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Abstract

This paper investigates how public equity issuance is related to stock market liquidity. Using quarterly data on IPOs and SEOs in 36 countries over the period 1995-2008, we show that equity issuance is significantly and positively related to contemporaneous and lagged innovations in aggregate local market liquidity. This relation survives the inclusion of proxies for market timing, capital market conditions, growth prospects, asymmetric information, and investor sentiment. Liquidity considerations are as important in explaining equity issuance as market timing considerations. The relation between liquidity and issuance is driven by the quarters with the greatest deterioration in liquidity and is stronger for IPOs than for SEOs. Firms are more likely to carry out private instead of public equity issues and to postpone public equity issues when market liquidity worsens. Overall, we interpret our findings as supportive of the view that market liquidity is an important determinant of equity issuance that is distinct from other determinants examined to date.

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1. Introduction

If the demand for a firm's shares is perfectly elastic, an increase in the supply of that firm's shares resulting from an equity issue has no effect on the share price keeping everything else the same. The existing empirical literature presents considerable challenges to the view that the demand for shares is perfectly elastic. First, many studies build on the finding in Shleifer (1986) that a firm's stock price increases when it experiences an increase in demand because of being added to a stock index such as the S&P 500. Second, studies that have access to data that make it possible to directly measure the demand for shares find that it is downward-sloping (e.g., Bagwell, 1992; Kandel, Sarig, and Wohl, 1999). Third, there is a vast literature showing that in many countries stock prices fall when an equity issue is announced, a result that is consistent with the existence of downward-sloping demand curves as well as other explanations (see Eckbo, Masulis, and Norli (2007) for a review of the literature). Fourth, more generally, the theoretical and empirical market liquidity literature suggests that buy and sell orders (which tend to involve far fewer shares than equity issues) can move share prices (e.g., Kyle, 1985; Easley and O'Hara, 1987; Glosten and Harris, 1988; Breen, Hodrick, and Korajczyk, 2002). Fifth, a more recent literature shows that market liquidity affects the expected cost of underwriters in placing an issue, their fees, and the price at which shares are sold (e.g., Butler, Grullon, and Weston, 2005; Ellul and Pagano, 2006; Gao and Ritter, 2010).

Imperfect liquidity is a common thread to these findings from the literature. As a firm's shares trade in a less liquid market, investors have to be given more of a discount to absorb these shares. We would therefore expect that equity issuance is more costly for existing shareholders when a firm's stock is less liquid – due to the greater price impact of the increase in the supply of shares. As issuance becomes more costly, firms are expected to issue less equity, everything else equal. In this paper, we investigate the hypothesis that security issuance is inversely related to illiquidity. We find very strong evidence across the world that firms become less likely to issue equity when the liquidity of equity markets worsens.

The liquidity of a firm's common stock can worsen because aggregate liquidity worsens or because of idiosyncratic shocks. Idiosyncratic liquidity shocks could be caused by shocks to firm attributes related to firm value, so that it would be difficult to identify the impact of liquidity as opposed to the impact of shocks to factors that affect liquidity but other firm characteristics as well. For instance, adverse information about a firm could lower the stock price and increase information asymmetry which would then lower liquidity as well. Since one would expect an increase in information asymmetry to make it more expensive for a firm to issue equity, identification of the liquidity effect when liquidity changes because of information asymmetry would be challenging. In this paper, we resolve this identification issue by focusing on equity issuance at the country level and by examining the relation between aggregate equity issuance and aggregate liquidity. Aggregate liquidity could affect a firm's decision to issue equity because there are strong common factors in liquidity (e.g., Chordia, Roll, and Subrahmanyam, 2000) and because aggregate liquidity could proxy for the general capacity of the market to absorb new shares. An additional advantage of studying the relation between equity issuance and liquidity at the market level instead of the firm level is that reverse causation is far less of a concern since new issues tend to represent a very small fraction of the overall market.

We create a sample of equity issues that covers 36 countries from 1995 to 2008. Like earlier papers that investigate equity issuance globally, such as Henderson, Jegadeesh, and Weisbach (2006) and Kim and Weisbach (2008), we obtain the equity issues from SDC and include both initial public offerings (IPOs) and seasoned equity offerings (SEOs). Our dataset has 1,872 country-quarters. We use two measures of equity issuance. The first measure consists of counts normalized by listings. The second one uses proceeds normalized by market capitalization. Most of our work focuses on the counts measure as the proceeds measure can be affected by a single large issue in many countries. We use the Amihud (2002) liquidity measure estimated across countries by Karolyi, Lee, and van Dijk (2012). Since the country-level Amihud measures are non-stationary and since their levels are not comparable across countries due to differences in

trading volume definitions and currency units, we first construct time-series of market liquidity innovations as the residuals from country-by-country AR(1) regressions, and subsequently standardize these series to make them comparable across countries. We would expect differences in levels of liquidity across countries to affect equity issuance. Further, as noted by recent studies (e.g., Doidge, Karolyi, and Stulz, 2013; Kim and Weisbach, 2008; McLean, Zhang, and Zhao, 2011), countries differ along many dimensions that affect equity issuance. We therefore estimate our regressions with country fixed effects and year fixed effects. All of our regressions use quarterly data.

When we regress our equity issuance counts measure on lead liquidity innovations, contemporaneous liquidity innovations, and four lags of liquidity innovations controlling for market returns, we find that while the coefficient on lead liquidity innovations is not significant, the contemporaneous as well as three of the four lagged liquidity innovation variables have a positive and significant coefficient.

The unconditional mean of the quarterly equity issuance counts variable is 2.52%. We find that a one standard deviation shock to liquidity is associated with a contemporaneous increase in equity issuance of 28 basis points, representing an increase of 11%. The coefficient on liquidity innovations in three of the four prior quarters is at least half the magnitude of the coefficient on contemporaneous liquidity innovations. The cumulative increase in equity issuance over the next five quarters associated with a one standard deviation improvement in liquidity is 101 basis points (or roughly 40% of the unconditional mean of the quarterly counts variable). Treating liquidity innovations as an explanatory variable for equity issuance, we find that liquidity innovations explain as much of the variation in equity issuance as stock returns. Stock returns are often used as a proxy for market timing.

After having established that equity issuance is positively related to liquidity innovations, we examine whether this relation could be explained by variables known to be correlated with aggregate liquidity that might affect equity issuance on their own. For example, U.S. studies

predicting aggregate seasoned equity issuance (e.g., Choe, Masulis, and Nanda, 1993) and the aggregate rate at which firms go public (e.g., Lowry, 2003) show that equity issuance is affected by the state of capital markets and aggregate economic activity, which are variables known to be related to liquidity as well.

Our first battery of tests therefore controls for proxies for general capital market conditions, such as market volatility, turnover, and liquidity risk. It is already known from the literature that aggregate equity issuance is lower when market volatility is higher (e.g., Schill, 2004). While we find a negative coefficient on lagged market volatility in our regressions, its inclusion does not affect the coefficients on the liquidity variables. We find no evidence that variation in market turnover is related to equity issuance, and again the coefficients on the liquidity variables remain significant when we include this variable. We do find that one-quarter lagged conditional volatility in liquidity (a measure of liquidity risk) is strongly negatively related to equity issuance, and reduces the explanatory power of lagged liquidity innovations, which suggests that firms not only care about the level of liquidity, but also about the risk that it deteriorates.

Since at least Amihud and Mendelson (1986), it is known that liquidity is related to valuation. But as long as their correlation is not perfect, firms not only benefit from timing equity issues when market valuations are high, but also have separate incentives to time issues when the price impact of the increase in share supply is low. Our benchmark regressions already control for lead, contemporaneous, and lagged returns as proxies for market timing. Next, we additionally include a number of direct proxies for the level of market valuation. Market-to-book is used in studies of market timing (e.g., Loughran and Ritter, 1995, 1997; Baker and Wurgler, 2002; DeAngelo, DeAngelo, and Stulz, 2010). There is evidence that more liquid firms in the U.S. have a higher market-to-book ratio (Fang, Noe, and Tice, 2009), so that liquidity could proxy for market-to-book in our regressions. After controlling for liquidity and market returns, we find no significant effect of the aggregate market-to-book ratio on equity issuance, while the relation between liquidity and equity issuance is unchanged. We do find a strong positive contemporaneous

relation between the aggregate price-earnings ratio and equity issuance, but this does not materially change the relation between liquidity and equity issuance.

Recent literature shows that liquidity is a predictor of economic activity (e.g., Næs, Skjeltorp, and Ødegaard, 2010). Since at least Miller (1963), poor economic activity has been associated with lower equity issuance and, not surprisingly, this finding holds in our sample. We find that when we control for proxies for future levels of economic activity, the coefficients on the liquidity measures remain significant.

Baker and Stein (2004) argue that liquidity is higher when more irrational investors are in the market and that the presence of these investors (in combination with short sales constraints) is associated with overvaluation. Their prediction is that firms issue more equity as liquidity improves. When we control for various measures of sentiment, we find that these measures are not related to equity issuance in our sample and the coefficients on the liquidity variables are unaffected. Also, we examine whether positive and negative liquidity shocks have a similar relation with equity issuance. We find that negative shocks have a much stronger relation with equity issuance and that there is little evidence that positive shocks have any relation with equity issuance. This finding is not supportive of Baker and Stein (2004) and other models whose key prediction is that an *increase* in liquidity leads to *greater* equity issuance.

We then turn to tests that focus more directly on the nature of the mechanism that explains this relation between liquidity and equity issuance. We would expect that many factors that affect equity issuance would be the same for public and private equity issues. However, private equity issues do not increase the supply of traded shares as typically the investors in a private equity issue face restrictions on selling the shares. We would therefore expect firms to have a private equity issue rather than a public equity issue when liquidity deteriorates. We investigate this hypothesis and find support for it. Next, we would expect adverse liquidity shocks to be accompanied by postponements and cancellations of equity issues. We find that postponements are more likely following adverse liquidity shocks, although cancellations are not. When we

examine whether the relation between liquidity and IPOs is similar to the relation between liquidity and SEOs, we find that it is stronger for IPOs. Through most of the paper, we measure equity issuance by dividing counts of equity issues by the number of listed firms. We would expect the results to be weaker when we use proceeds instead of counts because the proceeds measure is extremely skewed and can be heavily influenced by one single extremely large issue. When we investigate whether there is a relation between liquidity innovations and aggregate equity issuance proceeds, we find that such a relation exists, but only for IPOs.

Our paper contributes to several literatures. Our primary contribution is to the equity issuance literature. We find that liquidity is an important determinant of equity issuance across the world. While the recent literature on equity issuance has focused on market timing motivations for equity issuance, we show that liquidity's importance is of the same magnitude as the market timing motivation. A growing recent literature emphasizes the interaction between market liquidity and funding liquidity, following the work of Brunnermeier and Pedersen (2009). The empirical literature on this interaction has focused on financial institutions. The results in this paper suggest that market liquidity affects funding liquidity more generally. Several papers investigate how stock liquidity affects some aspects of the equity issuance process. In particular, Butler, Grullon, and Weston (2005) show that underwriters charge more when liquidity is lower and Gao and Ritter (2010) demonstrate that underwriters affect the slope of the demand function for shares through their marketing activities. Our paper adds to that literature by showing that aggregate liquidity has a powerful relation with security issuance. Finally, there is a large literature on the role of liquidity in the pricing of financial assets. In this paper, we provide evidence consistent with the view that the role of liquidity extends beyond the boundaries of financial markets and that it has a pervasive impact on corporate financial policies. While Fang, Noe, and Tice (2009) and Lipson and Mortal (2009) show that stock liquidity is related to a firm's capital structure, such a finding does not necessarily mean that firms are more likely to issue equity in more liquid markets. Our contribution therefore helps understand one mechanism

whereby more liquid firms have less leverage, namely that higher liquidity makes it less costly to issue equity.

