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Do Improvements in the Information Environment Affect Real Investment Decisions?[†]

Gilberto Loureiro and Alvaro G. Taboada[1]

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Abstract

We examine how changes in the information environment can affect real investment decisions. Using the events surrounding mandatory adoption of IFRS as exogenous shocks in information asymmetry, we find a significant increase in firms' investment-to-price sensitivity following IFRS adoption that persists for years after the adoption. These results are in line with the learning hypothesis and suggest that the improvements in the information environment lead to stock prices that are more informative, which enhances managers' reliance on stock prices in making investment and other decisions. We document that this increase in investment-to-stock price sensitivity is stronger for firms in countries with weaker ex-ante institutional and accounting quality as well as for firms that experience a larger improvement in stock price informativeness. Finally, we also show that higher investment-to-stock-price sensitivity is associated with improvements in performance.

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1. Introduction

More efficient capital markets incorporate information into stock prices quickly and accurately. More informative stock prices enable superior decision-making and can guide real decisions such as investment (Fama and Miller, 1972). In line with this view, higher levels of stock price informativeness have been associated with more efficient capital allocation (Wurgler, 2000; Durnev, Morck, and Yeung, 2004) and stock prices that are more informative about future earnings (Durnev, Morck, Yeung, and Zarowin, 2003). Per the leaning hypothesis (Bond, Edmans, and Goldstein, 2012; Focault and Fresard, (2011), when stock prices are more informative managers are able to extract valuable information from them and make more informed investments decisions, which leads to an increase in the sensitivity of corporate investment to stock prices (Chen, Goldstein, and Wei, 2007).

Our study builds on the above literature and tests the predictions of the learning hypothesis by examining how an exogenous change in the information environment – namely, the mandatory adoption of International Financial Reporting Standards (IFRS) – can affect real investment decisions. We show that firms' investment-to-price sensitivity increases significantly following the mandatory adoption of IFRS. The increase in investment-to-price sensitivity begins in the year after IFRS adoption and this effect lasts up to 5 years following IFRS adoption. The increase in investment-to-price sensitivity is stronger for firms in countries with weaker ex-ante institutional and accounting quality and for firms that experience a more significant improvement in stock price informativeness. We do not find evidence that the greater sensitivity of investment to stock prices observed after IFRS adoption is driven by firms' improved access to external finance, suggesting that this effect is driven at least in part, by improvements in the informational content of stock prices, consistent with the learning hypothesis.

International Financial Reporting Standards were designed primarily to provide more accurate, comprehensive, and timely financial statement information, and to reduce international differences in accounting standards by standardizing reporting formats. Existing literature documents that IFRS require

greater disclosure and are more comprehensive than local accounting standards (Ashbaugh and Pincus, 2001; Ding, Hope, Jeanjean, and Stolowi, 2007) and improve the comparability of firms across markets, which improves capital allocation efficiency (Covrig, Defond, and Hung, 2007; Armstrong, Barth, Jagolinzer, and Riedl, 2010). Improved disclosure should reduce information asymmetry, enhance liquidity and reduce the cost of capital (Diamond and Verrecchia, 1991; Easley and O'Hara, 2004). Empirical evidence supports the view that IFRS adoption (or events surrounding the adoption) is associated with a reduction in information asymmetry among investors and between insiders and outsiders (Daske, Hail, Leuz, and Verdi, 2008, 2011; Leuz and Verrecchia, 2000; Li, 2010). These studies emphasize the importance of both enforcement and firms' reporting incentives on the impact of IFRS adoption.

Given the documented evidence suggesting a decrease in information asymmetry associated with the introduction of IFRS, the adoption of IFRS provides a natural experiment to examine the impact of changes in the information environment on stock price informativeness; in particular, we examine the real consequences of IFRS adoption by exploring how this affects the investment-to-price sensitivity. We directly test implications of the learning hypothesis. First, we examine whether IFRS adoption leads to an increase in investment-to-stock price sensitivity. Second, we explore how differences in the institutional and accounting quality at the country level affect the impact of IFRS adoption on investment-to-price sensitivity; countries with weaker ex-ante shareholder protection and accounting quality should be the ones that benefit more from the adoption of IFRS, therefore, improvements in the information environment and its impact on investment-to-stock price sensitivity should be more pronounced in these countries. Finally, we test whether the increase in investment-to-stock price sensitivity following IFRS adoption is more pronounced for firms that experience an improvement in the informational content of their stock prices against the alternative that this effect might be driven by the improved access to external finance that firms experience post-IFRS.

We test our hypotheses using a differences-in-differences methodology using a treatment group of IFRS adopters and a control group of firms from countries that did not adopt IFRS during our sample period. Our sample consists of 25,168 firms (159,770 firm-year observations) from 50 countries for the period 1990-2012. Our treatment sample consists of 11,611 firms from 30 countries that adopted IFRS during our sample period and require listed firms to report their financial statements in accordance with IFRS, and we use a control group of 13,557 firms from 20 countries that had not adopted IFRS as of 2011. We find evidence consistent with our hypotheses. First, we document an overall increase in investment sensitivity-to-stock price following IFRS adoption for our sample firms, relative to a control group from non-IFRS adopting countries. This increase starts in the year after the adoption of IFRS and is observed up to five years following IFRS adoption. Second, we document a stronger impact on firms from countries with weaker institutional and accounting quality. Third, we document that the increase in investment-stock-price sensitivity is stronger for firms that experience a more significant improvement in stock price informativeness; in addition, we find that this result is not driven by the well documented decrease in firms' cost of capital following mandatory IFRS adoption. Finally, we find a positive association between investment-to-stock price sensitivity and firm performance (ROA and sales growth) post-IFRS adoption, providing additional support to the learning hypothesis. Our evidence supports the predictions of the learning hypothesis and suggests that the events surrounding IFRS adoption are associated with improvements in the precision of information conveyed by stock prices to managers. The results still hold after a variety of robustness tests, including the use of alternative measures of investment, various matching techniques, and alternate measures of stock price informativeness.

Our study contributes to the literature in several ways. First, we contribute to the growing literature on the informational role of market prices and their impact on real economic activity (see e.g. Bond et al., 2012). We add to this literature by providing some evidence on how changes at the country level can enhance the informational content of stock prices and affect real investment decisions; our evidence shows that improvements in the information environment can enhance the value of the

information that managers are able to extract from stock prices. We also add to the literature on the impact of IFRS adoption by exploring its impact on another important outcome measure, its effect on stock price informativeness and investment. In addition, we provide further evidence on the importance of countries' institutional quality in determining the effects of mandatory IFRS adoption. While the results presented in the paper show a positive impact of IFRS adoption on investment-sensitivity to stock price, our results should not be interpreted as IFRS adoption being the sole driver of these effects. As argued in other studies (see e.g. Christensen, Hail, and Leuz, 2011), several other events associated with the introduction of IFRS took place in IFRS adopting countries. It is thus hard to empirically disentangle such effects from the pure effects of IFRS adoption, especially when those effects happened in the same year as the adoption of IFRS. However, the purpose of our study is to examine the effect of changes in information asymmetry, and we are thus not strictly examining the effects of IFRS adoption.

The rest of the paper is organized as follows. In section 2 we review the related literature and develop our hypotheses; in section 3 we describe our data and the methodology used in our analyses; in section 4 we present our main findings on the impact of IFRS adoption on investment-to-stock price sensitivity and some additional robustness tests; in section 5 we conclude.

2. Literature Review and Hypotheses Development

2.1. Stock Price Informativeness and Investment-to-Stock Price sensitivity

Early work by Grossman and Stiglitz (1980) suggests that because information is costly, stock prices reflect only a subset of all relevant information. As the cost of private information declines, informed trading increases, which leads to more informative pricing. More informative stock prices can improve the investment decisions made by managers who learn from stock prices when making decisions such as investment (Chen et al., 2007; Bakke and Whited, 2010). As argued by Bond et al. (2012), while managers have more information than outsiders, stock prices can still convey new information that is relevant to decision makers as long as managers do not possess perfect information about all decision-

relevant factors. This is because stock prices aggregate information from many speculators who collectively may be more informed (Grossman, 1976; Hellwig, 1980). In addition, decisions by managers depend on both firm-specific information (of which managers may have an advantage) as well as additional macro factors (e.g. state of the economy; industry factors).

In line with the view that managers learn from stock prices in making investment and other decisions, a reduction in information asymmetry that leads to improved stock price informativeness should lead to an increase the investment-to-stock-price sensitivity, as more informative stock prices help to guide investment decisions. This idea is parallel to the argument developed by Focault and Gehrig (2008) with respect to cross-listings. In a test of the implications of their theory, Focault and Fresard (2011) find that investment-to-price sensitivity increases following a cross-listing in the U.S. market, and that the increase is more pronounced for cross-listings that are more likely to strengthen the informativeness of stock prices. Their results are in line with the learning hypothesis. After cross-listing, investors have more trading venues in which they can exploit their private information; in addition, cross-listing gives access to informed investors located in the host market who may have been unable or unwilling to trade prior to cross-listing. If there is a reduction in information asymmetry following the adoption of IFRS (perhaps as more investors are inclined to invest because of a decrease in the costs of obtaining information), stock prices should become more informative for managers and they should be able to extract more (and more precise) information from stock prices, which should make capital expenditures more sensitive to stock prices.

