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# **IFRS adoption in Europe and Investment-Cash Flow Sensitivity: Outsider *versus* Insider Economies**

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### **Abstract:**

This study examines the economic consequences of the mandatory adoption of IFRS in the EU countries by showing which types of economies have the largest reduction in investment-cash flow sensitivity post-IFRS. We also examine whether the reduction in investment cash flow sensitivity depends on firm size as well as economy type.

Using the Leuz et al. (2003) classification of economies, we first hypothesize that the investment-cash flow sensitivity of insider economies is higher than that of outsider economies pre-IFRS. Second, we hypothesize that IFRS reduces the investment-cash flow sensitivity of insider economies more than that of outsider economies. The results of our main model support these hypotheses.

In further tests we partition our insider economies sample by firm size. We find that the small and medium-sized firms operating in insider economies had the highest sensitivity of investment to lagged cash flow pre-IFRS, and that they are no longer sensitive to lagged cash flow post-IFRS.

Overall, the results suggest that IFRS adoption may have improved the functioning of capital markets in relation to small firms in insider economies. By reducing the dependence of such firms on internal cash flows for investment financing, IFRS may have moved us closer to a pure neoclassical setting in which internally generated cash flows play no direct role with regard to investment decisions.

**Keywords:** IFRS, Investment-Cash Flow Sensitivity, Insider Economies, Outsider Economies  
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## **1. Introduction**

Starting from 2005, listed firms in the European Union (EU) countries are required to prepare their consolidated financial statements according to the International Financial Reporting Standards (IFRS). Several studies attempt to model the anticipated economic consequences of IFRS adoption prior to their actual adoption (Armstrong et al. 2007; Comprix et al. 2003; Pae et al. 2006). The results of these studies suggest that capital markets expected net benefits to flow from IFRS adoption. This paper focuses on an outcome of IFRS adoption rather than expected outcomes. It asks, with regard to investment efficiency, which types of firms within which types of economies benefited most from IFRS adoption?

Several studies examine the association between information quality and investment efficiency. The results of these studies show that investment efficiency is positively associated with accounting quality (Biddle and Hilary 2006; Verdi 2006), disclosure level (Khurana et al. 2006), and stock price efficiency (Durnev et al. 2004). When combined with the empirical evidence suggesting that IFRS adoption is associated with higher quality accounting (Barth et al. 2007) as well as the empirical evidence that mandatory disclosure improves stock price efficiency (Ferrell 2003), these results suggest that the mandatory adoption of IFRS should improve investment efficiency in the EU countries.

Furthermore, the effects of IFRS adoption are likely to vary across economies and firms. Firms operating in high quality accounting regimes prior to the adoption of IFRS should have less to gain from IFRS implementation. For example, firms that were already committed to maintaining high accounting quality within a high quality accounting regime, may have had little to gain from IFRS adoption. This line of thinking leads us to consider the following two research question

- (1) Does IFRS adoption improve the investment efficiency of some types of economy more than other types?
- (2) Controlling for economy type, does IFRS adoption improve the investment efficiency of a certain types of firms more than other types of firms?

In order to answer these questions, we follow Leuz et al. (2003) who classify economies based upon several institutional features into *outsider economies*, which are economies with large stock markets, dispersed ownership, strong outside investor rights, high disclosure levels and strong legal enforcement, and *insider economies*, which are economies with small stock markets, highly concentrated ownership, weak outside investor rights, poor disclosure levels and weak legal enforcement.<sup>1</sup> Insider economies provide less protection for ordinary external investors giving rise to significant costs due to moral hazard and adverse selection (see e.g. Dyck and Zingales (2002)).

Furthermore, Leuz et al. (2003) show that the accounting and disclosure quality of insider economies is lower than that of outsider economies. Thus investors in insider economies lack the information they need to mitigate any agency and adverse selection problems that arise in such economies as a result of their weak institutional features.

If it is true that insider economies suffer from greater costs of moral hazard and adverse selection, then it seems reasonable to predict that a major change in accounting and disclosure, such as the implementation of IFRS throughout the EU, might affect outsider EU economies differently from insider EU economies. For this reason we test to see if the implementation of IFRS had a differential impact on a measure of investment efficiency for insider and outsider EU economies.

Firstly, we compare the pre-IFRS investment efficiency, proxied by investment-cash flow sensitivity, of insider and outsider economies. The literature on investment cash-flow sensitivity predicts and finds that firms for which the perceived adverse selection and agency problems are severe face tighter financing constraints, i.e. a larger cost differential between internal and external funds (e.g. Fazzari et al. 1988).<sup>2</sup> Consequently, such firms have to rely more on internally generated cash flows to finance their investment due to their cost advantage over external funds. Moreover any shortage in such firms' internal cash flows leads to an underinvestment problem, i.e. lower investment efficiency.<sup>3</sup>

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<sup>1</sup> In fact, Leuz et al. (2003) classify economies into three groups. The third one is insider economies with medium stock markets, concentrated ownership, weak outside investor rights, average disclosure level but with strong legal enforcement. We exclude this group for reasons explained in footnote no. 6.

<sup>2</sup> See Hubbard (1998) for a comprehensive review of this literature.

<sup>3</sup> In fact, investment can be sensitive to internally generated cash flows not only because firms are financially constrained but also because firms might have excess cash that managers do not want to distribute to investors, thereby leading to an overinvestment problem, i.e. lower investment efficiency. This is explained in Section 3.2.

Combining the insight that investment-cash flow sensitivity is greater for firms with severe adverse selection and agency problems with the insight that insider economies exhibit generally higher levels of adverse selection and moral hazard than outsider economies leads us to predict that insider economies should have higher investment-cash flow sensitivity than outsider economies before the mandatory adoption of IFRS. Our results are consistent with this prediction using both current and lagged cash flow as proxies for internal liquidity.

Secondly, we compare the post-IFRS investment-cash flow sensitivities of insider and outsider economies. The results of prior studies show that higher quality accounting enhances investment efficiency by mitigating agency problems and adverse selection (Biddle and Hilary 2006, 2007; Verdi 2006). When combined with the empirical evidence that IFRS is associated with higher quality accounting (Barth et al. 2007), these results suggest that the mandatory adoption of IFRS might play a role in enhancing investment efficiency by improving accounting quality that, in turn, mitigates agency problems and adverse selection. This role is expected to be more important in settings where there is a higher likelihood of agency problems and adverse selection and where there are lower quality accounting and poor disclosure levels before the mandatory adoption of IFRS. Since this is the case with insider economies, we expect a stronger effect of IFRS on reducing investment-cash flow sensitivity for those economies. Thus, we predict that IFRS reduces investment-cash flow sensitivity more in insider than in outsider economies. Our results support this prediction.

We extend our analysis by considering the possibility that the results may be sensitive to firm size as well as economy type. Firstly, combining our prediction that insider economies have the highest investment-cash flow sensitivity pre-IFRS with the empirical evidence that small and medium firms in general face liquidity constraints and have higher investment-cash flow sensitivity (Gilchrist and Himmelberg 1995; Himmelberg and Petersen 1994) leads us to further predict that the small and medium firms operating in insider economies should have the highest investment-cash flow sensitivity pre-IFRS adoption.

Secondly, we predict that IFRS adoption will have a stronger effect on reducing the investment-cash flow sensitivity of small to medium sized firms operating within insider economies than the large firms operating in such economies.

Consistent with these predictions, we find that (1) the small and medium firms have the highest sensitivity of investment to lagged cash flow pre-IFRS adoption, and (2) they have the largest reduction in the sensitivity to lagged cash flow post-IFRS adoption.

Our study is subject to three main caveats. First, our proxy for investment opportunities, i.e. the market to book ratio, might be affected by differences in accounting standards among insider and outsider economies that exist before IFRS adoption. Second, the reduction in sensitivity might have occurred not only because of IFRS, but also due to simultaneous changes in institutional and enforcement mechanisms in the EU. Thus, the reductions observed might be the outcome of IFRS implementation or other institutional changes or the joint effects of both sets of changes working together. Third, the time period after IFRS adoption is not enough to draw firm conclusions about the effect of IFRS and more data is still needed before concluding confidently that IFRS has a positive effect. However, the results are indicative and in the right direction.

Since we document that after the adoption of IFRS there is a reduction in investment-cash flow sensitivity [a measure that has been shown by prior studies to be negatively correlated with accounting quality (Biddle and Hilary 2006)], the results suggest that IFRS adoption relaxes the financing constraints by improving accounting quality and, accordingly, starts to take us back to the neoclassical setting in which Tobin's  $Q$ , as a proxy for investment opportunities, should be the only determinant of investment and internally generated cash flows should play no direct role with regard to investment decisions (Tobin 1969; Hayashi 1982).

The remainder of the paper is organised as follows. Section 2 shows how our study relates to prior literature. Section 3 develops the hypotheses. Section 4 presents the empirical model; and describes the sample and data. Section 5 provides the empirical results and some robustness tests. Finally, Section 6 concludes the paper.

## **2. Related Research**

Our paper extends three streams of research. A summary of each one of those streams and how our study complements each one of them now follows.

