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DOES TRADE GLOBALIZATION INDUCE OR INHIBIT CORPORATE TRANSPARENCY?
UNBUNDLING THE GROWTH POTENTIAL AND PRODUCT MARKET COMPETITION
CHANNELS

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Does Trade Globalization Induce or Inhibit Corporate Transparency? Unbundling the Growth
Potential and Product Market Competition Channels
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ABSTRACT

How does increasing globalization affect corporate transparency? Freer trade represents different facets
and in theory has ambiguous effects on corporate transparency. On the one hand, by exposing firms
to more product market competition, it could discourage discretionary disclosure. On the other hand,
by opening up foreign markets and enhancing firms' growth opportunities, it may promote more transparency.
Rather than simply estimating a net effect, this paper pursues an approach that allows separate estimation
of the two potentially opposing channels. We employ three different measures of corporate transparency
and track their evolutions for 4061 firms in 49 countries during 1992-2005. By using detailed product-level
tariff schedules for these countries, we construct a measure of growth opportunities enabled by foreign
tariff liberalizations at the sector-country-year level, and a second measure of globalization-induced
product market competition based on a country's own tariff liberalization (again at the sector–country-year
level). We find strong evidence that higher growth opportunities engendered by globalization promotes
corporate transparency, especially in industries that depend heavily on external financing. At the same
time, we find somewhat weaker evidence that greater product market competition engendered by globalization
discourages corporate transparency. The results demonstrate the importance of disentangling the multiple
and potentially conflicting effects of globalization.

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World trade has been growing faster than world GDP during the last three decades. The strong growth of cross-border trade results from multiple sources. Some of the reductions in trade barriers come from multi-lateral trade negotiations under the auspices of the World Trade Organization/GATT. A recent example of them is the termination of import quotas by the United States, Canada and European Union in 1995 under the Multi-fiber Agreement and Textile and Clothing agreement. Some trade liberalizations come from regional free trade agreements. Two prominent examples are the formation of the North America Free Trade Area and the enlargement of the European Union. But many other countries have formed regional trade blocs and are in the process of negotiating one. Finally, the world trade also expands as a result of many unilateral trade reforms. Unilateral tariff cuts by China, Columbia, and India are examples in the last category. Because the rapid pace of trade globalization has significantly altered the business landscape that firms operate in, it is useful and important to understand how rising globalization affects corporate transparency.

The question would have been trivial if trade globalization has a clearly defined uni-directional effect. However, in theory, freer trade in goods and services represents multiple facets and can have potentially conflicting effects on corporate transparency. On one hand, it generates more product market competition for firms (when home country's barriers to imports are reduced). On the other hand, it also generates more growth opportunities (when partner countries' trade barriers are reduced).

The effect of greater product market competition on corporate transparency is itself ambiguous. For example, the recent theoretical work by Carlin, Davies and Iannaccone (2010) show that, under fairly general conditions, greater competition in the product market leads to less

discretionary disclosure.[1] This view has been shared by a long list of earlier studies, such as Verrecchia (1983), Clinch and Verrecchia (1997) and Board (2009). But some other studies reach the opposite conclusion that more product market competition may lead to more disclosure (e.g. Darrough and Stoughton (1990), Wagenhofer (1990) and Feltham and Xie (1992)).[2]. Finally, Dye and Sridhar (1995) suggest that product market competition may either increase or decrease disclosure depending on whether the information the firm receives is firm-specific or industry-wide.

Greater trade globalization also enhances firms' growth opportunities by reducing barriers to exports to foreign markets. The effect of greater growth opportunities on corporate transparency is less controversial. The literature generally concludes that the effect is positive (Khanna, Palepu and Srinivasan, 2004; and many others).

Rather than estimating a single net effect of trade liberalization on corporate transparency, we estimate separate effects from greater product market competition (identified by reductions in home country trade barriers) and those from greater growth opportunities (identified by reductions in export barriers to foreign markets). On the effects of product market competition, we show evidence that is consistent with the model of Carlin, Davies and Iannaccone (2010): more competition leads to less corporate transparency. On the effects of export growth potential, we show evidence that strongly suggests that more foreign trade liberalization leads to more firm transparency, especially in industries that depend heavily on

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[1] Their argument is that competition frequently resembles a tournament, where CEOs who receive higher public praise receive positively skewed rewards. However, greater product market competition often translates into lower likelihood for CEOs to win the tournament. Hence, they may have less incentive to engage in discretionary disclosure.

[2] Darrough and Stoughton (1990) argue that the competition through the threat of product market entry encourages voluntary disclosure of the incumbent, particularly when the entry cost for the potential entrant is low.

external financing. These different results suggest that it is important to unbundle the different channels of globalization.

We employ three different and complementary measures of corporate transparency and track their evolutions for 4061 firms in 49 countries during 1992-2005. By using detailed product-level tariff schedules for these countries, we construct a measure of growth opportunities enabled by foreign tariff liberalizations at the sector-country-year level, and a second measure of globalization-induced product market competition based on a country's own tariff liberalization (again at the sector–country-year level).

In empirical work, product market competition is often measured by an industry concentration ratio, such as by the Herfindahl-Hirschman Index (HHI). However, because the concentration ratio is an endogenous outcome variable, its connection with the degree of competition is ambiguous. As Demsetz (1973) points out, in the absence of barriers to entry, "concentration of an industry's output in a few firms could only derive from their superiority in producing and marketing products." Baumol (1982) and Schmalensee (1989) hold the same view that a high concentration ratio does not necessarily reflect a low degree of competition. Guadalupe and Perez-Gonzalez (2011) point out, "the general merchandise industry is highly concentrated around industry leaders, such as Wal-Mart and Target, and at the same time extremely competitive." The key take-away point is that a direct measure of barriers to entry is preferred to an indirect measure such as industry concentration ratio.

In the empirical literature, growth potential is often measured by a market-to-book ratio. There are two key drawbacks with this measure. First, the ratio is endogenous. It is easy to think up a story that features reverse causality: a firm may choose to improve its corporate transparency for reasons unrelated to any change in growth potential, but such improvement

3

should nonetheless help that firm to obtain more external financing and therefore to realize more growth. The market-to-book ratio rises as a result. In other words, one may observe a positive association between the two, but the direction of causality can go from transparency to growth. Aside from reverse causality, both market-to-book ratio and a firm's transparency outcome could also be driven by a common third factor.

Khanna, Palepu and Srinivasan (2004), Cahan, Rahman and Perera (2005) recognized that growth potential (or a firm's investment opportunities) may be endogenous and used lagged sales or similar measures to mitigate the endogeneity concerns. They recognized that the lagged variables can still be endogenous and the procedure does not fully establish the direction of causality. Durnev and Kim (2005) went one step further and attempted to correct the endogeneity concerns with a three-stage least squared regression. The primary excluded regressors in the equation for growth potential (or "valuation") are industry fixed effects, which are still not ideal. It is not clear that the industry fixed effects satisfy the exclusion criteria in this context. They are very frank about the limitations of their approach and warned readers accordingly "identifying truly exogenous parameters is difficult; therefore the results presented below must be interpreted with caution" (Durnev and Kim, 2005, p1484). Second, even at a conceptual level, the link between a firm's market-to-book ratio and its growth opportunity is weak (Erickson and Whited, 2000; and Alti, 2003). As an important implication of the second drawback, what we need is not merely an instrumental variable for market-to-book ratio, but a separate measure that can reasonably be linked to growth potential and is exogenous with regard to corporate transparency.

One of the contributions of this paper is to develop a methodology that (a) identifies an exogenous source of variation in firms' growth potential, namely, changes in foreign trade barriers (due to changes in foreign government policies), and (b) interacts this shock with a

4

particular dimension of firm heterogeneity in terms of their intrinsic dependence on external finance. This framework sharpens our ability to identify the causal effect of growth opportunity on corporate transparency. Foreign trade liberalization represents an unambiguously favorable shock to a firm because it raises the firm's future profitability, but is exogenous to a firm's disclosure behavior. For example, a Philippine garment company is unlikely to be able to influence the tariff schedules or their changes in other countries[3]. By focusing on this exogenous source of growth potential, and examining possibly differential effects of this shock on firms with different degrees of reliance on external finance, we can sort out the causal effect of growth potential on firms' corporate transparency.

Foreign trade liberalization can be an important source of improving growth potential for firms around the world. Trade globalization has been taking place at a rapid speed during the last three decades, through three channels. First, many developing countries have experienced a change of attitude towards trade openness, and have undertaken unilateral liberalization by cutting tariffs and non-tariff trade barriers. China and India are among the most prominent examples in this area, but are by no means the only ones. Firms located in countries that trade heavily with China and India have benefited from improved market access. Second, regional trade agreements have spread like wildfire over the last ten years. NAFTA, ASEAN Free Trade Area, the widening European Union to include many former Communist countries, and the Singapore-US Free Trade Area are all examples. Third, multilateral trade liberalization under the umbrella of the GATT and the WTO is also making progress, although it may be less significant

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[3] To increase our confidence that foreign tariff schedules are exogenous, we exclude from our sample those exporting firms from the United States, Japan, and the United Kingdom which might be successful in lobbying for tariff changes abroad. As a further robustness check, we also exclude firms from two largest emerging markets, China and India, from the regression sample. This is probably more conservative than necessary as the literature on the determination of national tariffs focuses almost exclusively on countries' *internal* political economy.

compared with unilateral liberalization or regional trade agreements. The conclusion of the Uruguay Round in the mid-1990s was the last major success on the multilateral front. Another benefit of using foreign tariff schedules to construct a measure of trade potential is that tariff rates are available at a highly disaggregated level. There are over 5,000 products by the Harmonious System 6-digit classification. Even after some aggregation to match other variables, this sector classification is still much finer than is typical in the empirical finance or macroeconomic literature, and is standardized across all countries.

Corporate transparency conceptually refers to availability of firm-specific information to outside investors. Following Bushman, Piotroski and Smith (2004), it includes the effects of "corporate reporting, private information acquisition and information dissemination." In order to capture this broad concept, we do not rely on any single indicator and instead employ three different measures that hopefully complement each other.

The first is an outcome-based metric, namely, the average accuracy of earnings forecasts by stock analysts (conditional on other factors such as firm size that may also affect forecasting accuracy). The basic idea is that, other things equal, better corporate transparency should allow analysts to make accurate forecast. The same variable has been used in the earlier literature to gauge corporate transparency (e.g., Lang, Lins and Miller (2003) and Lang and Maffett (2011)). As Lang and Maffett (2011) put it: "The accuracy of their (analyst) forecasts is likely also a function of the transparency of the firm's information environment, including both the effects of their private information acquisition as well as firms' disclosure policies". Since a key to the validity of this measure is to hold other things equal, we control for variables that could directly affect accuracy of earnings forecasts such as firm size, ADR listing, and earnings volatility. Our second and third measures are the degree of earnings management and the number of disclosed

accounting items, respectively. These two measures look at the "input" side of transparency, or actions taken by the firms, and serve as useful complements to earnings forecast accuracy. For example, this can alleviate concerns that an improved earnings forecast might be the result of greater earnings management instead of a true improvement in the quality of transparency. As it turns out, trade globalization both reduces earnings management and increases the number of disclosed accounting items, especially by those firms that are dependent on external financing.