Empirical evidence on the consequences of the adoption of IFRS points to positive effects associated with the mandatory adoption of IFRS, which are in line with a reduction in information asymmetry. Armstrong et al. (2010) document incrementally positive reactions associated with events related to IFRS adoption for firms with lower pre-adoption information quality and higher information asymmetry, which suggests that investors perceive that IFRS will lead to improvements in information quality. Other studies show that mandatory IFRS adoption improves market liquidity and lowers firms'

cost of capital (Daske et al., 2008; Li, 2010). These results are in line with the information asymmetry literature documenting that increased disclosure reduces the cost of equity capital by mitigating adverse selection problems and enhancing liquidity (Diamond and Verrecchia, 1991; Easley and O'Hara, 2004). In addition, two recent studies find a link between IFRS adoption and stock price informativeness. Beuselinck, Joos, Khurana, and Van der Meulen (2010) examine the impact of mandatory IFRS adoption on stock price informativeness across EU countries, while Kim and Shi (2010) examine the consequences of voluntary IFRS adoption for firms in 34 countries from 1998-2004. Kim and Shi (2010) find that stock price synchronicity decreases following voluntary IFRS adoption, especially for firms with high analyst coverage in countries with weak institutional structures. Beuselinck et al. (2010) use a sample of 2,173 mandatory IFRS adopters in 14 EU countries over the 2003-2007 period and document a decrease in stock price synchronicity around IFRS adoption; they interpret their results as consistent with IFRS disclosures revealing new firm-specific information in the adoption period.

Building on the above ideas, we develop our first hypothesis. If the adoption of IFRS is associated with a reduction in information asymmetry that leads to an improvement in stock price informativeness, we should observe an increase in investment-to-stock price sensitivity following IFRS adoption. The improved transparency and increased disclosure quality that has been associated with IFRS adoption should in turn reduce the costs of obtaining information for investors. Stock prices would thus incorporate more information new to managers, which they in turn would use in making their investment decisions. This leads to our first testable hypothesis:

H1: Investment-stock price sensitivity should increase following IFRS adoption.

The impact of IFRS adoption on investment-to-price sensitivity should vary based on country characteristics. As shown by McLean et al. (2012), firms in countries with stronger investor protection and institutional quality have higher investment sensitivity-to-stock price; thus, firms in countries with poor institutional quality may stand to gain the most from a change in the information environment that

improves the informational content of stock prices. In addition, per the learning hypothesis, if improvements in the information environment are driving the increase in investment sensitivity to stock price, the increase should be more pronounced in countries with weaker ex-ante accounting quality, or in countries with accounting standards that differ significantly from IFRS. In such countries, the changes in disclosure requirements brought about by the adoption of IFRS should be greater; thus, the improvement in information available to investors should lead to a stronger increase in investment-to-stock price sensitivity may be lower in those countries. In line with these arguments we formulate our second hypothesis:

H2: *The increase in investment-to-stock-price sensitivity following IFRS adoption should be more pronounced in countries with weaker institutional quality and accounting standards.*

Our final hypothesis examines how firm level characteristics affect the impact of the events surrounding IFRS adoption on investment-sensitivity to stock price. With improvements in stock price informativeness, stock prices will convey more new information to managers which they will use to guide their investment decisions. The learning hypothesis predicts that the improvement in investment sensitivity-to-stock price is driven by the increased production of information following IFRS adoption. A reduction in information asymmetry should reduce the costs associated with obtaining information; this reduction in costs encourage more investors to trade on their information, which should lead to more information being impounded into stock prices. This should make stocks more informative for managers and decision makers, who could use this information to guide their investment decisions. If improvements in the informativeness of prices are driving the increase in investment-to-stock price sensitivity, the effect should be stronger for stocks that contain more information for managers. We posit that stock prices that become more informative (i.e. those that experience the largest increase in stock price informativeness) should contain more new information for decision makers, all else equal. We thus develop our final hypothesis:

H3: *The increase in investment-to-stock-price sensitivity following IFRS adoption should be more pronounced for firms whose stock prices become more informative.*

3. Data and Methodology

3.1. Data Description

We examine the impact of IFRS adoption on investment sensitivity to stock price using a broad sample of firms from 50 countries from 1990-2012. Our sample includes firms from 30 countries that adopted IFRS during our sample period, as well as a control group of firms from 20 countries that have not adopted IFRS by 2011. We obtain dates of actual and planned IFRS adoption for each country from Deloitte's IAS Plus and verify these dates using various other sources.[2] Our sample of IFRS adopting countries includes those that adopt IFRS and require listed firms to report financial statements in accordance with IFRS. We thus exclude a few countries that have adopted IFRS, but do not require listed firms (but rather make it optional) to report based on IFRS.[3] Our goal is to assess how an exogenous shock in information asymmetry affects investment to stock price sensitivity; as such, we choose countries in which all listed firms are required to adopt IFRS.

Our initial sample consists of all firms covered in Thomson Financial's WorldScope database. From WorldScope we collect information on each firm's total assets, market value of equity, capital expenditures, property plant and equipment, cash flows, book value of equity, sales, and additional variables used as controls. Following the literature (e.g. Focault and Fresard, 2011), we exclude firms from regulated industries (financials and utilities, SIC codes between 6000 and 6999 and between 4900 and 4949). We proceed with our data screening by excluding firms with missing data on total assets,

[2] http://www.IASplus.com/country/useIAS.htm. We also cross-check dates from other sources including the European Corporate Governance Institute and PWC website.

[3] Specifically, we exclude the following countries from our sample: Hong Kong; Philippines; Singapore; Switzerland, and Turkey. We exclude these countries because either Deloitte's IAS website or the PWC report on IFRS adoption by country indicates that IFRS is not required for all firms in such countries. As an example, Deloitte's IAS website reports that firms in Turkey are permitted but not required to follow IFRS and that IFRS is not required for all listed firms in Philippines. In addition, the PWC report states that IFRS is permitted (not required) for firms in Singapore and Switzerland.

sales, or capital expenditures. Moreover, to make firms more comparable across countries, we further eliminate those with negative sales or total assets lower than $10 million. We also winsorize all variables at the top and bottom 1% of the distribution to mitigate the influence of outliers. This screening process leads to a final sample of 25,618 firms from 50 countries. Our treatment sample includes 11,611 firms from 30 countries that have adopted IFRS and our control group consists of 13,557 firms from 20 countries that have not adopted IFRS. For these firms, we also collect data on stock prices from DataStream to construct our measures of stock price informativeness.

To identify firms in each country that voluntarily adopt IFRS prior to the mandatory adoption year, we use the "Accounting Standards Followed" variable (WorldScope item WC07536).[4] Thus, we classify a firm as a voluntary adopter if the firm reports financial statements according to IFRS (or similar) prior to the mandatory adoption year in the country (e.g. 2005 for European Union members). Throughout the paper we use the broader definition of IFRS adopters proposed by Daske et al. (2011) in which firms following international standards, or local standards with EU and IASC guidelines are also coded as IFRS adopters.[5]

Table 1 provides descriptive statistics of our sample, including the year of mandatory IFRS adoption for our IFRS-adopting countries. Our sample is fairly geographically diverse, although the majority of our IFRS adopters are from the European Union. Most countries that adopted IFRS did so in 2005, or after. Bulgaria is the one exception, adopting IFRS as of 2003.

Table 2 shows descriptive statistics of all our main firm-level variables. Panel A shows descriptive statistics from the IFRS-adopting countries, while Panel B reports statistics for the control group. Our treatment (control) firms have average assets of $1.7 ($1.8) billion, and average Tobin's q of

[4] We also use this variable (WC07536) to identify those firms that are not required (and thus do not report) under IFRS after the mandate in the country, following Christensen et al. (2012).

[5] The precise classifications are described in Table A1 of Daske et al. (2011).

1.6 (1.7). Capital expenditures represent 31% (24.5%) of lagged property, plant and equipment for our treatment (control) group of firms, while cash flows are 6.7% (6.6%) of total assets.

3.2. Investment sensitivity to stock price

Our main hypotheses test for changes in the investment sensitivity-to-stock price relation around the mandatory adoption of IFRS. To control for factors that may influence investment-sensitivity-to-stock price that are not related to the changes in the information environment around the mandatory adoption of IFRS, we employ a differences-in-differences approach using a control group of firms from countries that did not adopt IFRS during our sample period. Specifically, to estimate the investment-to-stock price sensitivity relation, we follow the literature (see e.g. Focault and Fresard, 2011; Baker, Stein, and Wurgler, 2003; Rauh, 2006), and run several specifications of the following regression:

$$I_{i,t} = \alpha + \beta_1 Q_{t-1} + \beta_2 Post + \beta_3 Q_{t-1} \times Post \times IFRS + \beta_4 \times IFRS + \beta_5 \times Q_{t-1} \times IFRS + \beta_6 Post \times IFRS + \beta_7 \times Q_{t-1} \times Post + \beta_8 CF_{i,t-1} + \beta_9 \log(Assets_{i,t-1}) + \varepsilon_{i,t} \quad (1)$$

where $I_{i,t}$ is a measure of corporate investment for firm i in year t - measured as the ratio of capital expenditures scaled by lagged property, plant, and equipment; Q is normalized stock price, measured as market value of equity (stock price times shares outstanding) plus total assets less book value of equity scaled by the book value of total assets; CF is cash flow (net income plus R&D and depreciation and amortization), scaled by lagged total assets; Post is an indicator variable that is equal to one beginning the year after the mandatory adoption of IFRS in the country, and 0 otherwise; for countries in the control group (non-IFRS adopters), we set Post equal to one if year t is greater than 2005, and 0 otherwise; IFRS is an indicator variable that is equal to one for firms in our treatment group of countries that adopted IFRS during our sample period. We include a proxy for size (log of total assets), reflecting 2010 prices, to control for the impact of size on firm's investment decisions; in addition, cash flow (CF) is included to control for the well- established relation between cash flow and investment. In our main specifications, we use year, country, and industry fixed effects to control for additional unobservable or omitted factors

that may influence investment and we cluster standard errors at the firm level, allowing for the error term to be serially correlated for the same firm. Because of our fixed effects framework, some of the coefficients in Equation 1 drop out because of collinearity. In additional robustness tests, we replicate our results using alternate specifications of Equation 1, including firm and year fixed effects and clustering standard errors at the country level.