## ***2.1. Economic consequences of the mandatory adoption of IFRS***

Our research is related to the vast literature on the economic consequences of mandated changes of accounting standards generally, and in particular to the stream of research that examines the economic consequences of the mandatory adoption of IFRS in Europe.<sup>4</sup> For example, Armstrong et al. (2007) attempts to infer investor perceptions about the mandatory adoption of IFRS in EU countries by examining the European market reaction, as measured by market-adjusted returns, to events (from 2002 to 2005) leading to such mandatory adoption. Similar to Armstrong et al. (2007) but using early events announced during 2000-2002, Comprix et al. (2003) also examine the European market reaction, as measured by abnormal returns, to events that increase the likelihood of the mandatory adoption of IFRS in the EU countries. Unlike Armstrong et al (2007) and Comprix et al (2003) who perform events study, Pae et al. (2006) measure the reduction in equity value discounts for EU firms with higher agency costs due to concentrated ownership *versus* other EU firms in 2003 (when the mandatory adoption of IFRS by EU firms in 2005 was certain) *versus* 1999 (when the mandatory adoption of IFRS was not yet certain).

The above-mentioned studies are related to the period preceding the actual adoption of IFRS and their results are mainly inferences about expected benefits from adopting IFRS. However, our study shows an actual benefit (i.e. improved investment efficiency) reaped post-IFRS. In addition, the results of our study confirm the expectations of those studies as follows. Since firms operating in insider economies (and in particular the small and medium firms) have both lower pre-adoption information quality and higher likelihood of severe pre-adoption information asymmetry than outsider economies, our result that the investment cash flow sensitivity of firms operating in insider economies (and in particular the small and medium firms) is reduced more than that of firms operating in outsider economies post-IFRS is consistent with (1) the finding of Armstrong et al. (2007), that investor reaction is more positive for firms with lower pre-adoption information quality and for firms with higher pre-adoption information asymmetry, (2) the finding of Comprix et al. (2003), that investors anticipated that firms in countries expected to have the greatest increases in the nature and level of disclosure as a result of adopting IFRS to enjoy the greatest reduction in information

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<sup>4</sup> See Leuz and Wysocki (2007) for a review of this literature.

asymmetry and in their cost of capital, and (3) the expectation of Pae et al. (2006) that IFRS will benefit more the minority shareholders of firms with the most severe perceived information asymmetries. Thus, this result supports the conclusion of Armstrong et al. (2007) that investors in European capital markets expect net benefits from the adoption of IFRS associated with increased information quality.

In addition, since insider economies are the economies with weak investor protection rights, whereas outsider economies are the economies with strong investor protection rights. Our result that IFRS adoption reduces the investment-cash flow sensitivity of insider economies more than that of outsider economies is consistent with the conclusion of Hope et al. (2006), that countries with strong investor protection expect little incremental benefit from IFRS adoption.

Moreover, since insider economies are the economies with the most concentrated ownership, our result that IFRS adoption reduces more the investment-cash flow sensitivity of insider economies than that of outsider economies is consistent with the conclusion of Pae et al. (2006) that investors' expectations of increased transparency due to IFRS adoption is responsible for mitigating agency costs associated with concentrated ownership. Finally, since small and medium firms operating in insider economies are (1) less likely to be followed by financial analysts; (2) are more likely to have poor quality accounting and (3) more likely to have families as their largest shareholders, our result that IFRS adoption reduces more the investment-cash flow sensitivity of small and medium firms operating in insider economies is consistent with the finding of Pae et al. (2006) that when the mandatory adoption of IFRS by EU firms in 2005 was certain, there are higher reductions in the equity value discount for firms with families as their largest shareholders, firms that are earnings-management-intensive prior to the proposal of IFRS adoption, and firms with low analyst following.

However, our results do not support the finding of Armstrong et al. (2007) that investor reaction is more positive for firms in common law countries, since our results show that the four countries (i.e. Italy, Spain, Portugal, Greece) constituting our insider economies sample, which are code law countries, on average benefited more from IFRS than the two countries constituting our outsider economies sample, which one of them is a common law country (i.e. United Kingdom) while the other one is a code law country (i.e. Norway). Excluding Norway does not affect our reported results. Although Leuz et al. (2003) point out that insider and

outsider economies closely parallel code and common law countries respectively, we cannot conclude that the countries constituting our insider economies sample benefited more from IFRS adoption because they are code law countries. Concluding this confidently requires the comparison of code law countries and common law countries that belong to the same type of economy (either insider or outsider economy) so we can hold the effect of other influential variables constant. Thus, whether reaping benefits from IFRS adoption is associated with countries' legal tradition is an interesting research question that requires further research.

Unlike the studies of Armstrong et al. (2007), Comprix et al. (2003) and Pae et al. (2006) that examine the economic consequences of mandatory IFRS in the EU countries before its actual adoption, Daske et al. (2007) examine the economic consequences of mandatory IFRS after its actual adoption in 26 countries around the world, and not only in the EU countries. They find that market liquidity and firm values increase around the mandatory adoption of IFRS. They find that these capital market effects (i) are stronger in countries that have larger differences between local GAAP and IFRS and (ii) exist only in countries with strong legal enforcement and reporting incentives.

Our results are also related to the results of Daske et al. (2007) as follows. First, since the four (two) countries constituting our insider (outsider) economies sample are classified by Daske et al. (2007) as countries with large (small) differences between local GAAP and IFRS, our result that insider economies have the largest reduction in the sensitivity of their investment to lagged cash flow after IFRS adoption is consistent with finding no. (i) above.

Second, since the four countries constituting our insider economies sample are classified by Daske et al. (2007) as countries with weak legal enforcement and reporting incentives, our result that the sensitivity of insider economies is reduced after IFRS adoption seems inconsistent with finding no. (ii) above. However, we should be careful about interpreting whether our results are inconsistent with this finding since the EU has revised their institutional and enforcement mechanisms. Consequently, the legal enforcement and reporting incentives of our insider economies countries might have been enhanced, and if this is the case our results will be consistent with Daske et al. (2007).

In fact, we conjecture that there is a higher probability that the reporting incentives of insider economies are improved. The explanation behind this is as follows. Since Biddle and Hilary

(2006) document a negative association between investment-cash flow sensitivity and accounting quality, our result that the investment-cash flow sensitivity of insider economies is reduced after IFRS implies that accounting quality might have been improved. This implied improvement in accounting quality, consequently, implies that the reporting incentives of firms in insider economies might have been improved as well since the empirical evidence in Christensen et al. (2007) suggests that mandatory IFRS adoption improves accounting quality only when firms have incentives to adopt. However, whether the legal enforcement, reporting incentives, and accounting quality of insider economies have been enhanced is still a research issue that needs further exploration.

Finally, since the countries constituting our sample are EU countries, our result that IFRS reduces the sensitivity of these countries is consistent with the finding of Daske et al. (2007) that there is a positive effect for IFRS on EU countries.

## ***2.2. Finance and economic growth***

Our study is also related to the stream of research that examines the association between financial market development (and the associated institutions) and economic growth. Several studies, for example King and Levine (1993) and Levine and Zeros (1998), show that developed financial markets facilitate economic growth. Subsequent studies attempt to examine the rationale behind such a relationship. For example, Rajan and Zingales (1998) show that industries that rely more on external financing grow faster in countries with more developed financial markets (as measured by the quality of accounting standards). Demirgüç-Kunt and Maksimovic (1998) find that the proportion of firms growing at rates exceeding the maximum growth rate that can be attained using only internal finance is higher in countries with strong legal enforcement and more developed financial markets. Both Demirgüç-Kunt and Maksimovic and Rajan and Zingales (1998) interpret their results as financial development reduces the cost of external finance to firms, and accordingly it is predicted that, as Rajan and Zingales (1998, 561) put it, “financial development liberates firms from the drudgery of generating funds internally” and, as Demirgüç-Kunt and Maksimovic (1998, 2108) put it, “as financial markets develop, the role of established firms’ internal capital diminishes.” Our results that outsider economies have lower investment cash flow sensitivity than insider economies provide empirical support for this prediction, since outsider (insider)

economies are the economies with more (less) developed financial markets, strong (weak) legal enforcement and higher (lower) quality accounting.

### ***2.3. Financing constraints and investment-cash flow sensitivity***

Finally, our study is related to the stream of research that examines the relation between financing constraints and investment-cash flow sensitivity. In their seminal paper, Fazzari et al. (1988) find that firms facing tighter financing constraints, i.e. a larger cost differential between internal and external financing as proxied by dividend payout ratio, have higher investment–cash flow sensitivities after controlling for their growth opportunities. A large body of subsequent empirical studies finds results consistent with those of Fazzari et al. (1988) using other proxies for being financially constrained, such as the existence of bond or commercial paper ratings and access to public debt markets (Calomiris et al. 1995; Gilchrist and Himmelberg 1995), membership in industrial groups (Hoshi et al. 1991), banking relationships (Houston and James 2001), firm size (Gilchrist and Himmelberg 1995), and firm age and ownership dispersion (Schaller 1993).<sup>5</sup>

We complement those prior studies in two ways. Firstly, unlike prior studies that allow the specification of their models to vary among firms within the same economy, we show a role for liquidity, as measured by internally generated cash flows, to influence investment by allowing the specification of the model to vary among economies. Secondly, we suggest a new proxy for financing constraints which is the type of the economy to which a firm belongs, i.e. insider *versus* outsider economies. Consistent with the validity of this proxy our results indicate that insider economies have higher investment cash flow sensitivity using both current and lagged cash flow.

