Does Foreign Competition Affect Stock Market Liquidity?*

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Abstract

We examine the effect of trade liberalization on stock markets, and find a negative association between foreign competition and stock liquidity. Our results hold using an instrumental variable methodology and in a quasi-natural experiment setting. We identify a deterioration in the informational environment in response to increases in foreign competition, as the channel through which foreign competition affects stock liquidity. Specifically, we find that the negative effect that foreign competition has on stock liquidity is less evident amongst better monitored firms and firms with greater analyst coverage. Our paper is the first to highlight the unintended consequences of trade liberalisation on financial markets.

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I. Introduction

Trade liberalization has been a key tennet of American economic policy in the post-World War II era. Advocates of trade liberalization argue that opening up local markets to international trade facilitates a more efficient allocation of resources which ultimately enhances social welfare. Numerous papers support this notion, documenting improvements in firm productivity following reductions in import tarrifs (Halpern, Koren, and Szeidl (2015), Hu and Liu (2014), Topalova and Khandelwal (2011), Amiti and Konings (2007), Fernandes (2007), Trefler (2004), Schor (2004), Pavcnik (2002), and Tybout and Westbrook (1995)). At the same time, other studies show the detrimental effect of foreign competition, particularly in the context of reduced profitability (Xu (2012)), increased propensity to engage in earnings management (Lin, Officer and Zhan (2015), and Markarian and Santalo (2014)), and reduced investment (Frésard and Valta (2015)). Although the arguments for and against foreign competition have been extensively studied in the economics and finance literature, little is known of the implications that foreign competition has on financial markets. Our paper is the first formal attempt to answer this intriguing question by examining the effect that import penetration has on stock market liquidity.

Our emphasis on stock market liquidity is motivated by the fact that stock markets play an important role in the efficient allocation of resources in an economy (Stiglitz (1981)), with liquidity being an essential element of an efficienctly operating market (Sadka and Scherbina (2007), and Chordia, Roll, and Subrahmanyam (2008)). In addition to its importance to market efficiency, stock market liquidity also has implications for firm performance (Fang, Noe and Tice (2009)), cost of capital (Amihud and Mendelson (1986)), and the level of corporate innovation (Fang, Tian, and Tice (2014)). Therefore, the effect that foreign competition has on stock market liquidity, if any, has important implications for the wider economy.

We hypothesize a negative association between the level of foreign competition a firm is exposed to and the firm's stock market liquidity. Our reasoning is based on two separate arguments. First, three recent papers show that competitive exposure increases the level of earnings management that firms engage in (Karuna et al. (2015), Lin et al. (2015), and Markarian and Santalo (2014)). Firms faced with greater competition and reduced profit margins (Xu (2012)) respond by engaging in more aggressive earnings management to paint a rosier picture of their accounts to shareholders. The implication of these studies is that managers are less transparent, and more likely to send distorted signals to the market when faced with increased competitive pressures. The information environment of a firm is relevant to stock liquidity, since higher quality disclosure reduces information assymetry between the different groups of market participants thus providing a similar level of information to all traders that otherwise would only be available to a few (Lev (1988)). Indeed, numerous empirical studies show that disclosure policy is positively associated with stock liquidity (Heflin, Shaw, and Wild (2005), Leuz and Verrecchia (2000), Healy, Hutton and Palepu (1999), Welker (1995), and Diamond and Verrecchia (1991)). Foreign competition is therefore expected to have a negative effect on stock market liquidty due to its detrimental effect on the information environement.

A second argument supporting the notion that foreign competition reduces stock market liquidity is based on cash flow volatility. Peress (2010) develops a model in which product market power lowers the firm's profit volatility and therefore stock return volatility. As a result, the firm's stock returns are more certain, giving investors a more homogenous expectation of future returns. As a consequnece, stock market liquidity improves. This theoretical prediction is empirically supported by Kale and Loon (2011), who find that product market power improves liquidity.

Assuming that foreign competition leads to increased variability of future profitability, one would expect to observe a negative relation between foreign comeptition and stock market liqudiity.

An alternate view is that foreign competition improves stock liquidity, through its disciplining effect on managers. Balakrishnan and Cohen (2013) and Alimov (2013) show that foreign competition acts as a disciplining mechanism on corporate managers. Chung, Elder, and Kim (2010) find a positive associtions between corporate governance oversight and stock liquidity, arguing that better corporate governance regimes mitigate information assymetries. It is therefore possible that foreign competition improves stock liquidity in a similar vein, by acting as an alternate disciplining mechanism.

We test these competing empirical predictions using a large sample of U.S. firms during the period 1993-2012.[1] Following Bertrand (2004) and Xu (2012), we use industry-level import penetration data to capture the extent of foreign competition that individual firms are exposed to. We utilize three illiquidity measures as inverse proxies of stock market liquidity: price impact of a trade (Amihud ratio), quoted spread (QSpread) and effective spread ESpread). We find a positive association between foreign competition and stock market illiquidity measures, indicating a negative association between foreign competition and stock market liquidity. This negative association holds after controlling for a large number of firm specific factors, as well as industry and year fixed effects. To address endogeneity concerns and more reliably establish causality, we use an instrumental variable approach, where the industry level of tariff rate and foreign exchange index are used to predict the exogenous component of import penetration (Xu (2012)).

[1] The sample period is limited to the 1993-2012 period due to the availability of liquidity data from the TAQ database as well as the availability of import penetration data.

Furthermore, we find consistent results after including firm fixed effects, which account for all time invariant firm specific factors.

We address endogeneity further by following Fresard (2010) and utilizing unexpected tariff rate reductions for the U.S. manufacturing sector as an exogenous shock to foreign competition in a quasi-natural experiment setting. Unexpected reductions of trade barriers facilitate the penetration of foreign competition into local markets and intensify the firms' competitive environment (Bernard, Jensen, and Schott (2006)). We define a shock in an industry's import tariffs in a given year as a decline in tariff rates imposed on that industry's products that are at least five times higher than the median industry change over the sample period.[2] We compare stock liquidity during the two-year period before and after the shock (first difference) across firms in industries experiencing a large tariff reduction versus firms in industries which do not experience such tariff reductions (second difference). We find that firms affected by a tariff reduction exhibit greater reductions in stock liquidity compared to control firms not affected by the tariff reduction. These results further support the main finding of the negative impact of foreign competition on stock liquidity.

Having established a negative association between foreign competition and stock liquidity, we examine the underlying channel driving the negative association. Specifically, we attempt to distinguish between the informational environment channel and the profit volatility channel. We address the information environment channel by conducting a number of sub-sample tests. We first examine whether the negative association between foreign competition and stock liquidity is

[2] The decline in import tariffs cannot be associated with any other large increase or decrease in tariff rates in the two years preceding and two years following the tariff shock.

more pronounced amongst firms with lower institutional holdings and analyst coverage. Graham, Harvey, and Rajgopal (2005) report that out of 401 surveyed CFOs, 90% considered institutional investors and financial analysts as the two most important groups in influencing their decision-making and behavior. In the context of institutional ownership, numerous prior studies report that their presence curbs the ability of managers to reduce the quality and quantity of information disclosed to the market (Velury and Jenkins (2006), Jiambalvo, Rajgopal and Venkatachalam (2002), Chung, Firth, and Kim (2002), Bange and De Bondt (1998), and Bushee (1998)). As a consequence, if the negative association between foreign competition and stock market liquidity is driven by a reduction in the quality of information which managers disclose to the public, the baseline results should be stronger amongst firms which have fewer institutional investors. This is indeed what we find, with the negative association between foreign competition and stock market liquidity being primarily observed amongst firms with lower levels of institutional holdings, and with lower holdings by institutions dedicated to monitoring the firm.

In addition to direct managerial monitoring, we also examine whether the reported negative association between foreign competition and stock market liquidity is stronger for firms which operate in a less informationally transparent environment. Towards this goal we partition our sample based on financial analyst coverage. Financial analysts are important capital market intermediaries, who play an essential role in alleviating information asymmetry and agency problems between managers and outside investors through information collection and dissemination (Bowen, Chen, and Cheng (2008), Easley and O'Hara (2004), Roulstone (2003)). Supporting their positive influence on the informational environment, Yu (2008) shows that firms with greater analyst coverage engage in less aggressive earnings management. Once again, if our baseline results are primarily driven by the effect that foreign competition has on the quality of

information which mangers disclose, we would expect to observe the negative association to be more prevalent amongst firms covered by fewer analysts and firms with greater dispersion in analyst forecasts. Indeed, our partitioning results reveal that the negative association is considerably stronger amongst firms with low analyst following and high dispersion in analyst forecasts.

Our partitioning results suggest that foreign competition has an adverse effect on stock market liquidity primarily due to its detrimental effect on the information environment in which a stock trades. This reduction in informational transparency is presumably a response to falling profit margins (Xu (2012)). As a further test to eliminate the alternate possibility that the reduction in stock liquidity is simply a response to increased corporate cash flow volatility, we directly relate import penetration with future profit volatility. We find that foreign competition has no statistical effect on profit volatility, implying that the negative association between foreign competition and stock market liquidity cannot be purely explained by profit variability.[3]

Our paper makes significant contributions to the literature in at least two ways. First, our paper contributes to our understanding of the consequences of foreign competition on financial markets. Numerous studies show the importance of stock liquidity in the effective operation of equity markets (Chordia et al. (2008), Sadka, and Scherbina (2007)). More broadly, it has been shown that developed and liquid stock markets spur economic growth (Acemoglu and Zilibotti (1999), Levine (1996)). Furthermore, many studies show that stock illiquidity adversely affects corporate growth (Fang et al. (2014), Fang et al. (2009), Amihud and Mendelson (1986)). If

[3] We do however confirm the argument in Kale and Loon (2011) that product market power is negatively related with profit volatility.

illiquidity is indeed harmful to economic growth at the macro level, and firm growth at the micro level, then our findings provide evidence of the perverse effects of trade liberalization. Our paper therefore fits into a small but growing body of evidence which highlights the 'dark side' of competition (Karuna et al. (2015), Cummins and Nyman (2005), Aghion, Bloom, Blundell, and Howitt (2005)).

This paper makes a significant contribution to the literature on the determinants of disclosure policy. In particular, voluntary disclosure tends to be higher amongst better monitored firms (Xie, Davidson, and DaDalt (2003)), and earnings management is less pervasive amongst firms with greater levels of institutional holdings (Chung et al. (2002)). Furthermore, analyst following also helps reduce earnings managements. Our paper is significant in that it shows that these same factors help in alleviating the negative incentives driven by increased foreign competition. As a result, our findings support the notion that institutional investors and financial analysts improve a firm's informational environment. A policy implication of our findings is that institutional holdings and analysts should be encouraged especially in industries which experience greater trade liberalization through reduced tariff protection.