The paper proceeds as follows. In Section 2, we introduce our sample. In Section 3, we show that equity issuance is related to liquidity. In Section 4, we check whether equity issuance is related to liquidity because liquidity proxies for other variables that are known to affect equity issuance. In Section 5, we investigate in more detail the mechanisms linking equity issuance to liquidity. We conclude in Section 6.

2. Data

We collect data on the number of issues and the amount of proceeds (in US$) raised from both IPOs and SEOs (both public and private) in 36 countries from January 1995 to December 2008 from the Securities Data Company (SDC) database. Our sample consists only of common stock offerings (ordinary common shares). In discussions with SDC representatives it was brought to our attention that there is a limited number of outdated security classifications that refer to common shares and were applied in the early part of our sample for certain countries. For these cases, we extend our sample of equity offerings to include the earlier definitions as well.[1] We include only primary offerings, since pure secondary issues by current shareholders do not increase the supply of a firm's shares, and therefore fall outside the scope of the present study. We exclude issues by utility companies, which are heavily regulated (2-digit SIC code 49), as well as issues by financial firms (2-digit SIC code 60). We also exclude foreign issues and issues of depository receipts (DRs). In addition, we discard issues that although announced, were eventually withdrawn (cancelled or postponed) from our main sample – but we use them in a separate analysis. For the U.S., we only include offerings from companies traded on the NYSE

[1] Examples of such security definitions include the category of "Par Value Common Shares" for Japan, "Equity Shares" for India, and "Class A Common/Ordinary Shares" for China.

because our liquidity measure is not comparable across exchanges.[2] SEOs consist of public follow-on offerings, as well as private placements and rights offerings.[3] In almost every market, the overwhelming majority of equity offerings are underwritten (the exceptions are Australia and Japan).

We aggregate equity issues at a quarterly frequency on the basis of their issue date. We deflate the quarterly number (US$ proceeds) of issues by the total number (market capitalization in US$) of all publicly listed companies in the country as of the end of the previous year. The resulting issuance measures reflect the relative increase in the supply of equity given the size of each market. We use the World Development Indicators database to obtain information on the number of listed companies and the aggregate market capitalization of each market.

As a measure of time-variation in liquidity, we use the market-wide Amihud (2002) proxy constructed by Karolyi, Lee, and van Dijk (2012) that is available for the 36 countries in our sample.[4] The Amihud proxy is designed to capture the marginal impact of a unit of trading volume on the stock price. It is computed as the daily ratio of the absolute stock return over the local currency trading volume of the stock. This measure stays close to the intuitive description of liquid markets as those that accommodate trading with the least effect on price. Amihud (2002) shows that this measure is strongly positively related to microstructure estimates of illiquidity for the U.S. stock market. Hasbrouck (2006) and Goyenko, Holden, and Trzcinka (2009) show that the Amihud measure performs well relative to other proxies in capturing high-frequency measures of transaction costs based on U.S. data. Lesmond (2005) reports a high correlation between the Amihud measure and bid-ask spreads in 23 emerging markets. Many recent

[2] We identify NYSE equity offerings based on the SDC field "Primary Exchange Where Issuer's Stock Trades".
[3] Rights issues represent a large fraction of SEOs in most continental European countries and several emerging markets. The effect of liquidity on rights issues could be different from that on other SEOs, since in a rights issue new shares are issued but not necessarily immediately sold on the market, which may help explain why our results on the relation between liquidity and issuance are weaker for SEOs than for IPOs. However, in unreported tests, we find little evidence that liquidity affects the choice between rights offerings and other SEOs.
[4] The data on liquidity are available at http://mathijsavandijk.com.

empirical studies use the Amihud proxy to measure stock market liquidity, both for the U.S. and for other countries. Examples include Acharya and Pedersen (2005), Spiegel and Wang (2005), Avramov, Chordia, and Goyal (2006), Kamara, Lou, and Sadka (2008), Watanabe and Watanabe (2008), and Beber and Pagano (2013). Karolyi, Lee, and van Dijk (2012) take a log transformation of the Amihud measure and multiply it by -10,000 to obtain a measure that is increasing in liquidity. To mitigate the effect of outliers, we winsorize their monthly liquidity time-series at the 1st and 99th percentiles by country. We then transform the monthly market liquidity time-series to a quarterly frequency by computing the average within each quarter. We apply the same procedure to their monthly turnover time-series.

Because market liquidity is characterized by persistent long-term trends (e.g., Chordia, Roll, and Subrahmanyam, 2008; Næs, Skjeltorp, and Ødegaard, 2011), we test for stationarity using the panel unit root test of Levin, Lin, and Chu (2002) and find evidence of non-stationarity. Therefore, all our regressions include a measure of liquidity innovations (rather than liquidity levels), taken as the residuals from country-by-country AR(1) regressions of the level of market liquidity.

We obtain the daily (value-weighted) total market return index for each country in our sample from Datastream. We then compute the average of the daily market returns within each quarter to obtain the corresponding quarterly time-series. We construct a quarterly time-series of market volatility for each country as the standard deviation of the daily market returns within the quarter and a quarterly time-series of liquidity risk as the conditional volatility of the raw quarterly liquidity series based on a GARCH(1,1) model.

We also construct quarterly time-series of idiosyncratic volatility and of "stock price synchronicity" (Morck, Yeung, and Yu, 2000) based on the value-weighted average standard deviation of the residuals and the value-weighted average R^2, respectively, from a simple market model run for individual stocks based on daily data within the quarter. For this purpose, we use Datastream to collect the daily total return index (*RI*) and monthly market capitalization (*MV*;

expressed in millions of local currency) for all individual stocks traded in the 36 countries in our sample. To be consistent with Karolyi, Lee, and van Dijk (2012), we limit our sample to only stocks from major exchanges.

Data on quarterly aggregate market-to-book ratios, price-earnings ratios, and dividend yields are also obtained from Datastream. As proxies for macroeconomic conditions we use quarterly GDP growth and sales growth rates from OECD and Datastream (following, e.g., Lowry, 2003; Næs, Skjeltorp, and Ødegaard, 2011). For the same purpose, we use the amplitude-adjusted composite leading economic indicator from the OECD, which is a compilation of several key economic indicators that provide signals on future turning points of economic activity.

To account for investor sentiment we use three different proxies: the U.S. investor sentiment index of Baker and Wurgler (2006), which is increasing with investors' optimism; the local closed-end country fund discount (Lee, Shleifer, and Thaler, 1991), which is available for 22 countries in our sample; and a global sentiment indicator computed as the equally-weighted average of the discounts of local closed-end fund discounts as in Karolyi, Lee, and van Dijk (2012). For the latter two variables, lower numbers indicate more optimistic investors.[5]

A detailed description of all variables and data sources is included in the Appendix.

Table 1 presents summary statistics for the number of equity issues, equity issuance proceeds, and market returns, liquidity, and volatility for each of the 36 countries in our sample. The table distinguishes developed and emerging countries based on the classification by the International Finance Corporation (IFC). The total number of equity issues (IPOs plus SEOs) in the sample is 47,399 (of which 36,400 took place in developed countries and 10,999 in emerging countries). The number of equity issues in Australia (12,013) is striking and may be due to the mining boom. We have carefully inspected the SDC data for Australia and found no reasons to assume that the number of equity issues is incorrect. Nonetheless, we have rerun all our analyses without Australia to make sure the results are not driven by this particular country.

[5] Data for these variables are available at http://mathijsavandijk.com.

The second and third columns of Table 1 show the time-series mean and standard deviation of the quarterly number of equity issues scaled by the number of listed stocks by country. This is the main dependent variable in our analyses. On average, the countries in our sample experience a number of equity issues per quarter that corresponds to 2.52% of the number of listed stocks on the local equity market. There is considerable variation in the average equity issuance counts variable across countries. The mean ratio of equity issues to listed stocks varies from 0.26% for South Africa to 15.31% for Australia. The ratio is larger in developed than in emerging countries (3.24% vs. 1.62%), even when we exclude Australia (2.61% vs. 1.62%). The time-series standard deviations in the third column of Table 1 suggest considerable time-variation in equity issuance. Consistent with prior studies, we find that equity issues tend to be clustered in time. The slope coefficient in a pooled AR(1) model of the quarterly equity issues counts variable across countries is 0.81.

The fourth and fifth columns of Table 1 show the time-series mean and standard deviation of the quarterly proceeds of these equity issues (expressed in US$) scaled by the local stock market capitalization (also in US$). We use this equity issuance proceeds variable as an alternative to the counts variable in some of our tests. On average, firms in the countries in our sample raise public equity capital per quarter corresponding to 0.22% of the local equity market capitalization. Average equity proceeds are somewhat greater in emerging countries than in developed countries, at 0.27% vs. 0.18%. China is an outlier for this variable, with average equity proceeds per quarter corresponding to 0.77% of the local market capitalization, or 3.5 times the average across all 36 countries. Again, we have found no reasons to question the SDC data for China and suspect this number is driven by several large privatizations early on in the sample when the Chinese stock market was still relatively undeveloped.

We note that a direct comparison of the level of the Amihud measure across countries is not possible because of differences in currency units and trading volume definitions. Therefore, we

standardize the quarterly time-series of market liquidity innovations for each country to have zero mean and unit standard deviation in our tests.

3. Does liquidity help explain time-variation in equity issuance?

Table 2 shows the estimation results of pooled tobit models to explain quarterly variation in the equity issuance counts variable (i.e., the number of IPOs + SEOs scaled by the number of listed stocks) in the 36 countries in our sample over 1995-2008 (in unreported tests, we obtain similar results when we exclude the years of the recent global financial crises 2007-2008). We use tobit specifications since the dependent variable is truncated at zero; many of the countries in our sample have zero equity issues in at least some quarters. Almost all models include country fixed effects to account for time-invariant country characteristics that can explain cross-country variation in equity issuance intensity. To be conservative, we also include year fixed effects in almost all models to account for any common global trends – although they subsume some of the time-variation in equity issuance that could potentially be due to liquidity. As prior studies (e.g., Lowry, 2003) argue that there may be institutional reasons that cause equity issuance to be less intense in the first calendar quarter, we also include a quarter one dummy in many of the tobit models. In the last model of Table 2, we also include a lagged dependent variable. Standard errors are clustered at the country-level. The last two rows of Table 2 report the results of *F*-tests on the joint significance of all liquidity variables, and of only the lagged liquidity variables.