I. **Putting the Paper in the Context of the Literature**

A number of other channels have been identified in the literature to affect corporate transparency, and corporate governance more generally. They include country level differences in investor protection, financial development and regulation on financial accounting (See, for example, Leuz et al., 2003; De Nicolo et al., 2008; Aggarwal et al., 2009). We control them in two ways. First, we add these channels and their interactions with a sector-level dependence on external finance as control variables. Second, we control them in a more general way by including time-varying country fixed effects (i.e., country-year pair dummies). The time-varying country fixed effects allow us to absorb not only typical instruments for creditor or shareholder rights protection such as legal origins, but also changes in government policies with regard to mandatory disclosure, the adoption of International Financial Reporting Standards, domestic financial liberalization and international financial integration.

The literature has also suggested that those firms that are cross-listed in a major foreign stock exchange, or otherwise need to tap into the international capital market may exhibit better disclosure. To control for this, we include a firm-level time-varying indicator variable for firm-years that cross-list in the United States. In addition, we control for time-invariant firm features

with firm fixed effects. We find that while cross-listing in the U.S. is associated more corporate transparency, which is consistent with the findings of Lang et al (2003), this effect disappears when cross listing is considered together trade opportunity, firm size and other factors. Reassuringly, the effect trade globalization on corporate transparency is not affected by the inclusion of ADR listings. (As our trade liberalization measure is at the sector-country-year level, and we identify the impact of trade liberalization on corporate transparency through cross-sector cross-time heterogeneity within a country.

Our key finding is that trade globalization has <u>caused</u> firms to undertake steps to become more transparent. This can be seen most clearly in terms of an increase in the number of disclosed items and in a reduction in earnings management, especially in sectors in which firms have a greater intrinsic need for external financing. This effect is also reflected in improved earnings forecast accuracy by analysts.

Our findings are consistent with the notion that more corporate transparency reduces capital cost (Gebhardt, Lee and Swaminathan, 2001; and Francis, Nanda and Olsson, 2008). They are also consistent with the earlier finding that firms tend to improve the quality of financial reporting before issuing equities or debts (see Lang and Lundholm (1993)). Our contribution is to be able to pin down the direction of causality.

Our paper is also related to the literature on firm-level choice of corporate governance versus country-level regulation on corporate governance. The question arises as whether companies will choose their governance above their country's regulatory requirements, and whether the choice matters for corporate valuation, and/or the ability to raise external finance

(Immordino and Pagano, 2008; and Tong (2008)).[4] An important question still needed to be addressed is whether a desire to raise external financing, such as that may arise from a positive shock to a firm's growth potential, could motivate the firm to improve internal governance provisions. This paper is a contribution to this literature as well.

Our paper also connects with the literature on globalization and corporate governance. There has been a relatively large literature on financial globalization and corporate governance (see Kose et al. (2009) for a survey). But the literature linking trade globalization with corporate governance is still scarce, although there are more studies associating trade globalization with economic growth and stock valuation.[5] One exception is Khanna, Kogan and Palepu (2006), who find that bilateral trade linkage between two countries promotes convergence of their de jure corporate governance. But Khanna et al. (2006) have not addressed the mechanism underlying the convergence. In this paper, we aim to fill the gap in the literature by examining a specific channel through which trade globalization could affect corporate governance. That is, trade globalization, as a source of growth opportunity, could affect the demand for external finance and hence corporate transparency.

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[4] Actual firm-level internal governance has been linked positively with valuation, after controlling for country-level standards, according to Gompers, Ishii, and Metrick (2003), and Aggarwal et al. (2007). Moreover, these effects are more pronounced for firms that depend on external financing (Bruno and Claessens (2007)).

[5] For example, Sachs and Warner's (1995) find that trade liberalization is closely tied to future growth, and Henry (2000) finds that trade liberalization increases equity price.

II. Methodology and Data

We now explain both the econometric specification and the construction of the key variables.

II.A. Econometric Model

We employ the following basic specification:

(1)

$$Transparency_{ijt}$$
$$= \beta_1 TradeOpportunity_{ijt} + \beta_2 TradeOpportunity_{ijt} * ExternalFinancingDemand_i$$
$$+ \lambda OwnTariff_{ijt} + \gamma OtherControlVariables_{ijt} + FirmFixedEffects_i + YearFixedEffects_t + \varepsilon_{ijt}$$

where i, j and t stand for stock i in country j at time t. The firm fixed effects are more general than either sector or country fixed effects, since the latter two are linear combinations of the firm fixed effects. For example, country-level differences in the protection of shareholder or creditor rights or financial development are controlled for by these fixed effects. Year fixed effects are meant to capture trends and cyclical factors that are common to all firms. In some robustness checks, we will also include time-varying country fixed effects to absorb factors such as changing government policies toward international financial integration or domestic financial liberalization. We will explain *"Trade Opportunity"* and *"Trade Opportunity*External Financing Demand"* in more detail in the following subsections. We note here that the measure of intrinsic demand for external finance is sector-specific but time-invariant. As such, it is part of the firm fixed effects. In other words, the regression is run as if the demand for external finance

is included as a regressor. Other control variables include firm size (year-end market capitalization in US dollars) which will be listed and defined below.

The coefficient on the interaction between "Trade Opportunity*External Financing Demand" captures the effect of greater growth opportunity. Under the hypothesis that a positive growth shock leads to an improvement in transparency for firms with a high dependence on external finance, we expect coefficient $\beta_2 > 0$. The interaction term between foreign trade opportunity and firms' intrinsic demand for external financing is crucial for our story. Otherwise, we cannot rule out the possibility of a direct connection between exports and forecasting accuracy without involving voluntary reforms on corporate transparency. The sign of this direct connection, β_1, is ambiguous, however. On one hand, if foreign demand is more stable than domestic demand, greater foreign trade could lead to a reduction in forecasting error ($\beta_1 > 0$). On the other hand, greater reliance on foreign trade also increases a firm' exposure to foreign factors such as exchange rate volatility, foreign political risk, regulatory intervention, and civil strife. They may increase a firm's earnings volatility and reduce the forecast accuracy ($\beta_1 < 0$). Indeed, Goldberg and Heflin (1995) and Duru and Reeb (2002) provide some evidence suggesting greater international sales could raise earnings volatility. In this paper, in addition to examining any direct connection between foreign trade opportunity and corporate transparency, we explore differences between firms that rely more or less on external financing. This provides a stronger check on the hypothesis that at least some of the improvement in corporate transparency is motivated by firms' desire to raise more external financing in order to take advantage of new trading opportunities.

The coefficient on "*OwnTariff*" directly measures the effect of greater product market competition. In particular, a lower domestic tariff rate in the sector that a firm operates represents

more competition from foreign firms in the same sector. If more product market competition (e.g., lower own tariffs) leads to less transparency, λ would be positive. If more product competition encourages transparency, λ would be negative.

II.B. Using changes in tariff rates to measure trade globalization

To measure the two different aspects of globalization, we use foreign tariff reductions as an exogenous measure of expanding growth opportunity, and reductions in domestic tariff (in the sector that a firm operates) as a measure of changes in product market competition.

We first retrieve MFN tariff data for Standard Industrial Classification (SIC) 4-digit products from the Trade Analysis and Information System (TRAINS) database, maintained by the United Nations Conference on Trade and Development (UNCTAD). If tariff data is missing for a particular importing country in a particular year, we use the most recent values (i.e, values at t-1, t1, t-2, t+2, …) on the ground that major tariff changes take place infrequently in any given country). In a small number of cases where the tariff rate for a SIC 4-digit sector is not available, we use the tariff for the corresponding 3-digit sector instead. We control for the major free-trade agreements: the European Union and the North American Free Trade Area, where bilateral tariffs typically fell to zero after the agreements took effect.

We identify the main business line (at the SIC 4-digit level) of a listed company based primarily on the information given in the WORLDSCOPE dataset but supplemented by information in the COMPUSTAT Global dataset if the first source is not available.

Figure 1 plots the histogram of the average tariffs for all manufacturing sectors in sample countries between 1992 and 2005. The tariff data are winsorized at the top 1% of the distribution; the figure indicates that 1% of the product line/exporting country pairs (represented by the spike

on the far right of the diagram) face a tariff rate of 28% or higher. Figure 2 plots the histogram for changes in average tariffs for sector-country pairs. As one can see, a majority of firms faced a decline in both home and foreign tariffs during this period, but some experienced an increase in tariffs.

While deciding home country tariff rates is relatively straightforward, computing weighted average of foreign tariff is more involved. For every business line in every exporting country i in a given year, we calculate the average tariff across all trading partners, weighted by each trading partner's share in country's i's exports of that particular sector. This measure of export potential is thus specific to sector, year, and exporting country. For ease of interpretation, in subsequent regressions, trade opportunity for a firm in a given year is defined as the negative value of the average tariff it faces across foreign markets. Thus, a reduction in foreign tariff rates translates into a positive increase in trade opportunity.

There is no comprehensive data set on non-tariff barriers across countries and over time, which is as detailed as the tariff rates. Nonetheless, tariff rates and non-tariff equivalents are likely to be positively correlated as they are promoted by the same protectionist lobbies. This is supported by the empirical findings in Lee and Swagel (1997), who found a positive association between these variables for 27 industries in 41 countries in 1988. Furthermore, they argue that this pattern – that tariff and non-tariff barriers are complements - is consistent with the political economy theory of trade protection. As an implication of this idea, a 5% reduction in tariff rates observed in the data may in fact correspond to a much bigger reduction in overall trade barriers.

It is useful to note that applied tariff rates can go up as well as down, even for member countries of the GATT/WTO. This is because GATT/WTO obligations place only an upper ceiling on tariff rates (i.e. bound rates). In most developing countries, applied tariff rates are

13

substantially lower than bound rates, leaving plenty of room for maneuver. Indeed, in the data, we observe many instances in which applied tariff rates were revised upward. Take Mexico as an example. After it signed the North America Free Trade Agreement with the United States and Canada in 1994, it raised its tariff rates on products in 150 out of 443 SIC 4-digit sectors on imports coming from non-NAFTA countries. In 22 of these sectors, tariff hikes were larger than 15%. For instance, the tariffs for men's coats, footwear cut stock, cheese, cigarettes, and corn were increased by 15%, 20%, 30%, 47%, and 62%, respectively. Variations in tariff rates across products, countries, and years are useful for our empirical examination.