## **3. Hypothesis Development**

### ***3.1. Investment-cash flow sensitivity of insider versus outsider economies: pre-IFRS***

Leuz et al. (2003) group 31 countries into three clusters according to some institutional characteristics that are drawn from La Porta et al. (1997, 1998). Those clusters and their

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<sup>5</sup> See Hubbard (1998) for a review of this literature.

related features are as follows: (1) outsider economies with large stock markets, dispersed ownership, strong outside investor rights, high disclosure level and strong legal enforcement; (2) insider economies with medium stock markets, concentrated ownership, weak outside investor rights, average disclosure level but with strong legal enforcement;<sup>6</sup> and, (3) insider economies with small stock markets, highly concentrated ownership, weak outside investor rights, poor disclosure level and weak legal enforcement.<sup>7</sup>

Since Dyck and Zingales (2002) find that private control benefits are negatively associated with investor protection and legal enforcement and they are observed in countries with small capital markets and concentrated ownership, one would expect that there are greater private control benefits acquired by managers (or controlling owners) in insider economies (in particular the last cluster with weak legal enforcement), as opposed to outsider economies. Accordingly, there is a higher likelihood of the funds of non-controlling investors being expropriated in insider economies. In addition, particularly as a consequence of the poor disclosure level in insider economies, there is also a higher likelihood of issuing overpriced securities to outside investors, i.e. an adverse selection problem, in those economies.

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<sup>6</sup> We exclude the insider economies with strong legal enforcement for three reasons as follows. First, it includes two countries that might lead to misleading inferences which are Germany, in which several companies already adopted IFRS voluntarily before the mandatory adoption of IFRS, and Switzerland, which is not committed to follow the EU Directives (Armstrong et al. 2007). Second, it includes three countries (which are Belgium, France, and Germany) that have been shown by Bond et al. (1997) to have lower sensitivity of investment to internal liquidity than the UK (one of our two outsider economies) since these three countries have more bank-oriented financial systems whereas the UK has a more market-oriented financial system. Third, this group is considered as a semi-insider economy, thus it's better to compare a pure insider economy to a pure outsider economy. However, we recommend the use of this group for future research as it is a good setting to explore some interesting issues that extend our current study. For example, it's a good setting to show whether the strong legal enforcement feature of those economies is a substitute for their deficiencies as being insider economies such as the weak outside investor rights or the average disclosure level. As La Porta et al. (1998, 1140) put it "a strong system of legal enforcement could substitute for weak rules since active and well-functioning courts can step in and rescue investors abused by the management." If this is the case, the direction of their investment-cash flow sensitivities is expected to be closer to those of outsider economies. On the other hand, if their sensitivities are similar to those of insider economies with weak legal enforcement, this will be an indicator that the strength of the legal enforcement does not really matter. In addition, if their sensitivities are significantly reduced post-IFRS like those of insider economies with weak legal enforcement, this will show that there is a benefit reaped from IFRS adoption regardless of the strength of the legal enforcement. But if their sensitivities are reduced more than those of insider economies with weak legal enforcement post-IFRS, this will indicate that having a strong legal enforcement enhances the benefits reaped from IFRS adoption. We leave examining these issues to future research.

<sup>7</sup> Leuz et al. (2003) measure the institutional variables that discriminate their clusters as follows. The importance of equity markets is measured by a country's average rank based on: (1) the ratio of the aggregate stock market capitalization held by minorities to gross national product; (2) the number of listed domestic firms relative to the population; and, (3) the number of IPOs relative to the population. The outside investor rights are measured by an anti-director rights index that captures the voting rights of minority shareholders. The legal enforcement measure per country is the average score across three variables: (1) efficiency of judicial system; (2) rule of law; and, (3) corruption level. Ownership concentration is measured as the median percentage of common shares owned by the largest three shareholders, in the ten largest privately owned non-financial firms. Finally, the Disclosure Index measures the inclusion or omission of 90 accounting items in firms' 1990 annual reports.

Moreover, the finding of Leuz et al. (2003), that outsider economies have the lowest level of earnings management and insider economies with weak enforcement, on the other hand, have the highest level of earnings management, suggests that the accounting quality of insider economies is lower than that of outsider economies. In addition, their descriptive statistics also show that the average disclosure level of insider economies is lower than that of outsider economies. Taken together, investors in insider economies lack the mechanisms (i.e. accounting and disclosure) for monitoring managers and reducing information asymmetry, and consequently, they lack the ability to mitigate any agency and adverse selection problems that might arise in those economies as a result of their weak institutional features.<sup>8</sup>

Thus, rational investors in insider economies are expected to withhold their capital or increase their required rate of return (i.e. the cost of external finance) as a result of both (1) the greater likelihood of facing severe adverse selection and agency problems due to the high private control benefits enjoyed by managers in these economies; and (2) the lack of effective tools to mitigate those adverse selection and agency problems.

Theoretical models explain how adverse selection and agency problems might lead to capital rationing or higher cost of external finance as follows. Concerning the adverse selection problem, Myers and Majluf (1984) suggest that if managers know more information about the value of the firm and its investment opportunities than investors do, rational investors will underprice the firm's securities. In other words, they will increase their required rate of return by including a premium [known as the lemons premium (Akerlof 1970)] to compensate them for the risk of buying an overpriced securities, thereby decreasing the amount of external capital demanded by managers due to its higher cost. Regarding agency problems, Jensen and Meckling (1976) suggest that external financing reduces the amount of equity held by managers, and accordingly, those managers have more incentives to reallocate wealth from

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<sup>8</sup> Prior literature shows how disclosure and accounting are important tools for mitigating information asymmetry and monitoring managers. One stream of research suggests that commitments to higher disclosure level mitigate adverse selection costs by reducing information asymmetry between managers and investors and between informed and uninformed investors (Diamond and Verrecchia 1991). Several studies support this empirically. For instance, Leuz and Verrecchia (2000) show that a commitment to increased levels of disclosure reduces information asymmetry. See Healy and Palepu (2001) for a review of this literature. Another stream of research suggests that financial accounting information can mitigate agency problems since it can be used as a direct input into compensation contracts and can be used by investors as a monitoring mechanism (Lambert 2001; Bushman and Smith 2001). Recently, both Bens and Monahan (2004) and Hope and Thomas (2007) show empirically that disclosure plays a crucial role in monitoring managers.

outside investors to themselves. “This *ex post* incentive problem reduces the amount of capital supplied *ex ante*” as Biddle and Hilary (2006, 967) put it or alternatively investors, in response, will require a higher return by adjusting the risk premium upward to compensate them for the costly monitoring of managerial actions.

Therefore, in both cases, there will be a gap between the cost of external financing (which contains a premium for either adverse selection or agency problem as explained above) and internally generated funds or even the possibility that external funds are withheld.<sup>9</sup> Accordingly, managers find it more attractive to finance their investment with their internally generated cash flows due to their cost advantage over external financing or they might find no other options apart from the reliance on internal financing due the probable withholding of external funds. In either case, any shortage in internal funds will lead to an underinvestment problem (Hubbard 1998).

Hence, it is theoretically predicted that if the cost differential between internal and external funds is significant, capital investment will be highly correlated with internally generated cash flows (Hubbard 1998). In an attempt to empirically investigate this hypothesis, Fazzari et al (1988) test whether the determinants of investment differ between firms for which the gap between the cost of internal financing and external financing differ, i.e. is there a difference in the investment behaviours of firms that are not financially constrained, and firms for which the cost of external financing exceeds the cost of internal financing, i.e. firms that are financially constrained. They show that the capital investment of the most constrained firms is more sensitive to their internally generated cash flows than that of the least constrained firms. A subsequent stream of studies provide results consistent with Fazzari et al (1988).<sup>10</sup> However, both Kaplan and Zingales (1997) and Cleary (1999) provide opposing evidence showing that the least constrained firms have the highest investment-cash flow sensitivity. That led to an ongoing debate as to whether investment-cash flow sensitivity provides a useful evidence about the presence of financing constraints (Fazzari et al. 2000; Kaplan and Zingales 2000).

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<sup>9</sup> In his analysis to show the link between internally generated cash flows and capital investment, Hubbard (1998) illustrates that the firm perceives the opportunity cost of internal funds to be the market interest rate, and the firm can borrow and lend at that interest rate in the capital market. Thus, without the lemons premium, the cost of both internal and external financing will be the same. In other words, internal and external funds are perfect substitutes in perfect capital markets.

<sup>10</sup> See Hubbard (1998) for a review of this literature.

To provide an explanation for this puzzle, Allayannis and Mozumdar (2004) show that the findings of both Kaplan and Zingales (1997) and Cleary (1999) are driven by the impact of including negative cash flow observations (as a proxy for financially distressed firms) in their samples.<sup>11</sup> They show that the inclusion of the negative cash flow observations biased the results of both Kaplan and Zingales (1997) and Cleary (1999) due to the fact that when a firm is in a financially distressed situation, investment cannot respond to cash flow. They explain the justification behind this result as follows. When firms' cash shortfall is severe, they are pushed into financial distress. Accordingly, they are able to make only the minimum essential investments. Any further reduction in their investments in response to further declines in their internally generated cash flows is no longer possible. Therefore, such firms' investment–cash flow sensitivities are very low. Since the incidence of the negative cash flow observations is higher in the most financially constrained firms than in the least financially constrained firms, the estimated investment-cash flow sensitivity is consequently the lowest for the most constrained firms as documented by both Kaplan and Zingales (1997) and Cleary (1999).

Indeed, when Allayannis and Mozumdar (2004) exclude the negative cash flows observations from the sample of both Kaplan and Zingales (1997) and Cleary (1999), they find that the estimated investment-cash flow sensitivities for the most financially constrained firms are much higher, and the results are much closer to those in Fazzari et al (1988) and other subsequent studies that document a higher investment cash flow sensitivity for the most financially constrained firms. A similar point to that of Allayannis and Mozumdar (2004) has been made by Fazzari et al (2000) who argue that the financially constrained firms in the sample of Kaplan and Zingales (1997) include some years of financial distress; and ignoring them causes a downward bias in the cash flow coefficient.