Model (1) of Table 2 includes one-quarter lead local stock market liquidity innovations, contemporaneous liquidity innovations, and four quarterly lags of liquidity innovations as explanatory variables. The coefficients on the contemporaneous and the first three lags of liquidity innovations are all positive and statistically significant, which is consistent with the hypothesis that firms issue more equity in and following quarters of improving market liquidity. The coefficient on lead liquidity innovations is close to zero and statistically insignificant. There

is thus little evidence of liquidity timing in the sense that firms are able to time their equity issues before market liquidity worsens.

The economic significance of the coefficients on contemporaneous and lagged liquidity innovations is substantial. A one standard deviation increase in market liquidity is associated with a contemporaneous increase in equity issues by 28 basis points (equal to the magnitude of the coefficient, since the liquidity variables have been standardized to have zero mean and unit standard deviation), which corresponds to 11% of the unconditional average ratio of equity issues of 2.52% (from Table 1). The coefficients on the lagged liquidity variables tend to be slightly smaller, but still sizable at more than half of the contemporaneous coefficient. The cumulative change in equity issuance over the next five quarters associated with a one standard deviation improvement in liquidity is 101 basis points (or around 40% of the unconditional average ratio of equity issues of 2.52%).

One could argue that the contemporaneous relation between liquidity and equity issuance may be driven by reverse causality, since equity issues could affect local stock market liquidity. However, there are at least three reasons why this is unlikely to be a concern in our analyses. First, equity issues correspond to a tiny fraction of existing listings on each market (counts are on average 2.52% of the number of listed stocks and proceeds are on average 0.22% of local market capitalization) and we measure market liquidity based on the value-weighted average liquidity across the existing stocks on a market. We thus expect the impact of equity issues on our liquidity variables to be very small. Second, if anything, we would expect the effect of equity issues on market liquidity to be negative, while we find a positive coefficient on contemporaneous liquidity innovations in Table 2. IPOs tend to involve relatively small stocks that are less liquid than the average existing stock, so a wave of IPOs could depress aggregate market liquidity. SEOs create the equivalent of a large sell order imbalance on the market for existing stocks, which is likely to temporarily depress liquidity. Third, in each of the models in Table 2 at least two of the coefficients on the lagged liquidity variables are significant (in addition to the significant

coefficient on contemporaneous liquidity), which suggests that liquidity matters even when disregarding the contemporaneous relation because of potential reverse causality concerns.

In model (2) of Table 2, we use the same specification as in model (1) but replace market liquidity innovations with lead, contemporaneous, and lagged local market returns (for the same sample of country-quarters). These results serve two purposes. First, they confirm the finding of prior work that equity issuance is positively and significantly related to contemporaneous and lagged market returns, and negatively and significantly related to lead market returns.[6] Second, they provide a benchmark for the importance of the relation between liquidity and equity issuance in model (1). In our regressions, the relation between liquidity innovations and equity issuance is as strong as the relation between market returns and equity issuance. The cumulative change in equity issuance over the next five quarters associated with a positive one standard deviation shock to market returns is 102 basis points (not taking into account the coefficient on lead market returns), which is almost identical to the cumulative change in equity issuance of 101 basis points for liquidity innovations discussed above.

In model (3), we include liquidity innovations and returns at the same time. The effects on equity issuance diminish somewhat relative to the first two models (for example, the coefficient on one-quarter lagged liquidity innovations becomes insignificant), but both liquidity and returns are still statistically and economically significant determinants of time-variation in equity issuance and still have comparable cumulative effects.[7] The coefficient on the quarter one dummy is negative and significant, but its inclusion does not materially affect the coefficients on the liquidity and return variables. In model (4), we drop the lead liquidity innovations as well as the

[6] Whether the latter finding can be attributed to market timing abilities by managers is subject to debate (e.g., Butler, Grullon, and Weston, 2005).

[7] McLean, Pontiff, and Watanabe (2009) argue that firms issue shares for two reasons – optimal capital structure and market timing – and that issuance for market timing motives is more likely when issuance costs are low. This argument would suggest that issuance is more likely to predict negative stock returns in more liquid markets. In unreported analyses, we test this hypothesis by including interaction terms between lead market returns and contemporaneous and lagged market liquidity innovations and find that none of them has a significant coefficient.

three- and four-quarter lags of market returns as they are not significant in model (3). Models (5) and (6) demonstrate that the relations between liquidity and returns and equity issuance are roughly equally strong when we drop either the year fixed effects or both the year and country fixed effects. Model (7) includes a lagged dependent variable, which has a coefficient of 0.544 and is statistically significant. The effects of liquidity and returns survive. In most of the other analyses we present below, we do not include a lagged dependent variable since our purpose is to understand which economic forces drive time-variation in equity issuance rather than to develop the best possible econometric model to explain the dynamics of equity issuance.

In unreported robustness tests, we estimate the specifications in Table 2 using panel tobits with random effects (instead of country fixed effects) and using regular panel models (instead of tobits) and obtain similar results. We also estimate the specifications in Table 2 with liquidity changes rather than liquidity innovations as independent variables. We still find a statistically and economically significant effect of the market liquidity variables (the *F*-tests on the joint significance of the coefficients on contemporaneous and lagged liquidity changes are significant at the 5% level or better), though overall the results are slightly weaker. It thus seems that firms respond particularly strongly to contemporaneous and lagged unexpected changes in liquidity (as captured by the liquidity innovations variables).

In sum, Table 2 presents evidence that equity issuance is positively related to innovations in liquidity. The relation between liquidity and equity issuance survives controlling for market returns and is roughly equally important as the relation between market returns and equity issuance uncovered by earlier studies.

4. Is the relation between liquidity and equity issuance due to other factors?

The results in the previous section show that equity issuance is positively related to liquidity, even after controlling for market returns. This finding is consistent with the hypothesis that managers take the costs associated with downward-sloping demand curves into account in their

decision to issue equity. However, it could also be the case that our liquidity variables proxy for other factors that affect equity issuance and are correlated with liquidity. In this section, we investigate whether the effects of liquidity can be explained by other financial and economic variables, including capital market conditions, (expected) economic activity, asymmetric information, and investor sentiment.

Table 3 reports the results of tobit regressions that include various other measures of capital market conditions in addition to market liquidity innovations and market returns. All models include country and year fixed effects as well as the quarter one dummy. Significance is again based on standard errors clustered at the country-level.

In model (1), we add contemporaneous and lagged market volatility to our baseline model that includes market liquidity and returns. We know that liquidity is negatively related to volatility (e.g., Chordia, Sarkar, and Subrahmanyam, 2005) and Schill (2004) shows there are fewer equity issues in volatile times. It is thus possible that the effects of liquidity in Table 2 capture the role of market volatility. Consistent with Schill (2004), we find a negative and significant coefficient on (one-quarter lagged) volatility. However, there is virtually no change in the magnitude and statistical significance of the coefficients on the liquidity variables.

Baker and Stein (2004) argue that market liquidity is a sentiment indicator and that periods of positive sentiment coincide with intense equity issuance. Using turnover as a liquidity proxy, they show that liquidity is positively correlated with aggregate time-variation in U.S. equity issuance.[8] Model (2) of Table 3 shows that the relation between liquidity and equity issuance in our global sample is not driven by turnover. None of the coefficients on market turnover are significant and

[8] Turnover can proxy for other stock characteristics besides liquidity. For instance, it can proxy for diversity of opinion. More generally, turnover does not seem to be widely accepted as a good proxy for time-series variation in liquidity. A common counterexample is that turnover tends to be high during financial crises, while liquidity tends to be low. Recent studies that evaluate liquidity proxies for U.S. and international equity markets (Goyenko, Holden, and Trzcinka, 2009; Fong, Holden, and Trzcinka, 2011) do not even include turnover as a proxy for liquidity. Lesmond (2005) studies the liquidity of emerging equity markets using different proxies (including turnover) and concludes: "These results cast doubt on a wide range of studies employing turnover as a principal liquidity proxy." (p. 423). In our sample, market turnover is only weakly correlated with the liquidity variables, at 0.12 with liquidity levels and 0.06 with liquidity innovations.

the coefficients on the liquidity variables are unaffected. These coefficient estimates suggest that our results are distinct from those of Baker and Stein (2004) and that there is no relation between turnover and equity issuance in our global sample once returns and liquidity are controlled for.

Model (3) shows that the contemporaneous relation between liquidity and equity issuance survives controlling for a proxy for liquidity risk (conditional liquidity volatility based on a GARCH(1,1) model). However, the significantly negative coefficient on one-quarter lagged liquidity risk and the weakened effects of lagged liquidity innovations suggest that equity issuance is in part related to liquidity because firms respond to uncertainty about liquidity in the recent past. Uncertainty about liquidity can deter equity issues since it leads to uncertainty about the discount that investors have to be given to absorb the additional supply of shares – and thus to uncertainty about the equity issue proceeds.

Although we control for potential market timing effects using lead, contemporaneous, and lagged market returns, many studies use the market-to-book ratio as a proxy for market timing. Since more liquid firms in the U.S. have a higher market-to-book ratio (Fang, Noe, and Tice, 2009), we want to make sure that liquidity is not picking up the effect of market-to-book. Model (4) shows that issuance is not related to the aggregate market-to-book ratio after controlling for liquidity and returns, and the effects of liquidity are not diminished. Model (5) shows a significant effect of the contemporaneous price-earnings ratio on equity issuance, but again the effects of liquidity are intact. The coefficients on the dividend-price ratio in model (6) are not significant. Consequently, the relation between liquidity and equity issuance cannot be attributed to these valuation proxies.

The estimation results of model (7) indicate that even when controlling for all of these variables as well as a lagged dependent variable, there is still a statistically and economically significant relation between contemporaneous liquidity innovations and aggregate equity issuance. The coefficients on the lagged liquidity innovations are no longer significant. We note that this specification stacks the odds against finding a significant effect of liquidity, since the

year fixed effects, quarter one dummy, and lagged dependent variable absorb a significant fraction of the quarterly variation in equity issuance that could potentially be due to variation in liquidity. In addition to the significantly positive coefficient on contemporaneous liquidity innovations, model (7) still shows a significantly negative coefficient on lagged liquidity risk. In sum, the significant coefficients on liquidity and liquidity risk are not explained by a host of other capital market conditions.

Recent studies show that liquidity forecasts economic activity (e.g., Næs, Skjeltorp, and Ødegaard, 2010) and we know from the equity issuance literature that firms issue more equity in anticipation of better economic conditions. Following Lowry (2003), we proxy for expectations about economic conditions using contemporaneous and lead GDP and sales growth in models (1) through (3) of Table 4. Lowry introduces these variables as proxies for the demand for capital. In model (3), we also include the composite leading economic indicator by the OECD. (We note that data on the sales growth and leading economic indicator variables are available for relatively few country-quarter observations.) In line with the results of earlier studies that document that firms issue more equity in (anticipation of) good economic times, the coefficients on contemporaneous GDP growth and sales growth are positive and significant – though only when these variables are considered in isolation. Moreover, the coefficients on the liquidity variables are still significant.