Our main variable of interest is the coefficient on the triple interaction term (β_3), which captures the change in investment-to-stock price sensitivity post-IFRS for our treatment group, relative to the control group of firms from countries that did not adopt IFRS. A positive coefficient on β_3 would reflect an increase in investment-to-stock price sensitivity post-IFRS adoption for our IFRS adopters, consistent with our main hypotheses.

4. Results

4.1. Investment sensitivity to stock price around IFRS adoption

In this section, we first examine whether IFRS adoption is associated with an increase in investment-to-stock price sensitivity. Table 3 shows results from various specifications of Equation 1. Consistent with prior studies (Chen et al., 2007; Focault and Fresard, 2011), investment is positively related to stock price (Q); the coefficient on Q_{t-1} is statistically significant at the 1% level in all model specifications. The main variable of interest is the coefficient on the triple interaction term between (Q x Post x IFRS - i.e., β_3), which captures the change in investment sensitivity to stock price after the adoption of IFRS for our treatment firms. Per Hypothesis 1, investment-to-stock price sensitivity should increase post-IFRS adoption as stock prices become more informative and managers are able to learn more from stock prices after the reduction in information asymmetry, which should translate into a positive correlation between stock prices and investment. No such increase is expected for our control group of firms. Thus, Hypothesis 1 would predict a positive and significant coefficient on β_3. As the results in Table 3 show, that is indeed what we find. All specifications show a positive and significant

coefficient on β_3, suggesting an increase in investment-to-stock price sensitivity following IFRS adoption for our group of IFRS adopters. This result is both statistically and economically significant. Taking the coefficients in model 1 as an example, a one standard deviation increase in Q (1.7) is associated with an increase of 5.78% ((0.038+-0.004) x 1.7) in investment prior to IFRS adoption, for the average IFRS adopter. Following IFRS adoption, the increase in investment associated with a one standard deviation increase in Q is substantially larger – 9.52% ((0.038+-0.004+0.022) x 1.7). The magnitude of the increase is similar across the various specifications. The remaining control variables have the expected signs documented in prior studies. Cash flows (CF) are positively related to investment, while the proxy for firm size (log assets) is inversely correlated with investment. The results also show that there is no significant difference in investment-to-stock price sensitivity between our treatment firms and our control sample prior to IFRS adoption – the coefficient on the interaction term (Q_{t-1} x IFRS) is not statistically significant.

We test the robustness of our results by estimating various specifications of Equation 1 in Panel A of Table 3. In model 2, we run regressions using firm and year fixed effects to better control for time invariant firm-specific characteristics, instead of the country, industry, and year fixed effects used in model 1. Results are similar when this alternate approach is used. We thus present the remaining results using our baseline specification with country, industry, and year fixed effects. One concern with our results is the fact that the increase in investment-to-price sensitivity following IFRS adoption may be driven by firms that adopt IFRS voluntarily before the mandatory date. To address this concern, in model 3, we estimate equation 1 excluding all firms that are classified as voluntary IFRS adopters. The results continue to show an increase in investment-stock-price sensitivity following IFRS adoption even after excluding voluntary adopters. Given that we include a control group of firms from non-adopting firms in our main regressions, one concern is that differences in size between the two groups may be driving the results. While we control for size in our regressions, we further address this valid concern by estimating regressions using only a subset of matched firms from the control group of countries. Specifically, each

year, we match each treatment firm in our sample to a firm from the control group by industry (4-digit SIC code) and size. For each treatment firm, we choose a firm in its same 4-digit SIC code from the control group of countries that is closest in size. We then run regressions including our treatment firms and their respective matches. The results are reported in models 4 and 5 of Table 3, including and excluding voluntary adopters, respectively. The results confirm our prior findings. Finally, in models 6 and 7 we estimate Equation 1 including the firms in our treatment group only. The results continue to hold even when we exclude firms from our control group.

In Panel B of Table 3 we provide some additional robustness tests. First, we replicate our results excluding firms from the U.S. from our control group. Firms from the US dominate our control group of countries; thus, what we may be picking up are differences between our IFRS adopters and US firms, which may be unrelated to improvements in information. The results in model 1 of Panel B show that our results continue to hold, and are very similar in magnitude, when we exclude the US. In model 2 we present results for a matched sample of firms using an alternate matching procedure. Given that our control group of countries is comprised primarily of firms from emerging markets (with some exceptions), what our results could be picking up are differences in information quality between emerging and developed countries. Ideally, we would like to match firms from countries with similar accounting standards before the adoption of IFRS, to tease out the impact of IFRS adoption on the quality of information and the resulting investment sensitivity to stock price. We attempt to do this by first matching each country in our treatment group to a country from the control group with similar accounting standards using the measure of GAAP differences from Bae, Tan, and Welker (2008).[6] We match

[6] This measure captures differences between local accounting standards and International Accounting Standards (IAS) for each country based on 21 key accounting items. For each of these 21 items, a score of one is assigned for that item to countries that do not conform to IAS and 0 otherwise. Higher values of the aggregate score reflect larger differences between local accounting standards and IAS. .

countries with the minimum GAAP differences.[7] We then match each firm in our treatment group, each year, with its closest match by industry (4-digit SIC code) and size (total assets) from the respective GAAP-differences-matched country. While the sample size drops, because certain matched countries may not have firms in certain industries, the results using this matching procedure confirm our prior results. The results are shown in Model 2 of Panel B; relative to matched firms from countries with similar accounting quality, there is a significant increase in the investment-to-stock-price sensitivity following IFRS for firms from IFRS adopting countries: a one percent increase in Q is associated with a 0.07% (0.034+-0.016+0.048)*0.01) increase in investment after IFRS adoption. The last two columns in Panel B of Table 3 replicate our results using two alternate proxies for investment: capital expenditures plus R&D-scaled by lagged assets, and total asset growth. The results using these alternate proxies are in line with our prior results, as the coefficients of the triple interaction term are still positive and statistically significant.

Overall, the results in Table 3 provide strong support for Hypothesis 1. Investment sensitivity to stock price increases significantly following the adoption of IFRS. These results are robust to alternate definitions of investment, various matching procedures, and different regression specifications. Next, we examine whether the increase in investment stock price sensitivity materializes on or after the year of IFRS adoption.

4.2. Event time regressions

If the increase in investment sensitivity to stock price following IFRS adoption is associated with more new information available to managers due to the reduction in information asymmetry, the result should materialize subsequent to the year of IFRS adoption. We test this prediction more closely by analyzing the year-by-year changes in investment-to-stock price sensitivity for our treatment sample of

[7] When there is more than one matching country with the same GAAP difference, we match our treatment country with the country that is either in the same geographical region, or closest in terms of GDP per capita.

firms from countries that adopt IFRS. To do this, we follow the approach used by Focault and Fresard (2011). Specifically, we define a set of event-time indicator variables $IFRS_t(-\tau)$ and $IFRS_t(+\tau)$, for τ=0,1, …5. $IFRS_t(\tau)$ is equal to one if year t is τ years from or since IFRS adoption. We then interact these event-time indicator variables with lagged Q. This approach allows us to estimate the investment sensitivity to price relation for each year over a 10-year window around the adoption of IFRS.

The results from the event-time regressions are shown in Table 4. The results provide support to the view that the investment-to-stock price sensitivity increase happens only after the mandatory adoption of IFRS. These findings are in line with the learning hypothesis and support the view that the increase is driven in part by the increase in the informativeness of stock prices for managers. The results in model 1 show that the investment-to-stock price sensitivity for firms in countries that adopt IFRS increases significantly but only in the year after IFRS adoption. In years prior to IFRS adoption, there is no significant relation between investment and stock price, with the exception of one year (and the relation is weak).[8] The investment-to-stock price sensitivity becomes positive and significant starting the year after IFRS adoption and the effect is persistent and shows up even 5 years after the adoption of IFRS, although it is not statistically significant in year 3. A plausible explanation as to why the investment-to-stock price sensitivity is not as statistically significant in years 2 and 3 post-IFRS adoption relates to the financial crisis. For the majority of our sample, mandatory IFRS adoption happens in 2005. Thus, years two and three after IFRS adoption coincide with the height of the financial crisis in which stock prices were depressed and firms were not investing as much; this in turn could lead to a reduced investment-to-stock price sensitivity. Of importance is the fact that the positive relationship between investment-to-stock price sensitivity is only significant in years subsequent to IFRS adoption.