Our paper is most closely related to Kale and Loon (2011) who show a positive association between product market power and stock liquidity. However, our paper differs from theirs in many important respects. First, while Kale and Loon (2011) concentrate on the implications of the relative power that a firm has in an industry, our explicit concern is foreign competition. In our empirical analysis we therefore hold product market power constant, and examine any incremental effect that trade liberalization has on stock market liquidity. Our implications are therefore not on whether monopolistic power is good for financial markets, but rather whether trade liberalization has negative implications for the effective operation of financial markets. Second and more

fundamentally, our partitioning results show that the underlying driver of the negative relation between competition and liquidity is different for foreign competition compared with market power. While market power influences liquidity via its effect on profit volatility, foreign competition influences liquidity by altering managerial incentives with respect to disclosure policy. Our paper therefore makes a fundamental contribution to the literature by not only highlighting the negative consequences of trade liberalization on financial markets, but also identifying the different channels through which different forms of competition influence liquidity.

The remainder of the paper proceeds as follows. Section II provides a discussion of the data used in this paper. Section III presents the main results including OLS and 2SLS results, as well as a discussion of results from an exogenous shock. Section IV discusses the economic channels through which foreign competition can influence stock market liquidity. Section V concludes.

II. Research Design

A. Data and Sample

Our sample includes all firms at the intersection of the Trades and Quotes (TAQ), industry import data, CRSP and COMPUSTAT databases. The TAQ database is the primary source of information for constructing two stock liquidity measures, namely quoted and effective spread. We are able to collect liquidity data from TAQ from 1993 onwards. We use the CRSP database to obtain information on stock prices, stock returns, and trading volume. COMPUSTAT is our source of firm specific accounting data. Finally, we obtain industry import tariff data from Feenstra (1996), Feenstra, Romalis, and Schott (2002), and Schott (2010).[4] The US tariff data are available

[4] The data can be found at http://faculty.som.yale.edu/peterschott/sub_international.htm. We thank Peter K. Schott for making the data available.

from 1974 to 2012. Since our liquidity data starts in 1993, our sample is limited to the 1993 to 2012 period. Since the import data cover only manufactured products, we restrict our sample to manufacturing industries (classified by three-digit SIC code between 200 and 399) over the period from 1993 to 2012.

We collate additional data which are necessary to examine the effect of the information environment on the relation between foreign competition and stock liquidity. Specifically, we obtain data for the number of analysts following and analyst dispersion from Institutional Brokers' Estimate System (IBES) database. Institutional ownership data are obtained from Thomson Reuters Institutional (13F) Holdings. To avoid the effects of outliers, we winsorize all variables used in our paper at the 1st and 99th percentiles. Our final sample consists 22,754 firm-year observations. A detailed description of the variables used in this study can be found in the Appendix.

B. Measures of Stock Liquidity: Amihud (2002), Quoted Spread, and Effective Spread.

We employ three measures of stock liquidity. The first is Amihud's (2002) illiquidity ratio which captures the ''daily price responses associated with one dollar of trading volume" (Amihud, 2002, p. 32). The illiquidity ratio of stock *i* in year *y* is defined as:

$$\text{Amihud ratio} = T_y^{-1} \sum \frac{|r_{i,t,y}|}{vol_{i,t,y}} \quad (1)$$

In equation (1), $r_{i,t,y}$ is the return of stock *i* on day *t* in year *y*, and $vol_{i,t,y}$ is the dollar volume of stock *i* on day *t* in year *y*. The summation is over T_y, the number of days in year *y* for which the ratio $\frac{|r_{i,t,y}|}{vol_{i,t,y}}$ is defined ($vol_{i,t,y} \neq 0$). Smaller values of the Amihud ratio imply higher liquidity, since a smaller value suggests that the stock price is less responsive to trades.

Our second and third measures of stock liquidity are quoted spread (QSpread) and effective spread (ESpread), respectively. These measures are based on the intraday TAQ database. The QSpread is the implicit trading cost for market orders when a trade occurs at the quoted price with no price improvement. The following formula is used to calculate the quoted percentage spread (QSpread) of stock for the transaction *j*:

$$\text{Quoted Spread}_j = (\text{ASK}_j - \text{BID}_j)/\text{M}_j \quad (2)$$

In equation (2), ASK is the ask price for the transaction *j*, BID is the bid price for the transaction *j*, and M is the mean of ASK and BID for the transaction *j*. The daily Quoted Spread$_t$ is the average Quoted Spread across all trades in the day *t*. To measure the cost of trading when it occurs at prices inside the posted bid and ask quotes, we utilize the effective spread (ESpread), the following formula used to calculate the effective percentage spread of stock for the transaction *j*:

$$\text{Effective Spread}_j = 2\text{D}_j(\text{P}_j - \text{M}_j)/\text{M}_j \quad (3)$$

In equation (3), P_j is the transaction price, M_j is the mean of ASK and BID for the transaction *j*, and D_j is a binary variable, which equals one for customer buy orders and negative one for customer sell orders. We estimate D_j using the algorithm in Ellis, Michaely, and O'Hara (2000) (see Bessembinder (2003) for detailed comparative analyses of different classification methods). The daily Effective Spread$_t$ is the average Effective Spread across all trades in the day *t*. We use annual QSpread and ESpread during each year from 1993 to 2012, which are averages of the daily spread measures, then we standardized them using trading volume following Goyenko, Holden, and Trzcinka (2009).

C. Measure of Foreign Competition: Import Penetration

We use import penetration as our proxy for foreign competition, in accordance with Bertrand (2004) and Xu (2012). In each year, we compute import penetration for each industry as:

$$\text{Import Penetration} = (\text{imports}/(\text{imports} + \text{domestic production}) \quad (4)$$

Industries are defined at the three-digit NAICS level. We focus on U.S. manufacturing firms (three digit NAICS varying from 311 to 399, which corresponds to SIC codes 200 to 399). We collect import data from the Bureau of Economic Analysis of the U.S. Department of Commerce. Furthermore, based on the GDP-by-Industry tables in the Bureau's Annual Industry Accounts section, we choose the Gross Output series and match it with the three-digit NAICS industry table by industry names.

The effect that foreign competition has on stock liquidity, will be to a large extent influenced by the level of domestic competition that the firm is exposed to. For this reason, in our regression analysis, we control for market power captured by the Lerner index (Lerner (1934)). The Lerner index captures the firm's ability to price above marginal cost and is widely used in much of the industrial organization literature (Lerner (1934), Lindenberg and Ross (1981)). The Lerner index is defined as the difference between price and marginal cost divided by price in which a higher value of Lerner Index implies weaker competition. Following Gaspar and Massa (2006), and Peress (2010), we compute the Lerner Index as the ratio of operating profit to sales, where operating profit is computed as sales less cost of goods sold, along with selling, general and administrative expenses. Lerner index calculated as:

$$\text{PCM} = (\text{Sales} - \text{COGS} - \text{SG \& A})/ \text{Sales} \quad (5)$$

In equation (5), Sales is COMPUSTAT variable SALE, cost of goods sold, is COMPUSTAT variable COGS, and sales, general and administrative expenses, is COMPUSTAT variable XSGA. This measure excludes depreciation, interest, special items, and taxes.

D. Firm-Level Control Variables

We include a number of firm-level control variables into all of our regression specifications, which have been identified by the extant literature as related to stock liquidity. Prior research shows that a significant portion of cross-sectional and time-series variation in spreads can be explained by stock characteristics such as share price, and return volatility. According to Harris (1994), the inverse of the stock price captures a large portion of the variation in tick-size induced binding constraints on spreads, especially when spreads are measured in relative terms. Therefore, to isolate the effect of foreign competition on spreads, we include *1/PRICE* and *Return Volatility* as control variables in our regressions.

We control for firm size since larger firms may simultaneously exhibit higher investor interest and lower spreads because of smaller adverse selection risk.[5] Similarly, tangible assets' payoffs are easier to observe, and therefore, they can reduce asymmetric information problems. On the other hand, payoffs from R&D and advertising expenditure are difficult to estimate, thus high R&D and advertising expenditure expenses may increase asymmetric information problems. Therefore, we include *Ln (AT), AT. Tang*, *Ln (Age)*, *R&D/AT* and *Advert/AT* as a control variables.

[5] Harris (1994) uses firm size as a proxy for the degree of public information available about the stock.

We also control for the number of analysts following the company, since firms that are widely followed by analysts have lower spreads due to higher trading activity (Balakrishnan, Billings, Kelly and Ljungqvist (2014)). Moreover, we control for institutional ownership, measured as the percentage of shares held by institutions (*Inst. Owship*). We also include firm leverage (*Leverage*) as a control, which is measured as the book value of total debt divided by book value of total assets.

E. Descriptive Statistics

Table 1 presents descriptive statistics on liquidity measures, as well as the explanatory variables used in this study. The number of firm-year observation is 22,754 for all variables except for *Profit Volatility*, *Ln (Tariff)* and *FX Index* due to data availability. We follow Goyenko et al. (2009) to standardize Quoted and Effective spread by dividing these measures by the trading volume. We use the natural logarithm of Amihud, Quoted spread and Effective spread in our regressions. The Ln (Amihud), Ln (QSpread) and Ln (ESpread) have mean values of -17.851, -19.223, and -20.662, respectively. Import penetration has a mean value of 0.25 and a standard deviation of 0.129. Lerner index has a mean value of 0.119 and a standard deviation of 0.09. The average natural logarithm of company age is 2.660 years. On average, companies in the sample hold 36.7 % of their assets as tangible assets, with a standard deviation of 14.8%. On average, six analysts follow the company during the year. The average institutional ownership of the sample firms is 53.3%, and the average total asset of our firms is 419 million dollars indicating that the sample firms are large cap firms.

[Insert Table 1]

III. Baseline Results

This section presents empirical results of the association between foreign competition and stock liquidity. We start with a simple OLS specification. We then address endogeneity concerns by employing a 2SLS specification as well as a quasi-natural experiment.

A. Baseline model

In the baseline specification, we regress stock liquidity on import penetration, after controlling for the firm-level control variables described in section II.D. We also include industry and year fixed effects into our model specification. Industry fixed effects account for time-invariant characteristics capturing foreign competition and stock liquidity levels. Year fixed effects account for common macroeconomic shocks affecting the entire economy. We also replicate our results after including firm and year fixed effects. Throughout the paper, all standard errors are clustered at the firm level.

