000
Turkey	French Civil Code	Exempt	None	Exchange transaction fee: 0.00001%

Source: Compiled by authors from National stock exchanges and World Federation of Exchanges
Notes: (1) Legal origin in accordance to definitions in La Porta et al (2008)

Appendix 2 Summary of Secondary Market regulations and fees for selected countries

Panel 1: Results for Austria (2001M07 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.18383	1.00000						
Volume	-0.22935	-0.00045	1.00000					
MV	0.46117	-0.22863	0.43306	1.00000				
Amihud	-0.30567	0.35372	**-0.62597**	**-0.68049**	1.00000			
Liu	0.06697	0.05832	**-0.79852**	-0.30395	**0.68353**	1.00000		
Turnover	-0.13974	0.14296	**0.69385**	-0.03933	-0.41389	**-0.70098**	1.00000	
Bid Ask Spread	-0.19093	0.30411	**-0.53225**	**-0.50802**	**0.69982**	**0.60560**	-0.30304	1.00000

Panel 2: Results for Belgium (2005M04 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.35569	1.00000						
Volume	**-0.53341**	0.13895	1.00000					
MV	0.19881	-0.26879	**0.57050**	1.00000				
Amihud	0.02182	0.20648	**-0.77648**	**-0.81391**	1.00000			
Liu	0.30564	-0.34502	-0.32146	0.26793	0.10853	1.00000		
Turnover	-0.32898	0.36694	0.34773	-0.26156	-0.11162	**-0.97578**	1.00000	
Bid Ask Spread	-0.12288	0.28995	**-0.56317**	**-0.62106**	**0.80322**	0.15715	-0.15024	1.00000

Panel 3: Results for Denmark (2001M07 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.21754	1.00000						
Volume	-0.41251	0.07659	1.00000					
MV	0.35453	-0.15211	0.49918	1.00000				
Amihud	-0.23174	0.15912	**-0.66386**	**-0.85392**	1.00000			
Liu	0.13189	-0.20978	**-0.62369**	-0.20737	**0.54542**	1.00000		
Turnover	-0.30604	0.21718	0.49541	-0.09037	-0.30966	**-0.78312**	1.00000	
Bid Ask Spread	-0.24254	0.21265	**-0.60766**	**-0.74305**	**0.87985**	**0.54228**	-0.31376	1.00000

Panel 4: Results for Finland (2008M12 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.01825	1.00000						
Volume	0.08284	0.31704	1.00000					
MV	**0.50926**	0.19872	**0.74272**	1.00000				
Amihud	-0.41554	-0.18397	**-0.89874**	**-0.85869**	1.00000			
Liu	-0.21095	-0.34846	**-0.80707**	-0.48479	**0.77572**	1.00000		
Turnover	0.20190	0.33890	**0.79925**	0.45516	**-0.76014**	**-0.99077**	1.00000	
Bid Ask Spread	-0.46883	-0.15252	**-0.83215**	**-0.80515**	**0.94351**	**0.78135**	**-0.76897**	1.00000

Panel 5: Results for France (2001M07 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.19839	1.00000						
Volume	-0.34858	0.13317	1.00000					
MV	0.18611	-0.05373	**0.59012**	1.00000				
Amihud	-0.28672	0.25319	**-0.63963**	**-0.72441**	1.00000			
Liu	0.00402	-0.14044	-0.14283	0.43649	0.08013	1.00000		
Turnover	-0.00440	0.14214	0.14254	-0.43724	-0.07899	**-0.99932**	1.00000	
Bid Ask Spread	-0.22020	0.17284	-0.38479	-0.46378	**0.62070**	0.09613	-0.09518	1.00000

Panel 6: Results for Germany (2008M12 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.44975	1.00000						
Volume	-0.34358	0.44179	1.00000					
MV	**0.63910**	-0.28853	0.26917	1.00000				
Amihud	-0.36133	0.06416	**-0.64070**	**-0.75984**	1.00000			
Liu	0.46155	**-0.59737**	**-0.70152**	0.28908	0.25333	1.00000		
Turnover	**-0.54821**	**0.61751**	**0.60493**	-0.45288	-0.11770	**-0.94611**	1.00000	
Bid Ask Spread	**-0.50376**	0.24704	-0.36972	**-0.85551**	**0.82176**	-0.05990	0.20538	1.00000

Panel 7: Results for Iceland (2006M07 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	0.24810	1.00000						
Volume	**-0.70136**	-0.17034	1.00000					
MV	-0.25449	-0.25122	**0.61408**	1.00000				
Amihud	0.11653	0.22891	**-0.52014**	-0.64762	1.00000			
Liu	-0.29034	-0.18728	-0.22122	-0.37129	0.47673	1.00000		
Turnover	0.08463	0.20442	0.40184	0.18980	-0.35748	**-0.62224**	1.00000	
Bid Ask Spread	0.24782	0.23007	-0.40639	-0.21163	0.35619	0.26537	-0.32687	1.00000

Panel 8: Results for Ireland (2005M03 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.58176	1.00000						
Volume	0.21534	-0.04911	1.00000					
MV	**0.78788**	-0.40261	**0.60007**	1.00000				
Amihud	**-0.77020**	0.47474	**-0.71247**	**-0.88844**	1.00000			
Liu	-0.47731	0.23853	**-0.82306**	**-0.66366**	**0.80849**	1.00000		
Turnover	0.33790	-0.17080	**0.70840**	0.33458	**-0.61542**	**-0.75803**	1.00000	
Bid Ask Spread	**-0.75346**	**0.52230**	**-0.66527**	**-0.83380**	**0.92023**	**0.81536**	**-0.60469**	1.00000