It is well-documented that the liquidity of a stock is inversely related to the degree of asymmetric information about the stock's value. More asymmetric information is also likely to lead to greater costs of raising equity capital, so changes in information asymmetries could influence liquidity and equity issuance simultaneously and in the same direction. As argued in the introduction, this identification issue is unlikely to be of great concern in our analysis of the relations between aggregate liquidity and aggregate equity issuance.[9] Nonetheless, it may be the case that market-wide fluctuations in information asymmetries affect aggregate liquidity and

[9] Baker and Stein (2004, p. 272) state that it seems "a stretch to argue that there are large swings in the degree of asymmetric information about the market as a whole."

aggregate issuance at the same time and in a similar way. In model (4) of Table 4, we include two proxies for market-wide variation in information asymmetries. The first is idiosyncratic volatility, computed as the value-weighted average of the residual volatility from market model regressions run for each individual stock within a country. The second is "stock price synchronicity," which is computed as the value-weighted average R^2 from market model regressions run for each individual stock within a country. Morck, Yeung, and Yu (2000) argue that greater stock price synchronicity is associated with less-informative stock prices. Model (4) shows that the inclusion of these variables does not materially affect the coefficients on the contemporaneous and lagged liquidity innovations.

Models (5) through (7) of Table 4 include various proxies for investor sentiment. In the model of Baker and Stein (2004), irrational investors can drive up stock prices above their fundamental value in the presence of short-sales constraints, and irrational investors also make the market more liquid. If market liquidity and sentiment are related, the relation between liquidity and equity issuance could thus be driven not by managerial concerns about downward-sloping demand curves, but by their incentives to issue equity when their stock is overvalued. Investor sentiment should be reflected in market returns and valuation ratios, so our evidence that the effects of liquidity are robust to the inclusion of returns and valuation proxies (such as market-to-book) is hard to reconcile with a sentiment-based explanation for our main results. Moreover, we find no evidence that market turnover – the variable that Baker and Stein use to proxy for this sentiment effect – has an impact on equity issuance in our international sample.

To further examine the sentiment hypothesis, we also include direct proxies for sentiment in our tobit models. We use local and global closed-end country fund discounts (Lee, Shleifer, and Thaler, 1991) and the U.S. investor sentiment index of Baker and Wurgler (2006) as proxies for variation in investor sentiment. We obtain the country fund discount variables from Karolyi, Lee, and van Dijk (2012). They construct time-series of local closed-end country fund discounts for 22 of the countries in our sample based on a sample of 42 closed-end funds. The global sentiment

indicator is the equally-weighted average of the discounts of these 42 country funds. None of the sentiment variables is significant in models (5) through (7) and the coefficients on liquidity remain significant even after controlling for these sentiment proxies. The magnitude of the coefficients on liquidity innovations is somewhat attenuated in model (7), but this model can only be estimated based on 840 country-quarter observations (compared to 1,800 in Table 2) and the *F*-tests in the bottom two rows of Table 4 confirm that the joint effects of all liquidity variables and of only the lagged liquidity variables are still significant at the 5% level.[10]

Overall, the results in Tables 3 and 4 suggest that the positive relation between market liquidity and aggregate equity issuance is not due to economic or financial variables that are unrelated to the aggregate demand elasticity of the stock market, but could simultaneously affect liquidity and equity issuance for other reasons.

5. How does equity issuance depend on liquidity?

In this section, we present the results of tests that focus more directly on the nature of the mechanism through which equity issuance is related to liquidity. We explore asymmetries in this relation, study the choice between private and public equity issues, and analyze postponements and cancellations of equity issues. We conclude with an analysis of the relation between liquidity and IPOs vs. SEOs and of the relation between liquidity and equity issue proceeds rather than equity issue counts.

Table 5 allows for an asymmetric effect of declines and improvements in liquidity by introducing dummy variables indicating quarters with the top 33% (Market liquidity UP) and the bottom 33% (Market liquidity DOWN) of observations by country based on liquidity innovations.

[10] Since the global and U.S. sentiment factors are the same for all countries, including year fixed effects in the tobit models may be overly restrictive. We therefore re-estimate models (5) through (7) of Table 4 without year fixed effects. The results suggest that the number of equity issues is greater in quarters with more pessimistic global sentiment and more optimistic U.S. sentiment, respectively. Neither of these effects survives the inclusion of the other sentiment variables and the lagged dependent variable in model (7). The coefficients on the liquidity variables remain significant.

The table contains five different models that differ in the number of lags of these dummy variables and in the extent to which we control for market returns. The results are consistent throughout the table: the relation between liquidity and equity issuance is driven by the quarters with the greatest deterioration in liquidity. The coefficient on the contemporaneous DOWN market liquidity dummy is always statistically significant at the 5% level or better. Its magnitude suggests that the ratio of equity issues is about 30 to 40 basis points lower in quarters with the most negative liquidity innovations, or about 15% of the unconditional average ratio of equity issues of 2.52%. In addition, in most models, the coefficients on at least two of the lagged DOWN liquidity dummies are significant. In model (4), a large deterioration in liquidity is associated with a decrease in equity issues over the next five quarters (based only on the significant coefficients on the DOWN liquidity dummies) by 89 basis points, or around 35% of the average fraction of issues in any given quarter across all countries in our sample. This effect is close in magnitude to the cumulative change in equity issues of 101 basis points associated with a one standard deviation shock to liquidity documented in Section 3 based on Table 2. In contrast, we find only weak evidence that equity issuance goes up during or following quarters with large improvements in market liquidity. The coefficient on the contemporaneous UP market liquidity dummy is positive and significant at the 10% level, but only in models (1) and (2) and none of the lagged UP market liquidity variables has a significant coefficient.[11]

These results seem to be at variance with the intuition of the model of Baker and Stein (2004), which predicts that liquidity is related to equity issuance because – in the presence of short-sales constraints – stocks can become overvalued and more liquid at the same time, and managers tend to issue more equity during these times. In contrast, our results are driven by periods of deteriorating liquidity. More generally, stories about managers exploiting mispricing on the equity market tend to focus on episodes of overvaluation and high liquidity when the

[11] In unreported robustness tests, we obtain almost identical results for the UP and DOWN liquidity dummies when we allow for asymmetric effects of market returns in a similar way.

overvaluation is associated with active participation by noise traders in equity markets. The asymmetric effects of liquidity innovations on equity issuance documented in Table 5 thus seem hard to reconcile with alternative explanations based on investor sentiment. In contrast, they accord well with the intuition that firms shun equity issues when markets are illiquid to avoid the large discount they need to offer investors to absorb the additional supply of shares in such market conditions.

It is interesting to note that although Baker and Stein (2004) argue that liquidity and sentiment are positively related, they do not necessarily attribute the positive empirical relation between market turnover (their proxy for liquidity) and aggregate U.S. equity issuance they find to managers having some comparative advantage in assessing mispricing and therefore timing equity issues to exploit overvaluation. In fact, footnote 7 of Baker and Stein (2004) discusses that their preferred interpretation is that "managers care about market liquidity per se – i.e., they simply wish to avoid large price impacts when issuing equity." The bigger point Baker and Stein make is that managers may appear to time the market successfully even when they base their decision to issue equity on the demand elasticity of the equity market, which happens to be correlated with investor sentiment.

The results in Table 5 lead us to conclude that it is unlikely that the relation between liquidity and equity issuance is due to sentiment. First, sentiment should be picked up by the market return variables and valuation proxies. Second, including direct measures of sentiment in our regressions does not affect the relation between liquidity and equity issuance. Third, that relation is driven by large deteriorations in liquidity, which is not consistent with common stories about how sentiment affects public capital raising.

We would expect that many of the other factors that could affect equity issuance (and that may not have been perfectly controlled for in Tables 2 through 5) should have similar effects on public and private equity issues. However, downward-sloping demand curves are less of a concern for private equity issues since investors in a private issue tend to face restrictions on

selling the shares, which implies that a private equity issue has less of an effect on the supply of shares in the public market. We therefore expect that poor liquidity conditions lead managers to opt for a private rather than a public equity issue. We test this conjecture in Table 6 by estimating tobit models to explain time-variation in the quarterly number of privately placed SEOs scaled by the number of public SEOs plus the number of privately placed SEOs. All models in Table 6 contain contemporaneous and lagged market liquidity innovations and market returns as well as lead market returns. Models (2) through (6) also include proxies for capital market conditions, future economic activity, or asymmetric information. The bottom line is that liquidity has a negative and significant relation with the fraction of private equity issues. In other words, firms tend to issue more private equity relative to public equity when market liquidity deteriorates. In model (1), a one-standard deviation deterioration in liquidity is associated with an increase in the fraction of private equity issues over the next two quarters by around 3.1% (which is a 12% increase relative to the unconditional average fraction of private SEOs in our sample of 25.0%). The negative relation between liquidity innovations and the fraction of private equity issues survives the inclusion of market volatility, market-to-book, idiosyncratic volatility, and stock price synchronicity.

If firms are concerned about the price impact of equity issues, adverse liquidity shocks should make them more likely to postpone or cancel equity issues previously filed. We investigate this hypothesis in Table 7. We obtain quarterly data on the number of postponements and cancellations from SDC. We scale the number of postponements (cancellations) in a country-quarter by the number of realized equity issues plus the number of postponements (cancellations). Models (1) through (4) explain time-variation in postponements, while models (5) through (8) explain time-variation in cancellations. Like in Table 6, we control for market returns and for proxies for capital market conditions, future economic activity, or asymmetric information in different models. One drawback of the SDC data on postponements and cancellations is that they are reported by the filing date of the equity issue and not by the postponement or cancellation

date. We expect that most postponements and cancellations are announced within six months of the filing date, so we include only contemporaneous and two quarterly leads of the explanatory variables in Table 7. The aggregation of postponements and cancellations by filing dates prevents us from making strong statements about the exact timing of postponements and cancellations relative to changes in market liquidity, returns, capital market conditions, and economic activity.

Model (1) of Table 7 shows that postponements are negatively related to both market liquidity innovations and to market returns, consistent with the hypothesis that firms tend to postpone equity issues during times of deteriorating liquidity and decreasing valuations. The economic effect of liquidity is large and of the same order of magnitude as that of returns. The effects of liquidity and returns both survive the inclusion of additional variables in models (2) through (4). In contrast, we find no significant relation between the liquidity variables and the fraction of cancelled equity issues. A potential explanation is that cancellations of equity issues are more costly (if only as a signal about the issuing firm's prospects) and are therefore less likely to be based on capital market conditions alone. We still find a significantly negative effect of market returns, though it is weaker in models (5) through (8) than in models (1) through (4). Unreported results show that the relation between liquidity and postponements of equity issues is similar for IPOs and SEOs.

In Table 8, we examine whether the effects of market liquidity innovations are different for IPOs and SEOs. Models (1) through (4) have the ratio of IPOs to listed stocks as dependent variable, while models (5) through (8) are based on SEOs over listed stocks. There are a number of interesting results in Table 8. First, liquidity is significantly related to time-variation in both IPOs and SEOs. Second, the relation is stronger for IPOs. A one standard deviation shock to liquidity is associated with a change in equity issuance over the next five quarters (based only on the significant liquidity coefficients in models (1) and (5)) that is equal to 65 basis points for IPOs and 25 basis points for SEOs. The correlation of contemporaneous liquidity innovations is stronger with IPOs than with SEOs throughout. In models (4) and (8) – which control for all

explanatory variables in this table – four of the five liquidity coefficients are significant for IPOs, versus only two for SEOs. That said, the number of observations is significantly reduced in models (4) and (8) and, if anything, the *F*-tests reported in the last two rows of Table 8 seem to suggest a stronger joint effect of lagged liquidity for SEOs. Third, the effects of market returns are considerably stronger both statistically and economically for SEOs than for IPOs. Most notably, the negative effect of one-quarter lead returns reported in previous tables is only observed in the SEO specifications. In other words, the evidence is consistent with market timing being much stronger for SEOs than for IPOs, perhaps because IPOs tend to involve more complex and lengthy processes that are more difficult to time.