Regression results are summarized in Table 2. In columns (1)-(3) the dependent variable is *Ln (Amihud)*, in columns (4)-(6) the dependent variable is *Ln (QSpread)*, and finally in columns (7)-(9) the dependent variable is *Ln (ESpread)*. For each dependent variable, three specifications are utilized. In the first specification, we test the Kale and Loon (2011) original results using *Learner Index* to confirm the association between market power and stock liquidity for our sample. Columns (1), (4) and (7) show that *Lerner Index* is negatively and significantly correlated with *Ln (Amihud)*, *Ln (QSpread)* and *Ln (ESpread)*, respectively. This result is consistent with Kale and Loon (2011), and confirms their results that market power is positively associated with stock liquidity.

[Insert Table 2]

The second set of regressions for each dependent variable relates foreign competition (ie. *Import Penetration*) directly with stock liquidity. We use the same set of control variables in the regressions reported in columns (2), (5), and (8) as in columns (1), (4), and (7), with the difference that we do not control for market power. Finally, in the third set of regressions we include both foreign competition and market power in the same regression specification. The results reported in Table 2 show a significantly positive association between import penetration and illiquidity measures, regardless of which illiquidity variable is examined and which set of controls are included in the regression model. The positive coefficient estimate on the import penetration variable means that more foreign competition has a negative effect on firm's stock liquidity. These results are consistent with our *ex-ante* expectations.

Turning our attention to the remaining control variables, we find that the relation between illiquidity and leverage is positive and significant, which is consistent with empirical results of Peress (2010), Lesmond, O'Connor, and Senbet (2002), and Chang and Yu (2010). Advertising is negatively and statistically correlated with all illiquidity measures, this result is in line with the finding of Grullon, Kanatas, and Weston (2004). We observe positive and significant relation between illiquidity and 1/price, which is consistent with Chung et al. (2010).

We also observe a negative and significant relation between Asset tangibility and illiquidity. This result is consistent with the theory that asset tangibility could reduce asymmetric information problems because tangible assets' payoffs are easier to observe. The coefficient estimate on *R&D/AT* is negative and significant. In contrast, the binary variable for R&D expenditure (*D.R&D/AT*) is positively and significantly related to illiquidity. Our regression models capture a large fraction of the variation in *Ln (Amihud)*, *Ln (QSpread)*, and *Ln (ESpread)*, with the R^2 for each regression in excess of 75%.

B Endogeneity

The results so far show a negative association between foreign competition and stock liquidity. However, a potential concern is that foreign competition and stock market liquidity are endogenously determined, making any causal inferences from our results meaningless. To address this problem, we use two empirical strategies to identify the causal effect of exogenous variations in import penetration on stock liquidity. First, we use the two instrumental variables (import tariff and foreign exchange rates). Second, we utilize the unexpected reduction of industry import tariff rates in a quasi-natural experiment setting.

B1 Results from two stage least square regression (2SLS)

Consistent with Xu (2012), we use two instrumental variables to capture exogenous variations in import competition, namely lagged import tariffs and lagged industry-level foreign exchange rate index. Prior studies on international trade emphasize that trade barriers reduce import competition (e.g., Helpman and Krugman (1989)). We use one of the most effective trade barrier, import tariffs, as the first instrumental variable for import penetration. The advantage of this measure is that it directly measures the industry entry barrier, which is a source of competition. According to Bernard et al. (2006), the intensification of competition following reductions in trade rates lead to more deaths of plants in the U.S. manufacturing. Furthermore, the changes in entry barriers are exogenous to individual firms in the sense that they do not reflect choices by individual firms.

Based on the U.S. import dataset from Feenstra (1996), Feenstra et al. (2002), and Schott (2010), we calculate the annual *ad valorem* tariff rate as the duties collected by the U.S. custom divided by the total Free on Board custom value of imports. We then calculate annual percentage

change of the import tariff rate and compute the median industry change over the sample period. A detailed description of this database can be found in Feenstra et al. (2002).

Our second instrument variable for import penetration is foreign exchange rates. Following Revenga (1992) and Bertrand (2004), we define foreign exchange rates as the amount of foreign currency per US dollar. In this sense, the exchange rate is positively correlated with import penetration, since higher exchange rate makes the good cheaper in US dollars, which encourages imports. It also satisfies the exclusion restriction because, the dollar's exchange rates are determined by macroeconomic factors that affect its aggregate demand and supply, such as interest rates, inflation and the balances of payments between the US and its trade partners. At the same time, none of these macroeconomic factors is likely to be caused by individual firm-level characteristics.

To construct the industry-level foreign exchange rate variable, we use the foreign exchange rates, expressed as the amount of foreign currency per US dollar. We first use the exchanging countries' consumer price indices to transform the raw exchange rates to real exchange. The exchange rate and consumer price index data are from the International Financial Statistics of the International Monetary Fund (IMF). Then, for each three-digit NAICS industry, we compute the source-weighted average of exchange rates across all countries exporting to the US that take up 2% or more of US total imports in the base year of 1995. The weights are the share of each exporting country in total US imports in 1995. Finally, we divide the resulting exchange rates by one thousand to obtain the industry exchange rate index variable expressed in thousands.

To establish the causal effects of import competition on stock liquidity, we estimate instrumental variables (IV) regressions using both the import tariffs and foreign exchange rates as instruments for import penetration. The IV regressions are performed in two stages. In the first

stage, we regress import penetration on tariffs, exchange rates and other control variables, controlling for year and industry fixed effects. In the second stage, we estimate the baseline regression model, while replacing import penetration by the predicted value of import penetration from the first-stage regression. The regression results are summarized in Table 3.

[Insert Table 3]

Panel A shows the 2SLS results without controlling for market power. Columns (1)-(3) of this Panel present the second-stage regression estimates of the effects of import penetration on different measures of liquidity, while column (4) reports the first-stage estimation. The coefficient estimate on the predicted import penetration variable in columns (1), (2) and (3) of Table 3, is positive and significant at the 1% level. These results are consistent with the baseline results reported in Table 2, and imply that an increase in import penetration from foreign rivals leads to a decrease in firm stock liquidity. In Panel B, we control for market power using Lerner index. Columns (5)-(7) of Panel B presents the second-stage regression estimates of the effect of import penetration on different measures of liquidity, while column (8) reports the first-stage estimation. The coefficient on Lerner index is negative and significant across all illiquidity measures, as predicted by Peress (2010). Again the coefficient estimate on the import penetration variable in columns (5), (6) and (7) is positive and significant at 1% level. In other words, import penetration negatively affects stock liquidity. These results are consistent with the OLS results while supporting a causal interpretation of the effect of import penetration on stock liquidity.

Column (7) shows the first stage regression results. The coefficient estimate on tariff rate is negatively and significantly correlated to import penetration at the 1 % significant level. This result is consistent with Tybout (2003) who observe a significant increase in competition from foreign rivals (high import penetration) after a reduction in trade barriers. The second instrumental variable

exchange rate is positively related to import penetration with the 1% significance level. This is in the line with the body of evidence surveyed in Hafer (1989). This indicates that the correlation condition for the instruments is satisfied.

As a robustness check we also replicate our results controlling for firm and year fixed effects and present the results in Table 4. Panel A of Table 4 presents the results using ordinary least squared (OLS) regression controlling for firm and year fixed effects. Panel B of Table 4 presents the results using two stage least square regression (2SLS) controlling for firm and year fixed effects. We find consistent results when addressing for time-invariant firm-specific omitted variables using firm fixed effect regression.

[Insert Table 4]

B2 Natural experiment

To further pin down the causal impact of foreign competition on stock liquidity, we take advantage of a quasi-natural experiment that captures exogenous variations in import competition. The core idea follows Fresard (2010), who employs exogenous import tariff reduction to identify varying intensity of competition. In the 1990s, the U.S. has experienced a series of large import tariff reductions, following the worldwide trend of trade liberalization. One of the most important events is the establishment of the North America Free Trade Agreement (NAFTA) on January 1, 1994. These tariff reduction events scattered across industries and over time, capturing both cross-sectional and time-series changes in competition intensity without reference to any specific proxies that suffer from measurement problems. Moreover, reduction in import tariff is unlikely to be driven by firms' existing characteristics. Therefore, it represents an unexpected shock to product market competition.

Bernard et al. (2006) show that a reduction in import tariffs exposed firms to significant foreign rivals in the product market, since this reduction lowers trade barriers and ultimately leads to a significant increase in competition from foreign rivals (Tybout (2003)). In fact, reductions of import tariff rates significantly decrease the cost of entering U.S. product markets and increase the presence of goods and services from foreign rivals on domestic markets. This penetration of imports represents an increase in the competitive pressure that domestic producers face. Many prior studies take the advantage of reduction in tariff rate as an exogenous shock to the competitive environment.[6]

We define an exogenous shock to tariff rates as a substantial decrease in tariff rates equal or exceeding five times the median tariff change for a particular industry over the entire sample period. Following Fresard (2010), we exclude tariff rate reductions that are preceded and followed by equivalently large increases in tariffs over the 2 subsequent years. That is, our sample only includes shock import tariff reductions with no other reductions or increases in the two years before and after the shock.

This requirement reduces the number of events but ensures that the identified tariff cuts do not just reflect temporary changes in the competitive environment. Moreover, it ensures that the tariff reductions (and hence firms reactions to them) are not contaminated by other (import tariff-related) events. We end up with 866 firm-year shocks to tariff reductions over the period 1993-2012. We define the untreated industries as all industries that do not witness a shock tariff reduction at any point during our sample period.

[6] See, for instance, Trefler (2004), Guadalupe and Wulf (2010), or Fresard (2010).

Table 5 displays the estimates of the difference-in-difference regressions for the three illiquidity measures. The coefficients of *TREAT* in columns (1), (4) and (7) is positive and statistically significant. In columns (2), (5) and (8) we control for product market power using *Lerner Index* and the coefficients of Treat is still positive and significant. Our results hold even when we control for foreign competition using import penetration across the three measure of illiquidity. The positive coefficients on *Treat* implies that firms that are affected by a tariff reduction exhibit greater reductions in stock liquidity compared with control firms not affected by the tariff reduction. The results of the quasi-natural experiment further support the main finding of the negative impact of foreign competition on stock liquidity. Moreover, this quasi–natural experiment mitigates concerns about potential endogeneity and confirms that foreign competition is crucial for stock market liquidity.

[Insert Table 5]

IV. Further Analysis

Having established a negative association between foreign competition and stock liquidity, we proceed to examine the likely channel through which import penetration reduces stock liquidity. Specifically, we consider whether greater exposure to foreign competition results in managers reducing the quality and quantity of information disclosure, leading to greater information asymmetry between investors and therefore lower liquidity. Alternatively, we consider whether foreign competition reduces liquidity due to its positive impact on profit volatility.