In summary, the likely private control benefits enjoyed by managers in insider economies coupled with the lack of adequate mechanisms for monitoring those managers and mitigating information asymmetry by investors increase the likelihood of having severe adverse selection and agency problems in those economies. Consequently, those managers in insider economies will face a high cost of external finance or a capital withholding problem, and in turn they will find it more attractive to finance their investment with their internally generated

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<sup>11</sup> Allayannis and Mozumdar (2004) present evidence on firm characteristics such as growth rates, debt ratings, debt ratios and dividend changes that confirm the validity of negative cash flow observations as a proxy for weak financial health.

cash flow due to its cost advantage over external financing or they will find no option apart from the reliance on internal financing due to the withholding of external capital. When combined with the literature on investment-cash flow sensitivity in conjunction with the recommendation of Allayannis and Mozumdar (2004) to exclude firms in distress (as proxied by negative cash flow observations), it can be hypothesised that:

*H1: Firms operating in insider economies have higher investment cash flow sensitivity than those operating in outsider economies before the mandatory adoption of IFRS.*

### ***3.2. Investment-cash flow sensitivity of insider versus outsider economies: post-IFRS***

Biddle and Hilary (2006) examine the association between accounting quality and investment efficiency as proxied by investment-cash flow sensitivity. They argue that if managers could commit to reveal all of their private information, investors would not ration capital for fear of purchasing overpriced securities and if higher accounting quality permitted perfect monitoring by outsider investors, there would be no agency problem. Their arguments suggest that higher accounting quality overcomes the capital rationing or the high cost of external finance problem by mitigating either the adverse selection or the moral hazard problem, and accordingly, higher accounting quality may serve to reduce investment-cash flow sensitivity due to the illustrated link (in Section 3.1) between capital rationing or cost of external finance and investment cash flow sensitivity. Thus, they hypothesize that higher accounting quality reduces investment cash flow sensitivity. For their cross-country tests, they measure accounting quality using four country-specific measures of accounting quality which are earnings aggressiveness, loss avoidance, earnings smoothing, and timeliness. While for their within country tests, they use firm-specific measure of accruals quality. Consistent with their prediction, Biddle and Hilary (2006) find that higher accounting quality reduces the investment-cash flow sensitivity both across and within countries.

However, Biddle and Hilary (2006) do not address whether high quality accounting mitigates the under-investment or over-investment problem. In fact, investment can be associated with internally generated cash flows not only because firms are financially constrained (thereby leading to underinvestment as explained in section 3.1) but also because firms might have excess cash that managers do not want to distribute to investors (thereby leading to

overinvestment).<sup>12</sup> Unlike Biddle and Hilary (2006), subsequent studies address the underinvestment or over-investment problem as follows. For example, Verdi (2006) examines the relation between accounting quality (using measures of accruals quality) and both underinvestment and overinvestment. He predicts the expected investment as a function of growth opportunities (as proxied by Tobin's  $Q$  and sales growth). He defines underinvestment (overinvestment) as negative (positive) deviations from this expected investment. He finds that accounting quality is negatively associated with both underinvestment and overinvestment.

Further, Verdi (2006) finds mixed evidence supporting the prediction that the negative relation between accounting quality and underinvestment is stronger for financially constrained firms (due to adverse selection costs). However, he finds that accounting plays a more important role in monitoring managers of firms with a higher likelihood of agency problems since his results show that the negative relation between accounting quality and overinvestment is stronger for those firms. Accordingly, he concludes that the impact of accounting quality on overinvestment is due to the mitigation of agency costs. Consistent with the latter result, Biddle and Hilary (2007) conclude that higher quality accounting serves primarily to mitigate over-investment rather than underinvestment since they find that firms with higher quality accounting invest less, and have (a) higher capital investment productivity, (b) higher technological efficiency and (c) higher returns on assets. Biddle and Hilary (2007) also show that accounting quality has a stronger effect in reducing investment-cash flow sensitivity for firms with greater liquidity constraints.

Taken together, the results of both Biddle and Hilary (2006, 2007) and Verdi (2006) provide clear-cut evidence that accounting quality plays a crucial role in enhancing investment

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<sup>12</sup> Jensen (1986) presents a free cash flow theory that suggests an explanation behind such overinvestment as follows. His theory suggests that managers 'with free cash flow' grow their firms beyond their optimal size since returning such excess cash to investors reduces the resources under managers' control, thereby reducing their power. In addition, reducing the available internal cash exposes managers to several problems, such as the monitoring of outside capital suppliers that occurs when managers must raise new capital; the probability that external capital will be unavailable; or available only at a high cost. By growing the firm using internal funds rather than external financing, managers can avoid all of these problems. Consistent with Jensen's (1986) theory, Blanchard et al. (1994) show empirically that managers, who receive a cash windfall that does not change the investment opportunity set, choose to keep such cash windfall inside the firm rather than return it to investors, and more surprisingly, they then use it to acquire other firms in unrelated lines of business that often fail. They point out that their evidence is inconsistent with the 'perfect capital market model', which predicts that the cash windfalls should be returned to investors when investment opportunities inside the firm are not attractive. There are other models that provide other explanations behind such overinvestment behaviour, for a review of those models see Hope and Thomas (2007).

efficiency by mitigating adverse selection and agency problems. In addition to accounting quality, other studies show that disclosure level (Khurana et al. 2006) and stock price efficiency (Durnev et al. 2004) also enhance investment efficiency.<sup>13</sup> Combining all this evidence with the evidence in Barth et al. (2007) that IFRS adoption improves accounting quality and the evidence in Ferrell (2003) that mandatory disclosure improves stock price efficiency, suggest an important role for IFRS adoption in enhancing investment efficiency. This role should be more important in economies where there is a higher likelihood of adverse selection and agency problems. Since there is higher likelihood of adverse selection and agency problems in insider economies compared to outsider economies as explained in section 3.1, we expect a stronger effect of IFRS adoption on investment-cash flow sensitivity in insider economies. Thus, it can be hypothesised that:

*H2: IFRS adoption reduces the investment-cash flow sensitivity of firms operating in insider economies more than those operating in outsider economies.*

### ***3.3. Investment-cash flow sensitivity of the small and medium firms in insider economies: pre-IFRS versus post-IFRS***

We extend our set of hypotheses to consider the differential impact of IFRS on small versus large firms.

Firstly, since small and medium firms are more likely to be young firms, less well-known, less followed by financial analysts, with more concentrated ownership, with lower quality accounting and disclosure level and hence more vulnerable to capital market imperfections induced by adverse selection and moral hazard problems, they are more likely to be financially constrained. Consistent with this expectation, a vast number of studies find that small firms face liquidity constraints and have higher investment-cash flow sensitivity (Gilchrist and Himmelberg 1995; Himmelberg and Petersen 1994). Combining this with our prediction, explained in section 3.1, that insider economies are expected to have the highest investment-cash flow sensitivity pre-IFRS adoption, lead us to hypothesize that:

*H3: The small and medium firms operating in insider economies have the highest investment-cash flow sensitivity pre-IFRS adoption.*

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<sup>13</sup> Durnev et al. (2004) show that investment efficiency, as measured by the deviation in Tobin's marginal  $q$ , is positively associated with the informativeness of stock prices, as measured by the magnitude of firm specific variation in stock returns. Khurana et al. (2006) find that a firm's externally financed growth rate is positively associated with AIMR disclosure scores, suggesting that disclosure improves investment efficiency.

Secondly, since we predict, as explained in section 3.2., that the mandatory adoption of IFRS will play a crucial role in reducing investment-cash flow sensitivity by improving accounting quality that, in turn, mitigates agency problems and adverse selection. This role is expected to be more important in settings where there is a higher likelihood of agency problems and adverse selection. Since this is the case with insider economies and in particular with the small and medium firms which are more likely to benefit from the ease of benchmarking themselves against firms in other countries as a result of IFRS, we expect a stronger effect of IFRS on reducing investment-cash flow sensitivity of these firms. Thus, it can be hypothesised that:

*H4: IFRS adoption reduces more the investment-cash flow sensitivity of the small and medium firms operating in insider economies.*

## 4. Empirical Setting

### 4.1. Investment-Cash Flow Sensitivity Model

Following Fazzari et al. (1988), Hoshi et al. (1991), Cleary (1999) and other subsequent related studies, we estimate the following investment cash flow sensitivity model using firm-year fixed effect in order to test our hypotheses.<sup>14</sup>

$$\frac{I_{it}}{TA_{it-1}} = \frac{\beta_0}{TA_{it-1}} + \beta_1 \frac{CF_{it}}{TA_{it-1}} + \beta_2 MTB_{it} + \varepsilon_{it}$$

where,  $I_{it}$  is the capital expenditures for firm  $i$  in year  $t$ .  $TA_{it-1}$  is the total assets for firm  $i$  in year  $t-1$ .  $MTB_{it}$  is the market to book ratio of assets for firm  $i$  at the beginning of period  $t$  as a proxy for its Tobin's  $Q$ , and equals to [total assets in year  $t-1$  – book value of equity in year  $t-1$  – deferred taxes in year  $t-1$  + market value of equity in year  $t-1$  (i.e. number of share outstanding multiplied by market price at year  $t-1$ ) / total assets in year  $t-1$ ].  $CF_{it}$  represents cash flow to firm  $i$  in year  $t$  as measured by the sum of income before extraordinary items and

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<sup>14</sup> We deflate all the model variables (including the intercept) with *Total Assets*, which is the same scalar used for computing the *MTB* because estimating a model with variables deflated by different scalars (and without deflating the intercept) might cause spurious significance. We thank the editor and one of the referees for pointing this out to us.

depreciation and amortization expense. We follow the prior literature on investment-cash flow sensitivity in defining each of the above variables.