II.C. Three Measures of Corporate Transparency

Because the notion of corporate transparency – or availability of firm specific information to outside investors – cannot be measured precisely and straightforwardly, we do not rely on any single measure and employ three measures instead. While we view forecasting accuracy as a "sufficient statistic" for the quality of transparency, the input-based measures are useful complements because they are more directly related to actions taken by the firms. On the other hand, surely some of the information disclosure is not captured by earnings management. And the number of disclosed accounting items does not capture the quality of disclosed items. In that sense, an overall outcome-based measure such as earnings forecast accuracy can provide information not captured by the two input-based measures. In any case, we consider a particular inference to be more reliable when all three measures give similar answers.

Our first measure of corporate transparency is ***accuracy of analysts' earnings forecast***. This has been used to proxy for financial information environment in the accounting literature, e.g. Lang and Lundholm (1996), Lang, Lins and Miller (2003), Bailey et al. (2003), and Heflin et

al. (2003), and Lang and Maffett (2011). According to Lang, Lins and Miller (2003), their notion of information environment is similar to the concept of "corporate transparency" in Bushman et al. (2004), which is also our definition of corporate transparency. Hence we use forecast accuracy to proxy corporate transparency. The rationale is that more frequent and accurate disclosure should lead to a more accurate forecast by analysts, as argued in Lang, Lins and Miller (2003). Note that trade globalization may also affect the volatility of earnings and hence forecast accuracy. Therefore as in Lang, Lins and Miller (2003), we will explicitly control for earnings volatility in our analysis, which strengthens forecast accuracy as a proxy of corporate transparency.

For a given firm in a given year, we use the most recent earnings forecast by each analyst before the end of a firm's accounting year to compute the consensus (mean) forecast, and compare it with the firm's realized earnings. More precisely, the earnings' forecast accuracy for a given company in a given year is defined by:

$$(2) \qquad Accuracy_{it} = -\left| \frac{Mean\ forecast_{it} - Actual_{it}}{Actual_{it}} \right|$$

The measure of forecast accuracy varies both across firms and over time. The variables are constructed from the Institutional Brokers Estimates System (IBES) database, which contains analyst-by-analyst estimates for 18,000 companies in 60 countries. The available information includes company name, data type indicator (e.g. earnings per share), forecast period indicator, broker and analyst code, estimate date, estimate value, actual reported value, and so on. The database compiles information from more than 7,000 financial analysts from over 1,000 institutions.

This measure by construction is bounded by zero from above. A higher value corresponds to more forecasting accuracy. For some companies, some analysts provide multiple-horizon

forecasts (e.g., over both 1-year and 2-year horizons). We choose to focus on the one-year horizon as it has the broadest coverage over firms and years. The mean and standard deviation are -0.86 and 2.75, respectively. The median value, which is less affected by outliers on the left tail, is -0.18. Figure 3 plots a histogram of the forecasting accuracy for all firms over all years, winsorized at both the bottom and the top 1%.

Our second measure is ***restraint on earnings management*** as in Lang and Maffett (2011). One particular channel through which a corporate financial release becomes less than fully informative is earnings management – a financial maneuver by a firm to make its reported earnings look more desirable (less volatile) than it actually is. In particular, a firm may strategically increase or decrease accruals to conceal the true fluctuations in its profits. Our second measure of corporate transparency is the extent to which a firm engages in earnings management. We will investigate if more product market competition and an improved growth opportunity would induce firms to do more or less earnings management.

To capture the extent to which a firm engages in the practice of earnings management, Land and Lang (2002), Leuz, Nanda, and Wysocki. (2003), and Lang, Ready, and Wilson (2006) use the correlation between cash flows (before any accounting adjustments) and profits (after accounting adjustments). We follow their methodology. To be precise, accruals (AS) for firm i in country j at time t are calculated as:

(3) $$AS_{ijt} = (\Delta CA_{ijt} - \Delta Cash_{ijt}) - (\Delta CL_{ijt} - \Delta STD_{ijt}) - Dep_{ijt}$$

where Δ denotes changes, *CA* is current assets, *Cash* is cash and cash equivalents, *CL* is current liabilities, *STD* is short-term debt and the current portion of long-term debt, and *Dep* is

depreciation and amortization. Operating cash flow (*OCF*) is derived by subtracting accruals from operating income (*OI*):

(4) $$OCF_{ijt} = OI_{ijt} - AS_{ijt}$$

We scale *AS* and *OCF* by firm's total asset (*TA*), and denote the resulting ratios by *OCFA* and *ASA*, respectively. The accounting literature cited above uses the following equation (or some variation) to examine the severity of earnings management:

(5) $$\Delta ASA_{ijt} = \alpha + \beta \Delta OCFA_{ijt} + \gamma ControlVariables_{ijt} + \varepsilon_{ijt}$$

A more negative β is interpreted as more aggressive earnings management. We build on this and further specify

(6) $$\beta = \beta_0 + \beta_1 \Delta TradeOpportunity_{ijt} + \beta_2 \Delta TradeOpportunity_{ijt} * RZ_i + \beta_3 RZ_i$$

where *RZ* is the Rajan-Zingales index for intrinsic demand for external finance. We also expand the list of control variables in Equation (5) to include change of trade opportunity, its multiplication with *RZ,* and a sequence of country-year pair dummies. If a positive growth shock reduces earnings management for firms that rely relatively heavily on external finance, we would expect $\beta_2 > 0$.

The correlation between ΔASA and $\Delta OCFA$ is negative naturally, resulting from the accrual accounting. But it will be even more negative if managers make accruals choices to smooth earnings. For instance, in bad times, managers may pre-book future revenues or delay the reporting of current costs to conceal poor current performance. But in good times, mangers may

17

do the reverse so as to create a reserve for the future. Hence accruals buffer cash flow shocks and generate a negative correlation between changes in accruals and cash flows. The calculation makes use of balance sheet data, which are retrieved from the Worldscope for the period from 1992-2005. [As noted earlier, US firms are excluded from the sample.] We end up with 5500 firms in 44 countries with 39376 observations in total.

Our third measure of corporate transparency is a simple **count of disclosed accounting items** (out of a list of 221). Our empirical model for the number of disclosed accounting items is

(7)

$$DisclosedItems_{ijt} = \beta_1 TradeOpportunity + \beta_2 TradeOppt_{ijt} * RZ_i + \lambda OwnTariff_{ijt}$$
$$+ \gamma ControlVariables_{ijt} + FirmFixedEffects_i + YearFixedEffects_t + \eta_{ijt}$$

The list of control variables includes firm size, the number of listed stocks in a country, or country-year pair dummies.

During the sample, there has been widespread international voluntary adoption of IFRS rules that generally mandates a greater number of disclosed account items. In addition, growing stock market liberalizations, more widespread adoption and better enforcement of insider trading laws may affect the incentives for firms to disclose information and may also affect the information environment in other ways that could affect an analyst's forecasting accuracy. These could generate trends in the number of disclosed items. The country-year pair dummies capture country-specific trends (as well as other variations common to a particular country-year combination).

These accounting items are from a list reported in the COMPUSTAT Global database related to firms' balance sheets, incomes and cash flows.[6] The number of disclosed items ranges from 42 to 187 over the sample period, with the mean at 151 and the median at 150. This measure implicitly assumes that all disclosed items are equally important to investors, which obviously is not true. At the same time, the errors from this assumption are unlikely to be correlated with a firm's growth opportunity. In any case, we regard this measure as an additional check. Our sample covers around 6200 firms in 49 countries.

II.D. Intrinsic Dependence on External Financing

Following Rajan and Zingales (1998), we define a firm's intrinsic demand for external financing by:

$$(8) \qquad \text{Dependence on external finance} = \frac{[\text{capital expenditures - cash flow}]}{\text{capital expenditures}},$$

where Cash flow = cash flow from operations + decreases in inventories + decreases in receivables + increases in payables. All the numbers are based on US firms, which are judged least likely to suffer from financing constraint relative to firms in other countries due to a relatively high level of financial development in the United States. As a result, the measure is exogenous to non-US firms (and we exclude US firms from our regressions). The original Rajan and Zingales index (1998) covers only 40 (mainly SIC 2-digit) sectors. Since we work with tariff data, which uses a substantially more refined sector classification, we expand the number of

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[6] There are nominally 225 items in total, but 4 items have never been reported by any firm in the dataset.

sectors to around four hundred 4-digit SIC sectors. (If we exclude non-tradable sectors such as utilities, we are still left with 234 sectors).

To calculate the demand for external financing for US firms, we take the following steps: First, every firm is sorted into one of the 4-digit SIC sectors. Second, for each firm, the median value of the dependence ratio is computed over the period of 1990-2005. Third, for each SIC 4-digit sector that contains at least 5 firms, the median value then is chosen to be the index of demand for external financing in that sector. For a few SIC 4-digit sectors in which there are fewer than 5 US firms, we pool firms from the United Kingdom, Canada and Japan and then implement a similar calculation. To minimize the influence of outliers in subsequent analysis, we winsorize this measure at both the top and bottom 1%.

The mean value of the indicator of demand for external financing is 0.53, with a standard deviation of 2.93. A histogram of the indicator is plotted in Figure 4. As our hypothesis stresses the interaction between foreign trade liberalization and a firm's dependence on external financing, a histogram of the interaction of the two variables is presented in Figure 5.

II.E. Other Control Variables

"Earnings change" is defined as the absolute value of the percentage change in realized earnings per share (in dollar terms) from the previous year. It is included to account for the possibility that when earnings variation is large, forecasting is likely to be more difficult. For example, international expansion increases a firm's exposure to foreign factors (i.e. political risk, regulatory intervention, and civil strife) that may increase that firm's earnings volatility and make it more difficult to forecast its earnings, as its operation becomes more complicated (this is

20

noted by Goldberg and Heflin, 1995; and Duru and Reeb, 2002). Realized change in earnings from the previous year is a proxy for such shocks.

"Negative earnings" is a dummy that equals one when a firm has negative earnings in the current period and zero, otherwise. This dummy is included to allow for asymmetry in a firm's disclosure or earnings management, depending on whether the news is good or bad. Specifically, with bad news looming, a firm may postpone disclosure (e.g. Kothari, Shu, and Wysocki 2005), and thereby impair analysts' ability to make accurate forecasts. For a somewhat different reason, negative earnings may cause the number of analysts to shrink, especially if bad news persists. Analysts' payoffs are often linked to the value of stock traded which could be lessened by consistently bad earnings news.

"Analyst number" is the number of analysts covering a firm. When foreign trade liberalization occurs, domestic firms may become more active in raising capital, which in turn may attract more analysts to cover the firm. The increased demand for information may generate a reduction in forecasting errors, which needs to be separated by a reduction in forecasting errors due to better disclosure by the firm. To control for market demand for information at the firm level, we use analyst coverage in each accounting year, which is also calculated from the IBES dataset. In the sample, the mean and median numbers of analysts covering a firm are 8.6 and 6, respectively (with a standard deviation of 8). A histogram of analyst coverage is presented in Figure 6.