A. Information Environment Channel

We first consider the information environment channel. A number of recent papers support the notion that foreign competition increases the chances of managers disclosing manipulated

information to shareholders. For example, Lin et al. (2015), and Markarian and Santalo (2014) show a positive association between foreign comeptition exposure and earnings management. The reason for this positive assocation is that foreign competition reduces profit margins (Xu (2012)), forcing managers to be more creative in generating an appearance that the firm's financial fortunes are sound. The implication of these studies is that managers are less transparent, and more likely to send distorted signals to the market when faced with increased competitive pressures. The information environment of a firm is relevant to stock liquidity since higher quality disclosure reduces information asymmetry between the different groups of market participants thus providing a similar level of information to all traders that otherwise would only be available to a few (Lev (1988)). Foreign competition is therefore expected to have a negative effect on stock market liquidity due to its detrimental effect on the information environment.

Assuming that foreign competition reduces stock liquidity due to the negative effect that foreign competition has on managerial disclosure of information, we should observe a stronger negative association between import penetration and stock liquidity amongst those firms which are less closely monitored, and those firms which whose information environment is inherently less transparent. We measure managerial monitoring using total insititutional ownership as well as dedicated insititutional ownership. A firm's inherent informational transparency is captured using analyst coverage as well as analyst dispersion in earnings forecasts. We divide firms into (a) those which are likely to be more and less heavily monitored, and (b) firms with higher and lower analysts following.

A1. Managerial Monitoring

The presence of institutional investors' curbs the ability of managers to reduce the quality and quantity of information disclosed to the market (Xie et al. (2003), Chung et al. (2002)).

Furthermore, Boone, and White (2015) find that higher institutional ownership influences firm management to provide more transparency, increase number of analyst following and lower the information asymmetries for all shareholders. This richer information environment should make it difficult for managers to decrease their informational transparency in response to an increase in foreign competition, reducing liquidity in the process (Diamond and Verrecchia (1991), and Beyer et al. (2010)).

By extension, one would expect the negative association between foreign product competition and stock liquidity to be weaker for the firms with a high proportion of institutional ownership. Panel A of Table 6 shows the result of the relation between foreign product competition and stock liquidity for firm with high and low institutional ownership after controlling for all control variables and year and industry fixed effects.

[Insert Table 6]

The results reported in Panel A of Table 6 confirm that foreign product competition has a weaker effect on stock liquidity for firms with high institutional ownership. The coefficient estimate on the interaction between import penetration and high institutional ownership (*Imprt.Pent*HIO*) is positive and insignificant. *HIO* is a binary variable equal to one for firms' whose institutional ownership is above the sample median, while *LIO* is a binary variable equal to one for firms' whose institutional ownership is below the sample median. In contrast, the coefficient estimate on the interaction with low institutional ownership (*Imprt.Pent*LIO*) is much stronger and statistically significant at 1% significant level. The coefficient test shows a significant difference on the effect of foreign completion on liquidity between firms with higher institutional ownership and lower institutional ownership. This result implies that the negative effect of foreign competition on stock liquidity is only evident for firms with low proportion of institutional

ownership. These results are consistent with the information environment channel, since clearly, foreign competition is negatively associated with stock liquidity amongst those firms which are less likely to curb managerial discretion in sending lower quality information signals in response to increased foreign competition.

Shareholders are not a homogenous group and they include a diverse mix of institutional and retail investors that differ in terms of investment horizon, objectives, level of activity, portfolio concentration, and size. Beyer, Larcker, and Tayan (2014) show that transient investors are less likely to directly influence managerial disclosure or analyst coverage decisions. This is because their short investment horizon reduces their opportunities to exert influence. Moreover, managers associate short-term investors with undesirable effects on stock price volatility and are, therefore, unlikely to alter policies to cater to this clientele.

On the other hand, dedicated investors hold large positions in a select set of firms for long periods of time, providing the ability to monitor the management closely. Chen, Harford and Li (2007) find that, within a cost–benefit framework, independent institutions with long-term investments will specialize in monitoring and influencing efforts rather than trading. Therefore, we expect dedicated investors to have higher influence on public information production because dedicated institutional investors engage in long-term trading strategies with low turnover in a select set of firms. We classify institutions as dedicated institutions following the method of Bushee (2001).

In Panel B of Table 6, we interact import penetration with high and low dedicated institutional ownership. For all illiquidity measures, the coefficient estimate on the interaction between import penetration and low dedicated ownership (*Imprt.Pent*LDED*) is much stronger and significant than for the interaction between import penetration and high dedicated ownership

(*Imprt.Pent*HDED*). The coefficient test shows a significant difference on the effect of foreign completion on liquidity between firms with higher dedicated investor's and lower dedicated investors. These results are consistent with the result in Panels A that managerial monitoring by institutional investors mitigates the unfavorable effect of foreign completion on stock liquidity.

A2. Information Transparency

Financial analysts are important capital market intermediaries, who play an essential role in alleviating information asymmetry and agency problems between managers and outside investors through information collection and dissemination (Bowen et al. (2008), Easley and O'Hara (2004), Roulstone (2003)). Thus, they are viewed as information intermediaries by processing and producing firm and macroeconomic information (Lang and Lundholm (1996), and Healy and Palepu (2001)). Supporting their positive influence on the informational environment, Yu (2008) show that firms with greater analyst coverage engage in less aggressive earnings management. Moreover, Roulstone (2003) documents that higher analyst following lead to greater stock liquidity. In addition, Sadka and Scherbina (2007) find that lower analyst forecast dispersion are associated with higher stock liquidity.

Once again, if our baseline results are primarily driven by the effect that foreign competition has on the quality of information which mangers disclose, we would expect to observe the negative association to be more prevalent amongst firms covered by fewer analysts and firms with greater dispersion in analyst forecasts. Towards this goal we partition our sample based on financial analyst coverage. Table 8 shows the result of the relation between foreign product competition and stock liquidity for firm with high and low analyst's coverage after controlling for all control variables and fixed effect.

[Insert Table 7]

The results reported in Panel A of Table 7 confirm that foreign product competition has weaker effect on stock liquidity for firms with higher number of analyst following. The coefficient estimate on the interaction between import penetration and high analyst following (*Imprt.Pent*HANA*) is negative and insignificant. In contrast, the coefficient estimate on the interaction with low analyst following (*Imprt.Pent*LANA*) is positive and statistically significant at 1% significant level. The coefficient test shows a significant difference on the effect of foreign completion on liquidity between firms with higher and analyst's following. Specifically, the negative effect of foreign competition on stock liquidity is weaker for the firms with higher number of analysts following the company.

In Panel B of Table 7, we interact import penetration with high and low analyst dispersion. For all illiquidity measures, the coefficient estimate on the interaction between import penetration and high analyst's dispersion. (*Imprt.Pent*HDISP*) is positive and statistically significant. At the same time, the interaction term between import penetration and low analyst dispersion (*Imprt.Pent*LDISP*) is negative and insignificant. The coefficient test shows a significant difference on the effect of foreign completion on liquidity between firms with higher dedicated investor's and lower dedicated investors.

Overall, our partitioning results reveal that the negative association is considerably stronger amongst firms with low analyst following and high dispersion in analyst forecasts. These results are consistent with the information environment channel.

B. Profit Volatility Channel

Peress (2010) presents a model, which predicts that firms with greater market power have a greater ability to set prices, which lowers the volatility of its cash flows and stock returns. The lower volatility of cash flows and returns makes informed traders more willing to trade with noise

traders, and ultimately stabilizing prices and improving liquidity. This theoretical prediction is empirically supported by Kale and Loon (2011) who find that product market power improves liquidity by reducing profit volatility. Assuming that foreign competition leads to increased variability of future profitability, one would expect to observe a negative relation between foreign competition and stock market liquidity.

We test whether the negative relation between foreign competition and liquidity arises from an increase in profit volatility, as predicted by the theoretical model of Peress (2010). Specifically, we regress the import penetration variable on profit volatility. Profit volatility is defined as the standard deviation in EBIT over a five-year period between *t* and *t*+5. In the regression model, we control for product market power (using Lerner Index as a proxy) to focus on the effect of foreign competition. Table 8 summarizes the regression results. As expected, the coefficient on Lerner index in columns (1) and (3) are negative and significant at the 1% level of significant. This result is consistent with the positive relation between market power and liquidity, as predicted in Peress (2010) and documented by Kale and Loon (2011).

[Insert Table 8]

Most important for this paper, the coefficient on import penetration in column (2) is positive and insignificant. The results in column (2) suggest that foreign competition has no statistical effect on profit volatility. As a consequence, we are unable to conclude that foreign competition influences stock liquidity through the profit volatility channel.

V. Conclusion

Does trade liberalisation affect stock market liquidity? We address this question and find that foreign competition adversely affects stock liquidity. Our results are robust to a large set of control variables and fixed effects. More significantly, we conduct numerous tests to address endogenity

concerns and find consistent results. Specifically, we first use a two stage least square regression (2SLS) with import tariff and foreign exchange rates as instrumental variables. Second, we follow Fresard (2010) and use tariff rate reductions as an exogenous competitive shock in a quasi-natural experiment setting.

In subsequent analysis, we examine the underlying channel through which foreign competition affects stock liquidity. Our results show that the negative association between foreign competition and stock market liquidity is more pronounced amongst firms with lower levels of institutional holdings, and with lower holdings by institutions dedicated to monitoring the firm. Moreover, the negative effect that foreign competition has on stock liquidity is more evident amongst firms that with greater analyst coverage and lower analyst dispersion. Taken in their entirety, these results suggest that a key channel through which foreign competition reduces liquidity is the reduction in the firm's informational transparency. We find no support for the alternate explanation, namely that foreign competition reduces liquidity due to its positive effect on profit volatility.

Our paper makes a significant contribution to the literature in at least three ways. First, our paper contributes to our understanding of the consequences of foreign competition on financial markets. Our paper therefore fits into a small but growing body of evidence which highlights the 'dark side' of competition (Karuna et al. (2015), Cummins and Nyman (2005), Aghion et al. (2005)). A second major contribution of this paper is to the literature on the determinants of disclosure policy. Our findings support the notion that institutional investors and financial analysts improve a firm's informational environment. A policy implication of our findings is that institutional holdings and analysts should be encouraged especially in industries which experience greater trade liberalization through reduced tariff protection.

Third, our paper makes a fundamental contribution to the literature by not only highlighting the negative consequences of trade liberalization on financial markets, but also identifying the different channels through which different forms of competition influence liquidity. Overall, our results suggest that that intensity of foreign competition, mainly, due to the relaxation of impediments to trade and barriers to entry has implications that extend to equity markets. Our paper is the first to highlight the unintended consequences of trade liberalisation on financial markets.