Following Fazzari et al (1988), Hovakimian and Hovakimian (2005), and other related studies we account for the possibility that investment is financed with cash flows from the previous year. Specifically, we include a one year lagged cash flow ( $CF_{it-1}/TA_{it-1}$ ) to the main model. In fact, the use of a one year lagged cash flow in investment-cash flow sensitivity model is more appropriate than the use of current cash flow. The argument behind this is as follows. Investment is added to the balance sheet in the period it is completed. However, the investment-cash flow sensitivity model is trying to model investment decisions, not additions to the balance sheet (which are only used because they are observable, while investment decisions are unobservable). Empirical evidence suggests that the average time between the investment decision and the completion of the investment (i.e. the addition to the balance sheet) is around one year (Mayer 1958). Thus, a one year lagged cash flow seems the appropriate specification; and any changes in investment decisions are expected to be more correlated with changes in lagged rather than current cash flow.<sup>15</sup> Fazzari et al. (1988) argue that lagged cash flow has explanatory power for investment in a time-to-build context.

In order to test Hypotheses one and two, we estimate the model below pre- and post-IFRS.

$$\frac{I_{it}}{TA_{it-1}} = \frac{\beta_0}{TA_{it-1}} + \beta_1 \frac{CF_{it}}{TA_{it-1}} + \beta_2 \frac{CF_{it}}{TA_{it-1}} * INSIDERS + \beta_3 \frac{CF_{it-1}}{TA_{it-1}} + \beta_4 \frac{CF_{it-1}}{TA_{it-1}} * INSIDERS + \beta_5 MTB_{it} + \beta_6 MTB_{it} * INSIDERS + \beta_7 INSIDERS + \sum \beta_i FIRM_i + \sum \beta_i YEAR_i + \varepsilon_{it}$$

Each of the above model variables is interacted with an *INSIDERS* dummy that takes the value 1 if the observation belongs to an insider economy and zero otherwise. We control for firm-year effects by including a full set of *FIRM* and *YEAR* dummies.<sup>16</sup>

In order to test the third and fourth hypotheses, we re-estimate the above model pre-and post-IFRS after partitioning the *INSIDERS* sample by firm size. Specifically, instead of interacting

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<sup>15</sup> For example, if a company reported a new fixed asset in the balance sheet at Year 2006, this fixed asset is more likely to be the outcome of an investment decision that has been taken in Year 2005 based upon the availability of the cash flow that was internally generated during 2005. Thus, this new fixed asset (which is a 2006 figure) is correlated with the cash flow generated during Year 2005 (i.e. the one year lagged cash flow for Year 2006).

<sup>16</sup> As a robustness test we re-estimate our models with country-year fixed effects.

each of the main variables with an *INSIDER* dummy, we interact them with (1) a *LARGEINSIDERS* dummy that takes the value 1 if the observation belongs to an insider country and is greater than (or equal to) the median value of the market capitalization for that country and zero otherwise; and (2) a *SMALLINSIDERS* dummy that takes the value 1 if the observation belongs to an insider country and is less than the median value of the market capitalization for that country and zero otherwise.

#### **4.2. Sample and Data**

Since our objective is to assess the economic consequences of the mandatory adoption of IFRS in European Union countries generally and to show, in particular, a differential effect of such IFRS adoption, we focus on those European Union countries which are classified by Leuz et al. (2003) as outsider and insider economies (with weak legal enforcement). Thus, our sample includes ‘United Kingdom and Norway’ as outsider economies and ‘Italy, Greece, Portugal and Spain’ as Insider economies.

The data required, as explained in Section 4.1, are obtained from Thomson ONE Banker during the years 2000 to 2006.<sup>17</sup> Following prior studies, we focus on publicly traded non-financial firms excluding those issuing American Depository receipts (ADRs). Excluding ADR firms in particular is a must for the purpose of our study as they are less likely to be affected by IFRS adoption compared to non-ADRs since ADR firms subject themselves to increased disclosure and reconciliation to U.S. GAAP which is more similar to IFRS, greater enforcement by SEC, more litigation risk, more scrutiny by investors and auditors and accordingly, they have better information environment and more transparent financial reporting than non-ADRs (Lang et al. 2003).

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<sup>17</sup> Thomson ONE Banker covers several databases such as Worldscope, Datastream, Thomson Financials,..etc. Since both the number of countries constituting our sample and the number of years post-IFRS are small, we try to minimize the number of the missing values, thereby increasing the number of observations on hand. Specifically, if there is an observation with a missing data item, we search for the availability of this data item in another database in which it might be available under the same label or a different label. In other words, we search for each data item across the databases covered by Thomson ONE Banker in order to fill the missing values. For example, in order to compute the market value of equity, we need the number of shares outstanding and the market price per share. In case any one of these items is missing, we take instead the market capitalization which is already computed and available by the same database or another database. However, before doing this we select any observation for which all three data items are available: the market capitalization, the market price per share, and the number of shares outstanding, then, we check that multiplying the market price per share by the number of shares outstanding yields a similar result to the market capitalization.

Following Allayannis and Mozumdar (2004), we exclude the negative cash flow observations in order to remove any probable bias in the cash flow coefficient that might occur due to the inclusion of those observations as already explained in Section 3.1. Allayannis and Mozumdar (2004) do not exclude observations for all years for a firm with negative cash flows in some years, but they exclude only those years with negative cash flows. We follow the same approach here in this paper.

We also exclude Year 2004 from the pre-IFRS period since this year is potentially clouded by the fact that firms will be preparing for IFRS, and they know that Year 2004 will be the last year of the old GAAP data so they might use this year to clean things up.<sup>18</sup> This gives us an entire sample of 8142 observations. Table 1 shows the distribution of those observations pre- and post-IFRS among economies (Panel A) and among countries (Panel B). In order to mitigate the influence of outliers we winsorize all variables at the 1% and 99% levels.

Table 2 provides the descriptive statistics of the main variables used in our econometric analysis. The descriptive statistics show that the pre- and post-IFRS median values (and *P25* & *P75*) for insiders are relatively close. This is an indicator that any changes in investment-cash flow sensitivity post-IFRS for insiders probably cannot be explained by changes in the underlying size of the regression variables, which in turn suggests that IFRS adoption becomes a more likely explanation behind any changes in their investment-cash flow sensitivity.<sup>19</sup>

Multicollinearity is not a problem in our study since the correlation matrix in Table 3 shows that all correlations among variables are very small.

## 5. Empirical Results

The regression results of the first and second hypotheses are presented in Tables 4 and 5, respectively, while the regression results for the third and fourth hypotheses are presented in

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<sup>18</sup> As a robustness test, we include later Year 2004 to the pre-IFRS period. We also compare Year 2003, as the only pre-IFRS period, to Year 2005, as the only post-IFRS period (and in another test to Year 2006).

<sup>19</sup> It can be noticed from the descriptive statistics table that the median and mean values are different. The standard solution to this problem, following Biddle and Hilary (2006), is to take the log of the variables in order to fit these non-linear data into a linear regression. We thank Gilles Hilary for pointing this out to us.

Tables 6 and 7, respectively. An interpretation of these results (followed by some robustness tests) is as follows.

### **5.1. Hypothesis One**

The regression results in Table 4 report the investment-cash flow sensitivity for both outsider and insider economies pre-IFRS adoption.

The regression results, reported in Table 4, show that the coefficient on current cash flow is statistically different between outsider and insider economies as the coefficient on  $(CF_{it}/TA_{it-1}) * INSIDERS$  is positive and statistically (as well as economically) significant, suggesting that firms operating in insider economies have higher investment-cash flow sensitivity.

In addition, these results show that the coefficient on the lagged cash flow for firms operating in outsider economies  $(CF_{it-1}/TA_{it-1})$  is statistically insignificant, suggesting that the investment of these firms is not sensitive to lagged cash flow before the mandatory adoption of IFRS. However, the sum of the positive coefficients on  $CF_{it-1}/TA_{it-1}$  and  $(CF_{it-1}/TA_{it-1}) * INSIDERS$  is statistically different from zero ( $p$ -value is 0.01) suggesting that the investment of firms operating in insider economies is highly sensitive to lagged cash flow before the mandatory adoption of IFRS. The sum of the coefficients on  $CF_{it-1}/TA_{it-1}$  and  $(CF_{it-1}/TA_{it-1}) * INSIDERS$  is statistically ( $p$ -value is 0.01) as well as economically significant.

Thus, these results support the first hypothesis that firms operating in insider economies had higher investment-cash flow sensitivities than those operating in outsider economies before the mandatory adoption of IFRS.

### **5.2. Hypothesis Two**

The regression results in Table 5 report the investment-cash flow sensitivity for both outsider and insider economies post-IFRS.

For firms operating in outsider economies the results show the following. First, the sensitivity of their investment to current cash flow post-IFRS is slightly lower than their sensitivity to current cash flow pre-IFRS as the coefficient on  $CF_{it}/TA_{it-1}$  equals to .7872826 post-IFRS (as shown in Table 5) compared to .7975132 pre-IFRS (as shown in Table 4). However, the difference between these two coefficients is statistically as well as economically insignificant (the computed t-statistic is 0.066). Second, similar to pre-IFRS, their investment is still not sensitive to lagged cash flow post-IFRS as the coefficient on  $CF_{it-1}/TA_{it-1}$  is statistically insignificant. Overall, these results show that IFRS adoption has no significant impact on the sensitivity of firms operating in outsider economies.