The *"number of listed stocks"* is meant to capture the maturity of a stock market. A greater number of listed stocks may also imply a stronger competition among firms for external funding, which may pressure them to improve transparency.

As shown by the histograms, the forecast accuracy, the earnings surprise, the index for intrinsic demand for external financing, and trade opportunity all have long tails, indicating the presence of outliers. To reduce the impact of the extreme values, we winsorize all these variables at the 1% level.

II.F. A Note on Sample Construction

The underlying sample is all manufacturing firms in the IBES database during the period of 1992-2005. We exclude firms in service sectors (such as banks) because we do not have the tariff data required to compute their export potential. As we use firm-level information from the United States to compute intrinsic demand for external finance, our regression sample must exclude firms from the United States in order to ensure that the measure for intrinsic demand for external financing is exogenous with respect to firms included in the regressions. For a small number of SIC-4 digit manufacturing sectors, there are fewer than five firms per sector even after we pool data from the four large industrial countries. To ensure that the measure for dependence on external finance is reliable, we exclude firms in these sectors from the regressions. All in all, our regression sample consists of 4061 unique manufacturing firms in 49 countries, or a total of 24,146 firm-year observations. Appendix I lists the number of firms in each country.

Some countries, such as Sri Lanka and Slovenia, have fewer than five manufacturing firms in our sample. We include them to reflect the broadness of country coverage. All the key results still carry through when we drop these countries (not reported to save space). A given regression may have a smaller sample due to missing values in some included regressors. Table 1 reports

summary statistics for the key variables.[7]

III. Statistical Results

III.A Some Preliminaries

The goal of our statistical analysis is to examine the relationship between a firm's transparency and greater trade globalization. Before we conduct this analysis, let us first document two patterns in the data. First, a firm's export growth is related to changes in foreign tariffs on its principal product. Second, a firm's investment responds to export opportunity. Neither is surprising, but it is useful to have them confirmed in the data.

We start with an association between firm-level export growth, and reductions in foreign tariffs in the SIC 4-digit sector that characterizes the firm's main line of business. The Worldscope database has information on export sales, but only for 513 firms in 17 countries. With these firms, a simple OLS regression is performed, of export growth from 1995 to 2005 on increase in trade opportunity (or reduction in the weighted average of foreign tariff rates) during the same period, controlling for country fixed effects. The slope coefficient on increase in trade opportunity is 0.041 with a standard error of 0.019 and a t-statistic of 2.14. This implies that, on average, a 10% reduction in the weighted average of foreign tariff rates is associated with a 40% increase in firms' export growth, and the relationship is statistically significant at the 1% level. Figure 7 presents a partial scatter plot of export expansion onto tariff reduction, conditional on country fixed effects. This confirms the regression result that reductions in foreign tariff rates are linked to firms' export expansion.

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[7] Due to data availability, we have a larger coverage of firms when we examine earnings management and the number of disclosed accounting items. The exact coverage is mentioned in the relevant subsections.

Next, we verify a link between firm-level investment (in percent of physical capital) and firm-level exports from 1995 to 2005. For 686 firms in 24 countries, the Worldscope database has data on both variables that span the eleven-year period. A simple OLS regression of change in investment on change in exports (conditional on country fixed effects) yields a slope coefficient (on export growth) of 0.296 with a standard error of 0.026 and a t-statistic of 11.3. In other words, a 10% increase in exports is associated with a 3% increase in the investment rate, on average, and the relationship is statistically significant at the 1% level. Figure 8 presents a partial scatter plot of investment rate on export growth, conditional on country fixed effects. The positive association between the two is visually strong.

To summarize, falling foreign tariffs tend to promote export expansion; and growth in exports tends to be associated with an increase in investment rate[8]. Neither relationship is particularly surprising, but they lay a foundation for our central task of investigating the connection between changes in foreign tariffs and corporate transparency.

III.B. Benchmark Results

We now turn to the relationship between a firm's growth opportunity and the quality of its information environment. The baseline result is reported in the first column of Table 2. Standard errors are clustered by country, year and sector.

The coefficient on trade opportunity is 0.013 and is statistically significant at the 5 percent level. A reduction in the average foreign tariff by 5 percentage points (approximately one standard deviation of the actual tariff rates in the sample) is associated with an improvement in

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[8] We are not able to perform such checks for all firms since the information on exports and investment is missing for most of them.

forecasting accuracy by 0.065 for firms with low intrinsic demand for external financing. While this estimate is statistically significant, it is relatively modest in quantitative terms. The coefficient on the interaction between intrinsic demand for external financing and trade opportunity is 0.003 and is statistically significant at the 10 percent level. For a sector whose intrinsic demand for external financing is one standard deviation above the mean (or 2.93+0.53=3.46 according to Table 1), the effect of the same improvement in growth opportunity leads to an improvement in forecasting accuracy by (0.003x3.46+0.013)*5=0.12. So the effect is twice as large for firms in a sector with a high intrinsic demand for external financing as in a sector with a low intrinsic demand for external financing. Evaluated at the median value of forecasting accuracy (-0.18), this represents a 67% percent improvement. Therefore, the effect of an increase in growth opportunity on corporate transparency is not only statistically significant, but also economically important, especially for firms that depend heavily on external financing.

We now turn to the control variables. Firm size has a negative coefficient. *Ex ante*, one would think that firm size could have two opposing effects on forecasting accuracy. On the one hand, larger firms tend to have more complex operations, which raise the difficulty in forecasting. On the other hand, larger firms may engage in multiple lines of business, which may have natural hedging or risk-sharing properties that tend to reduce earnings volatility. The negative coefficient on firm size suggests that the first effect dominates.

More analyst coverage can also increase forecast accuracy. When foreign tariffs drop, firms may become more active in raising capital. Hence more analysts may begin covering them, which may reduce forecasting errors. This analyst-driven story is different from a voluntary improvement in the transparency by firms. We hence include analyst coverage directly in the regression to control for this demand-driven possibility so that we can isolate voluntary

25

improvement in corporate transparency. The finding that improved trade opportunity increases forecast accuracy—even after controlling for analyst coverage —suggests that a reduction in forecasting errors is not just due to firms' greater visibility.

Note, however, that the literature sometimes uses analyst coverage directly as a measure of corporate transparency (e.g. Durnev and Kim, 2005, Lang and Maffett (2011)). In a separate regression using analyst coverage as the dependent variable (not reported to save space), we find that an improvement in growth opportunity tends to lead to a rise in analyst coverage, especially for firms with a large intrinsic demand for external financing. We might think that the overall effect of trade opportunity on forecast accuracy is the sum of a direct effect (as estimated in Table 2) and an indirect effect through its impact on analyst coverage. We take the conservative route of ignoring this indirect channel.

Other control variables have expected signs. A greater earnings surprise increases forecasting errors: If earnings change significantly from year to year, they become more difficult for analysts to forecast. The dummy for negative earnings (loss) produces a negative coefficient: when a firm is losing money, its management may have an incentive to hide losses, reducing the accuracy of forecasts. Also, the greater the number of listed stocks on a market, the more accurate the forecast, potentially due to stronger competition among firms for external financing.

In Column 2 of Table 2, we add a country's own tariff protection (MFN tariff rate at the 4 digit sector level) as a regressor. A decline in a country's own tariff rates weakens the protection for domestic firms from foreign competition. The effect of product market competition on corporate transparency is itself ambiguous at least in theory. For example, Carlin et al (2010) predict that greater competition in the product market leads to less discretionary disclosure, while

Darrough and Stoughton (1990) predict the opposite.[9] In our estimation, the regression in Column 2 produces a point estimate of 0.008 for *Own Tariff*, which is significant at the 5% level. This is consistent with the idea that an improved protection from foreign competition increases firm transparency, in line with the prediction of Carlin et al (2010). However, when we add an interaction term between own tariff and the demand for external finance, we do not find a statistically significant effect (not reported to save space).

Foreign tariff changes are likely to be a better measure of an exogenous change in a firm's growth opportunity than domestic tariffs. For example, domestic tariffs are more likely to be endogenous as they are subject to domestic firms' lobbying, and those firms with weak growth opportunities may lobby particularly hard for a higher domestic tariff protection. For these firms, a higher domestic tariff could signal weaker growth opportunities elsewhere. Therefore, we place more importance on inferences drawn from coefficients associated with foreign tariffs. Reassuringly, the interaction term between growth opportunities as measured by foreign tariffs and the index for intrinsic demand for external finance remains positive (with a point estimate of 0.0028) and statistically significant at the 10% level.

III.C. Robustness and Sensitivity Checks

First, we experiment with a refined measure of intrinsic demand for external financing. The original formula proposed by Rajan and Zingales (Equation (3)) produces a negative number whenever a majority of US firms in a sector have greater cash flow than capital expenditure. This

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[9] Carlin et al (2010) that greater product market competition often translates into lower likelihood for CEOs to win the tournament of public praise, and hence reduces CEO's incentive to engage in disclosure. But Darrough and Stoughton (1990) argue that the competition through the threat of product market entry encourages voluntary disclosure of the incumbent, particularly when the entry cost for the potential entrant is low.

is not uncommon in the data, and is true in the original Rajan and Zingales (1998) paper as well. Nonetheless, one might think that a negative value of demand for external financing may reflect noise in the data and is not desirable. As a robustness check, we re-assign all negative values of the index to zero. As a further refinement, we defined a second revised index for external financing that assigns all negative values to zero, and all values above one to one. By restricting the index to be between zero and one, it can be interpreted as a measure of the fraction of a firm's capital expenditure not financed by internal cash reserve. The revised regression is reported in the third column of Table 2. The coefficient for growth opportunity (corresponding to sectors with low intrinsic demand for external financing) becomes smaller and statistically insignificant. Importantly for our hypothesis, the coefficient on the interaction between growth opportunity and intrinsic demand for external financing turns out to be much larger than in the benchmark case. In other words, by introducing the restriction that demand for external financing ranges between 0 and 1, the contrast between firms with different degrees of dependence on external financing becomes much starker.

Second, we control for time-varying country-level channels that may also affect corporate transparency. In particular, we focus on country's capital account openness and domestic financial development and their interaction with a firm's intrinsic demand for external financing. When a country increases its capital account openness, two opposing effects are likely to take place. On one hand, if firms wish to compete for newly available international capital, they may strive to improve corporate transparency. On the other hand, if capital becomes truly abundant due to a removal of restrictions on inward foreign investment, firms may be less motivated to undertake reforms to improve transparency. We adopt the Chinn and Ito (2005) index of capital account openness, which is the principal component from a set of binary dummy variables that

28

codify restrictions on cross-border financial transactions as reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions. The new regression is reported in the fourth column of Table 2. Greater capital account openness is found to be weakly associated with poorer forecast accuracy. This is consistent with the interpretation that increased availability of capital from abroad makes firms less willing to improve their transparency. More importantly, the key results on growth opportunity and demand for external financing in our baseline model are not altered. In Column 5, we further control for domestic financial development and its interaction with external financing demand. We measure domestic financial development by the ratio of domestic private credit over GDP as in Rajan and Zingales (1998). The interaction between a country's domestic financial development and a firm's external financing demand is not significant. Moreover, adding domestic financial development does not alter the results for trade opportunity and its interaction with a firm's intrinsic demand for external financing.