In model 2 we show results excluding voluntary IFRS adopters and continue to find a positive and significant investment-to-stock price sensitivity starting the year after IFRS adoption. The results in model 2 show that there is no significant relation between investment and Q prior to the adoption of

[8] This result is likely driven by the inclusion of voluntary IFRS adopters in our sample. In model 2, we exclude voluntary IFRS adopters and find no significant relationship between investment and stock price pre-IFRS adoption.

IFRS; this suggests that the positive association between investment-to stock price sensitivity found in the year prior to IFRS adoption in model 1 could be attributed to the inclusion of voluntary adopters in the sample.[9]

4.3. Impact of country characteristics on investment sensitivity to stock price around IFRS adoption

The increase in investment sensitivity to stock price following IFRS adoption documented earlier may differ across countries; in particular, investor protection may play a significant role in how new information impounded into stock prices may affect investment. McLean et al. (2012) show that investor protection is positively associated with investment-to-stock price sensitivity; firms in countries with better ex-ante institutional quality exhibit a larger investment-to-stock price sensitivity; as such, firms in countries with poor institutional quality may stand to gain the most from a change in the information environment that improves the informational content of stock prices. In addition, per the learning hypothesis, if improvements in the information environment are driving the increase in investment sensitivity to stock price, the increase should be more pronounced in countries with weaker ex-ante accounting quality, or in countries with accounting standards that differ significantly from IFRS. The change in information asymmetry and the improvements in disclosure and in the overall information environment should be stronger in countries that have weak accounting standards, relative to IFRS. In line with this argument, Hypothesis 2 predicts that countries with weaker institutional quality and weaker accounting standards (those that differ widely from IFRS) should observe a larger increase in investment-to-stock price sensitivity following IFRS adoption. We test this hypothesis by estimating Equation 1 separately for countries with high/low investor protection and institutional quality and accounting standards. In particular, we first divide countries based on 1) the origin commercial laws – common vs. civil law, following the literature that argues that common law countries have better investor protection (e.g. La Porta, Lopez De Silanes, and Shleifer 1997; 1998); 2) the revised anti-director's rights index

[9] Improvements in the information environment associated with voluntary IFRS adoption may trigger an increase in investment-to-stock price sensitivity for these early adopters prior to the mandatory adoption of IFRS in their country.

(ADIR) from La Porta et al. (1998) updated in Djankov, La Porta, Lopez De Silanes, and Shleifer (2008); 3) a measure of differences between local accounting standards and International Accounting Standards (GAAP difference) from Bae et al. (2008), and 4) a measure of overall accounting quality and transparency that is the sum of earnings aggressiveness, loss avoidance, and earnings smoothing from Bhattacharya, Daouk, and Welker (2003) and the timeliness measures from Bushman, Piotroski, and Smith (2004). We group IFRS adopting countries into high/low institutional quality based on these indices; countries with index values above (below) the median are classified as high (low). Note that unlike the other three measures, countries with lower accounting quality are those with a high GAAP difference. We include country, industry, and year fixed effects in all of our regressions and cluster standard errors at the firm level.

We report our results in Table 5. As before, our main variable of interest is the interaction term between Q_{t-1} and the Post-IFRS indicator variable. Per Hypothesis 2, the coefficient on this interaction term should be positive and significant in countries with weaker ex-ante institutional and accounting quality; in addition, the magnitude of the increase in investment-to-stock price sensitivity should be larger in countries with better institutional quality.

The results in Table 5 provide support for Hypothesis 2. The results show that firms in civil law countries and in countries with lower investor protection experience a significant increase in investment-to-stock price sensitivity following the mandatory adoption of IFRS. In contrast, firms in countries with high institutional quality do not experience a significant increase in investment-to-stock price sensitivity following IFRS adoption. The results are both statistically as well as economically significant. Taking the coefficients in Model 2 as an example, prior to IFRS adoption, a one standard deviation increase in Q (1.7) is associated with a 5.44% [(0.029+0.003)*1.7] increase in investment for firms in civil law countries that adopt IFRS; the impact of a one standard deviation increase in Q on investment more than doubles after IFRS adoption to 11.22% ([0.029+0.003+0.034] x 1.7)). In contrast, there is no significant increase in investment-to-stock price sensitivity in common law countries. The impact is similar using

other proxies for institutional quality. Taking the coefficients in Model 4, a one standard deviation in Q is associated with a 5.95% (0.035 x 1.7) increase in investment prior to the adoption of IFRS for firms in countries with low investor protection, and with a significantly higher 11.73% [(0.35+0.034) x 1.7)] increase in investment following IFRS adoption. To examine the robustness of our results, in Models 5-8 of Panel A we run the regressions using only our sample firms and their respective matches (on 4-digit SIC codes and size) from the control group of countries. The results continue to show that the increase in investment-to-stock-price sensitivity after IFRS adoption is only significant for firms in countries with lower institutional quality.

Panel B of Table 5 shows results in which we split our sample based on ex-ante accounting quality. In line with Hypothesis 2, the results show that firms in countries with ex-ante accounting standards that differ widely from IFRS, and those in countries with low accounting quality exhibit a significant improvement in investment-to-stock-price sensitivity following IFRS adoption. In contrast, the increase in investment-to-stock price sensitivity is insignificant for firms in countries with better ex-ante accounting standards. The results are both economically and statistically significant. As an example, the coefficients in Model 1 show that, prior to IFRS adoption, a one standard deviation increase in Q (1.41) for firms in countries with accounting standards that differ widely from IFRS is associated with a 6.91% increase in investment. After IFRS adoption, a one standard deviation increase in q is associated with a much larger increase in investment (9.73%).[10] The results are similar for firms in IFRS adopting countries with low accounting quality. Results using only matched firms (Columns 5-8) also confirm our main findings that the increase in investment-to-stock-price sensitivity following IFRS adoption is only significant in countries with weaker ex-ante accounting standards.

The results in this section provide support to Hypothesis 2 and are consistent with the view that firms in countries with weaker ex-ante institutional and accounting quality stand to gain the most from

[10] The standard deviation of Tobin's q for firms in countries with high GAAP differences is 1.41. For IFRS adopters, the pre-adoption increase in investment associated with a one standard deviation increase in Q is [(0.030+0.019) x 1.41] = 0.0691. Post-IFRS, the impact increases to [(0.030+0.019+0.02) 0.0973.

improvements in the information environment. These results are consistent with the predictions of the learning hypothesis (e.g. Bond et al., 2012). The exogenous shock to the information environment brought about by the events surrounding the adoption of IFRS should be stronger for firms in countries with weaker institutional quality and accounting standards. Thus, firms in such countries should observe a more significant improvement in the informational content of their stock prices, which should translate into a higher investment-to-stock price sensitivity after IFRS adoption.

4.4. Firm-level characteristics and investment sensitivity to stock price around IFRS adoption

Firm level characteristics may play a significant role in determining the impact on information asymmetry and the resulting improvement in investment-to-stock price sensitivity brought about by the events surrounding mandatory IFRS adoption. Per Hypothesis 3, investment should become more sensitive to stock prices for firms with prices that convey more information to managers after an improvement in the information environment. Managers in such firms may learn more new information from stock prices that are more informative following IFRS adoption. With improvements in the quality of disclosure and in the comparability of financial statements, the costs associated with obtaining information should decrease; as such, more investors should be able to trade on their information and this will be impounded into stock prices, making them more informative for decision makers. Consistent with this view, several studies have found a significant improvement in stock price informativeness subsequent to IFRS adoption (see e.g. Beuselinck et al., 2010).

While there is no direct way to measure the quantity of information in stock prices that is new to managers and other decision makers, all else equal, stock prices that are more informative should contain more information that is relevant for decision makers and managers. We thus proceed to test Hypothesis 3 by estimating Equation 1 using two proxies for stock price informativeness: 1) firm-specific stock return variation (ψ) following Morck, Yeung, and Yu. (2000), and 2) stock return autocorrelation conditional on trading volume (θ), following Llorente, Michaely, Saar, and Wang (2002).

We compute our first measure of stock price informativeness, firm-specific return variation for each stock, following Morck et al. (2000). We estimate firm-specific return variation from the following two-factor model, as in Fernandes and Ferreira (2008), using US dollar-denominated weekly returns:

$$\mathbf{R_{it} = \alpha_i + \beta_{1i} R_{mt} + \beta_{2i} R_{USt} + \varepsilon_{it}} \quad (2)$$

where R_{it} represents stock i's return in week t in excess of the risk-free rate; R_{mt} is the value-weighted excess local market return, and R_{ust} is the value weighted excess US market return. Stock price returns and market index returns are obtained from DataStream using the total return index, while the risk-free rate was obtained from Kenneth French's website. Following prior literature (Morck et al., 2000; Jin and Myers, 2006; Fernandes and Ferreira, 2008), our measure of firm-specific return variation, Ψ_i, is a logistic transformation of the ratio of idiosyncratic volatility-to-total volatility ($1\text{-}R^2$) that measures firm-specific return variation relative to market-wide variation: $\Psi_{\mathbf{i}} = \log\left[\frac{(1-R^2)}{R^2}\right]$.

As our alternate measure of stock price informativeness, we use a measure based on stock return autocorrelation conditional on trading volume, following Llorente et al. (2002) and Fernandes and Ferreira (2009). This measure captures the degree of information-based trading; the idea is that during periods of high volume, stocks with more information-based trading should display positive return autocorrelation. To construct this measure, we run the following time-series regressions, following Fernandes and Ferreira (2008):

$$r_{i,t} = \alpha_i + \beta_i r_{i,t-1} + \theta_i r_{i,t-1} \times VO_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

where $r_{i,t}$ is the weekly stock return for firm i; $VO_{i,t}$ is the log turnover detrended by subtracting a 26-week moving average. Our variable of interest is θ_i, which captures the degree of information-based trading. We compute this measure for each firm-year.