Appendix - Variable Definitions

Variables Name	Description
Dependent Variables	
Ln (Amihud)	The natural logarithm of the Amihud Ratio, which is defined as the average of the ratio of the daily absolute return to the (dollar) trading volume on that day.
Ln (ESpread)	The natural logarithm of annual relative effective spread, measured over a firm's fiscal year. ESpread is defined as (the absolute value of the difference between the execution price and the midpoint of the prevailing bid-ask quote divided by the midpoint of the prevailing bid- ask quote. We standardize the ESpread by dividing it on trading volume following Goyenko et al. (2009).
Ln (QSpread)	The natural logarithm of the annual Quoted Spread, measured over a firm's fiscal year. QSpread is computed as (Ask-Bid)/M, where ASK and Bid are the best bid and offers in the stock's market and M is the quote midpoint computes as (Ask + Bid)/2. The annual QSpread is the average of the daily QSpread. We standardize the QSpread by dividing it by trading volume following Goyenko et al. (2009).
Instrumental Variables	
Fogn.Exchg	Foreign exchange rate, expressed as the amount of foreign currency per US dollar. To construct the industry-level foreign exchange rate variable, we first use the exchanging countries' consumer price indices to transform the raw exchange rates to real exchange. Then, for each three-digit NAICS industry, we compute the source-weighted average of exchange rates across all countries exporting to the US that take up 2% or more of US total imports in the base year of 1995. The weights are the share of each exporting country in total US imports in 1995. Finally, we divide the resulting exchange rates by one thousand to obtain the industry exchange rate index variable expressed in thousands.
Ln (Tariff)	Industry-level tariff rate. Computed as the ratio of import duties collected by the U.S. authorities divided by the total value of imports in each 3-digit SIC industry.
Treat	A dummy variable that is one if the reduction in the import tariff rate is at least 5 times the overall median change over the sample period, and zero otherwise.
Independent Variables	
Advert/At	Advertising expense divided by total assets. Advertising expense is Compustat DATA 45 (XAD) and total assets is Computat DATA 6 (AT). If advertising expense is missing in Compustat, we set it to zero.
Analysts	The maximum number of analyst following the company during the year.
Analysts_Disp	Analysts forecast dispersion is measured as the standard deviation of all outstanding earnings-per-share forecasts for the current fiscal year scaled by the absolute value of the mean forecast (with zero-mean-forecast observations excluded from the sample)
At_Tang	Asset tangibility, calculated using the following formula: [(0.715 × RECEIVABLES + 0.547 × INVENTORY + 0.535 × CAPITAL) + CASH]/ASSETS.
D. R&D/At	Dummy variable equal to 1 if the *R&D/At* have a Missing values.

Imprt_Pent	Import penetration, which is defined as the proportion of imports to the total domestic and foreign production for a specific industry. We compute the import penetration using the following formula: Imports / (Imports + Domestic production).
Inst.Ded	Dedicated institutions is a specific group of institutional ownership who characterized by large average investment in portfolio firms (high BLOCK factor) and extremely low turnover. The classification of institutions groups are described in Bushee (2001).
Inst. Owship	Institutional Ownership which is computed as the percentage of shares held by institutions for firm i in the last quarter before the balance sheet date.
1/Price	Inverse of the mean daily stock's price over the fiscal year t.
Lerner Index	It is the difference between price and marginal cost divided by price. Following Gaspar and Massa (2006) and Peress (2010), we calculate the Lerner index measure using the flowing formula: PCM = (Sales - COGS - SG & A)/ Sales.
Leverage	A Firm's leverage ratio, defined as book value of debt (DLTT+ DLC) divided by book value of total assets (AT).
Ln (Age)	The natural logarithm of a company's age, approximated by the number of years listed on Compustat
Ln (At)	The natural logarithm of the firm's total asset. Total assets is Compustat item (AT).
Prof_Volt	Profit volatility measured as the standard deviation of EBIT over the years t to t+5. EBIT is defined as revenues minus costs of goods sold and administrative and selling costs associated with the firm's operations. Interest and taxes the firm must pay are not deducted in the calculation of EBIT.
R&D/At	Research and development (R&D) expenditure, computed by dividing the Research and development Expenditures (XRD) on book assets (AT).
Ret.Volt	Return volatility measured as the standard deviation of the daily stock return over the fiscal year t.

References

Acemoglu, D., and F. Zilibotti. "Information accumulation in development." *Journal of Economic Growth*, 4 (1999), 5-38.

Aghion, P.; N. Bloom; R. Blundell; R. Griffith; and P. Howitt. "Competition and innovation: an inverted-Urelationship." *Quarterly Journal of Economics*, 120 (2005), 701–728.

Alimov, A. "Does Product Market Competition Discipline Managers? Evidence from Exogenous Trade Shock and Corporate Acquisitions." *Working Paper*, (2013).

Amihud, Y. "Illiquidity and stock returns: cross-section and time-series effects." *Journal of Financial Markets*, 5 (2002), 31-56.

Amihud, Y. and H. Mendelson. "Asset pricing and the bid-ask spread. *Journal of Financial Economics"*, 17 (1986), 223-249.

Amiti, M., and J. Konings. "Trade liberalization, intermediate inputs, and productivity: Evidence from Indonesia." *The American Economic Review*, 97 (2007), 1611-1638.

Balakrishnan, K., and D. A. Cohen. "Competition and financial accounting misreporting." *Available at SSRN 1927427,(2003).*

Balakrishnan, K.; M. B. Billings; B. Kelly; and A. Ljungqvist. "Shaping liquidity: On the causal effects of voluntary disclosure." *The Journal of Finance*, 69 (2014), 2237-2278.

Bange, M. M., and W. F. De Bondt. "R&D budgets and corporate earnings targets." *Journal of Corporate Finance*, 4 (1998), 153-184.

Bernard, A. B.; J. B. Jensen; and P. K. Schott. "Trade costs, firms and productivity." *Journal of Monetary Economics*, 53 (2006), 917-937.

Bertrand, M. "From the invisible handshake to the invisible hand? How import competition changes the employment relationship." *Journal of Labor Economics*, 22 (2004), 723-765.

Bessembinder, H. "Issues in assessing trade execution costs." *Journal of Financial Markets*, 6 (2003), 233-257.

Beyer, A.; D. A. Cohen; T. Z. Lys; and B. R. Walther. "The financial reporting environment: Review of the recent literature." *Journal of Accounting and Economics*, 50 (2010), 296-343.

Beyer, A.; D. F. Larcker; and B. Tayan. "Does the Composition of a Company's Shareholder Base Really Matter?." *Rock Center for Corporate Governance at Stanford University Closer Look Series: Topics, Issues and Controversies in Corporate Governance and Leadership No. CGRP-42*, (2014).

Boone, A. L., and J. T. White. "The effect of institutional ownership on firm transparency and information production." *Journal of Financial Economics,* 117 (2015), 508-533.

Bowen, R. M.; X. Chen; and Q. Cheng. "Analyst coverage and the cost of raising equity capital: Evidence from underpricing of seasoned equity offerings." *Contemporary Accounting Research,* 25 (2008), 657-700.

Bushee, B. J. "The influence of institutional investors on myopic R&D investment behavior." *Accounting Review*, (1998), 305-333.

Bushee, B. J. "Do Institutional Investors Prefer Near-Term Earnings over Long-Run Value?." *Contemporary Accounting Research*, 18 (2001), 207-246.

Chang, C., and X. Yu. "Informational efficiency and liquidity premium as the determinants of capital structure." *Journal of Financial and Quantitative Analysis,* 45 (2010), 401–440.

Chen, X.; J. Harford; and K. Li. "Monitoring: Which institutions matter?." *Journal of Financial Economics,* 86 (2007), 279-305.

Chordia, T.; R. Roll; and A. Subrahmanyam. "Liquidity and market efficiency." *Journal of Financial Economics,* 87 (2008), 249-268.

Chung, R.; M. Firth; and J. B. Kim. "Institutional monitoring and opportunistic earnings management." *Journal of Corporate Finance*, 8 (2002), 29-48.

Chung, K.H.; J. Elder; and J. Kim. "Corporate governance and liquidity. *Journal of Financial and Quantitative Analysis*", 45 (2010), 265–291.

Cummins, J.G., and I. Nyman. "The Dark Side of Competitive Pressure." *Rand Journal of Economics,* 36 (2005), 361-77.

Diamond, D. W., and R. E. Verrecchia. "Disclosure, liquidity, and the cost of capital." *The Journal of Finance,* 46 (1991), 1325-1359.

Easley, D., and M. O'hara. "Information and the cost of capital." *The Journal of Finance,* 59 (2004), 1553-1583.

Ellis, K.; R. Michaely; and M. O'Hara. "The accuracy of trade classification rules: Evidence from Nasdaq." *Journal of Financial and Quantitative Analysis,* 35 (2000), 529-551.

Fang, V. W.; T. H. Noe; and S. Tice. "Stock market liquidity and firm value." *Journal of Financial Economics,* 94 (2009), 150-169.

Fang, V. W.; X. Tian; and S. Tice. "Does stock liquidity enhance or impede firm innovation?" *The Journal of Finance*, 69 (2014), 2085-2125.

Feenstra, R. C. "US imports, 1972-1994: Data and concordances (Vol. 5515). *NBER Working Paper* (1996).

Feenstra, R. C.; J. Romalis; and P. K. Schott. "US imports, exports, and tariff data, 1989-2001 (No. w9387)." *NBER Working Paper* (2002).

Fernandes, A. M. "Trade policy, trade volumes and plant-level productivity in Colombian manufacturing industries." *Journal of International Economics,* 71 (2007), 52-71.

Fresard, L. "Financial strength and product market behavior: The real effects of corporate cash holdings." *The Journal of finance,* 65 (2010), 1097-1122.

Frésard, L., and P. Valta. "How Does Corporate Investment Respond to Increased Entry Threat?." *Review of Corporate Finance Studies*, (2015).

Gaspar, J. M., and M. Massa. "Idiosyncratic Volatility and Product Market Competition*." *The Journal of Business,* 79 (2006), 3125-3152.

Goyenko, R. Y.; C. W. Holden; and C. A. Trzcinka. "Do liquidity measures measure liquidity?." *Journal of Financial Economics*, 92 (2009), 153-181.

Graham, J. R.; C. R. Harvey; and S. Rajgopal. "The economic implications of corporate financial reporting." *Journal of Accounting and Economics*, 40 (2005), 3-73.

Grullon, G.; G. Kanatas; and J. P. Weston. "Advertising, breadth of ownership, and liquidity." *Review of Financial Studies*, 17 (2004), 439-461.

Guadalupe, M., and J. Wulf. "The flattening firm and product market competition: The effect of trade trade liberalization on corporate hierarchies." *American Economic Journal: Applied Economics,* 2 (2010), 105–127.

Hafer, R. W. "Does dollar depreciation cause inflation?." *Federal Reserve Bank of St. Louis Review,* 71 (1989), 16-28.