Panel 9: Results for Italy (2005M04 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.06535	1.00000						
Volume	**-0.50733**	0.35116	1.00000					
MV	0.08096	0.00280	**0.51239**	1.00000				
Amihud	-0.06674	-0.14733	**-0.72599**	-0.70482	1.00000			
Liu	-0.05795	-0.47572	-0.48698	0.08644	0.48670	1.00000		
Turnover	0.05421	0.49357	0.48272	-0.11561	-0.47525	**-0.97354**	1.00000	
Bid Ask Spread	-0.02889	-0.10216	**-0.61401**	**-0.59310**	**0.78910**	0.38832	-0.37681	1.00000

Panel 10: Results for Luxembourg (2005M03 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.29560	1.00000						
Volume	-0.48791	-0.01346	1.00000					
MV	-0.28187	0.36813	0.07418	1.00000				
Amihud	-0.05549	0.32857	-0.47857	-0.02665	1.00000			
Liu	0.04368	0.25934	-0.41868	**0.73407**	0.28956	1.00000		
Turnover	0.44258	-0.40467	-0.03132	**-0.89011**	-0.16951	**-0.71401**	1.00000	
Bid Ask Spread	-0.27225	0.38242	0.06374	0.16291	0.23846	0.11731	-0.19560	1.00000

Panel 11: Results for Netherlands (2005M04 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.30928	1.00000						
Volume	-0.00227	0.03783	1.00000					
MV	**0.53377**	-0.22521	**0.66361**	1.00000				
Amihud	-0.39719	0.21337	**-0.86203**	**-0.85199**	1.00000			
Liu	0.01613	-0.15892	**-0.83130**	-0.38803	**0.71010**	1.00000		
Turnover	-0.02361	0.17386	**0.80308**	0.31611	**-0.67195**	**-0.95852**	1.00000	
Bid Ask Spread	-0.35168	0.22771	**-0.82642**	**-0.79757**	**0.94676**	**0.69443**	**-0.64800**	1.00000

Panel 12: Results for Norway (2005M03 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.23473	1.00000						
Volume	-0.01628	0.24420	1.00000					
MV	**0.65545**	-0.12438	**0.58266**	1.00000				
Amihud	-0.45283	-0.01698	**-0.83572**	**-0.83927**	1.00000			
Liu	-0.02240	-0.38010	**-0.78805**	-0.31185	**0.67860**	1.00000		
Turnover	-0.02430	0.40481	**0.78149**	0.25056	**-0.63441**	**-0.95663**	1.00000	
Bid Ask Spread	-0.45190	-0.01565	**-0.77208**	**-0.78159**	**0.92778**	**0.67040**	**-0.62361**	1.00000

Panel 13: Results for Portugal (2005M04 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.36955	1.00000						
Volume	0.22506	-0.14362	1.00000					
MV	**0.59949**	-0.36216	**0.78715**	1.00000				
Amihud	**-0.52622**	0.37220	**-0.89776**	**-0.90164**	1.00000			
Liu	-0.15953	0.08496	**-0.82916**	**-0.52486**	**0.74841**	1.00000		
Turnover	0.05489	0.04537	**0.76665**	0.34632	**-0.62102**	**-0.87139**	1.00000	
Bid Ask Spread	**-0.58591**	0.41456	**-0.80204**	**-0.84157**	**0.92577**	**0.69774**	**-0.56062**	1.00000

Panel 14: Results for Slovenia (2005M03 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.03470	1.00000						
Volume	**-0.59646**	-0.17347	1.00000					
MV	**0.62768**	-0.17463	-0.19754	1.00000				
Amihud	-0.36515	0.40860	-0.34306	**-0.53181**	1.00000			
Liu	0.28766	0.15466	**-0.76836**	0.11142	0.43964	1.00000		
Turnover	-0.26147	-0.12561	**0.74435**	-0.21308	-0.39720	**-0.87061**	1.00000	
Bid Ask Spread	-0.10338	0.41716	**-0.53947**	-0.34625	**0.77030**	**0.58787**	**-0.52401**	1.00000

Panel 15: Results for Spain (2008M12 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.32429	1.00000						
Volume	-0.18951	0.20798	1.00000					
MV	**0.51623**	-0.19450	**0.53527**	1.00000				
Amihud	-0.32840	0.14924	**-0.78619**	**-0.83274**	1.00000			
Liu	0.13805	-0.27757	**-0.86004**	-0.29488	**0.66563**	1.00000		
Turnover	-0.14796	0.29526	**0.84815**	0.24985	**-0.63491**	**-0.97200**	1.00000	
Bid Ask Spread	-0.42107	0.25789	**-0.64329**	**-0.84279**	**0.92498**	**0.52344**	-0.48205	1.00000

Panel 16: Results for Sweden (2001M07 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.26886	1.00000						
Volume	0.09005	-0.02759	1.00000					
MV	**0.54848**	-0.15618	**0.65134**	1.00000				
Amihud	-0.42887	0.22364	**-0.89648**	**-0.79755**	1.00000			
Liu	0.01865	-0.04033	**-0.67491**	-0.08823	**0.55536**	1.00000		
Turnover	-0.07493	0.05597	**0.64581**	0.01618	**-0.50791**	**-0.96086**	1.00000	
Bid Ask Spread	-0.44459	0.25026	**-0.75485**	**-0.65746**	**0.88354**	**0.54994**	**-0.50217**	1.00000

Panel 17: Results for Switzerland (2006M12 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.34084	1.00000						
Volume	**-0.74437**	0.14407	1.00000					
MV	0.04395	-0.28344	**0.51155**	1.00000				
Amihud	0.05614	0.35168	**-0.63423**	**-0.86235**	1.00000			
Liu	0.40402	-0.46225	-0.35503	0.31585	0.01538	1.00000		
Turnover	-0.40629	0.46554	0.35570	-0.31718	-0.01351	**-0.99798**	1.00000	
Bid Ask Spread								