Because the adoption of IFRS has been associated with an increase in stock price informativeness, per Hypothesis 3, those firms that experience the largest increase in stock price

informativeness following IFRS should experience the largest increase in investment-to-stock price sensitivity. The stock prices of such firms should contain more new information for decision makers, who can then use this information to help guide their investment decisions. To this end, we divide stocks in each country based on the change in each measure of stock price informativeness around IFRS adoption; we group firms into high (low) informativeness if the change in Ψ_i, (θ_i) from year t-1 to year t+1 around IFRS adoption is above (below) the median for all firms in the country. In some robustness tests (not reported), we also use the change in each measure from year t-3 to year t+3 around IFRS adoption to rank firms and find similar results.

The results from these regressions are shown in Panel A of Table 6. Per Hypothesis 3, firms with more informational content in their stock price should observe a more pronounced increase in investment-to-stock price sensitivity. We thus should observe a positive and significant coefficient on the triple interaction term (Q_{t-1} x Post x IFRS) for firms that experienced the largest increase in stock price informativeness. This is what we find. The interaction term is positive and significant for firms with a large increase (High group) in our measures of stock price informativeness around IFRS adoption. Firms with a large increase in Ψ_i, (θ_i) experienced a significant improvement in the investment-to-stock price sensitivity following IFRS adoption relative to firms from countries that did not adopt IFRS. In contrast, firms that experienced little change in stock price informativeness around the adoption of IFRS did not experience any significant change in investment sensitivity-to-stock price post-IFRS adoption. In addition, the magnitude of the difference in this increase is significantly larger for firms that experience an increase in Ψ_i. From the results in Model 1, for firms that experience a large increase in stock price informativeness we observe no significant difference in investment-to-stock price sensitivity between firms from countries that adopt IFRS and the control group of firms prior to IFRS adoption (coefficient on Qt-1 x IFRS is 0.007 with a t-statistic of 0.43). Post-IFRS, firms from countries that adopt IFRS experience a large increase in investment-to-stock price sensitivity relative to firms in the control group. As an example, a one standard deviation increase in Q (1.48) is associated with a 5.48% increase in

investment prior to the adoption of IFRS for firms that experienced a large increase in Ψ_i; following IFRS adoption, the impact of a one standard deviation increase in Q is associated with a significantly higher 9.62% increase in investment.[11] The results are similar when using the alternate measure of stock price informativeness (θ_i). In contrast, the increase in investment-to-stock price sensitivity post-IFRS adoption is not significant for firms that experienced little or no change in stock price informativeness. The results are thus consistent with Hypothesis 3 and with the learning hypothesis. The impact is stronger for stocks from which managers can potentially learn more new information after the improvement in the information environment.

In additional robustness tests (unreported), we use an alternate measure of stock price informativeness to group firms. In particular, we use the future earnings response coefficient, FERC,[12] following Durnev et al. (2003), and divide firms into groups of high and low informativeness based on changes on this measure pre and post-IFRS. The results using this alternate measure of stock price informativeness are similar to the ones reported in Table 6.

4.5. Alternative explanation - Need for external finance

The results thus far show that the increase in investment-to-stock price sensitivity following IFRS adoption is concentrated in firms that experienced a significant improvement in stock price informativeness. This suggests that IFRS adoption results in improvements in the informativeness of stock prices, consistent with the learning hypothesis. Alternatively, the increase in investment-to-stock price sensitivity could be a result of firms having easier access to capital subsequent to IFRS adoption. Many studies document a decrease in cost of capital associated with the adoption of IFRS (Daske et al., 2008; Li, 2010). A decrease in the cost of capital should make it easier for firms with higher growth

[11] From Model 1 of Panel A of Table 6, for firms in our treatment group with a large increase in stock price informativeness, the increase in investment associated with a one standard deviation increase in Q (1.48) is [(0.03+0.007) x 1.48] =0.0548 prior to IFRS adoption. Post-IFRS adoption, the increase is [(0.03+0.007+0.028) x 1.48] = 0.0962.

[12] The FERC measure is the coefficient on future earnings from estimations of annual stock returns on current and future annual earnings.

opportunities to increase investment by raising external capital; this in turn would impact the investment-to-stock price sensitivity. We thus examine whether this alternative explanation, and not the improvement in stock price informativeness, is driving our results. If our results are driven by this alternative channel, firms with more need for external finance should experience a larger increase in investment sensitivity to stock price following IFRS adoption. Such firms would be more inclined to raise external capital to finance their investments after IFRS adoption due to the reduction in their cost of capital.

We examine this alternative by estimating Equation 1 separately for firms with high (low) need for external finance. We use two proxies for the need for external finance: 1) the external finance dependence ratio following Rajan and Zingales (1998) – capital expenditures minus cash flows, scaled by capital expenditures, and 2) the financing deficit from Frank and Goyal (2003).[13] We rank firms in each country as high (low) based on these two variables; firms with values above (below) the median are classified as high (low) need for external finance. We report results from these regressions in Panel B of Table 6.

The results in Panel B of Table 6 show that the improvement in investment-to-stock price sensitivity following IFRS adoption is not significantly related to firms' access to external finance. The results in Panel B show that the increase in investment-to-stock price sensitivity is significant for firms with high and low need for external finance. The increase in investment-to-stock price sensitivity is not statistically different for firms with high and low external finance dependence. In unreported results, we test for differences between the coefficients in the two equations and do not find a statistically significant difference (p-value of F-test is 0.99). These results do not support the view that improvement in firms' access to external finance, as opposed to improvements in the informativeness of stock prices, are driving our results. The results using the financing deficit also reveal no difference in the increase in investment-

[13] The financing deficit is computed as the sum of cash dividends, investments, and net changes in working capital, less internal cash flows, scaled by total assets.

to-price sensitivity (p-value of F-test 0.84) between firms with low and high financing deficit, providing additional evidence against the claim that changes in access to finance are driving our results.

4.6. Investment –to-stock price sensitivity and performance

We have documented an increase in investment-to-stock price sensitivity associated with the events surrounding IFRS adoption. If this increase is a result of improvements in the information contained in stock prices and the information that stock prices convey to decision makers, we should observe a positive impact on future performance. As stock prices become more informative for managers, they should be able to use that information to identify better investment opportunities (i.e. positive NPV projects). This should translate into improved operating performance. The improvement should be higher for firms whose stock prices are more informative. Thus, firms that experience a higher increase in investment-to-stock price sensitivity should observe more significant improvement in performance.

To directly test the above prediction, we would need a firm-level measure of the improvement in investment- to-stock price sensitivity (a firm-level coefficient of the interaction term (Q_{t1}- x Post IFRS)). We cannot estimate such a measure directly because we do not have a sufficiently large number of observations for each firm to estimate this precisely. Instead, we follow the approach taken by Focault and Fresard (2011) and estimate Equation 1 without the indicator of Post-IFRS and the respective interaction with Q_{t-1} for all firms in our treatment sample. We then collect the residuals from the regressions for each firm and construct an indicator variable, Pos, which is equal to one if firm i's residual in year t is greater than 0 and zero otherwise. As Focault and Fresard (2011) demonstrate, firms with positive (negative) residuals are those with a higher (lower) investment-to-stock price sensitivity, ceteris paribus.

Using the indicator variable (Pos), we run the following regressions to determine whether future operating performance is associated with the increase in investment-to-stock price sensitivity:

$$PERF_{i,t+1} = \alpha_{i,t} + \beta Pos_{i,t} + \gamma_{i,t} + \delta_i + \varphi_t + \varepsilon_{i,t} \quad (4)$$

where $PERF_{i,t+1}$ refers to two measures of firm performance: 1) return on assets, ROA, and 2) sales growth. We measure performance as of one-year ahead (3-year average), following Focault and Fresard (2011) and include only the years subsequent to IFRS adoption. Pos is the indicator variable that is equal to one for firm-year observations with positive residuals from the estimation of Equation 1 excluding the Post-IFRS indicator and the respective interactions, and zero otherwise; $\gamma_{i,t}$ is a vector of firm-level controls that includes: 1) the log of total assets to control for firm size; debt-to-assets as a proxy for leverage, and 3) cash-to-assets, and 4) property, plant and equipment-to-total assets to control for investment; δ_i and φ_t refer to firm and year fixed effects, respectively. We cluster standard errors at the firm level. If firms with higher investment-to-stock price sensitivity perform better, we expect the coefficient on Pos (β) to be positive and significant, which would indicate that firms with a higher increase in investment-to-stock price sensitivity perform better than those that experienced no change or a reduction in investment-to-stock price sensitivity. In unreported results, we replicate the results including the control group of firms; the results are similar to the ones presented here.

The results from the OLS estimation of Equation 4 are shown in Table 7. The results show that on average, performance improves following IFRS adoption for firms that experience large increases in investment-to-stock price sensitivity. Post-IFRS adoption, average 1-year ahead ROA is 0.60% higher for firms with a large increase in investment-to-stock price sensitivity, while sales growth is 13.3% higher. There is no difference in ROA using the three-year average,[14] but the difference in average sales growth is still significantly higher (8.8%) for firms with a larger increase in investment-to-stock price sensitivity. Overall, these results suggest that firms experience an improvement in performance following IFRS that is correlated with the increase in investment-to-stock price sensitivity associated with IFRS adoption. The results add support to the learning hypothesis that predicts that investment-to-price

[14] The reduction in the sample size may explain the lack of statistically significant results for the regressions using the three-year average ROA. The number of observations drops from 71,819 (Model 1) to 25,038 (Model 2).

sensitivity, if driven by an improvement in the information content of stock prices, should be correlated with future performance.