For firms operating in insider economies the results show the following. First, the sensitivity of their investment to current cash flow post-IFRS is no longer statistically different from the sensitivity of firms operating in outsider economies as the coefficient on  $(CF_{it}/TA_{it-1}) * INSIDERS$  is statistically insignificant. Second, the sensitivity of their investment to current cash flow is lower post-IFRS as the sum of the coefficients on  $(CF_{it}/TA_{it-1})$  and  $(CF_{it}/TA_{it-1}) * INSIDERS$  equals to approximately 1.04 post-IFRS compared to 1.22 pre-IFRS.<sup>20</sup> Third, their investment is no longer sensitive to lagged cash flow after the mandatory adoption of IFRS as we fail to reject the null hypothesis that the sum of the coefficients on  $CF_{it-1}/TA_{it-1}$  and  $(CF_{it-1}/TA_{it-1}) * INSIDERS$  is equal to zero (the  $p$ -value is 0.78).

Thus, these results support our second hypothesis that IFRS adoption reduces the investment-cash flow sensitivity of firms operating in insider economies more than those operating in outsider economies.

### **5.3. Hypothesis Three**

We examine the differential investment cash flow sensitivity of small firms, to both current and lagged cash flow. The results show the following.

Using current cash flow the regression results, reported in table 6, indicate that

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<sup>20</sup> 1.04 is the sum of .7872826 and .262359 reported in Table 5, while 1.22 is the sum of .7975132 and .4265119 reported in Table 4.

(1) the sensitivity of investment to current cash flow is similar for both firms operating in outsider economies and large firms operating in insider economies as the coefficient on  $(CF_{it}/TA_{it-1}) * LARGEINSIDERS$  is not statistically different from zero.

(2) the sensitivity of the investment of small firms operating in insider economies to current cash flow is higher than that of outsider firms as the positive coefficient on  $(CF_{it}/TA_{it-1}) * SMALLINSIDERS$  is statistically as well as economically significant.

The lagged cash flow the results in Table 6, show the following. First, the investment of firms operating in outsider economies is not sensitive to lagged cash flow before the mandatory adoption of IFRS since the coefficient on the lagged cash flow for the outsider economies  $(CF_{it-1}/TA_{it-1})$  is statistically insignificant. Second, the investment of large insider firms is also insensitive to lagged cash flow before the mandatory adoption of IFRS since we fail to reject the null hypothesis that the sum of the coefficients on  $CF_{it-1}/TA_{it-1}$  and  $(CF_{it-1}/TA_{it-1}) * LARGEINSIDERS$  equals to zero (the  $p$ -value is 0.22). Third, the investment of small and medium firms operating in insider economies is sensitive to lagged cash flow as the positive coefficient on  $(CF_{it-1}/TA_{it-1}) * SMALLINSIDERS$  is statistically as well as economically significant. In fact, the investment of small insider firms is highly sensitive to lagged cash flow as the sum of the positive coefficients on  $CF_{it-1}/TA_{it-1}$  and  $(CF_{it-1}/TA_{it-1}) * SMALLINSIDERS$  is statistically different from zero at 1% level (the  $p$ -value is 0.00).

Thus, these results support our third hypothesis that the small and medium firms operating in insider economies had the highest investment-cash flow sensitivity pre-IFRS adoption.

#### **5.4. Hypothesis Four**

This section reports the results of examining the differential impact of IFRS adoption on small versus large insider firms.

Firstly, for large firms operating in insider economies the results in Table 7 indicate that (1) post-IFRS the sensitivity of their investment to current cash flow is still similar to that of firms operating in outsider economies since the coefficient on  $(CF_{it}/TA_{it-1}) * LARGEINSIDERS$  is statistically as well as economically insignificant; and (2) their investment is still insensitive to lagged cash flow post-IFRS adoption as we fail to reject the null hypothesis that the sum of

the coefficients on  $CF_{it-1}/TA_{it-1}$  and  $(CF_{it-1}/TA_{it-1}) * LARGEINSIDERS$  equals to zero (the  $p$ -value is 0.52). Overall, these results suggest that there is no significant change in the sensitivity of large insider firms post-IFRS.

Secondly, for small and medium insider firms the results in Table 7 show that the sensitivity of their investment to current cash flow is no longer statistically different from that of outsider firms as the coefficient on  $(CF_{it}/TA_{it-1}) * SMALLINSIDERS$  is statistically insignificant.<sup>21</sup> They also show that their investment is no longer sensitive to lagged cash flow post-IFRS adoption as we fail to reject the null hypothesis that the sum of the coefficients on  $CF_{it-1}/TA_{it-1}$  and  $(CF_{it-1}/TA_{it-1}) * SMALLINSIDERS$  is equal to zero (the  $p$ -value is 0.85).

Thus, given the argument explained in Section 4.1 that lagged cash flow matters more than current cash flow these results support our fourth hypothesis that IFRS adoption reduces more the investment-cash flow sensitivity of small and medium firms operating in insider economies.

### **5.5. Robustness Tests**

We perform some robustness and sensitivity tests as follows. The first set of robustness tests is for the purpose of reducing the doubt that the investment-cash flow sensitivity has been reduced not due to IFRS adoption but due to the availability of more external capital. The reason behind this doubt is as follows. For a sample of manufacturing firms, Allayannis and Mozumdar (2004) find that the investment-cash flow sensitivities are lower for all firms in 1987-1996, compared to 1977-1986, and the decline in sensitivities is the strongest for the most financially constrained firms in particular. They argue that this might be due to either an improved informational efficiency of capital markets or an increased supply of funds to capital markets resulting in easier access to external capital. Since Ferrell (2003) shows that mandatory disclosure improves stock price efficiency, the mandatory adoption of IFRS is expected to improve the informational efficiency of the EU capital markets, and accordingly, this might be the explanation behind the reduction in sensitivities that we find. However, there

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<sup>21</sup> However, the sensitivity of small and medium insider firms to current cash flow post-IFRS is still economically higher than that of outsider firms as the coefficient on  $(CF_{it}/TA_{it-1}) * SMALLINSIDERS$  is still economically (but not statistically) significant as shown in Table 7.

is still the doubt that the observed reduction in sensitivities is not due to IFRS adoption but due to the availability of external capital post-IFRS.

Thus, in order to reduce this doubt and to enhance our confidence in the reliability of the inference that IFRS adoption might be responsible for the reduction in sensitivity, we perform additional tests that controls for the availability of external capital. Specifically, we re-estimate our models after including an additional variable that captures the availability of external capital, which is “the ratio of the stock market capitalization held by minorities to gross national product” [henceforth  $(EXTERNALCAP/GNP)_{it}$ ].<sup>22</sup> This variable is introduced by La Porta et al. (1997) as the main determinant of firms’ ability to raise external finance. The stock market capitalization held by minorities is “the product of the aggregate stock market capitalization and the average percentage of common shares not owned by the top three shareholders in the ten largest non-financial, privately-owned domestic firms in a given country”. We collect the data required for computing this variable from Thomson ONE Banker and the Global Market Information Database (Euromonitor). We compute this variable per year for each country in the sample.

For testing whether the results are robust to the inclusion of the  $(EXTERNALCAP/GNP)_{it}$ , we include it in our model along with its interaction with  $CF_{it}/TA_{it-1}$  and  $(CF_{it}/TA_{it-1}) * INSIDERS$ ; and we also interact it with  $(CF_{it}/TA_{it-1}) * LARGEINSIDERS$  and  $(CF_{it}/TA_{it-1}) * SMALLINSIDERS$  after partitioning our insider economies sample.

By including the  $(EXTERNALCAP/GNP)_{it}$  in our model we assume that that there is no change in the supply of funds to capital markets post-IFRS that is a consequence of IFRS adoption. We note that including  $(EXTERNALCAP/GNP)_{it}$  in our model might underestimate the effect of IFRS adoption given that IFRS adoption might induce some investors, who withhold their capital pre-IFRS, to provide their capital to the market post-IFRS since they perceive IFRS as a protection device for them. Regardless of this logical possibility, the results of these tests are qualitatively similar to those reported in the paper (therefore we don’t tabulate them). In fact, the results of this test are more consistent with our predictions.<sup>23</sup>

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<sup>22</sup> We thank Peter Wysocki for suggesting taking this variable into consideration.

<sup>23</sup> Most of the results of this test and those reported in the paper are qualitatively similar except that the coefficient on  $(CF_{it}/TA_{it-1}) * SMALLINSIDERS$  is -.0440787 (its  $p$ -value is 0.963) post-IFRS suggesting that the

The second set of robustness tests is to examine whether the results are sensitive to dropping any country of the two countries constituting our outsider economies sample (which are the UK and Norway). First, we re-estimate our models after dropping the UK and the results are qualitatively similar to those reported in the paper. For example, the results of dropping UK show that pre-IFRS the small insider firms have the highest sensitivity to both current and lagged cash flow as the sum of the coefficients on  $CF_{it}/TA_{it-1}$  and  $(CF_{it}/TA_{it-1}) * SMALLINSIDERS$  is positive and statistically different from zero (the  $p$ -value is 0.00) and the sum of the coefficients on  $CF_{it-1}/TA_{it-1}$  and  $(CF_{it-1}/TA_{it-1}) * SMALLINSIDERS$  is positive and statistically different from zero (the  $p$ -value is 0.01). While post-IFRS the results of dropping UK show that (1) the sensitivity of the investment of small insider firms to current cash flow is similar to that of outsider firms as the coefficient on  $(CF_{it}/TA_{it-1}) * SMALLINSIDERS$  is statistically insignificant (the  $p$ -value is 0.589) and (2) they are no longer sensitive to lagged cash flow as we fail to reject the null hypothesis that the sum of the coefficients on  $CF_{it-1}/TA_{it-1}$  and  $(CF_{it-1}/TA_{it-1}) * SMALLINSIDERS$  is equal to zero (the  $p$ -value is 0.788). Second, we re-estimate our models after dropping Norway and the results of this test are also similar to those reported in the paper. The results generally are in the same direction after dropping any country whether an outsider or insider country (therefore we don't tabulate these results).