In Table 9, we investigate whether our finding that firms issue less equity when market liquidity deteriorates is robust to using equity issue proceeds instead of equity issue counts. We estimate similar tobits as before, but use quarterly equity issue proceeds scaled by the local stock market capitalization (both expressed in US$) as dependent variable. We again distinguish between IPOs and SEOs; models (1) through (4) try to explain time-variation in IPO proceeds, and models (5) through (8) focus on SEO proceeds. Ex ante, we expect these results to be weaker since the proceeds measure is highly skewed and is more sensitive to individual extreme observations. We therefore drop China from the sample for this analysis, as Table 1 shows that there were a number of issues with very large proceeds that are likely to influence the results. (We obtain slightly weaker results when we include China.) Further, financial globalization makes it possible for firms to issue shares abroad (Doidge, Karolyi, and Stulz, 2013, and Caglio, Weiss-Hanley, and Marietta-Westberg, 2011, show the growing importance of global IPOs during our sample period), so that proceeds may overstate the amounts sold domestically. Also, firms might choose to issue more abroad when domestic liquidity has suffered an adverse shock but liquidity abroad has not.

Models (1) through (4) of Table 9 show a strong relation between liquidity innovations and IPO proceeds. At least two of the coefficients on contemporaneous and lagged liquidity

innovations are significant in each model. A one standard deviation shock to liquidity is associated with a change in IPO proceeds over the next five quarters (based only on the significant liquidity coefficients in model (1)) that is equal to 0.09% of local market capitalization, which corresponds to around 40% of the unconditional average fraction of equity issues of 0.22% in our sample – an economic effect that is comparable in magnitude to the effect on equity issue counts documented in Section 3 based on Table 2. In contrast, models (5) through (8) show almost no significant relation between liquidity innovations and SEO proceeds.

6. Conclusions

In this paper, we have shown that equity issuance across the world is strongly related to equity market liquidity. We provide evidence that this relation between liquidity and equity issuance cannot be attributed to liquidity serving as a proxy for future economic growth or market sentiment. It is also not plausible that the relation could be due to reverse-causation. Using liquidity as an explanatory variable for equity issuance, we find that liquidity explains as much of equity issuance as contemporaneous and past market returns. The relation between liquidity and equity issuance is stronger for decreases in liquidity than increases. As one would expect, the fraction of private equity issues to public equity issues increases as liquidity worsens since private equity issues do not increase the supply of traded shares in the short run because of restrictions on selling the shares from such issues. We interpret our findings to be supportive of the view that, in imperfectly liquid markets, the demand for shares is downward-sloping and that corporations take into account the slope of the demand curve for shares in their financing decisions.

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Appendix: Variable definitions and data sources

Variable	Description	Source
Dependent variables		
# equity issues / # listed companies	Quarterly number of primary common share issues (IPOs and SEOs) over 1995-2008, scaled by the total number of listed domestic companies (as of the end of the previous year). Aggregation by quarter is based on the date of issuance. We exclude issues by utility companies and financial firms (two-digit SIC codes 49 and 60), foreign issues, and issues that were eventually postponed or cancelled. For the U.S., we only include issues from NYSE-listed companies. The number of listed companies is from the World Bank (for Taiwan, we use http://www.world-exchanges.org/statistics).	Securities Data Company (SDC) World Bank's World Development Indicators.
proceeds / local market cap	Quarterly amount of proceeds (in million US$) raised from primary common share issues (IPOs / SEOs) over 1995-2008, scaled by the total market capitalization of domestic companies (in million US$, as of the end of the previous year). Aggregation by quarter is based on the date of issuance. We exclude issues by utility companies and financial firms (two-digit SIC codes 49 and 60), foreign issues, and issues that were eventually postponed or cancelled. For the U.S., we only include issues from NYSE-listed companies. Total domestic market capitalization is from the World Bank (for Taiwan, we use Datastream).	Securities Data Company (SDC) World Bank's World Development Indicators.
# private SEOs / (# public + private SEOs)	Quarterly number of privately placed SEOs over 1995-2008, scaled by the total number of public and privately placed SEOs. In the U.S., a private placement is directly addressed to an institutional investor, without having to be registered with the Securities and Exchange Commission. In other countries, an offering is classified as a private placement when the corresponding securities are not widely listed. Rights offerings are excluded.	Securities Data Company (SDC)
# postponements / (# realized issues + # postponements)	Quarterly number of primary common share issues (IPOs and SEOs) that were eventually postponed (over 1995-2008), scaled by the total number of realized and postponed issues. Aggregation of postponed issues by quarter is based on the announcement date of the offering.	Securities Data Company (SDC)
# cancellations / (# realized issues + # cancellations)	Quarterly number of primary common share issues (IPOs and SEOs) that were eventually cancelled (over 1995-2008), scaled by the total number of realized and cancelled issues. Aggregation of cancelled issues by quarter is based on the announcement date of the offering.	Securities Data Company (SDC)

Variable	Description	Source
Independent variables		
market returns	Quarterly average of daily local currency market returns, computed as the % change in the country's Datastream value-weighted total market return index.	Datastream
market liquidity	Residuals from quarterly AR(1) regressions of market-wide liquidity estimated by country over the whole sample period. Our quarterly time-series of market-wide liquidity are constructed as the average monthly liquidity within the quarter obtained from Karolyi, Lee, and van Dijk (2012), winsorized at 1% by country. The Amihud measure is multiplied by -10,000 to obtain a measure that is increasing in liquidity.	Own computations; Karolyi, Lee, and van Dijk (2012)
market liquidity UP (DOWN)	Dummy variable indicating top (*market liquidity UP*) and bottom (*market liquidity DOWN*) 33% liquidity quarters by country based on market-wide liquidity innovations.	Own computations; Karolyi, Lee, and van Dijk (2012)
market volatility	Standard deviation of daily market returns within a quarter.	Own computations; Datastream
market turnover	Average of monthly market-wide turnover within the quarter obtained from Karolyi, Lee, and van Dijk (2012), winsorized at 1% by country.	Own computations; Karolyi, Lee, and van Dijk (2012)
market liquidity risk	Conditional volatility of quarterly market-wide Amihud liquidity based on a GARCH(1,1) model estimated by country.	Own computations; Karolyi, Lee, and van Dijk (2012)
market-to-book ratio	Aggregate market value of equity, scaled by the aggregate book value of equity of all listed domestic companies in a country.	Datastream
price-earnings ratio	Aggregate market value of equity, scaled by the aggregate earnings of all listed domestic companies in a country.	Datastream
dividend-price ratio	Aggregate dividends, scaled by the aggregate market value of equity of all listed domestic companies in a country.	Datastream
GDP growth	Year-on-year % change of quarterly GDP (real, seasonally adjusted) by country.	Haver Analytics
sales growth	Year-on-year % change of quarterly aggregate sales by country.	OECD Statistics
leading economic indicator	Amplitude-adjusted composite leading economic indicator by country.	OECD Statistics
idiosyncratic volatility	Value-weighted average across all stocks within a country of the standard deviation of the residuals obtained from a simple market model run based on daily data within the quarter.	Own computations; Datastream
stock price synchronicity	Logistic transformation of the value-weighted average R^2 across all stocks within a country from a simple market model run based on daily data within the quarter.	Own computations; Datastream
global sentiment	Quarterly average of the monthly global country fund discount, which is computed as the average % discount of 42 closed-end funds; decreasing with investors' optimism.	Own computations; Karolyi, Lee, and van Dijk (2012)
U.S. sentiment index	Quarterly average of the monthly time-series of the U.S. sentiment index of Baker and Wurgler (2006); increasing with investors' optimism.	Own computations; Baker and Wurgler (2006)
closed-end fund discount	Quarterly average of the monthly time-series of the local country fund discount. The local country fund discount is the % closed-end country fund discount for 22 countries in our sample obtained from Karolyi, Lee, and van Dijk (2012); decreasing with investors' optimism.	Own computations; Karolyi, Lee, and van Dijk (2012)

Table 1: Summary statistics

This table reports the total number of equity issues (IPOs and SEOs from SDC), and the time-series average and standard deviation (based on quarterly data) of the number of equity issues scaled by the number of listed stocks, of the total proceeds (in US$) of these equity issues scaled by the local stock market capitalization (in US$), of local stock market returns (in local currency, expressed in % per day), and of market liquidity, as well as the time-series average of local market volatility. The sample covers the period from the first quarter of 1995 through the fourth quarter of 2008 (with the exception of Brazil and Germany, for which the data start in 1999QI, and Poland, for which the data start in 1996QII). Market returns are the total returns on the value-weighted local market index from Datastream. The liquidity time-series are taken from Karolyi, Lee, and van Dijk (2012) and are based on the value-weighted average of the daily estimates of Amihud's (2002) price impact proxy for individual stocks – computed as the absolute stock return divided by local currency trading volume. The Amihud measure is multiplied by -10,000 so that we obtain a measure that is increasing in liquidity. Volatility is the standard deviation of daily market returns within a quarter. The table also depicts the total number of equity issues and the average of the other variables for developed countries and for emerging countries, as well as the grand total / average for developed and emerging countries jointly.