5. Conclusion

In this paper we examine how changes in the information environment affect the investment-to-stock price sensitivity. Using mandatory adoption of IFRS as a natural experiment with exogenous variation in information asymmetry, we explore three hypotheses based on the learning hypothesis and related to the informational content in stock prices. First, we posit that investment-to stock price sensitivity should increase following IFRS adoption due to a reduction in information asymmetry that increases the informational content of stock prices. Second, we conjecture that the improvement in investment-to-stock price sensitivity should be stronger in countries with weaker ex-ante institutional and accounting quality. Finally, we examine whether the improvement in investment-to-stock price sensitivity is more pronounced for firms that experience a more significant increase in stock price informativeness.

Using a sample of 11,611 firms from 30 countries that adopted IFRS during our sample period and a control group of 13,557 firms from 20 countries, we find evidence supporting our three hypotheses. We document a significant increase in firms' investment-to-price sensitivity following IFRS adoption that persists for years after IFRS adoption. This relation is not present in years prior to IFRS adoption. In addition, we find that the improvement in investment-to-stock price sensitivity is stronger for firms in countries with weaker ex-ante institutional and accounting quality. This finding is consistent with the learning hypothesis and the view that changes in the information environment should benefit firms with lower ex-ante institutional quality, given that firms in countries with better institutional quality already have higher investment sensitivity-to-stock price (McLean et al., 2012). In addition, countries with accounting standards that differ significantly from IFRS should experience the strongest impact from IFRS adoption. Finally, we find that firms that exhibit a larger improvement in stock price

informativeness exhibit a stronger increase in investment-to-stock price sensitivity, which suggests that new informational content in stock prices is a plausible channel driving our results.

Overall, our results are in line with the learning hypothesis and suggest that the reduction in information asymmetry associated with the events around IFRS adoption leads to improved stock price informativeness; managers learn from the new information conveyed from stock prices in making investment and other decisions, resulting in an increase in investment-to-stock-price sensitivity. The positive association between investment-to-price sensitivity and future performance suggest that managers may be able to make better investment decisions after prices become more informative.

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Table 1. Sample description

Table reports the number of firms, total number of observations, and the year of mandatory IFRS adoption for each of our sample countries that have adopted IFRS as of 2011 and for a control group of countries that have not adopted IFRS as of 2011. Our treatment sample consists of 11,611 firms (90,880 firm-year observations) from 30 countries from 1990-2012. The control group consists of 13,557 firms (68,890 firm-year observations) from 20 countries.

Sample description						
IFRS Adopters				Non-IFRS Adopters (Control Group)		
Country	IFRS adoption	# of firms	# of obs.	Country	# of firms	# of obs.
Australia	2005	1,417	8,445	Argentina	68	362
Austria	2005	110	985	Bangladesh	21	58
Belgium	2005	139	1,396	China	1,484	7,579
Brazil	2010	114	744	Colombia	36	119
Bulgaria	2003	98	340	Egypt	85	414
Canada	2011	1,434	10,186	India	1,044	5,137
Chile	2009	167	1,923	Indonesia	266	1,315
Cyprus	2005	63	269	Japan	2,491	15,516
Czech Republic	2005	64	322	Kenya	32	149
Denmark	2005	221	2,384	Malaysia	758	4,108
Finland	2005	174	1,924	Mexico	106	532
France	2005	952	8,479	Morocco	48	159
Germany	2005	825	7,963	Russia	201	571
Greece	2005	274	1,738	Saudi Arabia	85	366
Hungary	2005	42	300	South Korea	662	3,605
Ireland	2005	81	777	Sri Lanka	105	510
Israel	2008	276	1,568	Taiwan	698	3,846
Italy	2005	364	3,496	Thailand	408	2,207
Jordan	2010	95	349	United States	4,814	21,987
Netherlands	2005	194	2,112	Vietnam	145	350
New Zealand	2007	122	1,023			
Norway	2005	316	2,297			
Peru	2010	104	817			
Poland	2005	209	830			
Portugal	2005	78	720			
Romania	2005	64	242			
South Africa	2005	417	3,141			
Spain	2005	161	1,773			
Sweden	2005	495	4,010			
United Kingdom	2005	2,541	20,327			
TOTAL		11,611	90,880	TOTAL	13,557	68,890

Table 2. Sample description

Table shows descriptive statistics for firms in our treatment sample of 30 countries and the control group of 20 countries. Our treatment sample consists of 11,611 firms (90,880 firm-year observations) from 30 countries from 1990-2012. The control group consists of 13,557 firms (68,890 firm-year observations) from 20 countries. Stock price and financial data are obtained from Thomson's DataStream and WorldScope databases. We exclude financial firms and utilities (SIC codes between 6000 and 6999 and between 4900 and 4949) and firms with missing data on market value of equity, total assets, sales, and capital expenditures, as well as firms with assets below $10 million and those with negative sales. Total assets are in US$ mil, reflecting 2010 pries; Q is the Tobin's q measured as total assets less book value of equity plus market value of equity divided by book value of total assets; CF-TA is cash flow (net income plus R&D and depreciation and amortization), scaled by lagged total assets; Capex-to-PPE_{t-1} is the ratio of capital expenditure-to-lagged property, plant and equipment All firm-level variables are winsorized at top and bottom 1% of the distribution.

Descriptive statistics				
Full sample				
Variable	Mean	Median	Standard dev.	N
Total assets (US$M)	1,722	227.365	4,944	159,770
Q	1.633	1.197	1.745	159,770
CF-TA	0.067	0.080	0.187	159,770
Capex-to-PPE_{t-1}	0.282	0.171	0.379	159,770
IFRS Adopters				
Variable	Mean	Median	Standard dev.	N
Total assets (US$M)	1,655	181.907	4,918	90,880
Q	1.593	1.192	1.733	90,880
CF-TA	0.067	0.084	0.188	90,880
Capex-to-PPE_{t-1}	0.310	0.188	0.409	90,880
Non-IFRS adopters (Control group)				
Variable	Mean	Median	Standard dev.	N
Total assets (US$M)	1,811	290.401	4,978	68,890
Q	1.686	1.204	1.761	68,890
CF-TA	0.066	0.076	0.185	68,890
Capex-to-PPE_{t-1}	0.245	0.148	0.331	68,890

Table 3. Main regressions. Investment sensitivity to stock price

Table shows results from panel regressions of investment on stock price for the period 1990-2012. The dependent variable, investment, is the ratio of capital expenditure-to-lagged property, plant and equipment. Q is Tobin's q, measured as total assets less book value of equity plus market value of equity divided by book value of total assets; CF-TA is cash flow (net income plus R&D and depreciation and amortization), scaled by lagged total assets; Log $assets_{t-1}$ is the natural logarithm of lagged total assets, reflecting 2010 pries. For the treatment group, Post IFRS is an indicator variable equal to one starting the year after mandatory IFRS adoption in the country and 0 otherwise; for the control group of countries, Post-IFRS is equal to one for years after 2005 and 0 otherwise. IFRS is an indicator variable that equals one for countries that adopted IFRS during our sample period and 0 otherwise. Model 3 shows results excluding voluntary adopters- firms that adopt IFRS prior to the year of mandatory adoption in their country. Models 4 and 5, only include firms from the treatment sample of countries and their respective matches from the control group. Each year, each firm in the treatment group is matched to a firm in the control group by industry (4-digit SIC code) and size. Models 6 and 7 only use firms in countries that have adopted IFRS including and excluding voluntary adopters, respectively. Panel B shows results from various robustness tests. Model 1 replicates results from model 1 in Panel A, but excluding firms from the US. Model 2 reports results from a matched sample of firms, using the following procedure: each country in the treatment group is matched to a country from the control group with similar accounting standards, using a measure of GAAP differences between countries from Bae et al. (2008). Then, each year, each firm from the treatment group is matched by industry (4-digit SIC code) and size to a firm from its matched country in the control group. Models 3 and 4 show results using alternate proxies for investment; specifically; capital expenditures plus R&D expense–to-lagged assets, and total asset growth rate. Heteroskedasticity robust t-statistics with standard errors clustered at the firm level are shown in parentheses. *, **, *** indicate significance at the 10, 5, and 1% level, respectively.