Panel 18: Results for UK (2003M07 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.11351	1.00000						
Volume	-0.36899	0.01789	1.00000					
MV	0.31961	-0.21032	**0.60481**	1.00000				
Amihud	-0.32445	0.29825	**-0.66578**	**-0.87273**	1.00000			
Liu	0.16241	-0.29080	-0.21909	0.29258	0.00434	1.00000		
Turnover	-0.16338	0.29176	0.21907	-0.29397	-0.00364	**-0.99855**	1.00000	
Bid Ask Spread	-0.40031	0.31113	-0.44853	**-0.69237**	**0.78326**	-0.02355	0.02518	1.00000

Panel 19: Results for Cyprus (2005M03 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.66804	1.00000						
Volume	-0.01929	0.02540	1.00000					
MV	**0.61339**	-0.48458	0.44591	1.00000				
Amihud	**-0.58922**	**0.53054**	**-0.55757**	**-0.67866**	1.00000			
Liu	-0.19735	0.13072	**-0.85520**	**-0.57602**	**0.63150**	1.00000		
Turnover	-0.08780	0.13748	**0.55970**	-0.22414	-0.27439	-0.34890	1.00000	
Bid Ask Spread	-0.55706	0.51981	**-0.51409**	**-0.71204**	**0.69621**	**0.68122**	-0.07065	1.00000

Panel 20: Results for Bulgaria (2005M07 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	0.03286	1.00000						
Volume	-0.39088	-0.20203	1.00000					
MV	-0.02463	-0.16490	**0.52171**	1.00000				
Amihud	-0.12862	0.42670	-0.45946	-0.39098	1.00000			
Liu	0.24213	0.28009	**-0.68808**	-0.18357	**0.55471**	1.00000		
Turnover	0.11642	-0.02146	0.35684	-0.23605	-0.33648	-0.47962	1.00000	
Bid Ask Spread	0.06048	0.51671	**-0.54678**	-0.40149	**0.67606**	**0.66315**	-0.17556	1.00000

Panel 21: Results for Czech Rep (2004M12 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.28285	1.00000						
Volume	0.03898	-0.18148	1.00000					
MV	0.40679	-0.30983	**0.81808**	1.00000				
Amihud	-0.39136	0.31631	**-0.82998**	**-0.94198**	1.00000			
Liu	-0.28527	0.09555	-0.36984	-0.24109	0.37765	1.00000		
Turnover	0.26318	-0.06142	0.35309	0.21429	-0.35573	**-0.98179**	1.00000	
Bid Ask Spread	-0.40141	0.29652	**-0.74766**	**-0.86296**	**0.89868**	0.41287	-0.39065	1.00000

Panel 22: Results for Estonia (2005M07 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.43907	1.00000						
Volume	-0.17538	-0.15257	1.00000					
MV	0.48716	-0.44149	0.39107	1.00000				
Amihud	-0.26568	0.44415	**-0.72098**	**-0.66732**	1.00000			
Liu	0.08581	0.12742	**-0.79142**	-0.24828	**0.67907**	1.00000		
Turnover	-0.21866	0.02132	**0.76319**	-0.04734	-0.42256	**-0.71431**	1.00000	
Bid Ask Spread	-0.34687	0.49457	**-0.64283**	**-0.65278**	**0.84811**	**0.63659**	-0.37344	1.00000

Panel 23: Results for Hungary (2001M06 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.26912	1.00000						
Volume	-0.25622	0.11986	1.00000					
MV	**0.66006**	-0.26860	0.32740	1.00000				
Amihud	-0.47625	0.16108	**-0.60470**	**-0.77763**	1.00000			
Liu	0.18030	-0.26347	**-0.53332**	0.16610	0.30744	1.00000		
Turnover	-0.25914	0.32607	**0.51235**	-0.28008	-0.21188	**-0.90526**	1.00000	
Bid Ask Spread	-0.35584	0.27052	**-0.55275**	**-0.68775**	**0.77116**	0.20203	-0.10785	1.00000

Panel 24: Results for Poland (2002M01 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.13624	1.00000						
Volume	**-0.53014**	0.19495	1.00000					
MV	0.53226	-0.17520	0.17077	1.00000				
Amihud	-0.34097	0.11318	-0.44642	**-0.79308**	1.00000			
Liu	0.42343	-0.27332	-0.44162	0.45840	-0.05663	1.00000		
Turnover	-0.52329	0.29979	0.40681	**-0.56366**	0.16005	**-0.91852**	1.00000	
Bid Ask Spread	-0.07621	0.09224	-0.30111	-0.39917	**0.53768**	-0.00802	0.05013	1.00000

Panel 25: Results for Russia (2002M07 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.35617	1.00000						
Volume	**-0.52800**	0.24034	1.00000					
MV	0.37496	-0.17067	0.26334	1.00000				
Amihud	-0.44736	0.37731	-0.29723	**-0.59363**	1.00000			
Liu	-0.03633	-0.16109	**-0.60149**	-0.24956	0.47408	1.00000		
Turnover	-0.13653	0.10876	0.19741	**-0.55807**	-0.05067	-0.31745	1.00000	
Bid Ask Spread	-0.19266	0.17520	-0.46575	-0.49058	**0.60706**	**0.66927**	-0.01904	1.00000

Panel 26: Results for Morocco (2005M01 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	0.04954	1.00000						
Volume	-0.45674	-0.20350	1.00000					
MV	0.46772	-0.18187	0.25264	1.00000				
Amihud	-0.04642	0.38324	**-0.60190**	**-0.50792**	1.00000			
Liu	0.31612	0.16488	**-0.80695**	-0.22391	**0.56701**	1.00000		
Turnover	-0.34751	-0.01982	**0.67754**	-0.26664	-0.32378	**-0.57700**	1.00000	
Bid Ask Spread	0.22515	0.30677	**-0.60061**	-0.33681	**0.53195**	**0.64009**	-0.28974	1.00000