Halpern, L.; M. Koren; and A. Szeidl. "Imported inputs and productivity". *The American Economic Review*, 105 (2015), 3660-3703.

Harris, L. E. "Minimum price variations, discrete bid–ask spreads, and quotation sizes." *Review of Financial Studies,* 7 (1994), 149-178.

Healy, P. M.; A. P. Hutton; and K. G. Palepu. "Stock performance and intermediation changes surrounding sustained increases in disclosure." *Contemporary Accounting Research,* 16 (1999), 485-520.

Healy, P. M., and K. G. Palepu. "Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature." *Journal of Accounting and Economics,* 31 (2001), 405-440.

Heflin, F. L.; K. W. Shaw; and J. J. Wild. "Disclosure Policy and Market Liquidity: Impact of Depth Quotes and Order Sizes." *Contemporary Accounting Research*, 22 (2005), 829-865.

Helpman, E., and P. R. Krugman. "Trade policy and market structure." MIT press, (1989).

Hu, A. G., and Z. Liu. "Trade liberalization and firm productivity: Evidence from Chinese manufacturing industries." *Review of International Economics,* 22 (2014), 488-512.

Jiambalvo, J.; S. Rajgopal; and M. Venkatachalam. "Institutional ownership and the extent to which stock prices reflect future earnings." *Contemporary Accounting Research*, 19 (2002), 117-145.

Kale, J. R., and Y. C. Loon. "Product market power and stock market liquidity." *Journal of Financial Markets*, 14 (2011), 376-410.

Karuna, C.; K. R. Subramanyam; and F. Tian. "Industry product market competition and earnings management." *Working Paper,* (2015).

Lang, M. H., and R. J. Lundholm. "Corporate disclosure policy and analyst behavior." *Accounting Review*, (1996), 467-492.

Lerner, A.P. "The concept of monopoly and the measurement of monopoly power." *The Review of Economic Studies*, 1 (1934), 157–175.

Lesmond, D.; P. O'Connor; and L. Senbet. "Leverage recapitalizations and liquidity." *Unpublished working paper,* Tulane University (2002).

Leuz, C., and R. E. Verrecchia. "The economic consequences of increased disclosure." *Journal of Accounting Research,* 38 (2000), 91-124.

Lev, B. "Toward a theory of equitable and efficient accounting policy." *Accounting Review,* (1988), 1-22.

Levine, R. "Stock markets: a spur to economic growth." *Finance and Development,* 33 (1996), 7-10.

Lin, C.; M. S. Officer; and X. Zhan. "Does competition affect earnings management? Evidence from a natural experiment." *Working Paper,* (2015).

Lindenberg, E. B., and S. A. Ross. "Tobin's q ratio and industrial organization." *Journal of business,* (1981), 1-32.

Markarian, G. ”Product market competition, information and earnings management.” *Journal of Business Finance and Accounting,* 41 (2014), 572-599.

Pavcnik, N. “Trade liberalization, exit, and productivity improvements: Evidence from Chilean plants.” *The Review of Economic Studies,* 69 (2002), 245-276.

Peress, J. “Product market competition, insider trading, and stock market efficiency.” *The Journal of Finance,* 65 (2010), 1-43.

Revenga, A. L. “Exporting jobs?: The impact of import competition on employment and wages in US manufacturing.” *The Quarterly Journal of Economics*, (1992), 255-284.

Roulstone, D. T. “Analyst following and market liquidity.” *Contemporary Accounting Research,* 20 (2003), 552-578.

Sadka, R., and A. Scherbina. “Analyst disagreement, mispricing, and liquidity.” *The Journal of Finance*, 62 (2007), 2367-2403.

Schor, A. “Heterogeneous productivity response to tariff reduction. Evidence from Brazilian manufacturing firms.” *Journal of Development Economics*, 75 (2004), 373-396.

Schott, P.K. “U.S. manufacturing exports and imports by SIC and NAICS category and partner country, 1972-2005.” *In: Unpublished working paper,* Yale School of Management, (2010).

Stiglitz, J. E. “Pareto optimality and competition.” *The Journal of Finance,* 36 (1981), 235-251.

Topalova, P., and A. Khandelwal. “Trade liberalization and firm productivity: The case of India.” *Review of Economics and Statistics*, 93 (2011), 995-1009.

Trefler, D. “The long and short of the Canada–U.S. Free Trade Agreement.” *American Economic Review*, 94 (2004), 870–985.

Tybout, J. R. “Plant-and firm-level evidence on “new” trade theories.” *Handbook of International Trade*, 1 (2003), 388-415.

Tybout, J. R., and M. D. Westbrook. “Trade liberalization and the dimensions of efficiency change in Mexican manufacturing industries.” *Journal of International Economics,* 39 (1995), 53-78.

Velury, U., and D. S. Jenkins. “Institutional ownership and the quality of earnings.” *Journal of Business Research,* 59 (2006), 1043-1051.

Welker, M. “Disclosure policy, information asymmetry, and liquidity in equity markets.” *Contemporary Accounting Research*, 11 (1995), 801-827.

Xie, B.; W. N. Davidson; and P. J. DaDalt. “Earnings management and corporate governance: the role of the board and the audit committee.” *Journal of Corporate Finance,* 9 (2003), 295-316.

Xu, J. "Profitability and capital structure: Evidence from import penetration." *Journal of Financial Economics,* 106 (2012), 427-446.

Yu, F. F. "Analyst coverage and earnings management." *Journal of Financial Economics,* 88 (2008), 245-271.

Table 1 - Descriptive Statistics

This table presents the descriptive statistics for the main variables used in this study across the entire sample period. For each variable, we report the sample average, standard deviation, 25th percentile, median, 75th percentile and number of observations. Detailed variable definitions are provided in Appendix A. The final sample consists of 22,754 firm-year observations over the period 1993-2012.

	Mean	Std.	P25	Median	P75	Obs.
Panel A: Dependent Variables						
Ln (Amihud)	-17.851	2.931	-19.994	-17.917	-15.772	22754
Ln (QSpread)	-19.223	2.624	-21.091	-19.250	-17.356	22754
Ln (ESpread)	-20.662	3.387	-23.178	-20.575	-18.052	22754
Panel B: Explanatory Variables						
Imprt.Pent	0.250	0.129	0.147	0.251	0.331	22754
Lern.Index	0.119	0.090	0.068	0.123	0.183	22754
Ln (Age)	2.660	0.838	2.079	2.639	3.367	22754
At.Tang	0.367	0.148	0.259	0.348	0.453	22754
R&D/At	0.062	0.094	0.003	0.029	0.089	22754
Advert/At	0.012	0.041	0.000	0.000	0.004	22754
Leverage	0.192	0.192	0.018	0.159	0.302	22754
Inst.Owship	0.523	0.280	0.290	0.541	0.752	22754
1/Price	0.094	0.144	0.033	0.058	0.109	22754
Ln (At)	6.038	1.915	4.619	5.852	7.271	22754
Ret.Volt	0.034	0.019	0.022	0.031	0.043	22754
Analysts	5.504	5.909	1.000	4.000	8.000	22754
Analysts_Disp	0.227	0.614	0.025	0.056	0.146	22754
Inst.Ded	0.050	0.070	0.000	0.014	0.083	22754
Panel C: Instrumental Variables						
Ln (Tariff)	0.968	0.574	0.570	0.959	1.362	18139
Fogn.Exchg	0.094	0.107	0.036	0.061	0.117	18139

Table 2 - Foreign Competition and Stock Market Liquidity – OLS Regressions

This table reports the OLS estimation of the effect of foreign competition on stock market liquidity. The three measures of dependent variables are *Ln (Amihud)* which is the logarithm of Amihud illiquidity ratio, *Ln (QSpread)* is the logarithm of the standardized quoted spread, and *Ln (ESpread)* is the logarithm of the standardized effective relative spread. Columns (1), (4) and (7) show the results using Lerner Index as a measure of market power. Columns (2), (5) and (8) show the results using import penetration as a measure of foreign competition. Columns (3), (6) and (9) show the results using import penetration after controlling for market power using Lerner Index. Detailed variable definitions are provided in Appendix (1). All regressions control for industry and year fixed effects. Standard errors are clustered at the firm level. *T*-statistics are in brackets. ***, **, * denote significance at the 1%, 5%, and 10% significance level, respectively. All independent and control variables are winsorized at the 1% level and lagged for one year relative to the dependent variable.

	Ln (Amihud)			Ln (QSpread)			Ln (ESpread)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Import.Pent		1.1842**	0.9590**		1.2202***	1.0076**		1.7339***	1.4933***
		(2.41)	(2.05)		(2.89)	(2.53)		(3.04)	(2.73)
Lern.Index	-4.7651***		-4.7502***	-4.5002***		-4.4845***	-5.0974***		-5.0741***
	(-18.33)		(-18.25)	(-20.13)		(-20.04)	(-17.52)		(-17.44)
Ln (Age)	-0.1653***	-0.1250***	-0.1620***	-0.0813***	-0.0429	-0.0778***	-0.0989***	-0.0542	-0.0937***
	(-5.35)	(-3.96)	(-5.23)	(-3.19)	(-1.63)	(-3.05)	(-2.75)	(-1.53)	(-2.60)
At.Tang	-0.9652***	-0.9320***	-0.9763***	-1.0171***	-0.9869***	-1.0287***	-1.0935***	-1.0634***	-1.1107***
	(-7.04)	(-6.60)	(-7.12)	(-8.70)	(-8.16)	(-8.79)	(-7.11)	(-6.73)	(-7.23)
R&D/At	-3.1681***	-1.8618***	-3.1725***	-2.9589***	-1.7261***	-2.9635***	-3.5814***	-2.1881***	-3.5881***
	(-12.41)	(-7.62)	(-12.45)	(-13.03)	(-8.21)	(-13.07)	(-13.05)	(-8.53)	(-13.10)
D.R&D/At	0.2118***	0.2419***	0.2098***	0.1877***	0.2159***	0.1856***	0.2363***	0.2675***	0.2332***
	(3.35)	(3.76)	(3.33)	(3.67)	(4.09)	(3.63)	(3.44)	(3.83)	(3.40)
Advert/At	-3.2288***	-3.0733***	-3.2239***	-2.5166***	-2.3693***	-2.5114***	-2.6064***	-2.4379***	-2.5987***
	(-5.98)	(-5.69)	(-5.99)	(-6.55)	(-5.94)	(-6.57)	(-4.52)	(-4.13)	(-4.50)
Leverage	1.2078***	1.3315***	1.2118***	1.0784***	1.1955***	1.0826***	1.0897***	1.2237***	1.0959***
	(9.23)	(9.59)	(9.26)	(9.89)	(10.23)	(9.92)	(8.13)	(8.71)	(8.17)
Inst.Owship	-1.3737***	-1.4817***	-1.3772***	-1.2561***	-1.3584***	-1.2598***	-1.7582***	-1.8752***	-1.7636***
	(-13.18)	(-13.36)	(-13.20)	(-15.08)	(-15.14)	(-15.11)	(-15.86)	(-16.12)	(-15.91)
1/Price	1.8987***	2.1909***	1.8861***	1.4600***	1.7344***	1.4467***	1.7433***	2.0491***	1.7236***
	(3.76)	(3.67)	(3.74)	(3.57)	(3.49)	(3.55)	(4.13)	(3.96)	(4.11)
Ln (At)	-0.7527***	-0.7988***	-0.7521***	-0.7439***	-0.7873***	-0.7433***	-0.8437***	-0.8926***	-0.8428***
	(-25.97)	(-26.31)	(-25.99)	(-29.85)	(-30.05)	(-29.87)	(-24.81)	(-25.74)	(-24.85)
Ret.Volt	-6.3234***	-2.7552**	-6.1190***	-5.0356***	-1.6452	-4.8208***	-12.4523***	-8.5408***	-12.1340***
	(-4.85)	(-2.11)	(-4.77)	(-4.57)	(-1.40)	(-4.47)	(-3.94)	(-3.93)	(-3.92)
Analysts	-0.1268***	-0.1333***	-0.1273***	-0.1027***	-0.1089***	-0.1033***	-0.1490***	-0.1563***	-0.1499***
	(-19.31)	(-19.66)	(-19.44)	(-19.01)	(-19.31)	(-19.19)	(-19.72)	(-20.01)	(-19.86)
Constant	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	22754	22754	22754	22754	22754	22754	22754	22754	22754
R^2	0.7510	0.7362	0.7512	0.7599	0.7434	0.7602	0.7720	0.7595	0.7723