The third set of robustness tests is to examine whether the results are sensitive to the inclusion or exclusion of particular years. First, since the years 2000-2001 were bad in terms of capital market performance, their inclusion in the pre-IFRS period might bias the results.<sup>24</sup> Thus, we compare Year 2003 to Year 2006 (and also in an additional test to Year 2005) since these are the immediate pre- and post-IFRS Years.<sup>25</sup> The results of just comparing Year 2003 to Year 2006 still support our predictions. For Year 2003, the results indicate the following. First, the investment of outsider firms is not sensitive to lagged cash flow as the coefficient on

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sensitivity of small insider firms to current cash flow become similar to that of firms operating in outsider economies post-IFRS.

<sup>24</sup> We thank one of the referees for pointing this out to us.

<sup>25</sup> We estimate this robustness test with fixed year-country effects but not with firm-fixed effect because it is not possible to estimate the model for only one Year using firm-fixed effects for the following reasons. Removing the fixed effects requires either Demeaning the variables (but this case requires at least two observations per firm, otherwise no mean can be estimated) or including one firm dummy per firm (but in this case the model is not identified because the number of parameter we estimate is greater than the number of observations we have). This is why fixed firm effects is a panel data technique: we need at least two years (i.e. observations) per cross-section, and this is true regardless of whether firm fixed effects are removed by demeaning or by including firm dummy variables.

$CF_{it-1}/TA_{it-1}$  is statistically insignificant (the  $p$ -value is 0.67). Second, the small insider firms have the highest sensitivity to lagged cash flow as the coefficient on  $(CF_{it-1}/TA_{it-1}) * SMALLINSIDERS$  is positive (1.336121) and statistically significant (the  $p$ -value is 0.08) and the sum of the coefficients on  $CF_{it-1}/TA_{it-1}$  and  $(CF_{it-1}/TA_{it-1}) * SMALLINSIDERS$  is positive and statistically different from zero at 10% level (the  $p$ -value is 0.09). While for Year 2006, the results show that (1) the investment of outsider firms is still insensitive to lagged cash flow as the coefficient on  $CF_{it-1}/TA_{it-1}$  is statistically insignificant (the  $p$ -value is 0.73); and (2) the small insider firms are no longer sensitive to lagged cash flow as we fail to reject the null hypothesis that the sum of the coefficients on  $CF_{it-1}/TA_{it-1}$  and  $(CF_{it-1}/TA_{it-1}) * SMALLINSIDERS$  equals to zero (the  $p$ -value is 0.86). Similarly, the results of comparing Year 2003 to Year 2005 (instead of Year 2006) show that the investment of small insider firms is no longer sensitive to lagged cash flow in Year 2005 as we fail to reject the null hypothesis that the sum of the coefficients on  $CF_{it-1}/TA_{it-1}$  and  $(CF_{it-1}/TA_{it-1}) * SMALLINSIDERS$  equals to zero (the  $p$ -value is 0.2).

Second, since the results reported in the paper are after excluding Year 2004 from our pre-IFRS period, we re-estimate our models to see whether the results are sensitive to the inclusion of Year 2004, which increases the number of the pre-IFRS observations to be 4,297 and 2,611 for outsider and insider economies, respectively. The results of this test are in the same direction with the results reported here in the paper. The results are generally not sensitive to the exclusion of any year whether pre- or post-IFRS (therefore, we don't tabulate these results).

Finally, the results are also in the same direction if we estimate our models with country-year fixed effect rather than firm-year fixed effect.

## **6. Conclusion**

This study examines the economic consequences of the mandatory adoption of IFRS in the EU countries. Specifically, it attempts to show whether IFRS adoption enhances more the investment efficiency of a certain type of economies and in particular, whether it enhances more the investment efficiency of particular firms operating in those economies.

In order to examine the differential effect of IFRS adoption across economy types, we follow Leuz et al. (2003) who classify economies into insider and outsider economies according to their institutional features. We use investment-cash flow sensitivity as a proxy for investment efficiency, i.e. lower investment-cash flow sensitivity means higher investment efficiency.

Following prior studies, we estimate our investment-cash flow sensitivity model using firm-year fixed effects. Pre-IFRS adoption, we find that (1) the investment of firms operating in insider economies is more sensitive to current cash flow than the investment of those operating in outsider economies; and (2) the investment of firms operating in insider economies is highly sensitive to lagged cash flow, whereas the investment of those operating in outsider economies is insensitive to lagged cash flow. Post-IFRS adoption, we find that (1) the sensitivity of the investment of insider firms to current cash flow is no longer statistically different from that of outsider firms; and (2) the investment of insider firms is no longer sensitive to lagged cash flow. Since the lagged cash flow is the construct that matters more, as we discuss in the paper, these results support our prediction that that IFRS adoption reduces investment-cash flow sensitivity more for insider economies.

Furthermore, when we partition the insider economies sample by firm size, the results show that (1) the small and medium firms operating in insider economies have the highest sensitivity of investment to lagged cash flow pre-IFRS adoption; and (2) their investment is no longer sensitive to lagged cash flow post-IFRS adoption. These results support our prediction that IFRS adoption reduces investment-cash flow sensitivity most for small and medium firms operating in insider economies.

It may seem surprising that the investment efficiency benefits of IFRS show up so quickly in the data. One might have expected the market to take several years to adjust to the new accounting and disclosure standards. Whilst we are inclined to agree that the full consequences of IFRS adoption may take several years to emerge, we note that the prolonged prior notice given to IFRS adoption, along with the level of pre-commitment it entailed may explain why observable benefits may have followed so soon after the actual implementation. In particular an important feature of the adoption of IFRS is that it pre-committed firms to improving their accounting and disclosure quality through IFRS several years prior to the actual implementation of the standards. Specifically, even though EU firms were not required to implement IFRS until 2005, the commitment to implement by 2005 was actually confirmed

by the EU in late 2001. Thus by 2002 all firms and investors would have known that all listed EU firms were committed to IFRS from 2005 onwards.

In order to reduce the doubt that the observed reduction in sensitivities is not due to IFRS adoption but due to the availability of external capital post-IFRS, we perform robustness tests that controls for the availability of external capital, as measured by “the ratio of the stock market capitalization held by minorities to gross national product.” Estimating these robustness tests (and some other sensitivity tests) provides results qualitatively similar to those reported in the paper.

Whilst our results are broadly consistent with our theoretical hypotheses, we would caution policy makers and other readers against placing too much reliance on our findings for two reasons. First, the reduction in sensitivity might not be attributed solely to IFRS adoption as there were simultaneous institutional and enforcement improvements in the EU suggesting that the reductions observed might be the outcome of IFRS or these improvements or the joint effects of both sets of changes working together. Second, the short time period we study after IFRS adoption, the sample sizes in some of our insider economies, and doubts about the quality of some of the raw data, limit our ability to draw firm conclusions. At this stage all we can conclude is that it appears that IFRS adoption may have had a positive effect on the investment efficiency of some EU countries/firms, and this theme is worthy of further attention as more data comes available.

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**Table 1: Distribution of Sample Observations**

	<i>Pre-IFRS</i> (2000-2003)	<i>Post-IFRS</i> (2005-2006)	Total
<b>Panel A:</b> <i>Economies</i>			
<i>Outsider Economies</i>	3229	1,999	5228
<i>Insider Economies</i>	2058	856	2914
Total	5287	2,855	8142
<b>Panel B:</b> <i>Countries</i>			
<i>UK</i>	2881	1812	4693
<i>NORWAY</i>	348	187	535
<i>SPAIN</i>	361	182	543
<i>GREECE</i>	872	295	1167
<i>PORTUGAL</i>	189	68	257
<i>ITALY</i>	636	311	947
Total	5287	2,855	8142

**Table 2: Descriptive Statistics**

	$\frac{I_{it}}{TA_{it-1}}$					$\frac{CF_{it}}{TA_{it-1}}$					$MTB_{it}$				
	Mean	P25	Median	P75	Std. Dev.	Mean	P25	Median	P75	Std. Dev.	Mean	P25	Median	P75	Std. Dev.
Panel A: <i>Full Sample</i>															
Pre-IFRS	.06	.013	.04	.08	.08	1.07	.18	.35	.76	2.61	1.78	.97	1.27	1.91	1.54
Post-IFRS	.06	.014	.034	.07	.08	1.66	.19	.44	1.23	3.48	1.71	1.09	1.38	1.95	1.10
Panel B: <i>Outsider Economies</i>															
Pre-IFRS	.07	.02	.045	.085	.087	1.23	.19	.40	0.94	2.79	1.77	.97	1.29	1.92	1.49
Post-IFRS	.062	.015	.035	.07	.083	2	.25	.60	1.7	3.86	1.83	1.13	1.49	2.14	1.16
Panel C: <i>Insider Economies</i>															
Pre-IFRS	.045	0	.022	.061	.071	.82	.16	.29	.577	2.29	1.80	.97	1.24	1.86	1.62
Post-IFRS	.053	0.01	.03	.068	.073	.78	.13	.25	.53	2.13	1.45	1.02	1.24	1.55	.9

$I_{it}$  is the capital expenditures for firm  $i$  in year  $t$ .  $TA_{it-1}$  is the total assets for firm  $i$  in year  $t-1$ .  $CF_{it}$  represents cash flow to firm  $i$  in year  $t$  as measured by the sum of income before extraordinary items and depreciation and amortization expense.  $MTB_{it}$  is the market to book ratio of assets for firm  $i$  at the beginning of year  $t$  as a proxy for its Tobin's  $Q$ , and equals to [(total assets – book value of equity – deferred taxes + market value of equity) / total assets].