	# equity issues	***# equity issues / # listed companies***		***proceeds / local market cap***		***market returns***		***market liquidity***		***market volatility***
		mean (%)	st.dev.	mean (%)	st.dev.	mean (%)	st.dev.	mean	st.dev.	mean
Developed countries										
Australia	12,013	15.3090	4.5993	0.4126	0.5686	0.0391	0.0988	-0.7060	0.3872	0.8445
Austria	95	1.7238	1.8889	0.2189	0.2689	0.0219	0.1636	-0.9726	0.6679	0.8661
Belgium	151	1.6293	2.0957	0.0906	0.1401	0.0260	0.1580	-0.5089	0.3242	0.9367
Canada	5,178	5.1065	3.1686	0.2284	0.1823	0.0422	0.1320	-0.7698	0.4018	0.9106
Denmark	197	1.6133	1.4026	0.1173	0.1563	0.0384	0.1568	-0.0748	0.0643	0.9925
Finland	181	2.7570	3.0731	0.1586	0.2696	0.0621	0.2785	-0.4777	0.4481	1.8307
France	1,138	2.7289	1.7541	0.1753	0.2430	0.0391	0.1688	-0.9335	0.6931	1.1561
Germany	934	2.3011	2.1491	0.2317	0.2787	0.0304	0.1799	-1.2991	0.9297	1.1213
Hong Kong	2,823	5.9706	3.4771	0.1055	0.0862	0.0393	0.1952	-0.0827	0.0636	1.4499
Italy	377	2.5403	2.3623	0.2953	0.5504	0.0291	0.1720	-0.2152	0.1764	1.1665
Japan	4,534	2.9519	1.0626	0.1576	0.1583	-0.0005	0.1588	-0.0025	0.0014	1.2258
Netherlands	229	1.9035	1.7360	0.1098	0.1696	0.0286	0.1743	-0.1425	0.1384	1.1334
New Zealand	130	1.5674	1.8053	0.1806	0.3450	0.0287	0.1068	-1.1213	0.3764	0.7295
Norway	377	3.8794	2.5345	0.4214	0.4376	0.0410	0.1894	-0.0777	0.0412	1.2298
Singapore	876	3.8994	2.3402	0.1367	0.1627	0.0190	0.2232	-0.9222	0.5042	1.1754
Spain	178	0.4728	0.5821	0.1573	0.2700	0.0506	0.1588	-0.1890	0.1750	1.0485
Sweden	428	2.8811	2.0682	0.1328	0.2519	0.0456	0.1978	-0.0573	0.0373	1.3750
Switzerland	178	1.2996	1.3561	0.0770	0.1244	0.0339	0.1470	-0.0804	0.0546	0.9977
U.K.	4,792	3.8666	1.8814	0.1524	0.1046	0.0301	0.1137	-0.1990	0.2486	0.9715
U.S.	1,591	0.4332	0.1879	0.0595	0.0302	0.0376	0.1139	-0.0208	0.0172	0.9854
Total/average	*36,400*	*3.24*	*2.08*	*0.18*	*0.24*	*0.03*	*0.16*	*-0.44*	*0.29*	*1.11*

Table 1, continued

	# equity issues	*# equity issues / # listed companies*		*proceeds / local market cap*		*market returns*		*market liquidity*		*market volatility*
		mean (%)	st.dev.	mean (%)	st.dev.	mean (%)	st.dev.	mean	st.dev.	mean
Emerging countries										
Argentina	48	0.6133	0.7894	0.1175	0.2703	0.0517	0.2239	-0.9933	0.5020	1.5657
Brazil	128	0.5071	0.5244	0.1017	0.1547	0.0740	0.2278	-0.4877	0.4578	1.5221
Chile	166	1.0721	1.1693	0.1279	0.2073	0.0335	0.1378	-0.0030	0.0023	0.8167
China	1,286	2.9684	3.5382	0.7674	1.2834	0.0612	0.2855	-0.0384	0.0426	1.8783
Greece	218	1.3593	1.6975	0.2272	0.4071	0.0458	0.2298	-2.9752	2.2572	1.3931
India	2,418	0.8823	1.6295	0.1171	0.2060	0.0501	0.2269	-0.6527	0.5520	1.5210
Indonesia	202	1.2762	1.0818	0.4047	0.6211	0.0488	0.2778	-0.0031	0.0043	1.6862
Malaysia	1,232	2.7717	1.5933	0.1612	0.1575	0.0224	0.2196	-1.3489	0.8099	1.1674
Mexico	49	0.5058	0.8336	0.0764	0.1836	0.0704	0.1672	-0.0365	0.0176	1.2442
Philippines	132	1.0569	1.3966	0.0939	0.1845	0.0098	0.2142	-0.1353	0.0676	1.2706
Poland	203	1.9204	2.1497	0.3570	0.5329	0.0506	0.2290	-2.2061	1.9785	1.5268
Portugal	94	1.7484	1.8641	0.6037	1.1258	0.0282	0.1788	-1.0851	0.8026	0.8617
South Africa	66	0.2575	0.3289	0.0393	0.0839	0.0588	0.1594	-0.5774	0.3832	1.1217
South Korea	3,226	3.7280	3.4454	0.5561	0.8031	0.0428	0.2854	-0.0009	0.0015	1.8862
Taiwan	1,117	3.5377	1.7733	0.2493	0.2693	0.0174	0.2049	-0.0071	0.0072	1.5083
Thailand	414	1.7046	1.6815	0.2583	0.4254	0.0051	0.2695	-0.1475	0.1485	1.7531
Total/average	*10,999*	*1.62*	*1.59*	*0.27*	*0.43*	*0.04*	*0.22*	*-0.67*	*0.50*	*1.42*
Developed and emerging countries										
Grand total/average	*47,399*	*2.52*	*1.86*	*0.22*	*0.33*	*0.04*	*0.19*	*-0.54*	*0.38*	*1.25*

Table 2: Tobit models to explain quarterly variation in equity issues in 36 countries

This table reports coefficient estimates of pooled tobit models to explain variation in the quarterly number of equity issues (IPOs and SEOs from SDC) – scaled by the number of listed stocks – in each of the 36 countries in our sample over the period 1995-2008. Independent variables include lead, contemporaneous, and lagged local market liquidity innovations and local market returns, a dummy for the first calendar quarter, and a lagged dependent variable. The liquidity time-series are taken from Karolyi, Lee, and van Dijk (2012) and are based on daily estimates of Amihud's (2002) price impact proxy for individual stocks – computed as the absolute stock return divided by local currency trading volume. The Amihud measure is multiplied by -10,000 so that we obtain a measure that is increasing in liquidity. Since the level of Amihud market liquidity is non-stationary in most countries, we use market liquidity innovations (taken as the residuals from country-by-country AR(1) regressions of the level of market liquidity) as independent variable. Market returns are the total returns on the value-weighted local market index from Datastream. All independent variables are standardized to have zero mean and unit standard deviation, so the coefficients can be interpreted as the effect of a one standard deviation (1SD) shock in the independent variable. The last two rows present the results of *F*-tests on the joint significance of all lagged market liquidity variables and of all market liquidity variables, respectively. Significance at the 1%, 5% and 10% level is indicated by ***, **, and *, respectively (based on standard errors that are clustered by country).

dependent variable:	***# equity issues (IPOs + SEOs) / # listed companies in quarter t***						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
market liquidity (t+1)	0.00003		0.00079				
market liquidity (t)	0.00279***		0.00220***	0.00217***	0.00201***	0.00174**	0.00175***
market liquidity (t-1)	0.00182***		0.00033	0.00033	0.00003	0.00021	-0.00064
market liquidity (t-2)	0.00292***		0.00194**	0.00214**	0.00190*	0.00284**	0.00146**
market liquidity (t-3)	0.00160*		0.00147	0.00190**	0.00178**	0.00229**	0.00092
market liquidity (t-4)	0.00095		0.00152*	0.00166**	0.00162**	0.00234**	0.00126**
market returns (t+1)		-0.00220***	-0.00181***	-0.00149***	-0.00232***	-0.00239***	-0.00187***
market returns (t)		0.00140*	0.00100	0.00126	0.00050	0.00056	0.00221***
market returns (t-1)		0.00278***	0.00346***	0.00346***	0.00324***	0.00322***	0.00329***
market returns (t-2)		0.00310***	0.00191**	0.00187***	0.00195**	0.00158*	0.00049
market returns (t-3)		0.00173**	0.00070				
market returns (t-4)		0.00122*	0.00054				
quarter 1 dummy			-0.00733***	-0.00721***	-0.00715***	-0.00769***	-0.00971***
equity issues (t-1)							0.544***
Year fixed effects	yes	yes	yes	yes	no	no	yes
Country fixed effects	yes	yes	yes	yes	yes	no	yes
# Observations	1,800	1,800	1,800	1,800	1,800	1,800	1,800
# Countries	36	36	36	36	36	36	36
Pseudo R^2	0.327	0.329	0.339	0.338	0.330	0.0108	0.437
F-test lagged liquidity	3.751***	NA	1.577	1.928	1.985*	2.409*	2.216*
F-test all liquidity	8.468***	NA	4.242***	5.522***	4.337***	2.972**	3.531***

Table 3: Tobit models to explain quarterly variation in equity issues in 36 countries: Controlling for capital market conditions

This table reports coefficient estimates of pooled tobit models to explain variation in the quarterly number of equity issues (IPOs and SEOs from SDC) – scaled by the number of listed stocks – in each of the 36 countries in our sample over the period 1995-2008. Independent variables include lead, contemporaneous, and/or lagged local market liquidity innovations, returns, volatility, turnover, liquidity risk (conditional liquidity volatility based on a GARCH(1,1) model), market-to-book ratio, price-earnings ratio, dividend-price ratio, a dummy for the first calendar quarter, and a lagged dependent variable. The liquidity time-series are taken from Karolyi, Lee, and van Dijk (2012) and are based on daily estimates of Amihud's (2002) price impact proxy for individual stocks – computed as the absolute stock return divided by local currency trading volume. The Amihud measure is multiplied by -10,000. Since the level of Amihud market liquidity is non-stationary in most countries, we use market liquidity innovations (taken as the residuals from country-by-country AR(1) regressions of the level of market liquidity) as independent variable. Variable definitions are in the Appendix. All independent variables are standardized. The last two rows present the results of *F*-tests on the joint significance of all lagged and all market liquidity variables, respectively. Significance at the 1%, 5% and 10% level is indicated by ***, **, and *, respectively (based on standard errors that are clustered by country).

dependent variable:	***# equity issues (IPOs + SEOs) / # listed companies in quarter t***						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
market liquidity (t)	0.00228***	0.00217***	0.00264**	0.00161***	0.00162***	0.00209***	0.00192**
market liquidity (t-1)	0.00024	0.00038	0.00104	0.00008	0.00020	0.00019	-0.00006
market liquidity (t-2)	0.00190**	0.00217**	0.00165	0.00211**	0.00195**	0.00198**	0.00084
market liquidity (t-3)	0.00175*	0.00192**	0.00156	0.00217***	0.00195***	0.00174**	0.00087
market liquidity (t-4)	0.00167**	0.00174**	0.00134	0.00167**	0.00163**	0.00158**	0.00129
market returns (t+1)	-0.00165***	-0.00155***	-0.00140**	-0.00123*	-0.00063	-0.00137**	-0.00153**
market returns (t)	0.00121	0.00101	0.00119	0.00104	0.00061	0.00144	0.00157*
market returns (t-1)	0.00323***	0.00341***	0.00345***	0.00314**	0.00248**	0.00325**	0.00246*
market returns (t-2)	0.00155**	0.00194***	0.00180**	0.00163**	0.00160**	0.00160**	0.00056
market volatility (t)	0.00045						-0.00123
market volatility (t-1)	-0.00160*						-0.00014
market volatility (t-2)	-0.00119						0.00038
market turnover (t)		0.00135					0.00116
market turnover (t-1)		-0.00054					-0.00046
market turnover (t-2)		-0.00106					-0.00144
market liquidity risk (t+1)			0.00105				0.00097
market liquidity risk (t)			0.00068				0.00041
market liquidity risk (t-1)			-0.00354***				-0.00380**
market liquidity risk (t-2)			0.00115				0.00196
market-to-book ratio (t)				0.00198			0.00105
market-to-book ratio (t-1)				0.00067			-0.00112
market-to-book ratio (t-2)				0.00027			0.00017
price-earnings ratio (t)					0.00438***		0.00250*
price-earnings ratio (t-1)					0.00140		0.00083
price-earnings ratio (t-2)					-0.00139		-0.00181
dividend-price ratio (t)						0.00010	0.00298**
dividend-price ratio (t-1)						-0.00129	-0.00229
dividend-price ratio (t-2)						-0.00033	-0.00071
quarter 1 dummy	-0.00746***	-0.00770***	-0.00709***	-0.00701***	-0.00700***	-0.00738***	-0.00954***
equity issues (t-1)							0.512***
Year fixed effects	yes	yes	yes	yes	yes	yes	yes
Country fixed effects	yes	yes	yes	yes	yes	yes	yes
# Observations	1,800	1,800	1,800	1,762	1,797	1,800	1,762
# Countries	36	36	36	35	36	36	35
Pseudo R^2	0.339	0.338	0.339	0.349	0.356	0.338	0.444
F-test lagged liquidity	1.667	1.763	0.758	3.900***	2.895**	2.295*	0.870
F-test all liquidity	4.603***	5.249***	3.710***	4.771***	3.362***	4.141***	1.651