Third, as there might be other changes in a country beyond capital openness, we introduce time-varying country fixed effects (or country-year pair dummies) to control for potential omitted time-varying factors at the country level.[10] These new fixed effects, however, are likely to bias down the estimated effect of growth opportunity. The reason is that country-year pair dummies also capture the overall improvement of a country's trade opportunity. For example, when China reduced its tariffs on a broad range of products in preparation for its WTO accession, many of its trading partners, such as Japan, enjoyed an increase in growth opportunity across almost all sectors. Because this aspect of the improvement in growth opportunities for Japanese firms is captured by country-year fixed effects, the coefficient on the growth opportunity and its interaction with demand for external financing capture only part of the total

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[10] Time-invariant country factors have already been captured by firm fixed effects.

effects. In any case, the estimation results with country-year fixed effects are reported in Column 6 of Table 2. The interaction term has a coefficient of 0.03, around 75% of that in Column 3. Reassuringly, it is still significant at the 5% level.

Finally, in the last column of Table 2, we allow firms that have an ADR (or cross-listed in the U.S. stock market) to have different corporate transparency. The idea is that those firms which choose to tap into international capital market may also choose to be more transparent. Since there have been an increase in cross-listed stocks, there may be an improvement in corporate transparency. The correlation with foreign trade liberalization could be incidental. To control for this, we form a time-varying firm-specific indicator variable for firms-years that have an ADR based on data from Bank of New York. The indicator is time-varying because different firms may be listed in different years. If the ADR indicator is entered into the regression on its own, it is positive and significant (not reported to save space), which is consistent with the findings in Lang et al (2003). If it is included as an additional regressor (reported in the last column of Table 2), it is not significantly different from zero. Reassuringly, the result on the effect of trade opportunity on corporate transparency remains positive and significant.

Since forecasting accuracy is non-positive by construction, we have also tried a Tobit specification. A serious drawback of this specification is that we cannot include firm fixed effects. We implement a Tobit version of the baseline equation (similar to Column 1 in Table 2) with firm random effects but no fixed effects. The coefficient β_2 on the interaction term between trade opportunity and demand for external finance continues to be positive and statistically significant (with a coefficient of 0.002 and a standard error of 0.001), thus consistent with the results in Table 2. A check of the data reveals that less than half of 1% of the observations on forecasting accuracy are at zero, suggesting that data censoring is not likely a major concern.

30

III.D. Alternative Measure of Quality of Corporate Transparency and Alternative Samples

Our measure of forecasting accuracy used so far does not penalize dispersion in forecasts made by different analysts. To see how important this is, we use an alternative definition of forecasting accuracy, namely, the average of the square of the percentage deviation of individual forecasts from the subsequent realized earnings:

$$(9) \qquad Accuracy = -\frac{1}{N} \sum_{p=1}^{N} \left| \frac{Forecast_p - Actual}{Actual} \right|^2$$

Here N is the number of analysts for a stock and $forecast_p$ is the last forecast value by analyst p before the end of the firm's accounting year. This measure treats a higher dispersion in forecasts, all else being equal, as a reflection of lower-quality transparency. We revisit Table 2 with this new definition of the left-hand-side variable. We redo all the regressions in Table 2 with the new measure of quality of transparency (not reported to save space).[11] The point estimates suggest that the direct effect of an increase in trade opportunity on firms' transparency is modest if firms have a low intrinsic demand for external financing. The effect becomes stronger when firms have a high demand for external financing.

We also restrict the sample to where firms have at least five years of coverage by the IBES. This restriction helps to distinguish between firms that have been covered by an analyst for a relatively long period of time and those that have been newly added to the analysts' radar

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[11] For example, in the same regression model as in Column 1 of Table 2, while the coefficient on trade opportunity is 0.022 (with standard error=0.008), that on the interaction between trade opportunity and external finance dependence is 0.004 (with standard error =0.002).

screen. The restriction reduces the number of firms by around 20% from 4061 to 3255, and the number of observations by around 5%. Still, we find similar results for our key variables in both the magnitude and the significance levels. For example, compared with Column 3 of Table 2 (RZ index between 0 and 1), the restricted sample gives a coefficient of 0.009 (p-value=0.2) for trade opportunity and a coefficient of 0.04 (p-value=0.006) for trade opportunity interacted with the Rajan-Zingales index.

Here we look at different weighting in constructing the trade opportunity. Earlier, we use the contemporary trade shares by trading partners as the weights to construct the average tariff for a given sector/country combination. This weighting scheme, although not uncommon (as in the construction of effective exchange rates), may generate some bias due to the potential contemporary impact from tariff on trade. To control for this problem, we fix the trade weights at the beginning of the sample - the year of 1992. Consequently, the trade weights are invariant to the tariff changes in later years. The regression results are presented in Table 3. There, the impacts of trade opportunity on forecast accuracy increase significantly compared with those in Table 2. For example, in the first column, the interaction term of trade opportunity and the index for demand for external financing has a coefficient of 0.0056 (double that of 0.0029 in Table 2), while still with a comparable standard error of 0.002. The point estimate of trade opportunity itself is also much larger at 0.03 (compared with 0.013 in Table 2).

We perform a long-differencing regression to examine whether and how changes in forecasting accuracy across firms from 1992 to 2005 are related to changes in trade opportunity faced by these firms. To reduce noise associated with year to year fluctuations in earnings forecast, we use the average of the initial three years (1992-1994) as the initial values for all variables, and the average of the last three years (2003-2005) as the final values. As this requires

a firm to be present in the IBES database both at the beginning and at the end of the sample period, the sample size is reduced (to 497 firms).

The regression results are reported in Table 4. The coefficient on the growth opportunity is 0.03, significant at the 5% level. More interestingly, the coefficient on the interaction between demand for external financing and trade opportunity is 0.04 and also significant at the 5% level (Column 1). Therefore, our basic story holds in the medium term as well: As a firm's growth opportunity improves due to foreign tariff cuts, it tends to improve the quality of transparency, resulting in a more accurate earnings forecast by analysts. This effect gets stronger for firms that have a high intrinsic demand for external financing for their growth needs. In column 2, we apply the alternative definition of forecasting accuracy and find similar (in fact, stronger) results.

We now turn to an alternative way of implementing the long-differencing regression specification. We classify all firms into six buckets based on two dimensions. First, three slices of the firms are cut based on the changes in their trade opportunity: those that have experienced a decline in trade opportunity, those for which the increase in trade opportunity is between 0 to 3.5 (which is the median value of the positive increase in trade opportunity), and those for which the increase in trade opportunity is 3.5 or more. Second, for each slice, two buckets are created based on a firm's dependence on external finance: those firms with little need for external finance (whose finance dependence index equals zero or negative), and those that are more dependent on external finance (whose finance dependence index is positive). Six binary dummies are created to represent these six buckets of the firms, and are used as regressors in the long-differencing regression. We plot the coefficients for the six dummies in Figure 9, with the benchmark case being the bucket of firms that do not rely on external financing for growth and have experienced a deterioration in trade opportunity (i.e., a rise in foreign tariffs). Two solid lines trace out the

33

coefficient estimates for the two types of firms based on their dependence on external financing. For each, two thin broken lines trace out the 90% confidence band. The results are revealing. For those firms that are more heavily dependent on external financing, a large positive shock to trade opportunity leads to a statistically significant improvement in the accuracy of earnings forecast, whereas a large negative shock to trade opportunity leads to a deterioration in forecast accuracy. In contrast, for those firms with little need for external financing, the effect of a change in trade opportunity – be it negative, small positive, or large positive – has no impact on their transparency as the relevant coefficient estimates are statistically the same as zero. This picture is consistent with the idea that a combination of a positive growth shock and a need for external financing motivates firms to improve their financial transparency.

To bolster our confidence that foreign trade liberalization is truly exogenous to the firms in our sample, we have already excluded the firms from the United States which might be able to influence foreign tariffs through the US government. As a further robustness check, we drop from the regression sample all firms from the remaining G-7 countries (United Kingdom, Canada, France, Germany, Japan, and Itay) plus the two largest emerging market economies, China and India. The new results are reported in Table 5. The first column reports the benchmark case (where the index for intrinsic demand for external finance is between 0 and 1), and the second column adds country-year fixed effects. The interaction of trade opportunity and external finance dependence still has a positive coefficient, significantly different from zero at the 5% level (column 1). With the country-year fixed effects included (Column 2), the interaction term is still significant at the 10% level. In both cases, the point estimates are somewhat larger than the corresponding column in Table 2. Finally, when we exclude countries with fewer than five manufacturing firms in our sample, all the key results still carry through.

III.E. Earnings Management

The regression results on earnings management are presented in Table 6. Column 1 reports the baseline case (where the index for dependence on external finance is winsorized at the 1% level). The average correlation between the change in accruals and the change in cash flow is -0.77 (column 1), consistent with the concept of accruals accounting. The average effect of improved trade opportunity on the correlation is insignificant at 0.0001(=-0.0017+0.003*0.61, where 0.61 is the average external finance dependence). But for industries with large external finance dependence, improved trade opportunity significantly reduces the correlation between accrual and cash flow. For instance, with an external finance dependence of 5.4 (the top 90% threshold) and a tariff reduction of 5%, the correlation between accrual and cash flow becomes weaker [which changes to -0.70 (= -0.77 + (-0.0017+0.003*5.4)*5)].

In Column 2, we further include the change in own tariff, and its interaction with the change in operational cash flow. The interaction term has a positive coefficient with a p-value of 0.11. Hence there is some weak evidence that higher own tariff is associated with less earnings management, consistent with the prediction of Carlin et al (2010) that less competition may improve corporate transparency.[12]

In Column 3, we repeat the same exercise as in Column 1, but lagging the change in trade opportunity by one period. Reassuringly, β_2 – the coefficient on the triple interaction term of cash flow change, trade opportunity change and external finance dependence – is still significantly positive with a similar magnitude. In Column 4, we further filter out noise in the

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[12] As a robustness check, we also include a triple interaction term of the change in own tariff, the change of operational cash flow, and external financing demand. This triple interaction term turns out to be insignificant.

index for external finance dependence by winsorizing it between 0 and 1. This results in a much stronger effect of a positive trade shock in reducing earnings management, as the estimate for β2 jumps from 0.0028 to 0.02. Hence we find robust evidence that better growth opportunity induces less earnings management for those firms that depend heavily on external financing.