Panel 27: Results for Egypt (2005M06 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.28827	1.00000						
Volume	-0.53152	0.23470	1.00000					
MV	**0.68384**	-0.34255	-0.13586	1.00000				
Amihud	-0.26461	0.16322	-0.51157	**-0.51005**	1.00000			
Liu	0.36066	-0.30972	**-0.66880**	0.39383	0.34174	1.00000		
Turnover	-0.44360	0.38594	**0.67628**	**-0.56312**	-0.24067	**-0.82521**	1.00000	
Bid Ask Spread	0.04461	0.12975	-0.49012	-0.24352	**0.62009**	0.29545	-0.21777	1.00000

Panel 28: Results for South Africa (2002M10 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	0.22447	1.00000						
Volume	-0.27938	0.06284	1.00000					
MV	**0.50129**	0.17220	0.45287	1.00000				
Amihud	-0.38060	-0.03339	**-0.67365**	**-0.78039**	1.00000			
Liu	0.04390	-0.14274	-0.43301	0.14515	0.32853	1.00000		
Turnover	-0.05080	0.13831	0.42640	-0.16055	-0.31802	**-0.98797**	1.00000	
Bid Ask Spread	-0.34975	-0.01030	**-0.54430**	**-0.63787**	**0.78952**	0.31126	-0.30181	1.00000

Panel 29: Results for Canada (2006M12 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.31830	1.00000						
Volume	0.03582	0.25099	1.00000					
MV	**0.67320**	-0.18486	**0.60432**	1.00000				
Amihud	**-0.61465**	0.19758	**-0.71169**	**-0.89643**	1.00000			
Liu	0.08666	-0.44002	**-0.60583**	-0.03492	0.31161	1.00000		
Turnover	-0.08900	0.44208	**0.60491**	0.03134	-0.31002	**-0.99703**	1.00000	
Bid Ask Spread	-0.60560	0.31113	**-0.55663**	**-0.78753**	**0.85817**	0.18548	-0.18334	1.00000

Panel 30: Results for US (2006M05 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.34240	1.00000						
Volume	-0.20536	0.26021	1.00000					
MV	**0.50122**	-0.25983	**0.54051**	1.00000				
Amihud	-0.48226	0.29713	**-0.60416**	**-0.89164**	1.00000			
Liu	0.33174	**-0.59875**	-0.27931	0.41904	-0.17345	1.00000		
Turnover	-0.33322	**0.58811**	0.27959	-0.42327	0.16672	**-0.98891**	1.00000	
Bid Ask Spread	-0.43378	0.43074	-0.07571	-0.46534	0.48611	-0.29185	0.29065	1.00000

Panel 31: Results for Australia (2001M07 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.19582	1.00000						
Volume	-0.25650	-0.08932	1.00000					
MV	**0.54585**	-0.33647	0.47119	1.00000				
Amihud	**-0.51739**	0.38664	**-0.58702**	**-0.86608**	1.00000			
Liu	0.05840	-0.19920	**-0.50430**	-0.01252	0.31961	1.00000		
Turnover	-0.10794	0.24822	**0.50634**	-0.04102	-0.28305	**-0.93422**	1.00000	
Bid Ask Spread	-0.53937	0.31211	-0.46279	**-0.74782**	**0.84100**	0.25814	-0.24388	1.00000

Panel 32: Results for New Zealand (2001M01 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.22929	1.00000						
Volume	-0.26348	0.05697	1.00000					
MV	**0.59558**	**-0.69877**	-0.06621	1.00000				
Amihud	-0.41497	0.17573	**-0.72081**	**-0.66995**	1.00000			
Liu	-0.01361	-0.02628	**-0.72300**	-0.15915	**0.56982**	1.00000		
Turnover	-0.29495	0.04328	**0.75679**	-0.11680	**-0.51582**	**-0.87281**	1.00000	
Bid Ask Spread	-0.44263	0.23130	**-0.53015**	**-0.51291**	**0.77050**	**0.50075**	-0.45544	1.00000

Panel 33: Results for Argentina (2002M07 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.17717	1.00000						
Volume	-0.10584	0.24348	1.00000					
MV	**0.54324**	-0.04629	0.40833	1.00000				
Amihud	-0.34751	0.02580	**-0.76596**	**-0.61652**	1.00000			
Liu	-0.03736	-0.24252	**-0.84949**	-0.24209	**0.73894**	1.00000		
Turnover	-0.22831	0.21971	**0.52192**	-0.36262	-0.32846	**-0.60451**	1.00000	
Bid Ask Spread	-0.26552	-0.02118	**-0.78919**	**-0.55773**	**0.85706**	**0.79000**	-0.32573	1.00000

Panel 34: Results for Brazil (2001M01 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	0.03536	1.00000						
Volume	-0.10932	0.09681	1.00000					
MV	**0.50751**	-0.00707	0.24592	1.00000				
Amihud	-0.28908	0.04641	**-0.64695**	-0.43922	1.00000			
Liu	0.07828	-0.06374	**-0.56304**	0.34689	0.32780	1.00000		
Turnover	0.00854	-0.00409	**0.53354**	-0.30660	-0.38786	**-0.92487**	1.00000	
Bid Ask Spread	-0.09068	-0.01757	**-0.63110**	-0.30317	**0.66333**	0.32239	-0.34869	1.00000

Panel 35: Results for Chile (2002M07 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.16139	1.00000						
Volume	-0.44948	0.29832	1.00000					
MV	0.43168	-0.02531	0.34785	1.00000				
Amihud	-0.29056	0.10235	-0.47955	**-0.66623**	1.00000			
Liu	-0.07636	-0.26177	**-0.72655**	**-0.53281**	**0.67433**	1.00000		
Turnover	-0.09736	0.26258	**0.65103**	0.03961	-0.45675	**-0.63944**	1.00000	
Bid Ask Spread	-0.25848	0.17570	-0.22831	-0.45576	0.46761	0.42520	-0.17311	1.00000