Table 4: Tobit models to explain quarterly variation in equity issues in 36 countries: Controlling for business cycle, asymmetric information, and investor sentiment

This table reports coefficient estimates of pooled tobit models to explain variation in the quarterly number of equity issues (IPOs and SEOs from SDC) – scaled by the number of listed stocks – in each of the 36 countries in our sample over the period 1995-2008. Independent variables include lead, contemporaneous, and/or lagged local market liquidity innovations and returns, business cycle proxies (GDP and sales growth, OECD leading indicator), asymmetric information proxies (idiosyncratic volatility, "stock price synchronicity" or average R^2 from market model as in Morck, Yeung, and Yu, 2000), investor sentiment (local closed-end country fund discount, global closed-end fund discount, and the U.S. sentiment index of Baker and Wurgler, 2006), a dummy for the first calendar quarter, and a lagged dependent variable. Variable definitions are in the Appendix. All independent variables are standardized. The last two rows present the results of *F*-tests on the joint significance of all lagged market liquidity variables and of all market liquidity variables, respectively. Significance at the 1%, 5% and 10% level is indicated by ***, **, and *, respectively (based on standard errors that are clustered by country).

dependent variable:	***# equity issues (IPOs + SEOs) / # listed companies in quarter t***						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
market liquidity (t)	0.00187**	0.00160**	0.00142*	0.00274***	0.00224***	0.00251***	0.00140*
market liquidity (t-1)	-0.00005	-0.00107	-0.00119	0.00077	0.00033	0.00048	0.00004
market liquidity (t-2)	0.00175*	0.00197*	0.00179*	0.00254***	0.00212**	0.00231**	0.00122**
market liquidity (t-3)	0.00150	0.00268***	0.00236***	0.00225**	0.00190**	0.00205**	0.00114**
market liquidity (t-4)	0.00173**	0.00227**	0.00218**	0.00196**	0.00168**	0.00174**	0.00038
market returns (t+1)	-0.00127**	-0.00196**	-0.00190**	-0.00133**	-0.00176***	-0.00196***	-0.00210***
market returns (t)	0.00136	0.00142	0.00127	0.00119	0.00146*	0.00109	0.00099
market returns (t-1)	0.00352***	0.00472***	0.00440***	0.00296***	0.00363***	0.00352***	0.00293***
market returns (t-2)	0.00163**	0.00255***	0.00213**	0.00177**	0.00190***	0.00201**	-0.00011
GDP growth (t+2)	0.00220*		0.00067				
GDP growth (t+1)	0.00040		-0.00017				
GDP growth (t)	0.00020		0.00107				
sales growth (t+2)		0.00204**	0.00185				
sales growth (t+1)		0.00040	0.00018				
sales growth (t)		0.00192	0.00147				
leading economic indicator (t)			0.00089				
idiosyncratic volatility (t)				0.00234*			
idiosyncratic volatility (t-1)				0.00105			
stock price synchronicity (t)				-0.00069			
stock price synchronicity (t-1)				-0.00180			
global sentiment (t)					0.00258		-0.00144
global sentiment (t-1)					-0.00061		0.00033
U.S. sentiment index (t)						-0.00022	0.00005
U.S. sentiment index (t-1)						-0.00158	-0.00085
closed-end fund discount (t)							0.00011
closed-end fund discount (t-1)							0.00024
quarter 1 dummy	-0.00788***	-0.00847***	-0.00868***	-0.00762***	-0.00660***	-0.00676***	-0.0104***
equity issues (t-1)							0.551***
Year fixed effects	yes	yes	yes	yes	yes	yes	yes
Country fixed effects	yes	yes	yes	yes	yes	yes	yes
# Observations	1,746	1,221	1,202	1,800	1,800	1,609	840
# Countries	36	26	26	36	36	35	22
Pseudo R^2	0.350	0.413	0.415	0.342	0.338	0.352	0.537
F-test lagged liquidity	1.726	4.377***	3.993***	2.602**	1.944	1.986*	3.244**
F-test all liquidity	2.666**	4.242***	3.530***	6.455***	5.461***	4.235***	2.729**

Table 5: Tobit models to explain quarterly variation in equity issues in 36 countries: Asymmetric effect of liquidity

This table reports coefficient estimates of pooled tobit models to explain variation in the quarterly number of equity issues (IPOs and SEOs from SDC) – scaled by the number of listed stocks – in each of the 36 countries in our sample over the period 1995-2008. The key independent variables are (contemporaneous and lagged) dummy variables indicating quarters with the top (Market liquidity UP) and bottom (Market liquidity DOWN) 33% observations based on liquidity innovations by country. Other independent variables include lead, contemporaneous, and lagged local market returns, and a dummy for the first calendar quarter. Variable definitions are in the Appendix. All independent variables are standardized. The last two rows present the results of *F*-tests on the joint significance of all UP and DOWN market liquidity variables, respectively. Significance at the 1%, 5% and 10% level is indicated by ***, **, and *, respectively (based on standard errors that are clustered by country).

dependent variable:	***# equity issues (IPOs + SEOs) / # listed companies in quarter t***				
	(1)	(2)	(3)	(4)	(5)
market liquidity UP (t)	0.00311*	0.00319*	0.00227	0.00232	0.00250
market liquidity DOWN (t)	-0.00425***	-0.00428***	-0.00304**	-0.00293**	-0.00283**
market liquidity UP (t-1)	0.00097	0.00115	-0.00031	-0.00022	-0.00010
market liquidity DOWN (t-1)	-0.00291**	-0.00333***	-0.00146	-0.00170	-0.00168
market liquidity UP (t-2)	-0.00024	0.00075	-0.00058	0.00052	0.00029
market liquidity DOWN (t-2)	-0.00186	-0.00167	-0.00139	-0.00108	-0.00090
market liquidity UP (t-3)		0.00093		0.00122	0.00069
market liquidity DOWN (t-3)		-0.00246*		-0.00276*	-0.00213
market liquidity UP (t-4)		-0.00037		-0.00039	-0.00064
market liquidity DOWN (t-4)		-0.00295**		-0.00323**	-0.00309**
market returns (t+1)			-0.00169***	-0.00169***	-0.00171***
market returns (t)			0.00120	0.00123	0.00109
market returns (t-1)			0.00292***	0.00316***	0.00307***
market returns (t-2)			0.00204***	0.00222***	0.00236***
market returns (t-3)					0.00127
market returns (t-4)					0.00089
quarter 1 dummy	-0.00657***	-0.00672***	-0.00690***	-0.00712***	-0.00713***
Year fixed effects	yes	yes	yes	yes	yes
Country fixed effects	yes	yes	yes	yes	yes
# Observations	1,872	1,800	1,872	1,800	1,800
# Countries	36	36	36	36	36
Pseudo R^2	0.318	0.330	0.325	0.337	0.338
F-test all liquidity UP	1.378	1.798	1.552	1.829	2.011*
F-test all liquidity DOWN	3.334**	3.450***	1.477	2.765**	2.036*

Table 6: Tobit models to explain quarterly variation in the fraction of privately placed SEOs in 36 countries

This table reports coefficient estimates of pooled tobit models (censored at 0 and 1) to explain variation in the quarterly number of privately placed SEOs (from SDC) – scaled by the number of public SEOs plus the number of privately placed SEOs – in each of the 36 countries in our sample over the period 1995-2008. Independent variables include lead, contemporaneous, and/or lagged local market liquidity innovations and returns, proxies for capital market conditions (market volatility, market-to-book ratio), business cycle proxies (GDP growth), and asymmetric information proxies (idiosyncratic volatility, "stock price synchronicity" or average R^2 from market model as in Morck, Yeung, and Yu, 2000). Variable definitions are in the Appendix. The last row presents the results of *F*-tests on the joint significance of all market liquidity variables. Significance at the 1%, 5% and 10% level is indicated by ***, **, and *, respectively (based on standard errors that are clustered by country).

dependent variable:	***# private SEOs / (# public + private SEOs) in quarter t***					
	(1)	(2)	(3)	(4)	(5)	(6)
market liquidity (t)	-0.0256***	-0.0164***	-0.0211***	-0.0303***	-0.0223***	-0.0242***
market liquidity (t-1)	-0.0052*	0.0038	0.0014	-0.0060	0.0001	-0.0054*
market returns (t+1)	-0.0288***	-0.0342***	-0.0308***	-0.0369***	-0.0341***	-0.0317***
market returns (t)	0.0334***	0.0354***	0.0295***	0.0325***	0.0297***	0.0412***
market returns (t-1)	-0.0192***	-0.0210***	-0.0612***	-0.0270***	-0.0222***	-0.0191***
market returns (t-2)	-0.0189***	-0.0324***	-0.0130***	-0.0302***	-0.0236***	-0.0226***
market volatility (t)		0.0320***				
market volatility (t-1)		-0.0143				
market volatility (t-2)		-0.0528***				
market-to-book ratio (t)			-0.0042			
market-to-book ratio (t-1)			0.0627***			
market-to-book ratio (t-2)			-0.0934***			
GDP growth (t+2)				0.0203*		
GDP growth (t+1)				-0.0239*		
GDP growth (t)				0.0207		
idiosyncratic volatility (t)					0.0220***	
idiosyncratic volatility (t-1)					-0.0104	
idiosyncratic volatility (t-2)					-0.0465***	
stock price synchr. (t)						0.0269***
stock price synchr. (t-1)						-0.0011
stock price synchr. (t-2)						-0.0062
Year fixed effects	yes	yes	yes	yes	yes	yes
Country fixed effects	yes	yes	yes	yes	yes	yes
# Observations	1,236	1,236	1,213	1,208	1,235	1,236
# Countries	36	36	35	36	36	36
Pseudo R^2	0.391	0.393	0.385	0.388	0.392	0.391
F-test all liquidity	30.74***	26.21***	27.85***	39.31***	36.12***	22.11***

Table 7: Tobit models to explain quarterly variation in postponements and cancellations of equity issues in 36 countries

This table reports coefficient estimates of pooled tobit models to explain variation in the quarterly number of postponed equity issues (models (1) through (4)) scaled by the number of realized equity issues plus the number of postponements and in the quarterly number of canceled equity issues (models (5) through (8)) scaled by the number of realized equity issues plus the number of cancellations – in each of the 36 countries in our sample over the period 1995-2008. Postponements and cancellations of IPOs and SEOs are obtained from SDC. Independent variables include lead and contemporaneous local market liquidity and returns, proxies for capital market conditions (market-to-book ratio), the state of the business cycle (GDP growth), and asymmetric information (idiosyncratic volatility, "stock price synchronicity" or average R^2 from market model as in Morck, Yeung, and Yu, 2000). Variable definitions are in the Appendix. Since SDC does not report postponements and cancellations by the postponement or cancellation date but by the filing date, we only include contemporaneous and lead independent variables. The last row presents the results of *F*-tests on the joint significance of all market liquidity variables. Significance at the 1%, 5% and 10% level is indicated by ***, **, and *, respectively (based on standard errors that are clustered by country).