In Columns 5 and 6, we control for other channels that may also affect earnings management, particularly capital openness and domestic financial development. We add their interaction with $\Delta OCFA$ and external financing demand. The triple interaction involving capital openness, $\Delta OCFA_{ijt} * \Delta CapitalOpenness_{ijt} * RZ_i$, is not significant. The triple term involving domestic financial development, $\Delta OCFA_{ijt} * \Delta DomesticFinDev_{ijt} * RZ_i$, has a significantly positive coefficient of 0.99. That is, as domestic financial market becomes more developed, firms engage in less earnings management, particularly for firms that have large intrinsic dependence on external finance. Reassuringly, our earlier results for trade opportunity stay almost the same even after we control for capital openness and domestic financial development. In Column 7, we allow the coefficient on $\Delta OCFA$ (i.e., β_0) to vary across countries, as different countries may have different accounting rules and hence different degrees of earnings management to start with. We use the index for dependence on external finance as in Column 4. The impact of $\Delta OCFA_{ijt} * \Delta TradeOppt_{ijt} * RZ_i$ is smaller than in Column 4, but still positive and significant at the 5% level.

These results help to alleviate a concern about the first measure of corporate transparency by forecast accuracy. Forecast errors may artificially decline if managers manipulate earnings to match analyst forecast rather than truly improving the disclosure. Since firms tend to reduce earnings management in response to better growth opportunity, our finding of an improvement in earnings forecast is unlikely to result from more earnings management.

36

III.F. Number of Accounting Items Disclosed

The results on the number of accounting items disclosed are presented in Table 7.[13] In Column 1, we find that trade opportunity is associated with more disclosed items for firms with a large intrinsic demand for external finance. The interaction term between trade opportunity and finance dependence has a coefficient of 0.23 (with a standard error of 0.08). Hence, for a firm whose index of intrinsic demand for external finance is one, a reduction of tariff by 5 percentage points will increase the number of disclosed items by 1.53 (=(0.076+0.23*1)*5). To put the estimate in perspective, the mean change in the number of reported accounting items per firm-year is 0.54. With that comparison in mind, the effect of trade opportunity is not trivial.

In Column 2, we add domestic tariff as another regressor. A higher domestic tariff (which protects domestic firms from foreign competition) is associated with more disclosed items, in line with the theoretical prediction of Carlin et al (2010). The effect of (external) trade opportunity is similar to those in Column 1. In Column 3, we add country-year pair dummies. This helps to control for changes in a country's accounting requirements, such as a conversion to the International Accounting Standards. Now the interaction term between trade opportunity and external finance dependence becomes smaller (with a coefficient of 0.13), but still significant at the 10% level. In Column 4, we lag the change in trade opportunity by one year, and find that the coefficient on the interaction term becomes moderately bigger (and significant at the 1% level). In Column 5, we again allow for country-year pair dummies and find the interaction term still significant at the 5% level.

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[13] We winsorize the number of disclosed items at the 1% level, and restrict the index for external finance dependence to be between 0 and 1.

To summarize, this exercise provides some direct evidence that corporate transparency of a firm responds to changing growth opportunities if the firm depends on external finance for growth. It also shows that a firm's response to greater product market competition engendered by globalization is different from its response to greater growth opportunities engendered by globalization.

IV. Conclusion

In this paper, we explore whether trade globalization induces or inhibits corporate transparency. Trade globalization in theory has conflicting effects on corporate transparency. On the one hand, by exposing firms to more product market competition, it could discourage corporate disclosure. On the other hand, by opening up foreign markets and enhancing firms' growth opportunities, it may promote more transparency. Since these channels can have very different effects, it is important to unbundle them in an empirical strategy. This paper proposes an approach that disentangles these different channels of trade globalization by making use of very detailed tariff schedules at the country-product-year level.

We find strong evidence that higher growth opportunities engendered by trade globalization promote corporate transparency, especially in industries that depend heavily on external financing. Since our measure of growth potential is exogenous to a given firm, we are reasonably confident that the correlation we observe reflects a causal effect from growth potential to corporate transparency.

While a reduction in foreign tariffs represents an improvement in growth potential, a reduction in a country's own tariff represents increased competition from foreign firms. We find

some evidence that greater product market competition engendered by globalization discourages corporate transparency.

We hence identify concrete channels through which corporate transparency might be both promoted and inhibited in response to market forces. While this paper focuses on corporate transparency, firms may voluntarily improve other aspects of corporate governance. The relevant empirical literature faces similar challenges: to identify an appropriately exogenous source of shock to growth potential, and to unbundle the multiple and potentially conflicting effects of globalization. The methodology proposed in this paper can shed light on these questions as well. We leave these topics for future research.

FIGURE 1: HISTOGRAM OF TARIFF (WINSORIZED)

(MEAN= 5.13, MEDIAN=3.54 , STD DEV=5.32)
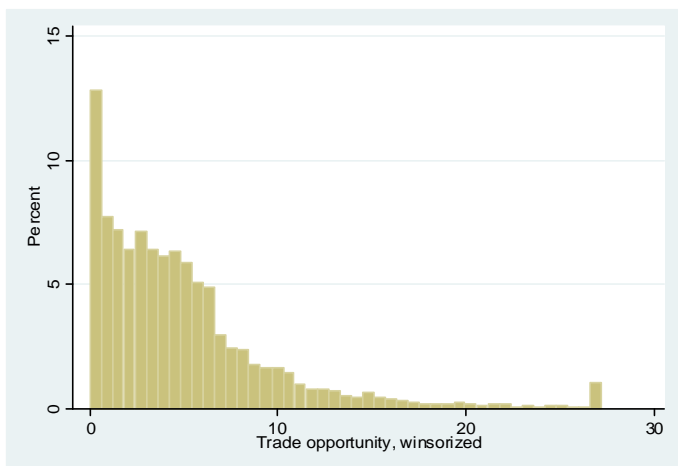
FIGURE 2: HISTOGRAM OF THE CHANGE IN TARIFF FROM 1992 TO 2005

(MEAN=-3.50, MEDIAN=-2.73, STD DEV=4.83)
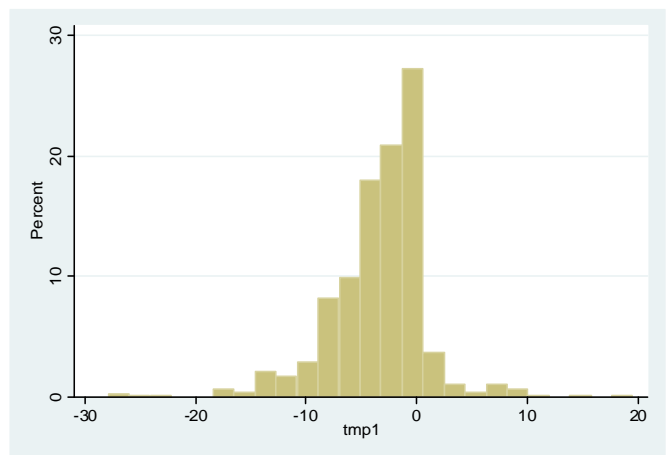
FIGURE 3. HISTOGRAM OF FORECAST ACCURACY, WINSORIZED

(MEAN=-0.86, MEDIAN=-0.18, STD DEV=2.75)
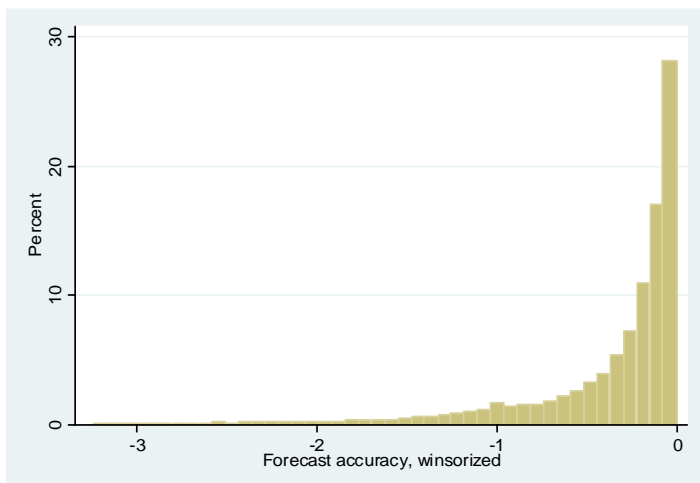
FIGURE 4. HISTOGRAM OF EXTERNAL FINANCING DEPENDENCE

(MEAN=0.53, MEDIAN=-0.17, STD DEV=2.93)

40
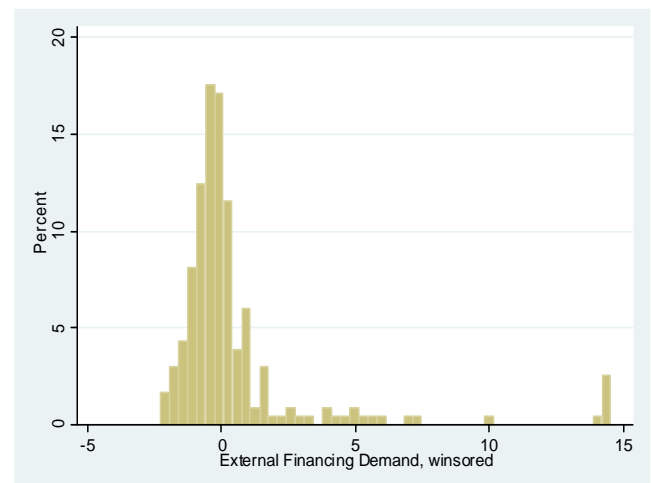
FIGURE 5. HISTOGRAM OF TRADE OPPORTUNITY * EXTERNAL FINANCING DEMAND (MEAN=-1.84, MEDIAN=0.15, STD DEV=15.21)
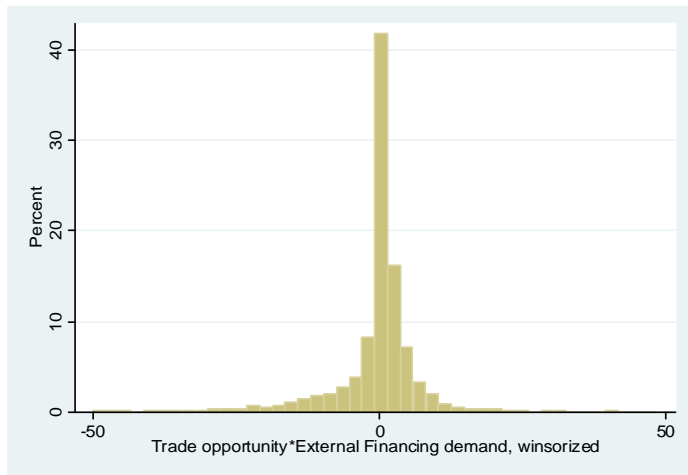
FIGURE 6. HISTOGRAM OF ANALYST NUMBER (WINSORIZED) (MEAN=8.64, MEDIAN=6, STD DEV=8.22)
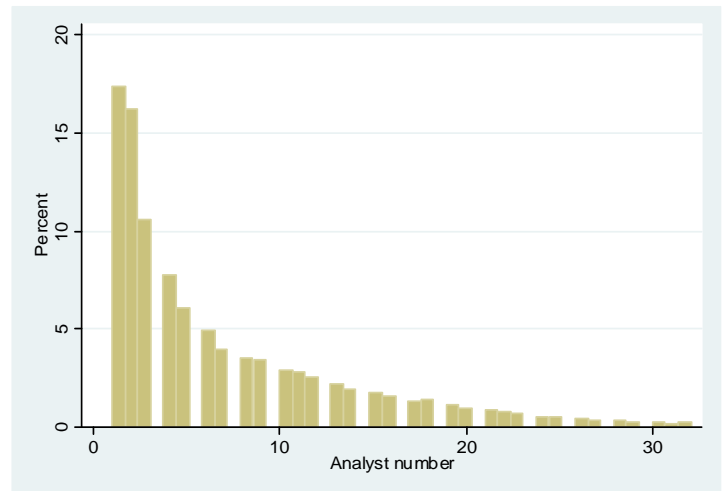
FIGURE 7: CONDITIONAL SCATTER PLOT OF EXPORT GROWTH AGAINST (FOREIGN) TARIFF REDUCTION