Panel 36: Results for Colombia (1999M01 – 2001M12)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.19080	1.00000						
Volume	-0.30229	0.22848	1.00000					
MV	**0.56978**	-0.09804	-0.12792	1.00000				
Amihud	-0.37011	0.38779	-0.10538	-0.22652	1.00000			
Liu	-0.10703	-0.42826	-0.44741	-0.02035	0.15670	1.00000		
Turnover	-0.09013	0.05276	**0.54445**	**-0.50548**	-0.18276	-0.25872	1.00000	
Bid Ask Spread	-0.15162	0.06266	-0.03826	0.04401	0.29112	0.31142	-0.14013	1.00000

Panel 37: Results for Jamaica (2004M04 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.23671	1.00000						
Volume	-0.27262	0.02091	1.00000					
MV	**0.51844**	-0.30320	0.37086	1.00000				
Amihud	-0.40502	0.42142	-0.40677	**-0.64071**	1.00000			
Liu	-0.11578	0.10754	**-0.73556**	**-0.50563**	**0.59406**	1.00000		
Turnover	0.00718	0.16395	0.40747	-0.21928	-0.12234	-0.32791	1.00000	
Bid Ask Spread	-0.24838	0.45807	**-0.51057**	**-0.69086**	**0.66349**	**0.68936**	0.00811	1.00000

Panel 38: Results for Mexico (2002M07 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.07130	1.00000						
Volume	-0.09983	0.00419	1.00000					
MV	**0.51868**	-0.08707	0.49707	1.00000				
Amihud	-0.26864	0.11683	**-0.83645**	-0.72227	1.00000			
Liu	0.02133	-0.07584	**-0.79588**	-0.18163	**0.66883**	1.00000		
Turnover	-0.16780	0.05420	**0.75060**	-0.02356	**-0.54801**	**-0.87796**	1.00000	
Bid Ask Spread	-0.16165	0.04158	**-0.80197**	**-0.57284**	**0.83483**	**0.69254**	**-0.57687**	1.00000

Panel 39: Results for Peru (2007M12 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.12507	1.00000						
Volume	-0.07168	0.08360	1.00000					
MV	**0.59230**	-0.22179	0.37966	1.00000				
Amihud	-0.42187	0.22991	**-0.65199**	**-0.59434**	1.00000			
Liu	-0.18268	-0.17283	**-0.80176**	-0.34094	**0.64217**	1.00000		
Turnover	-0.30898	0.27943	0.32933	**-0.57383**	-0.06996	-0.28658	1.00000	
Bid Ask Spread	-0.38556	0.07136	**-0.61332**	**-0.57808**	**0.69124**	**0.70874**	0.00309	1.00000

Panel 40: Results for Japan (2001M01 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.0287	1.00000						
Volume	-0.4580	0.1567	1.00000					
MV	0.2889	-0.0649	0.4215	1.00000				
Amihud	-0.2338	0.0729	**-0.6655**	**-0.7461**	1.00000			
Liu	0.0239	-0.3826	**-0.5515**	0.0100	0.4956	1.00000		
Turnover	-0.0232	0.3855	**0.5519**	-0.0133	-0.4966	**-0.9950**	1.00000	
Bid Ask Spread	-0.0836	0.1355	-0.2417	-0.2505	0.3693	0.1963	-0.1942	1.00000

Panel 41: Results for Singapore (2004M02 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	**-0.63559**	1.00000						
Volume	0.05981	0.11149	1.00000					
MV	**0.81172**	-0.47661	0.35349	1.00000				
Amihud	**-0.69036**	0.45964	**-0.64039**	**-0.76123**	1.00000			
Liu	-0.24674	0.05030	**-0.86293**	-0.44196	**0.72335**	1.00000		
Turnover	0.02890	0.10359	**0.84831**	0.08371	**-0.55103**	**-0.75845**	1.00000	
Bid Ask Spread	**-0.75723**	**0.54976**	-0.49303	**-0.76088**	**0.87574**	**0.63906**	-0.41488	1.00000

Panel 42: Results for China Shenzen (2002M10 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.02892	1.00000						
Volume	-0.29780	0.30378	1.00000					
MV	**0.52147**	-0.08896	0.20277	1.00000				
Amihud	-0.28824	-0.01891	**-0.67379**	**-0.57596**	1.00000			
Liu	0.18966	-0.24347	-0.38010	0.29075	0.15605	1.00000		
Turnover	-0.29266	0.40093	**0.58000**	-0.45346	-0.28750	**-0.56907**	1.00000	
Bid Ask Spread	-0.05755	0.01139	-0.15230	-0.06319	0.20482	0.10543	-0.12922	1.00000

Panel 43: Results for China Shanghai (2007M09 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	0.17925	1.00000						
Volume	-0.43343	-0.02015	1.00000					
MV	0.16207	-0.32678	0.45933	1.00000				
Amihud	-0.15714	0.17407	**-0.70392**	**-0.70851**	1.00000			
Liu	0.03964	-0.31321	-0.09381	0.37056	-0.03186	1.00000		
Turnover	-0.04716	**0.50941**	0.08323	**-0.67736**	0.09633	**-0.55837**	1.00000	
Bid Ask Spread	-0.10189	0.12925	-0.04378	-0.12474	0.12464	-0.01702	0.06831	1.00000

Panel 44: Results for Hong Kong (2007M09 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.19258	1.00000						
Volume	-0.29105	0.37546	1.00000					
MV	**0.57073**	-0.12651	0.32390	1.00000				
Amihud	-0.42366	-0.04556	**-0.66399**	**-0.77089**	1.00000			
Liu	0.04054	-0.45441	**-0.71078**	-0.06888	**0.56529**	1.00000		
Turnover	-0.04816	0.49287	**0.74510**	0.06727	**-0.58385**	**-0.94805**	1.00000	
Bid Ask Spread	-0.32572	-0.02704	**-0.58574**	**-0.61570**	**0.82732**	**0.50201**	**-0.51907**	1.00000