dependent variable:	***# postponements / (# realized issues + # postponements) in quarter t***				***# cancellations / (# realized issues + # cancellations) in quarter t***			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
market liquidity (t+2)	-0.0484***	-0.0536***	-0.0572***	-0.0470***	-0.0057	-0.0054	-0.0026	-0.0082
market liquidity (t+1)	-0.0345***	-0.0466***	-0.0451***	-0.0616***	-0.0011	-0.0046	-0.0010	-0.0027
market liquidity (t)	-0.0397***	-0.0482***	-0.0550***	-0.0527***	0.0078	0.0141	0.0081	0.0169
market returns (t+2)	-0.0276***	-0.0535***	-0.0212***	-0.0523***	-0.0291*	-0.0524**	-0.0378**	-0.0360*
market returns (t+1)	-0.0073	0.0178***	-0.0081	-0.0158***	0.0165	-0.0028	0.0114	0.0131
market returns (t)	-0.0301***	-0.0487***	-0.0295***	-0.0402***	-0.0493***	-0.0514***	-0.0461***	-0.0587***
market-to-book ratio (t+2)		0.1280***				0.0460		
market-to-book ratio (t+1)		-0.0952***				0.0078		
market-to-book ratio (t)		0.1150***				-0.0523		
GDP growth (t+2)			0.0884***				0.0161	
GDP growth (t+1)			-0.0588***				-0.0331	
GDP growth (t)			0.0658***				0.00603	
idiosyncratic volatility (t+2)				0.0143				-0.0028
idiosyncratic volatility (t+1)				-0.0656***				-0.0217
idiosyncratic volatility (t)				0.0402***				0.0634**
stock price synchronicity (t+2)				-0.0635***				0.0056
stock price synchronicity (t+1)				-0.0072				0.0001
stock price synchronicity (t)				0.0028				-0.0077
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Country fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
# Observations	1,667	1,636	1,607	1,601	1,696	1,664	1,635	1,630
# Countries	36	35	36	36	36	35	36	36
Pseudo R^2	0.323	0.340	0.320	0.349	0.178	0.182	0.179	0.192
F-test all liquidity	127.6***	146.6***	158.0***	94.73***	0.210	0.772	0.177	0.423

Table 8: Tobit models to explain quarterly variation in equity issues in 36 countries: IPOs vs. SEOs

This table reports coefficient estimates of pooled tobit models to explain variation in the quarterly number of equity issues (separate regressions for IPOs and SEOs from SDC) – scaled by the number of listed stocks – in each of the 36 countries in our sample over the period 1995-2008. Models (1) through (4) have IPOs scaled by listed companies as dependent variable. Models (5) through (8) have SEOs scaled by listed companies as dependent variable. Independent variables include lead, contemporaneous, and/or lagged local market liquidity innovations and returns, proxies for capital market conditions (market volatility, market-to-book ratio), business cycle proxies (GDP growth, OECD leading indicator), asymmetric information proxies (idiosyncratic volatility, "stock price synchronicity" or average R^2 from market model as in Morck, Yeung, and Yu, 2000), investor sentiment (global closed-end fund discount), and a dummy for the first calendar quarter. Variable definitions are in the Appendix. The last two rows present the results of *F*-tests on the joint significance of all lagged market liquidity variables and of all market liquidity variables, respectively. Significance at the 1%, 5% and 10% level is indicated by ***, **, and *, respectively (based on standard errors that are clustered by country).

dependent variable:	***# IPOs / # listed companies in quarter t***				***# SEOs / # listed companies in quarter t***			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
market liquidity (t)	0.00193***	0.00265***	0.00250***	0.00239***	0.00081*	0.00073	0.00141***	0.00083*
market liquidity (t-1)	0.00063	0.00054	0.00065	0.00082	0.00027	-0.00060	0.00039	-0.00091
market liquidity (t-2)	0.00157**	0.00089	0.00151**	0.00136*	0.00160**	0.00127*	0.00177***	0.00107
market liquidity (t-3)	0.00164*	0.00099	0.00174*	0.00212**	0.00099*	0.00094	0.00131**	0.00105
market liquidity (t-4)	0.00138***	0.00160**	0.00193***	0.00232***	0.00027	0.00087*	0.00084	0.00115**
market returns (t+1)	-0.00062	0.00006	-0.00026	0.00010	-0.00144***	-0.00165***	-0.00116***	-0.00159**
market returns (t)	0.00009	-0.00053	0.00048	-0.00104	0.00109	0.00147*	0.00083	0.00158
market returns (t-1)	0.00134*	0.0013	0.00194**	0.00213*	0.00211***	0.00280***	0.00195**	0.00247*
market returns (t-2)	0.00156***	-0.00021	0.00107**	0.00024	0.00154***	0.00134**	0.00122**	0.00065
market volatility (t)				-0.00124				0.00122
market volatility (t-1)				-0.00163*				-0.00031
market volatility (t-2)				0.00026				-0.00188
market-to-book ratio (t)				0.00212				0.00007
market-to-book ratio (t-1)				-0.00248**				0.00085
market-to-book ratio (t-2)				0.00219**				0.00177
GDP growth (t+2)		0.00090		0.00032		0.00130		0.00104
GDP growth (t+1)		0.00057		0.00096		-0.00113		-0.00104
GDP growth (t)		0.00040		0.00015		0.00080		0.00031
leading econ. indic. (t)		0.00515**		0.00308**		0.00044		0.00042
idiosyncratic volatility (t)			0.00074				0.00149	
idiosyncratic volatility (t-1)			0.00112	0.00196			0.00021	0.00150
stock price synchr. (t)			0.00052	0.00082			-0.00138**	-0.00264***
stock price synchr. (t-1)			0.00005	-0.00033			-0.00206**	-0.00283**
global sentiment (t)				0.00103				0.00082
global sentiment (t-1)				0.00217*				-0.00118
quarter 1 dummy		-0.00784***	-0.00612***	-0.00724***		-0.00373**	-0.00372***	-0.00414**
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Country fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
# Observations	1,800	1,389	1,800	1,351	1,800	1,389	1,800	1,351
# Countries	36	29	36	28	36	29	36	28
Pseudo R^2	0.190	0.209	0.199	0.212	0.422	0.492	0.431	0.510
F-test lagged liquidity	1.961*	1.692	2.804**	2.474**	2.650**	2.283*	2.859**	3.416***
F-test all liquidity	4.433***	3.292***	5.145***	3.318***	2.858**	1.861*	3.535***	2.818**

Table 9: Tobit models to explain quarterly variation in equity issues in 35 countries: IPO proceeds vs. SEO proceeds

This table reports coefficient estimates of pooled tobit models to explain variation in the quarterly US$ proceeds of equity issues (separate regressions for IPOs and SEOs from SDC) – scaled by the US$ local market capitalization – in 35 countries in our sample (we drop China because of its very large proceeds) over the period 1995-2008. Models (1) through (4) have IPO proceeds scaled by local market cap as dependent variable. Models (5) through (8) have SEO proceeds scaled by local market cap as dependent variable. Independent variables include lead, contemporaneous, and/or lagged local market liquidity innovations and returns, proxies for capital market conditions (market volatility, market-to-book ratio), business cycle proxies (GDP growth, OECD leading indicator), asymmetric information proxies (idiosyncratic volatility, "stock price synchronicity" or average R^2 from market model as in Morck, Yeung, and Yu, 2000), investor sentiment (global closed-end fund discount), and a dummy for the first calendar quarter. Variable definitions are in the Appendix. The last two rows present the results of *F*-tests on the joint significance of all lagged market liquidity variables and of all market liquidity variables, respectively. Significance at the 1%, 5% and 10% level is indicated by ***, **, and *, respectively (based on standard errors that are clustered by country).

dependent variable:	***IPO proceeds / local market cap in quarter t***				***SEO proceeds / local market cap in quarter t***			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
market liquidity (t)	0.00027***	0.00034***	0.00036***	0.00046***	0.00001	-0.00002	0.00005	0.00002
market liquidity (t-1)	0.00002	-0.00007	0.00000	-0.00001	0.00005	-0.00011	0.00002	-0.00014
market liquidity (t-2)	0.00022***	0.00011	0.00020**	0.00012	0.00013	0.00005	0.00013	0.00011
market liquidity (t-3)	0.00040***	0.00033**	0.00040***	0.00032**	0.00019	0.00010	0.00020*	0.00014
market liquidity (t-4)	0.00004	0.00002	0.00014	0.00008	-0.00014	-0.00012	-0.00006	-0.00009
market returns (t+1)	0.00011	0.00017	0.00015*	0.00013	-0.00014	-0.00023	-0.00012	-0.00023
market returns (t)	0.00009	-0.00005	0.00019*	-0.00028*	0.00020*	0.00026*	0.00025*	0.00017
market returns (t-1)	0.00017	0.00016	0.00023**	0.00022	0.00045***	0.00055***	0.00046***	0.00038*
market returns (t-2)	0.00023**	-0.00011	0.00015	-0.00003	0.00021	0.00012	0.00016	0.00021
market volatility (t)				0.00013				0.00022
market volatility (t-1)				-0.00005				0.00022
market volatility (t-2)				-0.00003				0.00029
market-to-book ratio (t)				0.00043				0.00047
market-to-book ratio (t-1)				-0.00064**				-0.00026
market-to-book ratio (t-2)				-0.00003				-0.00016
GDP growth (t+2)		-0.00022		-0.00032		0.00044		0.00047
GDP growth (t+1)		0.00073**		0.00092**		-0.00051**		-0.00047*
GDP growth (t)		-0.00004		-0.00004		0.00072***		0.00072***
leading econ. indic. (t)		0.00051***		0.00054***		0.00015		0.00018
idiosyncratic volatility (t)			0.00005	0.00015			-0.00013	0.00001
idiosyncratic volatility (t-1)			0.00015	0.00019			0.00017	0.00013
stock price synchr. (t)			0.00020*	0.00026*			0.00009	-0.00002
stock price synchr. (t-1)			-0.00012	-0.00017			-0.00024**	-0.00048**
global sentiment (t)				-0.00032				0.00012
global sentiment (t-1)				0.00091**				-0.00011
quarter 1 dummy		-0.00120***	-0.00096***	-0.00137***		-0.00088**	-0.00064**	-0.00077*
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Country fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
# Observations	1,749	1,338	1,749	1,303	1,749	1,338	1,749	1,303
# Countries	35	28	35	27	35	28	35	27
Pseudo R^2	0.051	0.062	0.055	0.068	0.024	0.032	0.026	0.035
F-test lagged liquidity	4.513***	2.676**	5.650***	1.988*	1.630	0.723	1.265	0.941
F-test all liquidity	5.940***	3.562***	5.988***	3.134***	1.355	0.593	1.082	0.762