coef = .04088011, se = .01910346, t = 2.14
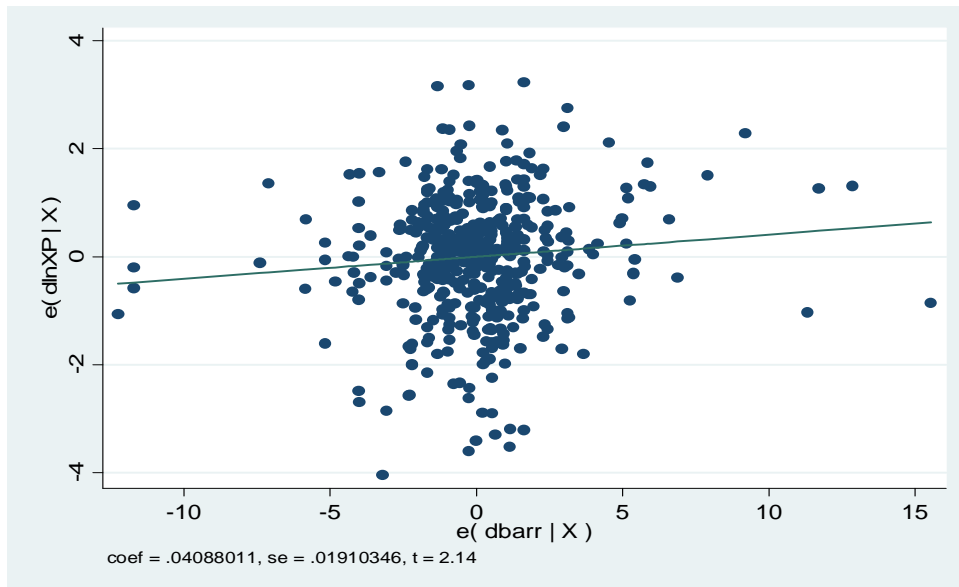
FIGURE 8: CONDITIONAL SCATTER PLOT OF NET INVESTMENT AGAINST EXPORT GROWTH

coef = .29633084, se = .026214, t = 11.3
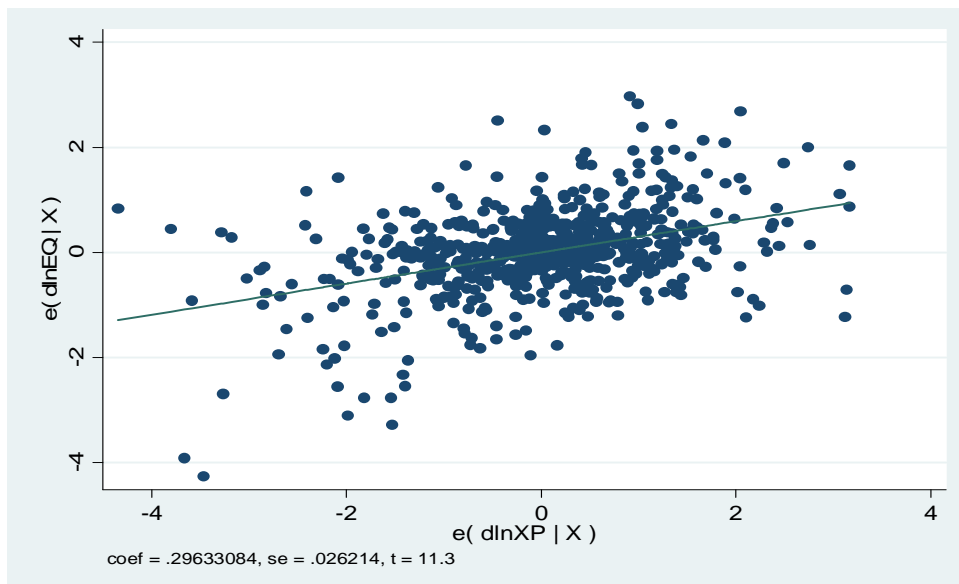
Figure 9. Impact of Trade Opportunity on Forecast Accuracy

LOW FINANCING NEEDS

HIGH FINANCING NEEDS

Negative trade shock   Small positive shock   Large positive shock

43
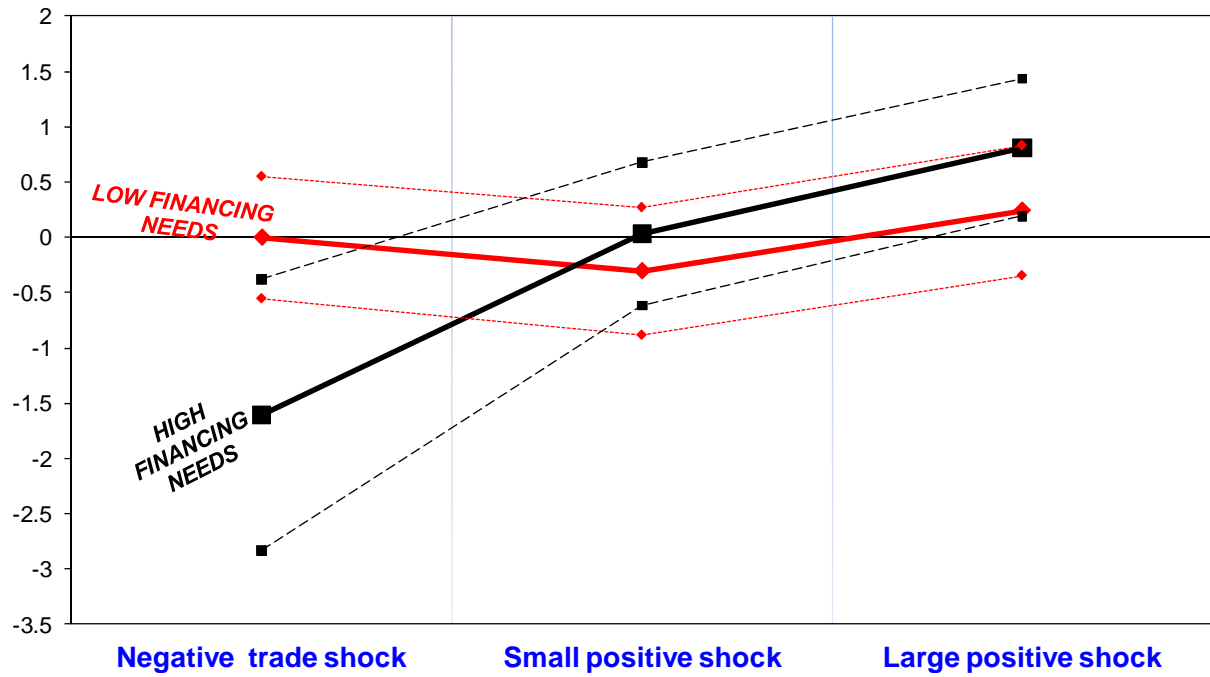
Table 1: Summary Statistics of Key Variables

	Obs	Mean	Median	St. Dev.	Max	Min
Firm-level variables						
Forecast Accuracy	24146	-0.86	-0.18	2.75	0.00	-23.36
Analyst Number	24146	8.64	6.00	8.22	59.00	1.00
Firm size (log)	24146	6.22	5.90	2.28	16.78	-3.25
Earnings change	24146	1.81	0.44	5.59	46.12	0.00
Negative earnings	24146	0.17	0.00	0.37	1.00	0.00
Number of disclosed items	55035	151	150	12	187	42
Country-sector-year variables						
Trade opportunity	12503	-5.13	-3.54	5.32	0.00	-27.25
Own tariff	12460	5.88	2.80	8.87	55.00	0.00
Sector variables						
External financing demand	234	0.61	-0.17	3.40	20.8	-2.85

Note: Forecast accuracy, analyst number, and earnings are constructed from the Institutional Brokers Estimates System (IBES) database, for 4061 firms in 49 countries from 1992 to 2005. *Forecast accuracy* is defined as the negative value of the absolute difference between average earnings forecast and actual earnings, normalized by actual earnings. *Analyst number* is the number of analysts covering a firm. *Firm size* is the year-end market capitalization in US dollars. *"Earnings change"* is the absolute value of the percentage change in realized earnings per share (in dollar terms) from the previous year. *Negative earnings* is a dummy that equals one when a firm has negative earnings in the current period and zero, otherwise. The number of disclosed items is constructed from COMPUSTAT Global database, for 6200 firms in 49 countries from 1992 to 2005. It counts the number of accounting items reported in the COMPUSTAT Global database related to firms' balance sheets, incomes and cash flows, for a total of 225 items. Tariff data is the Most-Favored-Nation tariff for SIC 4-digit products in each country, retrieved from the Trade Analysis and Information System (TRAINS) database. *Trade opportunity* for a sector-country-year is defined as the negative value of the average tariff it faces across foreign markets. *Own tariff* is the tariff for a given sector in the country where the firm belongs to. *External financing demand* is industry's intrinsic dependence on external finance for investment based on Rajan and Zingales (1998), measured at the 4-digit US SIC level.