Table 3 - Foreign Competition and Stock Market Liquidity - 2SLS Regressions controlling for year and industry effect

This table presents the results of 2SLS regression on the effects of foreign competition on stock liquidity, using instrumental variable (IV) approach. The instrument variables for the competition are the import tariff rate and foreign exchange rates. Columns (1)-(3) in Panel A and columns (5)-(7) in Panel B present the second-stage regression results for the three measures of dependent variables: *Ln (Amihud)* is the logarithm of Amihud illiquidity ratio, *Ln (QSpread)* is the logarithm of the standardized quoted spread, and *Ln (ESpread)* is the logarithm of the standardized effective relative spread. Column (4) in Panel A and column (8) in Panel B reports the first-stage estimation. Columns (1), (2) and (3) of Panel A show the result using import penetration as a measure of foreign competition. In Columns (5), (6) and (7) of Panel B we control for market power using Lerner Index. Detailed variable definitions are provided in Appendix (1). All regressions control for industry and year fixed effects. T-statistics are in brackets. ***, **, * denote significance at the 1%, 5%, and 10% significance level, respectively. All independent and control measures are lagged for one year except for instrument variables lagged 2years.

Panel A: Results without controlling for market power.

	Second-Stage			**First-Stage**
	Ln (Amihud)	Ln (QSpread)	Ln (ESpread)	Imprt.Pent
	(1)	(2)	(3)	(4)
Imprt.Pent	7.9114***	3.9744***	7.3310***	
	(4.70)	(2.65)	(3.96)	
Ln (Tariff)				-0.0064****
				(-7.13)
Fogn.Exchg				0.0894****
				(24.68)
Constant & All controls	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES
Observations	18139	18139	18139	18139
R^2	0.6979	0.7044	0.7209	0.5653

Panel B: Results after controlling for market power using Lerner Index.

	Second-Stage			**First-Stage**
	Ln (Amihud)	Ln (QSpread)	Ln (ESpread)	Imprt.Pent
	(5)	(6)	(7)	(8)
Imprt.Pent	8.2954***	4.3529***	7.7572***	
	(5.06)	(3.00)	(4.30)	
Lern.Index	-4.6020***	-4.4168***	-5.0584***	-0.0162***
	(-30.69)	(-33.28)	(-30.70)	(-4.5)
Ln (Tariff)				-0.0062***
				(-6.96)
Fogn.Exchg				0.0896***
				(24.75)
Const. & All controls	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES
Observations	18139	18139	18139	18139
R^2	0.7124	0.7215	0.7345	0.5658

Table 4 - Foreign Competition and Stock Market Liquidity - OLS and 2SLS results controlling for Firm Fixed effect

This table reports the results for the effect of foreign product competition on stock market liquidity after controlling for firm fixed effect. The three measures of dependent variables are ln (Amihud) which is the logarithm of Amihud illiquidity ratio, Ln (QSpread) which is the logarithm of the standardized quoted spread, Ln (ESpread) which is the logarithm of the standardized effective relative spread. Panel A reports the result using OLS regression. Columns (1), (4) and (7) of Panel A show the result using Lerner index as a measure of market power. Column (2), (5) and (8) of Panel A show the result using import penetration as a measure of foreign competition. Columns (3), (6) and (9) of Panel A show the result using import penetration after controlling for market power using Lerner Index. Panel B presents the results of 2SLS regression. The instrument variables for the competition are the import tariff rate and foreign exchange rates. Columns (1), (2) and (3) in Panel B present the Second-stage regression results for ln (Amihud), Ln (QSpread) and Ln (ESpread) respectively. Column (4) in Panel B reports the First-stage estimation. Column (5), (6) and (7) of Panel B present the Second-stage regression results for ln (Amihud), Ln (QSpread) and Ln (ESpread) respectively after controlling for market power using Lerner Index. Column (9) in Panel B reports the First-stage estimation after controlling for market power. Detailed variable definitions are provided in Appendix (1). All regressions control for firm and year fixed effects. T-statistics are in brackets. ***, **, * denote significance at the 1%, 5%, and 10% significance level, respectively. All independent and control measures are lagged for one year.

Panel A: Ordinary least square

	Ln (Amihud)			Ln (QSpread)			Ln (ESpread)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Imprt.Pent		2.2317**	2.5241***		2.2609***	2.5298***		3.6881***	3.9999***
		(2.53)	(3.04)		(2.88)	(3.47)		(3.73)	(4.25)
Lern.Index	-6.2050***		-6.2292***	-5.7014***		-5.7257***	-6.6018***		-6.6401***
	(-23.87)		(-23.98)	(-24.36)		(-24.50)	(-23.82)		(-24.11)
Const. & All controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	22754	22754	22754	22754	22754	22754	22754	22754	22754
R2	0.9139	0.9042	0.9143	0.9046	0.8944	0.9050	0.9172	0.9093	0.9179

Panel B: 2SLS Regressions

	Second-Stage			**First-Stage**		**Second-Stage**			**First-Stage**
	Ln (Amihud)	Ln (QSpread)	Ln (ESpread)	Imprt.Pent		Ln (Amihud)	Ln (QSpread)	Ln (ESpread)	Imprt.Pent
	(1)	(2)	(3)	(4)		(5)	(6)	(7)	(8)
Imprt.Pent	6.1586***	3.4460***	4.8383***			5.6683***	3.0008**	4.3211***	
	(4.67)	(2.73)	(3.24)			(4.55)	(2.49)	(3.04)	
Lern.Index						-6.3027***	-5.7214***	-6.6521***	-0.0013
						(-42.33)	(-39.83)	(-39.14)	(-0.46)
Ln (Tariff)				-0.0116***					- 0.0116***
				(-17.85)					(-17.85)
Fogn.Exchg				0.1105***					0.1105***
				(42.67)					(42.67)
Const. & All controls	YES	YES	YES	YES		YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES		YES	YES	YES	YES
Firm fixed effects	YES	YES	YES	YES		YES	YES	YES	YES
Observations	18139	18139	18139	18139		18139	18139	18139	18139
R2	0.4892	0.4082	0.5533	0.8138		0.5436	0.4643	0.5943	0.8138

Table 5 - Evidence from Natural Experiment: Reduction of Import Tariff Rates and Stock Market Liquidity

This table reports the impact of the substantial reduction in import tariffs on Stock Liquidity. The variable *Treat* is one if the reduction in the import tariff rate is at least five times the overall median change over the sample period, and zero otherwise. For each firm, we calculate the difference in *Ln (Amihud)*, *Ln (ESpread)*, and *Ln (QSpread)* over the period *t*-2 years to *t*+ 2 years. Columns (1), (4) and (7) shows the result using *Treat* variable. In Columns (2), (5) and (8) we control for market power using Lerner index. Columns (3), (6) and (9) we control for the foreign competition using import tariff. Detailed variable definitions are provided in Appendix (1). All regressions control for industry and year fixed effects. T-statistics are in brackets. ***, **, * denote significance at the 1%, 5%, and 10% significance level, respectively. All independent and control measures are lagged for one year.