Panel 45: Results for Indonesia (2007M09 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.04119	1.00000						
Volume	0.17539	0.18569	1.00000					
MV	**0.77831**	-0.07191	0.37774	1.00000				
Amihud	**-0.73718**	-0.00029	**-0.69268**	**-0.77199**	1.00000			
Liu	-0.22510	-0.22712	**-0.74153**	-0.11752	**0.57530**	1.00000		
Turnover	0.19485	0.28770	**0.77444**	0.04732	**-0.55024**	**-0.90781**	1.00000	
Bid Ask Spread	0.09736	0.06408	-0.09705	-0.00251	0.05206	0.07328	-0.06038	1.00000

Panel 46: Results for Kazakhstan (2009M04 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	0.14286	1.00000						
Volume	**-0.64286**	-0.42857	1.00000					
MV	0.17857	-0.32143	0.10714	1.00000				
Amihud	-0.35714	0.39286	-0.32143	-0.35714	1.00000			
Liu	0.25000	0.42857	-0.82143	**-0.60714**	**0.57143**	1.00000		
Turnover	-0.10714	-0.32143	0.21429	**-0.53571**	-0.32143	0.10714	1.00000	
Bid Ask Spread	-0.03571	**0.67857**	**-0.60714**	**-0.71429**	**0.75000**	**0.89286**	0.00000	1.00000

Panel 47: Results for Malaysia (2002M10 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.48348	1.00000						
Volume	0.09403	0.17049	1.00000					
MV	**0.78766**	-0.33849	0.45249	1.00000				
Amihud	**-0.55655**	0.23658	**-0.75397**	**-0.76226**	1.00000			
Liu	-0.01363	-0.19566	**-0.79201**	-0.16159	**0.58474**	1.00000		
Turnover	0.01654	0.19989	**0.81158**	0.11893	**-0.58344**	**-0.89246**	1.00000	
Bid Ask Spread	-0.24071	0.14268	-0.49453	-0.39153	**0.54847**	0.41785	-0.39761	1.00000

Panel 48: Results for Pakistan (2007M09 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.20084	1.00000						
Volume	-0.39709	0.29439	1.00000					
MV	0.19746	-0.11497	0.36158	1.00000				
Amihud	0.10890	0.07280	**-0.66984**	-0.39152	1.00000			
Liu	0.25335	-0.15330	**-0.77539**	-0.11685	**0.77332**	1.00000		
Turnover	-0.06389	0.23604	**0.80737**	0.11239	**-0.65279**	**-0.81397**	1.00000	
Bid Ask Spread	0.32718	0.03162	-0.43064	-0.20134	**0.50607**	0.47450	-0.29312	1.00000

Panel 49: Results for Philippines (2007M11 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.31581	1.00000						
Volume	-0.21721	0.11800	1.00000					
MV	**0.62975**	-0.30310	0.17139	1.00000				
Amihud	-0.42631	0.26522	**-0.64345**	**-0.56498**	1.00000			
Liu	-0.14166	-0.02350	**-0.81295**	-0.24734	**0.77734**	1.00000		
Turnover	-0.06545	0.15849	**0.76359**	-0.16076	**-0.56256**	**-0.75957**	1.00000	
Bid Ask Spread	-0.29260	0.20735	**-0.60944**	-0.47123	**0.73234**	**0.74560**	-0.45390	1.00000

Panel 50: Results for South Korea (2002M08 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.14157	1.00000						
Volume	-0.27999	0.30275	1.00000					
MV	**0.52431**	-0.01096	**0.51670**	1.00000				
Amihud	-0.35182	-0.05207	**-0.73780**	**-0.87684**	1.00000			
Liu	0.28252	-0.42098	**-0.60976**	0.03068	0.35322	1.00000		
Turnover	-0.29429	0.43231	**0.61316**	-0.04474	-0.34620	**-0.97331**	1.00000	
Bid Ask Spread	-0.09414	-0.09584	**-0.69554**	**-0.58244**	**0.75206**	0.42741	-0.42095	1.00000

Panel 51: Results for Sri Lanka (2007M11 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.18888	1.00000						
Volume	**-0.62340**	0.01259	1.00000					
MV	-0.17689	-0.16910	0.38163	1.00000				
Amihud	0.18361	0.15628	**-0.51544**	-0.26234	1.00000			
Liu	0.47039	0.04940	**-0.67166**	-0.02338	0.48846	1.00000		
Turnover	0.14528	0.11185	0.27578	-0.55585	-0.22359	-0.37649	1.00000	
Bid Ask Spread	0.49583	0.16554	**-0.53315**	-0.33266	0.45732	**0.61727**	0.03681	1.00000

Panel 52: Results for Taiwan (2006M08 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	0.00631	1.00000						
Volume	-0.08620	0.19329	1.00000					
MV	0.44776	-0.08903	**0.65905**	1.00000				
Amihud	-0.47025	-0.01881	**-0.75000**	**-0.88051**	1.00000			
Liu	-0.04194	**-0.58479**	-0.36450	0.08037	0.29035	1.00000		
Turnover	0.04492	**0.58469**	0.36631	-0.07756	-0.29360	**-0.99778**	1.00000	
Bid Ask Spread	-0.14207	0.00442	-0.22285	-0.25895	0.31156	0.12501	-0.12598	1.00000

Panel 53: Results for Thailand (2001M08 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.24803	1.00000						
Volume	-0.45895	0.46574	1.00000					
MV	**0.64518**	-0.10548	0.09111	1.00000				
Amihud	-0.35124	-0.10645	**-0.56083**	**-0.68264**	1.00000			
Liu	0.30057	-0.45752	**-0.70873**	0.20907	0.40246	1.00000		
Turnover	-0.37159	0.49989	**0.71230**	-0.29414	-0.35060	**-0.93507**	1.00000	
Bid Ask Spread	0.20431	-0.03014	-0.25882	0.04104	0.12379	0.19248	-0.19185	1.00000