**Table 3: Correlation among Main Variables**

	$\frac{CF_{it}}{TA_{it-1}}$	$MTB_{it}$
$MTB_{it}$	0.1715 (0.00)	
$(EXTERNALCAP/GNP)_{it}$	0.0895 (0.00)	0.1344 (0.00)

$CF_{it}$  represents cash flow to firm  $i$  in year  $t$  as measured by the sum of income before extraordinary items and depreciation and amortization expense.  $TA_{it-1}$  is the net property, plant, and equipment for firm  $i$  in year  $t-1$ .  $MTB_{it}$  is the market to book ratio of assets for firm  $i$  at the beginning of year  $t$  as a proxy for its Tobin's  $Q$ , and equals to [(total assets - book value of equity - deferred taxes + market value of equity) / total assets].  $(EXTERNALCAP/GNP)_{it}$  is the ratio of the stock market capitalization held by minorities to gross national product. The  $p$ -values are reported in parentheses.

**Table 4: Regression Results for the First Hypothesis (pre-IFRS)**

Independent variables	Dependent variable: $\frac{I_{it}}{TA_{it-1}}$
	Firm-Year Fixed effect
$\frac{CF_{it}}{TA_{it-1}}$	.7975132 (0.00)
$\frac{CF_{it}}{TA_{it-1}} * INSIDERS$	.4265119 (0.01)
$\frac{CF_{it-1}}{TA_{it-1}}$	.1553163 (0.21)
$\frac{CF_{it-1}}{TA_{it-1}} * INSIDERS$	.3882185 (0.13)
$MTB_{it}$	.3123359 (0.00)
$MTB_{it} * INSIDERS$	-.1008015 (0.21)
$R^2$	17.31%

$I_{it}$  is the capital expenditures for firm  $i$  in year  $t$ .  $TA_{it-1}$  is the total assets for firm  $i$  in year  $t-1$ .  $CF_{it}$  represents cash flow to firm  $i$  in year  $t$  as measured by the sum of income before extraordinary items and depreciation and amortization expense.  $CF_{it-1}$  is the cash flow for firm  $i$  in year  $t-1$ .  $MTB_{it}$  is the market to book ratio of assets for firm  $i$  at the beginning of year  $t$  as a proxy for its Tobin's  $Q$ , and equals to [(total assets – book value of equity – deferred taxes + market value of equity) / total assets].  $INSIDERS$  is a dummy variable that takes the value 1 if the observation belongs to an insider economy and zero otherwise. The model includes a full set of  $FIRM$  and  $YEAR$  dummies, and  $INSIDERS$  dummy. The  $p$ -values are reported in parentheses.

**Table 5: Regression Results for the Second Hypothesis (post-IFRS)**

Independent variables	Dependent variable: $\frac{I_{it}}{TA_{it-1}}$
	Firm-Year Fixed effect
$\frac{CF_{it}}{TA_{it-1}}$	.7872826 (0.00)
$\frac{CF_{it}}{TA_{it-1}} * INSIDERS$	.262359 (0.30)
$\frac{CF_{it-1}}{TA_{it-1}}$	-.1323384 (0.49)
$\frac{CF_{it-1}}{TA_{it-1}} * INSIDERS$	.2212033 (0.55)
$MTB_{it}$	.1071663 (0.10)
$MTB_{it} * INSIDERS$	.3264167 (0.13)
$R^2$	7%

$I_{it}$  is the capital expenditures for firm  $i$  in year  $t$ .  $TA_{it-1}$  is the total assets for firm  $i$  in year  $t-1$ .  $CF_{it}$  represents cash flow to firm  $i$  in year  $t$  as measured by the sum of income before extraordinary items and depreciation and amortization expense.  $CF_{it-1}$  is the cash flow for firm  $i$  in year  $t-1$ .  $MTB_{it}$  is the market to book ratio of assets for firm  $i$  at the beginning of year  $t$  as a proxy for its Tobin's  $Q$ , and equals to [(total assets – book value of equity – deferred taxes + market value of equity) / total assets].  $INSIDERS$  is a dummy variable that takes the value 1 if the observation belongs to an insider economy and zero otherwise. The model includes a full set of  $FIRM$  and  $YEAR$  dummies, and  $INSIDERS$  dummy. The  $p$ -values are reported in parentheses.

**Table 6: Regression Results for the Third Hypothesis (pre-IFRS)**

Independent variables	Dependent variable: $\frac{I_{it}}{TA_{it-1}}$
	Firm-Year Fixed effect
$\frac{CF_{it}}{TA_{it-1}}$	.8026592 (0.00)
$\frac{CF_{it}}{TA_{it-1}} * LARGEINSIDERS$	.0198056 (0.93)
$\frac{CF_{it}}{TA_{it-1}} * SMALLINSIDERS$	.4400806 (0.05)
$\frac{CF_{it-1}}{TA_{it-1}}$	.164155 (0.19)
$\frac{CF_{it-1}}{TA_{it-1}} * LARGEINSIDERS$	.186039 (0.55)
$\frac{CF_{it-1}}{TA_{it-1}} * SMALLINSIDERS$	.9946754 (0.02)
$MTB_{it}$	.3168609 (0.00)
$MTB_{it} * LARGEINSIDERS$	.0845974 (0.44)
$MTB_{it} * SMALLINSIDERS$	-.2452572 (0.24)
$R^2$	17.26%

$I_{it}$  is the capital expenditures for firm  $i$  in year  $t$ .  $TA_{it-1}$  is the total assets for firm  $i$  in year  $t-1$ .  $CF_{it}$  represents cash flow to firm  $i$  in year  $t$  as measured by the sum of income before extraordinary items and depreciation and amortization expense.  $CF_{it-1}$  is the cash flow for firm  $i$  in year  $t-1$ .  $MTB_{it}$  is the market to book ratio of assets for firm  $i$  at the beginning of year  $t$  as a proxy for its Tobin's  $Q$ , and equals to [(total assets – book value of equity – deferred taxes + market value of equity) / total assets].  $LARGEINSIDERS$  is a dummy variable that takes the value 1 if the observation belongs to an insider country and is greater than or equal to the median value of the market capitalization for that country and zero otherwise.  $SMALLINSIDERS$  is a dummy variable that takes the value 1 if the observation belongs to an insider country and is less than the median value of the market capitalization for that country and zero otherwise. The model includes a full set of  $FIRM$  and  $YEAR$  dummies;  $LARGEINSIDERS$  dummy; and  $SMALLINSIDER$  dummy. The  $p$ -values are reported in parentheses.

**Table 7: Regression Results for the Fourth Hypothesis (post-IFRS)**

Independent variables	Dependent variable: $\frac{I_{it}}{TA_{it-1}}$
	Firm-Year Fixed effect
$\frac{CF_{it}}{TA_{it-1}}$	.7903136 (0.00)
$\frac{CF_{it}}{TA_{it-1}} * LARGEINSIDERS$	.060482 (0.89)
$\frac{CF_{it}}{TA_{it-1}} * SMALLINSIDERS$	.6020627 (0.284)
$\frac{CF_{it-1}}{TA_{it-1}}$	-.1324219 (0.57)
$\frac{CF_{it-1}}{TA_{it-1}} * LARGEINSIDERS$	.3476026 (0.39)
$\frac{CF_{it-1}}{TA_{it-1}} * SMALLINSIDERS$	.0061808 (0.99)
$MTB_{it}$	.1099928 (0.11)
$MTB_{it} * LARGEINSIDERS$	.6607605 (0.07)
$MTB_{it} * SMALLINSIDERS$	.5569369 (0.32)
$R^2$	8%

$I_{it}$  is the capital expenditures for firm  $i$  in year  $t$ .  $TA_{it-1}$  is the total assets for firm  $i$  in year  $t-1$ .  $CF_{it}$  represents cash flow to firm  $i$  in year  $t$  as measured by the sum of income before extraordinary items and depreciation and amortization expense.  $CF_{it-1}$  is the cash flow for firm  $i$  in year  $t-1$ .  $MTB_{it}$  is the market to book ratio of assets for firm  $i$  at the beginning of year  $t$  as a proxy for its Tobin's  $Q$ , and equals to [(total assets – book value of equity – deferred taxes + market value of equity) / total assets].  $LARGEINSIDERS$  is a dummy variable that takes the value 1 if the observation belongs to an insider country and is greater than (or equal to) the median value of the market capitalization for that country and zero otherwise.  $SMALLINSIDERS$  is a dummy variable that takes the value 1 if the observation belongs to an insider country and is less than the median value of the market capitalization for that country and zero otherwise. The model includes a full set of  $FIRM$  and  $YEAR$  dummies;  $LARGEINSIDERS$  dummy; and  $SMALLINSIDER$  dummy. The  $p$ -values are reported in parentheses.