Panel A – Baseline results

	Full sample			Matched sample		IFRS adopters only	
		Firm fixed-effects	Excludes voluntary		Excludes voluntary		Excludes voluntary
	Dependent variable: Capital expenditure-to-lagged property, plant and equipment.						
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Qt-1 x Post x IFRS	0.022***	0.018***	0.023***	0.022***	0.023***	0.017***	0.017***
	(3.81)	(3.84)	(3.91)	(3.81)	(3.92)	(2.72)	(2.72)
Qt-1 x IFRS	-0.004	-0.009**	-0.006	-0.008	-0.009		
	(-0.76)	(-2.22)	(-1.01)	(-1.27)	(-1.48)		
Qt-1	0.038***	0.038***	0.038***	0.041***	0.041***	0.038***	0.037***
	(15.01)	(13.20)	(14.99)	(12.24)	(12.20)	(7.42)	(7.00)
CF-TA	0.126***	0.195***	0.127***	0.120***	0.121***	0.123***	0.126***
	(11.46)	(13.57)	(11.17)	(9.21)	(8.94)	(8.48)	(8.13)
Post IFRS	-0.032**	-0.041***	-0.030**	-0.031**	-0.028**	-0.020	-0.017
	(-2.45)	(-3.53)	(-2.25)	(-2.32)	(-2.08)	(-1.43)	(-1.13)
IFRS	-0.076***		-0.023	-0.080**	-0.026		
	(-2.94)		(-0.99)	(-2.38)	(-0.81)		
Log $assets_{t-1}$	-0.026***	-0.093***	-0.026***	-0.031***	-0.031***	-0.032***	-0.034***
	(-32.02)	(-21.25)	(-31.49)	(-29.88)	(-29.58)	(-27.95)	(-27.58)
Constant	0.367***	1.402***	0.353***	0.416***	0.457***	0.360***	0.396***
	(14.51)	(24.52)	(13.95)	(11.50)	(12.12)	(10.76)	(15.80)
Country fixed effects	Yes	No	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	No	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	Yes	No	No	No	No	No
Observations	159,770	159,770	149,796	107,365	97,750	90,880	80,934

R-squared	0.143	0.368	0.145	0.145	0.149	0.146	0.150

Table 3. Main regressions. Investment sensitivity to stock price. Continued.

Panel B- Robustness tests				
	Dependent variable:			
	Capex-to-lagged PPE		Capex + R&D-to-lagged assets	Asset growth
VARIABLES	(1)	(2)	(3)	(4)
	Excludes US	Matched sample		
Q_{t-1} x Post x IFRS	0.022***	0.034***	0.004**	0.014**
	(3.89)	(3.10)	(1.99)	(2.07)
Q_{t-1} x IFRS	-0.002	-0.016	-0.003*	0.002
	(-0.38)	(-1.32)	(-1.95)	(0.26)
Q_{t-1}	0.037***	0.048***	0.016***	0.043***
	(10.56)	(10.30)	(17.32)	(16.35)
CF-TA	0.137***	0.120***	0.042***	0.164***
	(10.38)	(7.32)	(6.37)	(17.03)
Post IFRS	-0.035***	-0.021	-0.011**	-0.059***
	(-2.65)	(-0.99)	(-1.96)	(-4.29)
IFRS	-0.095***	-0.039	-0.018	0.077***
	(-3.31)	(-0.64)	(-1.49)	(3.14)
Log assets $_{t-1}$	-0.025***	-0.035***	-0.005***	0.002*
	(-27.46)	(-21.91)	(-9.24)	(1.70)
Constant	0.391***	0.458***	0.086***	-0.117***
	(13.94)	(8.17)	(5.46)	(-3.85)
Country fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	No	No
Observations	137,783	46,044	66,242	159,770
R-squared	0.145	0.162	0.222	0.118

Table 4. Event time regressions. Investment sensitivity to stock price

Table shows results from regressions of investment on stock price for our sample of IFRS adopters for the period 1990-2012. The dependent variable, investment, is the ratio of capital expenditure-to-lagged property, plant and equipment. Q is Tobin's q, measured as total assets less book value of equity plus market value of equity divided by book value of total assets; CF-TA is cash flow (net income plus R&D and depreciation and amortization), scaled by lagged total assets. Log $assets_{t-1}$ is the natural logarithm of lagged total assets, reflecting 2010 pries. Lagged Q is interacted with various event time indicator variables ($IFRS_{-\tau}$ … $IFRS_{+\tau}$). $IFRS_{\tau}(_{-\tau})$ is equal to one if year t is τ years after (before) IFRS adoption in the country (τ=-5,…,+5) and zero otherwise. Models 1 and 2 show results for the full sample of IFRS adopting countries including and excluding voluntary adopters, respectively. To conserve space, we do not report the coefficients on the event time indicator variables. Heteroskedasticity robust t-statistics with standard errors clustered at the firm level are shown in parentheses. *, **, *** indicate significance at the 10, 5, and 1% level, respectively.

Event time regressions		
	Dependent variable: Capex-to-lagged PPE	
	(1)	(2)
		Excludes voluntary
Q X IFRSt-5	-0.006	-0.008
	(-0.84)	(-1.14)
Q X IFRSt-4	0.006	0.007
	(0.90)	(1.21)
Q X IFRSt-3	0.002	0.002
	(0.41)	(0.32)
Q X IFRSt-2	0.010	0.009
	(1.12)	(0.87)
Q X IFRSt-1	0.012*	0.010
	(1.78)	(1.62)
Q X IFRSt	0.009	0.007
	(0.68)	(0.57)
Q X IFRSt+1	0.022**	0.021**
	(2.79)	(2.55)
Q X IFRSt+2	0.010*	0.009
	(1.75)	(1.63)
Q X IFRSt+3	0.004	0.002
	(0.84)	(0.42)
Q X IFRSt+4	0.047***	0.050***
	(8.86)	(9.09)
Q X IFRSt+5	0.021***	0.020***
	(3.51)	(3.29)
Q_{t-1}	0.040***	0.040***
	(8.20)	(7.93)
CF-TA	0.119***	0.121***
	(7.67)	(6.93)
Log assets t-1	-0.032***	-0.034***
	(-21.17)	(-20.85)
Constant	0.326***	0.447***
	(16.11)	(21.98)
Country fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	259,173	245,365
Adj. R-squared	0.142	0.144

Table 5. Investment sensitivity to stock price post IFRS: Country institutional quality

Table shows results from regressions of investment on stock price based on different levels of institutional and accounting quality. The dependent variable, investment, is the ratio of capital expenditures-to-lagged property, plant and equipment. Q is Tobin's q, measured as total assets less book value of equity plus market value of equity divided by book value of total assets; CF-TA is cash flow (net income plus R&D and depreciation and amortization), scaled by lagged total assets; Log $assets_{t-1}$ is the natural logarithm of lagged total assets, reflecting 2010 pries. For the treatment group, Post IFRS is an indicator variable equal to one starting the year after mandatory IFRS adoption in the country and 0 otherwise; for the control group of countries, Post-IFRS is equal to one for years after 2005 and 0 otherwise. IFRS is an indicator variable that equals one for countries that adopted IFRS during our sample period and 0 otherwise. We use four proxies for institutional quality and accounting quality: 1) legal origin of commercial laws – common and civil law, per La Porta et al. (1998); 2) the revised anti-director's rights index (ADIR) from La Porta et al. (1998), revised in Djankov et al. (2008); 3) a measure of local GAAP differences from International Accounting Standards from Bae, et al. (2008), and 4) a measure of accounting quality and transparency that is the sum of earnings aggressiveness, loss avoidance, and earnings smoothing from Bhattacharya et al. (2003), and timeliness from Bushman et al. (2004). Countries with values above (below) the median are classified as high (low). Panel A reports results for the two proxies of institutional quality and Panel B shows results using the proxies for accounting quality. Models (1)-(4) use the full sample and models (5)-(8) use the treatment firms and their respective matches. Each year, firms in the treatment group are matched to firms in the control group by 4-digit SIC code and size. Heteroskedasticity robust t-statistics with standard errors clustered at the firm level are shown in parentheses. *, **, *** indicate significance at the 10, 5, and 1% level, respectively.

Panel A- By institutional quality								
	Full sample				Matched sample			
	Common law	Civil law	High ADIR	Low ADIR	Common law	Civil law	High ADIR	Low ADIR
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Qt-1 x Post x IFRS	0.006	0.034**	0.009	0.034*	0.006	0.031**	0.009	0.031*
	(0.46)	(2.57)	(0.73)	(1.93)	(0.46)	(2.40)	(0.75)	(1.84)
Qt-1 x IFRS	0.011	0.003	0.011	0.000	0.012	0.005	0.011	0.002
	(1.06)	(0.18)	(0.82)	(0.03)	(1.20)	(0.29)	(0.75)	(0.10)
Qt-1	0.034***	0.029**	0.032***	0.035***	0.032***	0.026**	0.032**	0.032***
	(6.94)	(2.69)	(3.15)	(5.57)	(6.39)	(2.26)	(2.78)	(4.51)
CF-TA	0.100***	0.222***	0.107***	0.143***	0.091***	0.212***	0.094***	0.162***
	(10.56)	(7.09)	(6.32)	(4.62)	(7.59)	(6.49)	(5.95)	(3.84)
Post IFRS	0.046*	-0.068*	0.029	-0.084**	0.050*	-0.062*	0.033	-0.079**
	(1.90)	(-1.98)	(1.11)	(-2.62)	(1.86)	(-1.82)	(1.17)	(-2.71)
IFRS	-0.052***	-0.124***	0.067***	-0.132***	-0.269***	-0.111***	0.088***	-0.129***
	(-5.55)	(-4.94)	(3.39)	(-6.92)	(-15.82)	(-7.44)	(3.85)	(-6.90)
Log assets t-1	-0.030***	-0.021***	-0.025***	-0.027***	-0.033***	-0.027***	-0.031***	-0.030***
	(-11.20)	(-4.55)	(-5.66)	(-7.54)	(-10.30)	(-6.98)	(-8.99)	(-8.74)
Constant	0.236***	0.398***	0.178***	0.458***	0.553***	0.467***	0.304***	0.462***
	(13.31)	(7.82)	(3.96)	(12.44)	(15.75)	(9.66)	(8.86)	(8.19)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	80,258	79,512	85,824	72,903	54,723	52,642	59,926	46,942
Adj. R-squared	0.143	0.148	0.156	0.132	0.149	0.154	0.154	0.144

Table 5. Investment sensitivity to stock price post IFRS: Country institutional quality. Continued.