	Δ Ln (Amihud)			Δ Ln (QSpread)			Δ Ln (ESpread)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Treat	0.2548**	0.2727**	0.2760**	0.2117**	0.2283**	0.2324**	0.2491**	0.2653**	0.2691**
	(2.37)	(2.54)	(2.53)	(2.13)	(2.29)	(2.31)	(2.05)	(2.18)	(2.18)
Lern.Index		-0.2106***	-0.2105***		-0.1958***	-0.1957***		-0.1907***	-0.1906***
		(-2.98)	(-2.98)		(-3.20)	(-3.20)		(-2.61)	(-2.61)
Imprt.Pent			0.1677			0.2129			0.1939
			(0.21)			(0.32)			(0.24)
Ln (Age)	0.0332	0.0333	0.0338	-0.0471	-0.0470	-0.0464	0.0135	0.0135	0.0141
	(0.79)	(0.79)	(0.80)	(-1.24)	(-1.24)	(-1.22)	(0.29)	(0.29)	(0.30)
At.Tang	-0.6534**	-0.6275**	-0.6313**	-0.5756**	-0.5515**	-0.5564**	-0.7415***	-0.7180**	-0.7224**
	(-2.51)	(-2.43)	(-2.43)	(-2.56)	(-2.47)	(-2.48)	(-2.65)	(-2.56)	(-2.56)
R&D/At	-0.5712	-1.1017**	-1.1020**	-0.6555	-1.1488**	-1.1492**	-0.9468*	-1.4271**	-1.4275**
	(-1.19)	(-2.13)	(-2.13)	(-1.40)	(-2.33)	(-2.33)	(-1.75)	(-2.46)	(-2.46)
D.R&D/At	0.0792	0.0748	0.0740	0.0939	0.0898	0.0888	0.1327	0.1288	0.1278
	(0.91)	(0.87)	(0.85)	(1.20)	(1.16)	(1.13)	(1.41)	(1.37)	(1.35)
Advert/At	0.3537	0.3800	0.3781	0.5095	0.5339	0.5315	0.6468	0.6706	0.6684
	(0.47)	(0.51)	(0.50)	(0.69)	(0.72)	(0.72)	(0.79)	(0.82)	(0.82)
Leverage	0.2051	0.2158	0.2179	0.1170	0.1269	0.1296	0.0720	0.0817	0.0841
	(1.12)	(1.20)	(1.21)	(0.69)	(0.76)	(0.78)	(0.36)	(0.42)	(0.43)
Inst.Owship	0.0342	0.0471	0.0470	0.0597	0.0717	0.0716	-0.1009	-0.0893	-0.0894
	(0.22)	(0.31)	(0.31)	(0.44)	(0.53)	(0.53)	(-0.60)	(-0.53)	(-0.53)
1/Price	-0.0454	-0.0783	-0.0783	-1.5606***	-1.5913***	-1.5913***	-1.2092*	-1.2391	-1.2391*
	(-0.08)	(-0.13)	(-0.13)	(-2.85)	(-2.94)	(-2.94)	(-1.88)	(-1.94)	(-1.94)
Ln (At)	-0.1023***	-0.0983***	-0.0981***	-0.0912***	-0.0875***	-0.0873***	-0.1340***	-0.1304***	-0.1301***
	(-3.99)	(-3.83)	(-3.84)	(-4.02)	(-3.85)	(-3.85)	(-4.57)	(-4.44)	(-4.44)
Ret.Volt	-4.9469	-6.1027*	-6.0520*	0.5588	-0.5159	-0.4516	3.9694	2.9230	2.9816
	(-1.52)	(-1.87)	(-1.85)	(0.19)	(-0.17)	(-0.15)	(1.08)	(0.79)	(0.80)
Analysts	0.0348***	0.0363***	0.0362***	0.0290***	0.0304***	0.0303***	0.0409***	0.0423***	0.0422***
	(6.87)	(7.09)	(7.05)	(6.40)	(6.65)	(6.62)	(6.95)	(7.11)	(7.07)
Const.	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	4884	4884	4884	4884	4884	4884	4884	4884	4884
R^2	0.2070	0.2097	0.2097	0.1849	0.1878	0.1879	0.1776	0.1794	0.1794

Table 6 - Foreign Competition and Managerial Monitoring

This table reports the OLS estimation in which we interact the import penetration measure with different measures of corporate governance. The three measures of dependent variables are: *Ln (Amihud)* is the logarithm of Amihud illiquidity ratio, *Ln (QSpread)* is the logarithm of the standardized quoted spread, and *Ln (ESpread)* is the logarithm of the standardized effective relative spread. In Panel A, we interact the import penetration measures with high and low total institutional ownership. In Panel B, we interact the import penetration measures with high and low Dedicated institutional ownership. HIO (HDED) is a binary variable equal to one for firms' whose institutional (Dedicated) ownership is above the sample median, while LIO (LDED) is a binary variable equal to one for firms' whose institutional (Dedicated) ownership is below the sample median. Δ *Coefficient* represents the difference in coefficients between *Imprt.Pent*HIO* and *Imprt.Pent*LIO in* Panel A and between *Imprt.Pent*HDED* and *Imprt.Pent*LDED in* Panel B. F-statistic for the difference in coefficients is reported in square brackets. All regressions control for industry and year fixed effects. Standard errors are clustered at the Firm level. *T*-statistics are in brackets. ***, **, * denote significance at the 1%, 5%, and 10% significance level, respectively. All independent and control variables are winsorized at the 1% level and lagged for one year relative to dependent variable.

Panel A: Total.Inst

	Ln (Amihud)	Ln (QSpread)	Ln (ESpread)
	(1)	(2)	(3)
*Imprt.Pent*HIO*	0.2896	0.4739	0.6772
	(0.62)	(1.19)	(1.24)
*Imprt.Pent*LIO*	2.2794***	2.0086***	3.0763***
	(4.61)	(4.77)	(5.38)
Lern.Index	-4.7280***	-4.5019***	-5.0653***
	(-17.96)	(-19.75)	(-17.21)
Δ *Coefficient*	1.9898***	1.5347***	2.3991***
F-Statistic	[149.32]	[132.86]	[178.91]
Const. & All controls	YES	YES	YES
Year & Industry fixed effects	YES	YES	YES
Observations	22754	22754	22754
R^2	0.7477	0.7546	0.7671

Panel B: Inst.Ded

	Ln (Amihud)	Ln (QSpread)	Ln (ESpread)
	(1)	(2)	(3)
*Imprt.Pent*HDED*	0.5601	0.6733*	0.9988*
	(1.17)	(1.65)	(1.79)
*Imprt.Pent*LDED*	1.2333**	1.2149***	1.8214***
	(2.56)	(2.95)	(3.25)
Lern.Index	-4.9278***	-4.6539***	-5.3052***
	(-18.15)	(-19.96)	(-17.60)
Δ *Coefficient*	0.6732***	0.5416***	0.8226***
F-Statistic	[27.29]	[26.31]	[32.22]
Const. & All controls	YES	YES	YES
Year & Industry fixed effects	YES	YES	YES
Observations	22754	22754	22754
R2	0.7421	0.7504	0.7610

Table 7 - Foreign Competition and Information Transparency

This table reports the OLS estimation in which we interact the import penetration measure with different measures of information transparency. The three measures of dependent variables are: *Ln (Amihud)* is the logarithm of Amihud illiquidity ratio, *Ln (QSpread)* is the logarithm of the standardized quoted spread, and *Ln (ESpread)* is the logarithm of the standardized effective relative spread. In Panel A, we interact the import penetration measures with high and low analyst's following. In Panel B, we interact the import penetration measures with high and low analyst's dispersion. HANL (HDISP) is a binary variable equal to one for firms' whose Analyst Following (Analyst Dispersion) is above the sample median, while LANL (LDISP) is a binary variable equal to one for firms' whose Analyst Following / Analyst Dispersion is below the sample median. Δ *Coefficient* represents the difference in coefficients between *Imprt.Pent*HANL* and *Imprt.Pent*LANL* in Panel A and between *Imprt.Pent*HDISP* and *Imprt.Pent*LDISP* in Panel B. F-statistic for the difference in coefficients is reported in square brackets. All regressions control for industry and year fixed effects. Standard errors are clustered at the Firm level. *T*-statistics are in brackets. ***, **, * denote significance at the 1%, 5%, and 10% significance level, respectively. All independent and control variables are winsorized at the 1% level and lagged for one year relative to dependent variable.

Panel A: Analysts

	Ln (Amihud)	Ln (QSpread)	Ln (ESpread)
	(1)	(2)	(3)
*Imprt.Pent*HANL*	-0.6064	-0.2008	-0.3162
	(-1.28)	(-0.49)	(-0.57)
*Imprt.Pent*LANL*	3.1830***	2.5692***	3.9788***
	(6.48)	(6.16)	(6.97)
Lern.Index	-5.0886***	-4.7743***	-5.4810***
	(-18.20)	(-19.62)	(-17.07)
Δ *Coefficient*	3.7894***	2.7700***	4.2950***
F-Statistic	[314.85]	[250.88]	[324.38]
Const. & All controls	YES	YES	YES
Year & Industry fixed effects	YES	YES	YES
Observations	22754	22754	22754
R^2	0.7383	0.7461	0.7572

Panel B: Analysts_Disp

	Ln (Amihud)	Ln (QSpread)	Ln (ESpread)
	(1)	(2)	(3)
*Imprt.Pent*HDISP*	1.1011***	1.0942**	1.6354***
	(2.18)	(2.58)	(2.81)
*Imprt.Pent*LDISP*	-0.5813	-0.2193	-0.3006
	(-1.16)	(-0.52)	(-0.51)
Lern.Index	-4.6101***	-4.3913***	-4.9272***
	(-15.44)	(-17.26)	(-14.43)
Δ *Coefficient*	-1.6824***	-1.3135***	-1.9360***
F-Statistic	[145.10]	[129.24]	[147.64]
Const. & All controls	YES	YES	YES
Year & Industry fixed effects	YES	YES	YES
Observations	22754	22754	22754
R^2	0.7200	0.7343	0.7397

Table 8 - Foreign Competition and Profit Volatility

This table reports the OLS estimation of the foreign competition on firm profit volatility. Profit volatility defined as the standard deviation of EBIT over the years *t* to *t*+5. EBIT is defined as revenues minus costs of goods sold and administrative and selling costs associated with the firm's operations. Interest and taxes the firm must pay are not deducted in the calculation of EBIT. Colum (1) shows the result of the association between market power using Lerner index and firm profit volatility. Column (2) shows the result of the relation between foreign competition using import penetration and firm profit volatility. Colum (3) shows the result of the relation between foreign competition using import penetration and profit volatility after controlling for market power using Lerner index. Detailed variable definitions are provided in Appendix (1). All regressions control for industry and year fixed effects. Standard errors are clustered at the firm level. *T*-statistics are in brackets. ***, **, * denote significance at the 1%, 5%, and 10% significance level, respectively. All independent and control variables are winsorized at the 1% level and lagged for one year relative to the dependent variable.

	Profit Volatility		
	(1)	(2)	(3)
Import.Pent		0.0264	0.0231
		(1.26)	(1.12)
Lern.Index	-0.0615***		-0.0611***
	(-6.10)		(-6.06)
Ln (Age)	-0.0064***	-0.0058***	-0.0063***
	(-6.74)	(-6.09)	(-6.70)
At.Tang	-0.0049	-0.0045	-0.0052
	(-0.77)	(-0.71)	(-0.82)
R&D/At	0.1218***	0.1392***	0.1218***
	(8.68)	(9.90)	(8.67)
D.R&D/At	-0.0024	-0.0019	-0.0024
	(-1.22)	(-1.00)	(-1.25)
Advert/At	0.0245	0.0258	0.0246
	(1.36)	(1.43)	(1.37)
Leverage	0.0091**	0.0105**	0.0092**
	(2.01)	(2.31)	(2.03)
Inst.Owship	-0.0006*	-0.0074**	-0.0061**
	(-1.94)	(-2.35)	(-1.97)
1/Price	0.0145*	0.0196**	0.0142*
	(1.94)	(2.34)	(1.90)
Ln (At)	-0.0064***	-0.0069***	-0.0063***
	(-10.67)	(-10.89)	(-10.59)
Ret.Volt	0.2335***	0.2755***	0.2375***
	(2.68)	(2.76)	(2.69)
Analysts	0.0006***	0.0005***	0.0006***
	(5.26)	(4.34)	(5.05)
Const. & All controls	YES	YES	YES
Year fixed effects	YES	YES	YES
Industry fixed effects	YES	YES	YES
Observations	19554	19554	19554
R^2	0.2911	0.2844	0.2914