Table 2 : The Impact of Trade Opportunity on Forecast Accuracy

	Baseline	With Own Tariff	External Dependence (0 and 1)	Capital Account Openness	Domestic Financial Development	Time-varying Country Effects	Adding Cross-listing
Trade opportunity	0.013**	0.015**	0.0096	0.0092	0.0099	-0.0016	-0.0018
	[0.0062]	[0.0061]	[0.0067]	[0.0067]	[0.0068]	[0.0061]	[0.0060]
Trade opportunity	0.0029*	0.0028*	0.039**	0.036**	0.040**	0.030**	0.030**
*External Financing demand	[0.0017]	[0.0017]	[0.016]	[0.016]	[0.016]	[0.015]	[0.015]
Firm size	-0.26***	-0.26***	-0.26***	-0.26***	-0.26***	-0.23***	-0.23***
	[0.029]	[0.029]	[0.029]	[0.029]	[0.029]	[0.032]	[0.032]
Earnings change	-0.32***	-0.32***	-0.32***	-0.32***	-0.32***	-0.29***	-0.29***
	[0.0074]	[0.0074]	[0.0074]	[0.0074]	[0.0077]	[0.0082]	[0.0082]
Negative earnings	-0.67***	-0.67***	-0.67***	-0.67***	-0.68***	-0.67***	-0.67***
	[0.047]	[0.047]	[0.047]	[0.048]	[0.047]	[0.047]	[0.047]
Analyst number	0.0060*	0.0055	0.0055	0.0062*	0.0058	0.0055	0.0058
	[0.0035]	[0.0035]	[0.0035]	[0.0036]	[0.0035]	[0.0041]	[0.0041]
Number of list stocks	-0.026	-0.031	-0.032	-0.018	-0.0031	-0.20	-0.20
	[0.034]	[0.034]	[0.034]	[0.034]	[0.034]	[0.29]	[0.29]
Own tariff		0.0080**	0.0078**	0.0072*	0.0068*	0.0027	0.0026
		[0.0037]	[0.0037]	[0.0037]	[0.0035]	[0.0040]	[0.0040]
Capital openness				-0.042			
				[0.046]			
Capital openness				-0.07			
*External Financing demand				[0.088]			
Domestic financial development					0.006		
					[0.083]		
Domestic financial development					0.039		
*External Financing demand					[0.19]		
Firm cross-listing dummy							-0.064
							[0.095]
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-year fixed effects	No	No	No	No	No	Yes	Yes
Observations	24146	24090	24090	23905	23380	24090	24090
Number of firms	4061	4054	4054	4043	3918	4054	4054
Number of countries	49	49	49	47	48	49	49
R-squared	0.56	0.56	0.56	0.56	0.56	0.61	0.61

Note: Standard errors are in parentheses; ***, **, and * denote p<0.01, 0.05, and 0.1, respectively. The standard errors are clustered by country, year and sector.

Table 3: Alternative Definition of Trade Opportunity

	Baseline	Own Tariff	External Dependence (0 and 1)	With Country-Year Effects
Trade opportunity	0.030***	0.031***	0.022**	-0.0019
	[0.009]	[0.009]	[0.010]	[0.009]
Trade opportunity *External Financing demand	0.0056**	0.0053**	0.054***	0.063***
	[0.002]	[0.002]	[0.02]	[0.02]
Firm size	-0.24***	-0.24***	-0.24***	-0.22***
	[0.03]	[0.03]	[0.03]	[0.04]
Earnings change	-0.30***	-0.30***	-0.30***	-0.27***
	[0.009]	[0.009]	[0.009]	[0.009]
Negative earnings	-0.65***	-0.65***	-0.65***	-0.65***
	[0.05]	[0.05]	[0.05]	[0.05]
Analyst number	0.0054	0.0053	0.0051	0.006
	[0.004]	[0.004]	[0.004]	[0.004]
Number of list stocks	0.0088	0.0043	0.0043	-0.45
	[0.04]	[0.04]	[0.04]	[0.3]
Own tariff		0.0090**	0.0089**	0.0023
		[0.004]	[0.004]	[0.004]
Capital openness				
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Country-Year fixed effects	No	No	No	Yes
Number of countries	49	49	49	49
Observations	18684	18684	18684	18684
Number of firms	3096	3096	3096	3096
Within R-squared	0.53	0.53	0.53	0.57

Note: The trade weights for calculating trade opportunity come from the beginning of the sample--the year of 1992. Standard errors are in parentheses; ***, **, and * denote p<0.01, 0.05, and 0.1, respectively. The standard errors are clustered by country, year and sector.

Table 4: Long Difference Regressions (1992-2005):
The Impact of Trade Opportunity on Forecast Accuracy

	Baseline	Alternative Forecast Accuracy
Trade opportunity	0.030**	0.054***
	[0.01]	[0.02]
Trade opportunity *External Financing demand	0.041**	0.067**
	[0.02]	[0.03]
Firm size	-0.056*	-0.061
	[0.03]	[0.05]
Earnings change	-0.31***	-0.48***
	[0.04]	[0.06]
Number of listed stocks	0.094*	0.087
	[0.05]	[0.08]
Analyst number	-0.022**	-0.036**
	[0.01]	[0.02]
Number of firms	497	497
R-squared	0.46	0.46

Note: Standard errors are in parentheses; ***, **, and * denote p<0.01, 0.05, and 0.1, respectively.

Table 5 : The Impact of Trade Opportunity on Forecast Accuracy
(With G7, China and India Excluded)

	Benchmark	Country-year fixed effects
Trade opportunity	0.0081	-0.01
	[0.01]	[0.010]
Trade opportunity *External Financing demand	0.059**	0.049*
	[0.03]	[0.03]
Firm size	-0.31***	-0.27***
	[0.06]	[0.06]
Earnings change	-0.39***	-0.33***
	[0.01]	[0.02]
Negative earnings	-0.70***	-0.68***
	[0.1]	[0.1]
Analyst number	0.0022	0.0061
	[0.006]	[0.007]
Number of list stocks	0.12	-0.68**
	[0.1]	[0.3]
Own tariff	0.0091	0.0039
	[0.006]	[0.006]
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Country-year fixed effects	No	Yes
Observations	9202	9202
Number of firms	1633	1633
R-squared	0.62	0.68

Note: Standard errors are in parentheses; ***, **, and * denote p<0.01, 0.05, and 0.1, respectively. The standard errors are clustered by country, sector, and year (since average foreign tariff changes at the level of country, sector, and year).

	Baseline	With Own Tariff	Lagged Trade Opportunity	External Dependence (0 and 1)	Capital Openness	Domestic Financial Development	Country Variation
Table 6: Does Growth Opportunity Reduce Earnings Management? (Dependent Variable = Change of Accruals)							
Change of operation cash flow	0.0030**	0.0031**	0.0028***	0.021***	0.021***	0.020***	0.013**
*Change of trade opportunity	[0.0015]	[0.0015]	[0.001]	[0.0067]	[0.0066]	[0.0057]	[0.0052]
*External financing demand							
Change of operation cash flow	-0.77***	-0.77***	-0.76***	-0.80***	-0.80***	-0.80***	-0.66***
	[0.0075]	[0.0077]	[0.0078]	[0.0083]	[0.0083]	[0.0085]	[0.028]
Change of operation cash flow	-0.0017	-0.0016	-0.0016	-0.0045	-0.0044	-0.0043	-0.0029
*Change of trade opportunity	[0.0030]	[0.0030]	[0.0026]	[0.0028]	[0.0028]	[0.0028]	[0.0027]
Change of operation cash flow	0.014***	0.014***	0.014***	0.17***	0.17***	0.15***	0.079***
*External financing demand	[0.0022]	[0.0022]	[0.0022]	[0.018]	[0.018]	[0.018]	[0.018]
Change of trade opportunity	0.00021	0.00022	0.00024	0.00017	0.00018	0.00012	0.00014
	[0.00018]	[0.00018]	[0.00019]	[0.00019]	[0.00019]	[0.00019]	[0.00019]
Change of trade opportunity	-0.00017*	-0.00017*	0.00011	0.00061	0.00059	0.00062	0.00068
*External financing demand	[0.00010]	[0.00010]	[0.00013]	[0.00086]	[0.00087]	[0.00085]	[0.00081]
Change of operation cash flow		0.0057					
*Change of own tariff		[0.0035]					
Change of own tariff		0.0002					
		[0.0004]					
Change of operation cash flow					-0.036*	0.081	
* Change of financial channel					[0.020]	[0.096]	
Change of operation cash flow					0.024	0.99***	
*Change of financial channel					[0.067]	[0.25]	
*External financing demand							
Change of financial channel					-0.002	-0.026	
*External financing demand					[0.0078]	[0.022]	
Country-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	39374	39325	37875	37875	37759	36925	37875
R-squared	0.63	0.63	0.63	0.63	0.63	0.63	0.65

Note: Financial Channel in Column 4 refers to international capital openness, while Financial Channel in Column 5 refers to domestic financial development. Standard errors are in parentheses; ***, **, and * denote p<0.01, 0.05, and 0.1, respectively. The standard errors are clustered by country, year and sector. Both the change of accruals and the change of operating cash flow are scaled by firm's total asset.

Table 7: The Impact of Trade Opportunity on Disclosed Accounting Items

	External Finance Dependence (0 and 1)	With Own Tariff	With Country-Year Fixed Effects	Lagged Trade Opportunity	Lagged Oppt & Country-Year Fixed Effects
Trade opportunity	0.076***	0.079***	-0.067***	0.056***	-0.078***
	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]
Trade opportunity *External financing demand	0.23***	0.23***	0.13*	0.29***	0.17**
	[0.08]	[0.08]	[0.08]	[0.08]	[0.09]
Firm size	0.56***	0.61***	0.77***	0.56***	0.75***
	[0.04]	[0.04]	[0.05]	[0.04]	[0.05]
Number of listed stocks	1.45***	1.55***		1.54***	
	[0.1]	[0.1]		[0.1]	
Own tariff		0.12***	-0.006		-0.007
		[0.01]	[0.004]		[0.004]
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
Country-year fixed effects	No	No	Yes	No	Yes
Observations	55035	54984	54984	52803	52747
Number of firms	6234	6234	6234	6233	6232
R-squared	0.08	0.08	0.14	0.08	0.14

Note: Standard errors are in parentheses; ***, **, and * denote p<0.01, 0.05, and 0.1, respectively. The standard errors are clustered by country, year and sector. .

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Appendix 1. Numbers of Firms in Each Country

Country	Number of firms
Argentina	15
Australia	133
Austria	38
Belgium	30
Brazil	54
Canada	273
Chile	23
China	112
Colombia	3
Croatia	1
Czech Republic	11
Denmark	51
Egypt, Arab Rep.	2
Finland	52
France	166
Germany	213
Greece	42
Hong Kong, China	118
Hungary	13
India	109
Indonesia	48
Ireland	13
Israel	11
Italy	58
Japan	1107
Korea, Rep.	189
Luxembourg	1
Malaysia	110
Mexico	33
Netherlands	50
New Zealand	20
Norway	43
Pakistan	1
Peru	10
Philippines	19
Poland	17
Portugal	9
Russian Federation	9
Singapore	101
Slovak Republic	7
Slovenia	2
South Africa	53
Spain	42
Sri Lanka	5
Sweden	82
Switzerland	84
Thailand	92
Turkey	3
United Kingdom	383
Total	4061