Panel B- By accounting quality								
	Full sample				Matched sample			
	GAAP difference		Accounting quality		GAAP difference		Accounting quality	
	High	Low	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Qt-1 x Post x IFRS	0.020**	0.012	0.003	0.021**	0.018**	0.013	0.003	0.021**
	(2.48)	(1.00)	(0.09)	(2.33)	(2.18)	(1.01)	(0.11)	(2.38)
Qt-1 x IFRS	0.019	0.004	0.021	-0.004	0.022*	0.003	0.007	0.000
	(1.69)	(0.34)	(1.03)	(-0.57)	(1.88)	(0.28)	(0.80)	(0.06)
Qt-1	0.030***	0.034***	0.036	0.038***	0.025**	0.035***	0.049***	0.033***
	(3.73)	(6.26)	(1.76)	(13.24)	(2.75)	(11.83)	(7.10)	(6.21)
CF-TA	0.225***	0.097***	0.100***	0.125***	0.211***	0.090***	0.081**	0.121***
	(6.93)	(9.95)	(9.23)	(6.82)	(6.28)	(7.33)	(2.71)	(5.09)
Post IFRS	-0.035	0.034	0.005	-0.102***	-0.028	0.039	0.009	-0.100***
	(-1.29)	(1.31)	(0.12)	(-5.28)	(-1.03)	(1.37)	(0.20)	(-4.91)
IFRS	-0.048***	0.037**	0.030***	0.085***	0.065***	0.035**	-0.002	-0.041**
	(-3.19)	(2.53)	(4.83)	(7.94)	(4.91)	(2.36)	(-0.07)	(-2.27)
Log assets t-1	-0.019***	-0.033***	-0.023**	-0.029***	-0.026***	-0.035***	-0.033***	-0.031***
	(-4.24)	(-11.64)	(-2.35)	(-11.74)	(-6.77)	(-10.06)	(-4.03)	(-11.86)
Constant	0.388***	0.344***	0.246**	0.511***	0.489***	0.357***	0.300***	0.489***
	(7.84)	(11.22)	(2.54)	(19.12)	(10.27)	(12.24)	(4.63)	(10.32)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	83,990	72,869	34,231	113,390	52,556	53,058	20,378	81,786
Adj. R-squared	0.147	0.143	0.173	0.140	0.151	0.145	0.172	0.141

Table 6. Investment sensitivity to stock price post IFRS: Firm-level characteristics

Table shows results from regressions of investment on normalized stock price (Tobin's q) based on different levels of firm-level characteristics for firms from our sample of IFRS adopting countries. The dependent variable, investment, is the ratio of capital expenditure-to-lagged property, plant and equipment. Q is Tobin's q, measured as total assets less book value of equity plus market value of equity divided by book value of total assets; CF-TA is cash flow (net income plus R&D and depreciation and amortization), scaled by lagged total assets; Log $assets_{t-1}$ is the natural logarithm of lagged total assets, reflecting 2010 pries. For the treatment group, Post IFRS is an indicator variable equal to one starting the year after mandatory IFRS adoption in the country and 0 otherwise; for the control group of countries, Post-IFRS is equal to one for years after 2005 and 0 otherwise. IFRS is an indicator variable that equals one for countries that adopted IFRS during our sample period and 0 otherwise. Panel A shows results using two proxies for stock price informativeness: 1) firm-specific return variation, ψ, following Morck et al. (2000), and 2) stock return autocorrelation conditional on trading volume (θ), following Llorente et al. (2002). The sample is divided into groups of high & low price informativeness by computing the change in each measure from t-1 to t+1 around mandatory IFRS adoption in the country; firm with an above (below) median change in each measure are classified as high (low). Panel B shows results using proxies for firms' need of external finance: 1) dependence on external finance, following Rajan and Zingales (1998), and 2) the financing deficit, following Frank and Goyal (2003). High & low need for external finance are based on each of these variables; firms with values above (below) the country median are classified as high (low). Heteroskedasticity robust t-statistics with standard errors clustered at the firm level are shown in parentheses. *, **, *** indicate significance at the 10, 5, and 1% level, respectively.

Panel A – Measures of price informativeness				
	Dependent variable: Capex-to-lagged PPE			
	Measure: $\Delta \psi_{t-1,t+1}$		Measure: $\Delta \theta_{t-1,t+1}$	
	High	Low	High	Low
	(1)	(2)	(3)	(4)
Qt-1 x Post x IFRS	0.028***	0.002	0.022**	0.013
	(2.89)	(0.13)	(2.63)	(0.71)
Qt-1 x IFRS	0.007	0.014	0.012	0.001
	(0.43)	(1.36)	(0.89)	(0.07)
Qt-1	0.030***	0.034***	0.031***	0.039***
	(2.76)	(6.69)	(3.11)	(5.95)
CF-TA	0.189***	0.148***	0.184***	0.146***
	(6.07)	(5.14)	(5.57)	(5.64)
Post IFRS	-0.072***	0.040*	-0.038*	-0.047
	(-3.50)	(1.69)	(-1.76)	(-1.22)
IFRS	-0.083***	-0.158***	-0.031**	-0.053**
	(-4.94)	(-6.61)	(-2.08)	(-2.44)
Log assets t-1	-0.016***	-0.021***	-0.019***	-0.021***
	(-5.26)	(-4.76)	(-6.12)	(-4.97)
Constant	0.344***	0.408***	0.366***	0.384***
	(8.47)	(6.84)	(7.37)	(5.92)
Country fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	43,271	47,605	43,270	44,392
R-squared	0.149	0.154	0.161	0.146

Table 6. Investment sensitivity to stock price post IFRS: Firm-level characteristics. Continued.

Panel B- Need for external finance				
	External finance dependence		Financing deficit	
	High	Low	High	Low
	(5)	(6)	(7)	(8)
Qt-1 x Post x IFRS	0.022*	0.022***	0.021**	0.023**
	(1.83)	(2.90)	(2.55)	(2.05)
Qt-1 x IFRS	-0.008	-0.002	-0.004	-0.004
	(-0.85)	(-0.20)	(-0.49)	(-0.38)
Qt-1	0.045***	0.034***	0.037***	0.034***
	(8.19)	(4.79)	(7.87)	(4.48)
CF-TA	0.170***	0.189***	0.131***	0.149***
	(5.98)	(9.07)	(7.57)	(7.90)
Post IFRS	-0.023	-0.040**	-0.032	-0.040*
	(-0.89)	(-2.22)	(-1.21)	(-1.74)
IFRS	-0.065***	-0.115***	-0.096***	-0.054***
	(-7.60)	(-11.71)	(-12.30)	(-5.63)
Log assets t-1	-0.032***	-0.017***	-0.032***	-0.022***
	(-9.71)	(-6.53)	(-8.94)	(-7.61)
Constant	0.420***	0.304***	0.396***	0.381***
	(9.96)	(9.59)	(8.53)	(11.89)
Country fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	72,967	86,803	75,405	84,365
R-squared	0.145	0.178	0.146	0.141

Table 7. Investment sensitivity to stock price and performance

Table shows results from OLS regressions of two measures of performance: 1) return on assets and 2) sales growth. Performance measures are one-year-ahead (3-year average) and include only years following IFRS adoption. Following Focault and Fresard (2011), Pos is an indicator variable that equals one for firms experiencing a large increase in investment-to-stock price sensitivity. To compute Pos, we run Equation 1 regressions excluding the post IFRS indicator and collect residuals for each firm-year. Pos is equal to one if firm i's residual in year t is greater than 0 and otherwise. Control variables include the natural logarithm of total assets (in US$ mil, reflecting 2010 prices); the ratio of total debt divided by total assets; the cash-to-assets ratio, and a ratio of property, plant and equipment to total assets. All control variables are measured as of t-1. All regressions include year and firm fixed effects to control for other factors that may affect performance. Heteroskedasticity robust t-statistics with standard errors clustered at the firm level are shown in parentheses. *, **, *** indicate significance at the 10, 5, and 1% level, respectively.

Investment-to-stock price sensitivity and performance				
	(1)	(2)	(4)	(5)
VARIABLES	ROA	ROA	Sales growth	Sales growth
	1-year ahead	3-year average	1-year ahead	3-year average
Pos	0.006***	-0.002	0.133***	0.088***
	(4.78)	(-0.85)	(36.40)	(6.39)
Log assets t-1	0.014***	0.019***	-0.022***	-0.035***
	(28.94)	(20.50)	(-21.56)	(-6.71)
Debt-to-assets t-1	-0.081***	-0.081***	0.039***	0.103*
	(-15.76)	(-8.27)	(3.73)	(1.96)
Cash-to-assets t-1	-0.153***	-0.050***	0.128***	0.159
	(-14.13)	(-2.97)	(5.82)	(1.61)
PPE-to-assets t-1	0.041***	0.033***	0.043***	-0.082
	(9.01)	(3.98)	(3.87)	(-1.39)
Year fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Observations	71,819	25,038	70,229	23,017
R-squared	0.127	0.229	0.165	0.191

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