Panel 54: Results for Vietnam (2009M04 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.13934	1.00000						
Volume	0.04937	0.36585	1.00000					
MV	**0.65590**	0.02892	**0.55451**	1.00000				
Amihud	-0.38689	-0.11797	**-0.84725**	**-0.72191**	1.00000			
Liu	0.16834	-0.43725	**-0.63988**	-0.00255	0.45497	1.00000		
Turnover	-0.24686	0.42459	**0.65787**	-0.11365	-0.44961	**-0.86531**	1.00000	
Bid Ask Spread	-0.07088	0.01356	-0.37161	-0.26126	0.43459	0.17745	-0.20151	1.00000

Panel 55: Results for Abu Dhabi (2007M12 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.11273	1.00000						
Volume	-0.28176	-0.15812	1.00000					
MV	0.28189	-0.27171	**0.54103**	1.00000				
Amihud	-0.03391	0.41324	**-0.75321**	**-0.61405**	1.00000			
Liu	0.24662	0.07681	**-0.86587**	-0.39914	**0.69579**	1.00000		
Turnover	-0.19718	-0.06693	**0.77703**	0.10774	**-0.56539**	**-0.66532**	1.00000	
Bid Ask Spread	0.17324	0.25041	**-0.67352**	-0.42369	**0.62975**	**0.69416**	-0.45898	1.00000

Panel 56: Results for Dubai (2008M01 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.14199	1.00000						
Volume	-0.43445	0.11721	1.00000					
MV	0.36470	-0.23944	0.38557	1.00000				
Amihud	0.23719	0.03656	**-0.92378**	**-0.51789**	1.00000			
Liu	0.49134	-0.21302	**-0.87060**	-0.08573	**0.77011**	1.00000		
Turnover	-0.49578	0.20650	**0.83203**	-0.04038	**-0.74218**	**-0.94612**	1.00000	
Bid Ask Spread	0.28391	0.04586	**-0.84968**	-0.42000	**0.86542**	**0.75974**	**-0.71059**	1.00000

Panel 57: Results for Israel (2002M12 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.03102	1.00000						
Volume	-0.48419	-0.08125	1.00000					
MV	0.11074	-0.23626	**0.62810**	1.00000				
Amihud	-0.15166	0.23419	**-0.68122**	**-0.86212**	1.00000			
Liu	-0.05236	-0.07860	**-0.62011**	-0.42767	**0.68141**	1.00000		
Turnover	0.04734	0.10970	**0.57987**	0.34203	**-0.63950**	**-0.94437**	1.00000	
Bid Ask Spread	-0.09959	0.17434	**-0.70730**	**-0.82477**	**0.90563**	**0.68349**	**-0.61994**	1.00000

Panel 58: Results for Jordan (2009M02 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.19809	1.00000						
Volume	-0.19344	0.41583	1.00000					
MV	**0.53419**	-0.15713	0.11860	1.00000				
Amihud	-0.11294	-0.15410	**-0.82693**	-0.37645	1.00000			
Liu	0.23635	-0.35093	**-0.81423**	0.07864	**0.72143**	1.00000		
Turnover	-0.27273	0.48406	**0.86270**	-0.29303	**-0.59683**	**-0.76906**	1.00000	
Bid Ask Spread	-0.31392	0.43244	-0.10821	-0.30425	0.38638	0.20287	0.05648	1.00000

Panel 59: Results for Kuwait (2009M02 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	**-0.73861**	1.00000						
Volume	-0.35479	0.47940	1.00000					
MV	**0.59424**	-0.39228	0.18572	1.00000				
Amihud	-0.23897	0.04921	**-0.67492**	**-0.56611**	1.00000			
Liu	0.21152	-0.43085	**-0.86837**	-0.21527	**0.68414**	1.00000		
Turnover	-0.41205	0.48031	**0.85323**	-0.19542	-0.47875	**-0.70770**	1.00000	
Bid Ask Spread	-0.03773	-0.06161	**-0.63034**	-0.40568	**0.64190**	**0.65612**	-0.42731	1.00000

Panel 60: Results for Oman (2009M02 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	**-0.63291**	1.00000						
Volume	-0.40586	0.38777	1.00000					
MV	**0.71185**	**-0.55245**	-0.17499	1.00000				
Amihud	-0.26609	0.19145	-0.46670	-0.34154	1.00000			
Liu	0.47067	-0.38932	**-0.70464**	**0.55632**	0.23356	1.00000		
Turnover	-0.48467	**0.55013**	**0.62886**	**-0.74500**	-0.06913	**-0.79191**	1.00000	
Bid Ask Spread	-0.09362	0.05304	-0.48626	-0.13348	**0.50748**	0.41039	-0.21251	1.00000

Panel 61: Results for Qatar (2008M10 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	0.02190	1.00000						
Volume	-0.41026	0.02926	1.00000					
MV	**0.54789**	0.06339	0.19585	1.00000				
Amihud	0.05052	0.08434	**-0.87567**	-0.43622	1.00000			
Liu	**0.51319**	0.06232	**-0.73439**	0.21786	**0.58016**	1.00000		
Turnover	**-0.60394**	0.00146	**0.73479**	-0.39746	**-0.52914**	**-0.84393**	1.00000	
Bid Ask Spread	0.17086	-0.00317	**-0.83593**	-0.26999	**0.85052**	**0.66129**	**-0.58756**	1.00000

Panel 62: Results for Saudi Arabia (2009M02 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.00977	1.00000						
Volume	**-0.67120**	0.27204	1.00000					
MV	0.11396	-0.46471	-0.16577	1.00000				
Amihud	0.25388	0.00018	**-0.72201**	-0.06439	1.00000			
Liu	0.24038	**-0.55167**	**-0.56546**	**0.85639**	0.32966	1.00000		
Turnover	-0.23838	**0.55179**	**0.56389**	**-0.85828**	-0.32848	**-0.99912**	1.00000	
Bid Ask Spread	0.08517	-0.15116	-0.32446	0.14375	0.36359	0.29317	-0.29553	1.00000

Panel 63: Results for Turkey (2009M02 – 2009M05)

	Price	Volatility	Volume	MV	Amihud	Liu	Turnover	Bid Ask Spread
Price	1.00000							
Volatility	-0.15118	1.00000						
Volume	-0.43372	0.24798	1.00000					
MV	**0.62093**	-0.08257	0.19601	1.00000				
Amihud	-0.17916	-0.02037	**-0.72549**	**-0.65140**	1.00000			
Liu	**0.63038**	-0.30418	**-0.58504**	0.51984	0.17845	1.00000		
Turnover	**-0.63816**	0.31235	**0.60807**	**-0.52007**	-0.19499	**-0.97446**	1.00000	
Bid Ask Spread	0.05920	0.04453	-0.10366	-0.03153	0.12756	0.09462	-0.09498	1.00000

Appendix 3. Vuong likelihood ratio test

Following Lesmond (2005) a likelihood ratio test is used that was originally proposed by Vuong (1989). This is specific for non-nested model selection in testing whether a reference model and comparison model do equally well at explaining the underlying data. The reference model is either the Amihud measure (Amihud 2002) or alternatively the Turnover measure, which is a measure of trading frequency, and the comparison models are the remaining liquidity measures, i.e. Liu derived from Liu (2006) and the liquidity determinants of Stoll (2000). Each of the comparison models are tested independently against the reference Amihud or Turnover measure with each individual regression stated as:

Reference Model: $S + C_j = \theta_0 + \theta_1$ (reference liquidity measure$_j$) + ε_j, (8)

Comparison Model 1: $S + C_j = \gamma_0 + \gamma_1$ other liquidity measure(s)$_j$ + ε_j, and (9)

Comparison Model 2: $S + C_j = \gamma_0 + \gamma_1$ price$_j$ + γ_2 volume$_j$ + γ_3 σ_j^2 + γ_4 size$_j$ + ε_j, (10)

where $S + C_j$ refers to the average, proportional bid ask spread plus commission cost for each firm-month j within each country. The comparison liquidity measures are those of Liu (2006). Price is the average annual daily stock price in local currency, and volume is the average annual daily trading volume. σ_j^2 is the daily average volatility. Size is the monthly market capitalization and is defined as the share price times the number of shares outstanding. Share price is measured at the beginning of each month, while number of shares outstanding is measured at the beginning of the year.

The basis of the test is a likelihood ratio of the log likelihood function for the reference model to the log likelihood function for the comparison model. Using R to represent the reference model and C to represent the comparison model:

$$LR_n(\hat{\theta}, \hat{\gamma}) \equiv L_n^R(\hat{\theta}) - L_n^C(\hat{\gamma}) = \sum_{i=1}^{n} \log \frac{f(S + C \mid Z_i; \hat{\theta}_n)}{g(S + C \mid Z_i; \hat{\gamma}_n)}, \quad (11)$$

Where LR_n is the likelihood ratio function for n firm-month observations in each country. Z_i is a vector of m independent standard normal variables, $\hat{\theta}_n$ is the maximum likelihood parameter estimates for the reference model, and $\hat{\gamma}_n$ is the maximum likelihood parameter estimates for the comparison model. The variance of the likelihood function is given by Vuong as

$$\hat{\omega}_n^2 = \frac{1}{n} \sum_j^n \left(\frac{1}{2} [\log(\hat{\sigma}_C^2) - \log(\hat{\sigma}_R^2)] + \frac{1}{2} \left[\frac{\varepsilon_{Cj}^2}{\hat{\sigma}_C^2} - \frac{\varepsilon_{Rj}^2}{\hat{\sigma}_R^2} \right] \right) - \left[\frac{1}{2} LR_n \right]^2 \quad (12)$$

where ε is the residual using the fitted parameters for either the Amihud regression case of the comparison model case. Vuong shows that the likelihood ratio statistic converges to a normal distribution:

$$\text{Under } H_0: \; n^{-1/2}\frac{LR_n(\hat{\theta}_n,\hat{\gamma}_n)}{\hat{\omega}_n^2} \xrightarrow{D} N(0,1) \tag{13}$$

The resultant test statistic is stated as

$$Z = \frac{1}{\sqrt{n}}\frac{LR_n(\hat{\theta}_n,\hat{\gamma}_n)}{\hat{\omega}_n} \tag{14}$$

A one-sided Z-statistic tests whether either of the reference models, in this case being either the Amihud or Turnover measure, is more highly associated with the underlying S + C cost than the comparison model(s). The test is directional, given by a positive or negative Z-statistic, indicating which model is more highly associated with the underlying S + C cost. A positive and significant Z-statistic indicates that the reference measure is more highly associated with the underlying S + C cost than the comparison measure(s). A negative and significant Z-statistic indicates the comparison measure is more highly associated with the underlying S + C cost.

Alternatively, the Z-statistic can be obtained from a linear regression if the log ratio is defined at every month j as

$$m_j = \frac{1}{2}\log\left[\frac{\hat{\sigma}_C^2}{\hat{\sigma}_R^2}\right] + \frac{1}{2}\left[\frac{\varepsilon_{Cj}^2}{\hat{\sigma}_C^2} - \frac{\varepsilon_{Rj}^2}{\hat{\sigma}_R^2}\right] \tag{15}$$

Vuong states that a useful abstraction of the test statistic in above equation "$\frac{1}{\sqrt{n}}\frac{LR_n(\hat{\theta}_n,\hat{\gamma}_n)}{\hat{\omega}_n}$ is numerically equal to $[(n-1)/n]^{1/2}$ times either the usual t-statistic on the constant term in a linear regression of m_j on only the constant term, or the usual t-statistic on the coefficient of m_j in a linear regression of one on m_j." Stated another way, the Z-statistic can be obtained by regressing m_j on unity and multiplying the t-statistic from this regression by $[(n-1)/n]^{1/2}$. This procedure involving the running of two subsequent sets of regressions is employed in this paper.